HP Insight Management WBEM Providers for HP integrated VMware ESXi 4.0 U3 and Updates

Data Sheet



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1 Overview

The HP Insight Management WBEM Providers supply system management data through HP integrated VMware ESXi framework for HP ProLiant server platforms and options. These providers implement the profiles and data described in this document.

Use of the providers requires HP integrated VMware ESXi.

2 Ethernet port

2-1 Overview

The following profiles are implemented, and files are installed by this provider.

Table 2-1 Overview

Implemented Profiles	• DMTF: Ethernet Port Profile (DSP1014) v. 1.0.0 • DMTF: Host LAN Network Port Profile (DSP1035)1.0.0 • HP Location Profile 1.0 • HP Ethernet Teaming Profile – P00117 v1.0.1 (partial only, VMware only –no teams) • DMTF: IP Protocol Profile (w/ IPv6 implementation) • DSP1036 version 1.0.0 Date 09/04/2008

2-2 Namespaces

This provider returns instances in the `root/hpq` namespace.

2-3 Class implementations

The classes below reside in the local host OS CIMOM on each individual monitored system and describe the ethernet ports, associated controllers and logical ethernet interfaces that are available in the system. These classes do not describe Management Processor of (iLO) related information, that information is provided via the MPLite provider.

- SMX_EthernetPort
- SMX_EthernetDevice
- SMX_EthernetLANEndpoint
- SMX_EthernetLANHostedAccessPoint
- SMX_EthernetPortToLANEndpoint
- SMX_EthernetPortController
- SMX_EthernetPortControllerEthernetPort
- SMX_EthernetPortControllerPhysicalPackage
- SMX_EthernetPortControllerPhysicalPackageEthernetPort
- SMX_EthernetControllerLocation
- SMX_EthernetControllerPhysicalPackageEthernetControllerLocation
- SMX_IPProtocolEndpoint
- SMX_IPBindsToEthernetLANEndpoint
- SMX_EthIPHostedAccessPoint
- SMX_RemoteServiceAccessPoint

- SMX_RemoteAccessAvailableToIPEndpoint
- SMX_RemoteServiceHostedAccessPoint
- SMX_EthernetStatistics
- SMX_EthernetPortToStatisticalData
- SMX_EthernetPortControllerSoftwareIdentity
- SMX_EthernetPortControllerFirmwareIdentity
- SMX_EthernetElementSoftwareIdentity
- SMX_EthernetElementFirmwareIdentity
- SMX_EthernetCollection
- SMX_EthernetMemberOfCollection
- SMX_EthernetGroupHostedCollection

2-3-1 SMX_EthernetPort

SMX_EthernetPort implements the class HP_EthernetPort and describes capabilities and characteristics of each EthernetPort in a monitored system.

Table 2-2 Class: SMX_EthernetPort

Property name	Property implementation
CIM_ManagedElement	
ElementName	Same as Caption
Caption	Text describing this port as advertised from PCI config/header information. For Example: Broadcom Corporation NetXtreme BCM5753M Gigabit Ethernet PCI Express (rev 21)
Description	A description of the instance with unique port number for each port on a particular controller, for example: Ethernet port *<PortNumber>* on ethernet controller *<controller_id>*
CIM_ManagedSystemElement	
HealthState	5 (OK) 20 (Major failure)
Name	The logical MAC address of a the Ethernet Port, typically for the format FFFFFFFFFFFF where each F is a text representation of a hexidecimal digit 0x0 - 0xF.
OperationalStatus	• 0 (Unknown) • 2 (OK) • 3 (Degraded)—Indicating that there is no link for this Port • 6 (Error)—Indicating a link that was active is now lost

Table 2-2 Class: SMX_EthernetPort

StatusDescriptions	StatusDescriptions [0] per OperationalStatus[0]: • Unknown • OK • Degraded • Error
CIM_LogicalElement	
CIM_EnabledLogicalElement	
EnabledState	5 (Not Applicable)
RequestedState	12 (Not Applicable)
EnabledDefault	2 (Enabled)
CIM_LogicalDevice	
CreationClassName	SMX_EthernetPort
DeviceID	HPQ:SMX_EthernetPort:<*InstanceNum*>
SystemName	SMX_ComputerSystem.Name
SystemCreationClassName	SMX_ComputerSystem
CIM_LogicalPort	
MaxSpeed	Current bandwith in bits per second. If port has link (value is 0 otherwise)
CIM_NetworkPort	
AutoSense	Boolean that is true if Ethernet Port can automatically determine speed of comm charateristics of the network
FullDuplex	Boolean that is true if operating in FullDuplex mode
LinkTechnology	2 (Ethernet)
PermanentAddress	The logical MAC address of a the Ethernet Port, in the format FFFFFFFFFFFF, where each *F* is a text representation of a hexidecimal digit 0x0 - 0xF.
PortNumber	<*port_id*> (unique within a specific ethernet controller) Not implemented for single port controllers
Speed	Current bandwith in bits per second. If port has link (value is 0 otherwise)
SupportedMaximumTransmission Unit	64 bit unsigned integer of MTU in bytes
CIM_EthernetPort	

Table 2-2 Class: SMX_EthernetPort

PortType	0 (Unknown) 1 (Other) 50 (10BaseT) 51 (10-100BaseT) 52 (100BaseT) 53 (1000BaseT) 54 (2500BaseT) 55 (10GbaseT) 56 (10Gbase-CX4) 100 (100Base-FX) 101 (100Base-SX) 102 (1000Base-SX) 103 (1000Base-LX) 104 (1000Base-CX) 105 (10Gbase_SR) 106 (10Gbase_SW) 107 (10Gbase_LX4) 108 (10Gbase_LR) 109 (10Gbase_LW) 110 (10Gbase_ER) 111 (10Gbase_EW)
Capabilities[]	Array of 16 bit unsiged integers advertising the capabilities of the EthernetPort: • 0 (Unknown) • 1 (Other) • 2 (AlertOnLan) • 3 (WakeOnLan)
CapabilityDescriptions[]	Capability Descriptions[0] per Capabilities[0]. Text descriptions for the Capabilities array above. Examples: • Unknown • Other • Alert On LAN • Wake On LAN
EnabledCapabilities[]	Specifies which of the Ethernet Ports capabilities are enabled.
NetworkAddresses[]	Array of MAC addresses affiliated with port. Formatted like 001122334455 with no delimiting
HP_EthernetPort	
VirtualPortNumber	Virtual Port Number for FlexNICS

2-3-2 SMX_EthernetDevice

SMX_EthernetDevice implements the class HP_EthernetDevice and associates the enclosures computer system instance to the blades computer system instance.

Table 2-3 Class: SMX_EthernetDevice

Property name	Property implementation
HP_EthernetDevice	
GroupComponent	ref: SMX_ComputerSystem (the computer system in which this Ethernet Port resides)
PartComponent	ref: SMX_EthernetPort (the instance of Ethernet Port in this ComputerSystem)

2-3-3 SMX_EthernetLANEndpoint

SMX_EthernetLANEndpoint implements the class HP_EthernetLANEndpoint and describes a communication endpoint which, when its associate interface is connected to a LAN, might send and receive data frame.

Table 2-4 Class: SMX_EthernetLANEndpoint

Property name	Property implementation
CIM_ManagedElement	
Caption	LAN Endpoint info for OS Exposed Ethernet Port informatiom. For example: LAN Endpoint(<*instanceNum*>) for : 82546GB Gigabit Ethernet Controller port <*portNumber*>
CIM_ManagedSystemElement	
HealthState	5 (OK), normal operation 20 (Major Failure)
Name	HPQ:SMX_EthernetLANEndpoint*:<instanceNum>*
OperationalStatus	0 (Unknown) 2 (OK) 3 (Degraded)—Indicating that there is no link for this Port 6 (Error)—Indicating that previous active link lost connectivity
StatusDescriptions	StatusDescriptions[0] per OperationalStatus[0]: • Unknown • OK • Degraded • Error
CIM_LogicalElement	
CIM_EnabledLogicalElement	
CIM_ServiceAccessPoint	
CreationClassName	SMX_EthernetLANEndpoint
SystemName	SMX_ComputerSystem.Name

Table 2-4 Class: SMX_EthernetLANEndpoint

Property name	Property implementation
SystemCreationClassName	SMX_ComputerSystem
CIM_ProtocolEndpoint	
Description	Text representing of what the operating system labels this endpoint. For example: eth3 On Windows operating systems: Local Area Connection 2
ElementName	LAN Endpoint info for OS Exposed Ethernet Port information. For example: LAN Endpoint(<*instanceNum*>) for : 82546GB Gigabit Ethernet Controller port <*portNumber*>
ProtocolIFType	6 (Ethernet CSMA/CD)
CIM_LANEndpoint	
MACAddress	Text representing the principal unicast address used in communication with the LANEndpoint. Twelve hexadecimal digits. For Example: 010203040506
HP_EthernetLANEndpoint	

2-3-4 SMX_EthernetLANHostedAccessPoint

SMX_EthernetLANHostedAccessPoint implements the class HP_EthernetLANHostedAccessPoint and associates Ethernet LAN Endpoint to the Computer System in a managed system.

Table 2-5 Class: SMX_EthernetLANHostedAccessPoint

Property name	Property implementation
CIM_Dependency	
CIM_HostedDependency	
CIM_HostedAccessPoint	
HP_EthernetLANHostedAccessPoint	
Antecedent	ref: SMX_ComputerSystem
Dependent	ref: SMX_EthernetLANEndpoint

2-3-5 SMX_EthernetPortToLANEndpoint

SMX_EthernetPortToLANEndpoint implements the class HP_EthernetPortToLANEndpoint and associates the Ethernet Port instance to its Ethernet LAN Endpoint instance.

Table 2-6 Class: SMX_EthernetLANHostedAccessPoint

Property name	Property implementation
CIM_Dependency	
CIM_DeviceSAPImplementation	
HP_EthernetPortToLANEndpoint	
Antecedent	ref: SMX_EthernetPort
Dependent	ref: SMX_EthernetLANEndpoint

2-3-6 SMX_EthernetPortController

SMX_EthernetPortController implements the class HP_EthernetPortController and is a logical device corresponding to a hardware Ethernet network controller.

Table 2-7 Class: SMX_EthernetPortController

Property name	Property implementation
CIM_ManagedElement	
Caption	A description of the class, for example: Ethernet Controller *<controller id>*
Description	A description of the class, for example: Ethernet Controller *<controller id>*
ElementName	A description of the class, for example: Ethernet Controller *<controller id>*
CIM_ManagedSystemElement	
HealthState	5 (OK), normal operation
Name	A description of the class, for example: Ethernet Controller *<controller id>*
OperationalStatus	2 (OK), normal operation
StatusDescriptions	Ethernet Controller status: OK
CIM_LogicalElement	
CIM_EnabledLogicalElement	
CIM_LogicalDevice	
CreationClassName	SMX_EthernetPortController
SystemCreationClassName	SMX_ComputerSystem
SystemName	SMX_ComputerSystem.Name
IdentifyingDescriptions	None
CIM_Controller	
CIM_PortController	

Table 2-7 Class: SMX_EthernetPortController

Property name	Property implementation
ControllerType	2 (Ethernet)
ControllerVersion	Hardware revision number of the controller or 0 if unknown

2-3-7 SMX_EthernetPortControllerEthernetPort

SMX_PortControllerEthernetPort implements the class HP_PortControllerEthernetPort and associates an Ethernet Port Controller to its controlled Ethernet Ports.

Table 2-8 Class: SMX_EthernetPortControllerEthernetPort

Property name	Property implementation
CIM_Dependency	
CIM_DeviceConnection	
CIM_ControlledBy	
HP_PortControllerEthernetPort	
Antecedent	ref: SMX_EthernetPortController
Dependent	ref: SMX_EthernetPort

2-3-8 SMX_EthernetPortControllerPhysicalPackage

SMX_EthernetPortControllerPhysicalPackage implements the class HP_EthernetPortControllerPhysicalPackage and describes an Ethernet Port Controller Physical Package to a given.

Table 2-9 Class: SMX_EthernetPortControllerPhysicalPackage

Property name	Property implementation
CIM_ManagedElement	
Caption	Product name For example: Controller (<*num_ports*>-port): Broadcom Corporation NetXtreme BCM5753M Gigabit Ethernet PCI Express (rev 21)
CIM_ManagedSystemElement	
Name	Ethernet Controller Package
HealthState	5 (OK), normal operation
OperationalStatus	2 (OK), normal operation
StatusDescriptions	Ethernet Controller Package status: OK

Table 2-9 Class: SMX_EthernetPortControllerPhysicalPackage

Property name	Property implementation
CIM_PhysicalElement	
CanBeFRUed	Boolen describing if this individual physical package can be replaced in the field. • True if PCI card • False if embedded device on Motherboard
CreationClassName	SMX_EthernetPortControllerPhysicalPackage
Description	Product Name For example: Controller (<*num_ports*>-port): Broadcom Corporation NetXtreme BCM5753M Gigabit Ethernet PCI Express (rev 21)
ElementName	Ethernet Controller Package
Manufacturer	Text representng vendor info from PCI config space. (HP, Intel®, Broadcom and so on)
Tag	HPQ:SMX_EthernetPortContollerPhysicalPackage *<controller_id>*
Version	Hardware version of the Package or N/A
CIM_PhysicalPackage	
OtherPackageType	If PackageType is 1 (Other), then this text will further descript the package. Example: Embedded Controller
PackageType	0 (Unknown) 1 (Other), more info in OtherPackageType 9 (Module/Card)
HP_EthernetPortPhysicalPackage	

2-3-9 SMX_EthernetControllerPhysicalPackageEthernetController

SMX_EthernetControllerPhysicalPackageEthernetController implements the class HP_EthernetControllerPhysicalPackageEthernetController and associates an Ethernet Port Controller Physical Package to its logical Ethernet Port Controller.

Table 2-10 Class: SMX_EthernetControllerPhysicalPackageEthernetController

Property name	Property implementation
CIM_Dependency	
CIM_Realizes	

Table 2-10 Class: SMX_EthernetControllerPhysicalPackageEthernetController

Property name	Property implementation
HP_EthernetControllerPhysicalPackageEthernetController	
Antecedent	ref: SMX_EthernetPortControllerPhysicalPackage
Dependent	ref: SMX_EthernetPortController

2-3-10 SMX_EthernetControllerLocation

SMX_EthernetControllerLocation implements the class HP_EthernetControllerLocation. It describes the location information of the Ethernet Contoller Physical Package or card.

Table 2-11 Class: SMX_EthernetControllerLocation

Property name	Property implementation
CIM_ManagedElement	
ElementName	Product Name. For Example: 2 port controller: Broadcom Corporation NetXtreme BCM5753M Gigabit Ethernet PCI Express (rev 21)
Description	Value of ElementLocationTag prefaced with either "Embedded Controller" or "Ethernet Controller in"
Caption	Same as Description
CIM_Location	
Name	PCISLOT Embedded Ethernet
PhysicalPosition	Opaque key Example for a contoller in cabinet 1, bay 2 chassis 3 slot 6: 01-02-03-FF-FF-06-FF-85 For Embedded Ethernet Controller in this system: FF-FF-FF-FF-FF-00-FF-88
HP_Location	
ElementLocationTagDesc	18 (Embedded Port) 23 (PCI Adapter Slot)
ElementLocationTag	Text representing the slot location. Examples: If an embedded controller on a motherboard or chassis Embedded Controller;<controller_number> On non-cellular servers: *<physical_slot_number>* On cellular servers: Cabinet: *<cabinet_num>* Bay: *<bay_num>* Chassis: *<chassis_num>* Slot: *<slot_num>*

Table 2-11 Class: SMX_EthernetControllerLocation

Property name	Property implementation
LocationInfoDesc	Array of enums describing values at comparable index in LocationInformation array. LocationInfoDesc[0] per LocationInfornation[0]. Values for embedded devices: • 17 (Embedded) • 10 (Cell) if Embedded device in a cellular system Possible values for all other cases: • 1 (Mezzanine Slot) • 3 (PCI Slot) • 2 (Interconnect Bay) • 7 (Cabinet) • 6 (Chassis)
LocationInformation	Array of text values representing the location components that describe this Ethernet Controller Physical location. LocationInfoDesc[0] per LocationInfornation[0]. Cross-reference with LocationInfoDescription array to determine what type of location information is represented.

2-3-11 SMX_EthernetControllerPhysicalPackageEthernetControllerLocation.

SMX_EthernetControllerPhysicalPackageEthernetControllerLocation implements HP_EthernetControllerPhysicalPackageEthernetControllerLocation and associates SMX_EthernetControllerPhysicalPackage to its logical SMX_EthernetControllerLocation.

Table 2-12 Class: SMX_ EthernetControllerPhysicalPackageEthernetControllerLocation

Property name	Property implementation
CIM_PhysicalElementLocation	
HP_EthernetControllerPhysicalPackageEthernetControllerLocation	
Element	ref: SMX_EthernetControllerPhysicalPackage
PhysicalLocation	ref: SMX_EthernetControllerLocation

2-3-12 SMX_IPProtocolEndpoint

SMX_IPProtocolEndpoint implements the class HP_IPProtocolEndpoint and describes capabilities and characteristics of each IP interface in a managed system.

Table 2-13 Class: SMX_IPProtocolEndpoint

Property name	Property implementation
CIM_ManagedElement	
ElementName	IP Protocol Endpoint info for OS Exposed Ethernet Port informatiom. For example: IP Protocol Endpoint(<*instanceNum*>) for : 82546GB Gigabit Ethernet Controller port <*portNumber*> For ESXi, IP Protocol Endpoint information for management network logical interface name. For example, IP protocol Endpoint (<instanceNum>) for vmk0-ipv4-0
Caption	Same as associated ElementName.
Description	For Linux, operating System ethernet device name For Example: eth1 For ESXi, management network logical interface name. For example, vmk0-ipv4-0.
CIM_ManagedSystemElement	
HealthState	Same as associated LAN Endpoint
StatusDescriptions	StatusDescriptions[0] per OperationalStatus[0]: • Unknown • OK • Degraded • Error
CIM_LogicalElement	
CIM_EnabledLogicalElement	
RequestedState	12 (Not Applicable)
EnabledDefault	2 (Enabled)
CIM_ServiceAccessPoint	
CreationClassName	SMX_IPProtocolEndpoint
SystemCreationClassName	SMX_ComputerSystem
SystemName	SMX_ComputerSystem.Name
CIM_ProtocolEndpoint	
OperationalStatus	0 (Unknown) 2 (OK) 3 (Degraded) 6 (Error)
CIM_IPProtocolEndpoint	

Table 2-13 Class: SMX_IPProtocolEndpoint

Property name	Property implementation
AddressOrigin	How the Address was assigned to this IP Protocol Endpoint. • 0 (Unknown) • 3 (Static) • 4 (DHCP)
IPv4Address	Only initialized if IP interface advertises a valid IPv4 Address.
IPv6Address	Only initialized if IP interface advertises a valid IPv6 Address.
IPv6AddressType	If ProtocolIFType is 4097 or 4098, then this property is implemented. • 3 (Loopback) • 5 (Link Local Unicast) • 7 (Embedded IPv4 Address)
IPv6SubnetPrefixLength	Unisigned integer. Only initialized if IP interface advertises a valid IPv6 Address. Its used to describe the prefix length of the IPv6Address subnet. (Experimental Schema)
PrefixLength	Same as IPv6SubnetPrefixLength. (non-experimental schema)
Name	Opaque Key SMX scoped instance name. For example: HPQ:SMX_IPProtocolEndpoint:<*instance_num*>
NameFormat	Text describing the method to create a unique name for every IPProtocolEndpoint. For example: Opaque Key. Unique scoped instance information HPQ:SMX_IPProtocolEndpoint: concatenated with the class instance id number.
ProtocolIFType	1 (Other) 4096 (IPv4) 4097 (IPv6) 4098 (IPv4/IPv6)
SubnetMask	Text representing the mask of the IPv4 address, if defined, else 0.0.0.0
HP_IPProtocolEndpoint	

2-3-13 SMX_IPBindsToEthernetLANEndpoint

SMX_IPBindsToEthernetLANEndpoint implements the class HP_IPBindsToEthernetLANEndpoint and associates an instance of an IP ProtocolEndpoint with its representative Ethernet LAN Endpoint instance.

NOTE: Currently not implemented on VMware ESXi platform. The association information between IP addresses and physical NICs is not available to OEM providers on ESXi.

Table 2-14 Class: SMX_IPBindsToEthernetLANEndpoint

Property name	Property implementation
CIM_SAPSAPDependency	
CIM_BindsTo	
CIM_BindsToLANEndpoint	
FrameType	1 (Ethernet)
HP_IPBindsToEthernetLANEndpoint	
Antecedent	ref: SMX_EthernetLANEndpoint
PartComponet	Ref:SMX_IPProtocolEndpoint

2-3-14 SMX_EthIPHostedAccessPoint

SMX_EthIPHostedAccessPoint implements the class HP_EthIPHostedAccessPoint and associates IP Protocol Endpoints to the Computer System.

Table 2-15 Class: SMX_IPProtocolBingsToEthernetLANEndpoint

Property name	Property implementation
CIM_HostedDependency	
CIM_HostedAccessPoint	
HP_EthIPHostedAccessPont	
Antecedent	Ref: SMX_ComputerSystem
Dependent	Ref : SMX_IPProtocolEndpoint

2-3-15 SMX_EthernetRemoteServiceAccessPoint

SMX_RemoteServiceAccessPoint implements the class HP_RemoteServiceAccessPoint and describes the managed systems view of the default gateway.

NOTE: Currently not implemented on on VMware ESXi platform.

Table 2-16 Class: SMX_RemoteServiceAccessPoint

Property name	Property implementation
CIM_ManagedElement	
ElementName	A unique description of the gateway, for example: RemoteServiceAccessPoint: Gateway for *<interface_name>*
CIM_ManagedSystemElement	
CIM_LogicalElement	
CIM_EnabledLogicalElement	
CIM_ServiceAccessPoint	
CreationClassName	SMX_RemoteServiceAccessPoint
Name	A unique description of the gateway, for example: RemoteServiceAccessPoint: Gateway for *<interface_name>*
SystemCreationClassName	SMX_ComputerSystem
SystemName	SMX_ComputerSystem.Name
CIM_RemoteServiceAcessPoint	
AccessContext	0 (Unknown) 2 (Default Gateway)
AccessInfo	If ProtocolIFType = 4095 (IPv4), then text value is dot-delimited ip address of default gateway, otherwise 0.0.0.0 if default gateway is unassigned. If ProtocolIFType = 4097 or 4098 (IPv6), the text value is either a valid IPv6 Address or /128 if default gateway is unassigned.
InfoFormat	3 (IPv4 Address) 4 (IPv6 Address)

2-3-16 SMX_EthernetRemoteAccessAvailableToIPEndpoint

SMX_RemoteAccessAvailableToIPEndpoint implements the class HP_RemoteAccessAvailableToIPEndpoint and associates the Default Gateway represented by SMX_RemoteAccessPoint instance to the IP Protocol Endpoint which has access to it.

NOTE: Currently not implemented on VMware ESXi platform.

Table 2-17 Class: SMX_RemoteAccessAvailableToIPEndpoint

Property name	Property implementation
CIM_Dependency	
CIM_RemoteAccessAvailableToElement	

Table 2-17 Class: SMX_RemoteAccessAvailableToIPEndpoint

Property name	Property implementation
CIM_RemoteAccessAvailableToElement	
IsDefault	Boolean true if only one default and only one gateway are present. In some systems, you might have order of access constraints if multiple gateways are present. Check OrderOfAccess property for gateway priorities.
OrderOfAccess	0 (default) indicates ordering does not apply, othewise numbers indicate priority order of access.
HP_RemoteAccessAvailableToIPEndpoint	
Antecedent	ref: SMX_RemoteServiceAccessPoint
Dependent	ref: SMX_IPProtocolEndpoint

2-3-17 SMX_EthernetRemoteServiceHostedAccessPoint

SMX_RemoteServiceHostedAccessPoint implements the class HP_RemoteServiceHostedAccessPoint and associates Remote Service Access Point to the Computer System in a managed system.

NOTE: Currently not implemented on VMware ESXi platform.

Table 2-18 Class: SMX_RemoteServiceHostedAccessPoint

Property name	Property implementation
CIM_Dependency	
CIM_HostedDependency	
CIM_HostedAccessPoint	
HP_EthernetLANHostedAccessPoint	
Antecedent	ref: SMX_ComputerSystem
Dependent	ref: SMX_RemoteServiceAccessPoint

2-3-18 SMX_EthernetStatistics

Currently implemented only in VMware ESXi platform.

SMX_EthernetStatistics implements the class HP_EthernetStatistics. The following table lists the property implementation for SMX_EthernetStatistics.

Table 2-19 Class: SMX_EthernetStatistics

Property name	Property implementation
CIM_ManagedElement	

Table 2-19 Class: SMX_EthernetStatistics

Property name	Property implementation
Caption	For Ethernet Ports, same as associated EthernetPort.Caption.
Description	A description of the instance with unique port number for each port on a particular controller, for example: Ethernet port *<PortNumber>* on ethernet controller *<controller_id>*
ElementName	Same as Caption
CIM_StatisticalData	
InstanceId	HPQ:SMX_EthernetStatistics: <instance_id>
SampleInterval	00000000000000.000000:000
StatisticTime	Time of current statistics
CIM_NetworkPortStatistics	
BytesReceived	Total number of bytes received
BytesTransmitted	Total number of bytes transmitted
PacketsReceived	Total number of packets received
PacketsTransmitted	Total number of packets transmitted
CIM_EthernetPortStatistics	
AlignmentErrors	See CIM_EthernetPortStatistics mof.
DeferredTransmissions	See CIM_EthernetPortStatistics mof.
ExcessiveCollisions	See CIM_EthernetPortStatistics mof.
FCSErrors	See CIM_EthernetPortStatistics mof.
InternalMACReceiveErrors	See CIM_EthernetPortStatistics mof.
InternalMACTransmitErrors	See CIM_EthernetPortStatistics mof.
LateCollisions	See CIM_EthernetPortStatistics mof.
MultipleCollisionFrames	See CIM_EthernetPortStatistics mof.
SingleCollisionFrames	See CIM_EthernetPortStatistics mof.
HP_EthernetStatistics	

2-3-19 SMX_EthernetPortStatisticalData

SMX_EthernetPortToStatisticalData associates Ethernet Ports to Ethernet Port Statistics.

NOTE: Currently implemented only on VMware ESXi platform.

Table 2-20 Class: SMX_EthernetPortStatisticalData

Property name	Property implementation
CIM_ElementStatisticalData	
Key:ManagedElement	ref:SMX_EthernetPort
Key:Stats	ref:SMX_EthernetStatistics
HP_EthernetPortStatisticalData	

2-3-20 SMX_EthernetPortControllerSoftwareIdentity

SMX_EthernetPortControllerSoftwareIdentity implements the class CIM_SoftwareIdentity. It represents the adapter driver software of the associated Ethernet Port.

NOTE: Currently implemented only on VMware ESXi platform.

Table 2-21 Class: SMX_EthernetPortControllerSoftwareidentity

Property name	Property implementation
CIM_ ManagedElement	
Caption	Ethernet Port Controller Driver
Description	*Product Name* Device Driver, where *product name* is the product name of the Ethernet Adapter.
ElementName	Ethernet Port Controller Driver
CIM_ManagedSystemElement	
Name	**DriverFilename**
CIM_LogaicalElement	
CIM_SoftwareIdentity	
ClassificationDescriptions	Ethernet Port Controller Driver
Classifications	2 (Driver)
InstanceID	HPQ:SMX_EthernetPortControllerSoftwareIdentity:<*instanceNum*>
Manufacturer	Manufacturer
VersionString	Driver Version

2-3-21 SMX_EthernetPortControllerFirmwareIdentity

SMX_EthernetPortControllerFirmwareIdentity implements the class CIM_SoftwareIdentity. It represents the adapter firmware of the associated Ethernet Port.

NOTE: Currently implemented only on VMware ESXi platform.

Table 2-22 Class: SMX_EthernetPortControllerFirmwareIdentity

Property name	Property implementation
CIM_ManagedElement	
Caption	Ethernet Port Controller Firmware
Description	*Ethernet Port Controler Firmware details for Model Name, where Model name is the Model name of the Ethernet Adapter.*
ElementName	PCI Vendor Id: Device Id
CIM_ManagedSystemElement	
Name	Ethernet Port Controler Firmware details for *Model Name,* where Model name is the Model name of the Ethernet Adapter.
CIM_LogaicalElement	
CIM_SoftwareIdentity	
ClassificationDescriptions	Ethernet Port Controller Firmware
Classifications	10 (firmware)
InstanceID	HPQ:SMX_EthernetPortControllerFirmwareIdentity:*<instanceNum>*
IdentityInfoType	CIM:SoftwareFamily
IdentityInfoValue[0]	HPQ:PCI Vendor Id:DeviceId
TargetType	PCI Vendor Id:Device Id
Manufacturer	Manufacturer
VersionString	Firmware Version

2-3-22 SMX_EthernetElementSoftwareIdentity

SMX_EthernetElementSoftwareIdentity implements the class CIM_ElementSoftwareIdentity. It represents the association between SMX_EthernetPortController and SMX_EthernetPortControllerSoftwareIdentity.

Table 2-23 Class: SMX_EthernetElementSoftwareIdentity

Property name	Property implementation
CIM_Dependency	
Antecedent	ref:SMX_EthernetPortControllerSoftwareIdentity
Dependent	ref:SMX_EthernetPortController
CIM_ElementSoftwareIdentity	
ElementSoftwareStatus	ElementSoftwareStatus[0]: 2 (Current) ElementSoftwareStatus[1]: 6 (Installed)

2-3-23 SMX_EthernetElementFirmwareIdentity

SMX_EthernetElementFirmwareIdentity implements the class CIM_ElementSoftwareIdentity. It represents the association between SMX_EthernetPortController and SMX_EthernetPortControllerFirmwareIdentity.

Table 2-24 Class: SMX_EthernetElementFirmwareIdentity

Property name	Property implementation
CIM_ Dependency	
Antecedent	ref:SMX_EthernetPortControllerFirmwareIdentity
Dependent	ref:SMX_EthernetPortController
CIM_ElementSoftwareIdentity	
ElementSoftwareStatus	ElementSoftwareStatus[0]: 2 (Current) ElementSoftwareStatus[1]: 6 (Installed)

2-3-24 SMX_EthernetCollection

SMX_EthernetCollection implements the class HP_EthernetCollection. It represents the collection of all Ethernet Ports.

Table 2-25 Class: SMX_EthernetCollection

Property name	Property implementation
CIM_ManagedElement	
Caption	Ethernet Adapter Collection
Description	This is a collection of all Ethernet Ports.
ElementName	Ethernet Adapter Collection
CIM_Collection	
CIM_SystemSpecificCollection	
InstanceID	HPQ:SMX_EthernetCollection-1
HP_GroupSystemSpecificCollection	
GroupOperationalStatus	0 (Unknown) 2 (OK) 3 (Degraded) 6 (Error)
GroupStatusDescriptions	GroupStatusDescriptions[0] per GroupOperationalStatus[0]: Unknown OK Degraded Error
HP_EthernetCollection	

2-3-25 SMX_EthernetMemberOfCollection

SMX_EthernetMemberOfCollection associates Ethernet Ports to the Ethernet Collection.

Table 2-26 Class: SMX_EthernetMemberofCollection

Property name	Property implementation
CIM_ MemberOfCollection	
Collection	ref:SMX_EthernetCollection
Member	ref:SMX_EthernetPort
CIM_MemberOfPolicyCollection	
Included	Writeable boolean property indicating if the ethernet port instance referenced by Member will contribute status to the SMX_EthernetCollection. • TRUE—Include member status in collection status • FALSE—Do not include member status in collection status
HP_EthernetMemberOfCollection	

2-3-26 SMX_EthernetGroupHostedCollection

SMX_EthernetGroupHostedCollection associates the Ethernet Collection to the Computer System.

Table 2-27 Class: SMX_EthernetGroupHostedCollection

Property name	Property implementation
CIM_ Dependency	
Antecedent	ref:SMX_ComputerSystem
Dependent	ref:SMX_EthernetCollection
CIM_HostedDependency	
CIM_HostedCollection	
HP_EthernetGroupHostedCollection	

2-4 Supported indications

The following table describes the properties that are common to all of the SMX Ethernet Port Provider indications that are implemented for server platforms, where available.

Table 2-28 Class: Provider Indication Common Properties

Property name	Property implementation
CIM_Indication	
IndicationIdentifier	GUID string generated at the time of indication

Table 2-28 Class: Provider Indication Common Properties

Property name	Property implementation
IndicationTime	Time of indication
CIM_AlertIndication	
EventTime	Time of the event or time of the indication if event time unknown
SystemName	SMX_ComputerSystem.Name
SystemCreationClassName	SMX_ComputerSystem.CreationClassName
HP_AlertIndication	
ProviderVersion	Provider Version in the format VV.UU.FF. For example, 01.05.00
NetworkAddresses	Contains a list of all the IP addresses of the computer system generating the indication
OSType	On ESX, 39 (VM) On Linux, 36 (Linux)
OSVersion	The operating system version of the computer system generating the indication in the following format: *<major>.<minor>.<build>*
SystemFirmwareVersion	Array of firmware versions of the computer system generating the indication
SystemSerialNumber	Serial number of the computer system generating the indication
SystemProductID	Product ID of the computer system generating the indication
SystemModel	Model name of the computer system generating the indication
SystemGUID	Platform GUID of the computer system generating the indication

The following indications are implemented for ProLiant server platforms where available.

Table 2-29 HP_AlertIndication: Network Interface Connectivity Lost

Property name	Property implementation
CIM_Indication	
PerceivedSeverity	6 (Critical)
CIM_AlertIndication	
Description	If the Network Interface is an Ethernet Port, the Ethernet Port has transitioned from OK to Error.
AlertingManagedElement	WBEM Path of the SMX_EthernetPort instance
AlertingElementFormat	2 (CIMObjectPath)

Table 2-29 HP_AlertIndication: Network Interface Connectivity Lost

Property name	Property implementation
AlertType	2 (Communications Alert)
EventID	2
ProviderName	HP Ethernet
RecommendedActions	View the Ethernet Port status in HP Systems Insight Manager (SIM). View the System Event Log for additional information.
HP_AlertIndication	
Summary	The Network interface has lost connectivity.
EventCategory	9 (Network Device)
EventSubCategory	11 (Ethernet port) 12 (Ethernet team) 13 (Ethernet LAN Endpoint)
ProbableCause	7 (Communications Subsystem Failure)
ProbableCauseDescription	Network Interface Lost Connectivity

Table 2-30 HP_AlertIndication: Network Interface Connectivity Restored

Property name	Property implementation
CIM_Indication	
PerceivedSevertiy	2 (Information)
CIM_Alertindication	
Description	If the Network Interface is an Ethernet Port, the Ethernet Port has transitioned from Error to OK.
AlertingManagedElement	WBEM Path of the SMX_EthernetPort instance
AlertingElementFormat	2 (CIMObjectPath)
AlertType	2 (Communications Alert)
EventID	3
ProviderName	HP Ethernet
RecommendedActions	No action is recommended
HP_AlertIndication	
Summary	The interface network connectivity has been restored.
EventCategory	9 (Network Device)
EventSubCategory	11 (Ethernet port) 12 (Ethernet team) 13 (Ethernet LAN Endpoint)
ProbableCause	1 (Other)

Table 2-30 HP_AlertIndication: Network Interface Connectivity Restored

Property name	Property implementation
ProbableCauseDescription	Network Interface Connectivity Restored

Table 2-31 HP_AlertIndication: Group System Specific Consolidated Status Policy Change

Property name	Property implementation
CIM_Indication	
PerceivedSeverity	2 (Informational)
CIM_AlertIndication	
Description	*HP_GroupSystemSpecificConsolidated* operational status policy has been modified to monitor operational status from different set of managed elements.
AlertingManagedElement	WBEM Path of the HP_GroupSystemSpecificCollection instance
AlertingElementFormat	2 (CIMObjectPath)
AlertType	7 (Model Alert)
EventID	1
ProviderName	HP Consolidated Status
RecommendedActions	Inspect the members of the collection to discovery whether each managed element status is included in collection operational status.”
HP_AlertIndication	
Summary	Consolidated Status Collection operational status policy has changed “
EventCategory	1 (Other)
OtherEventCategory	Consolidated Status Policy Change
ProbableCause	1 (Other)
ProbableCauseDescription	This group status policy change is caused by activation or deactivation of Status Propagation Filtering for existing managed elements in HP_GroupSystemSpecificCollection.

3 PCI Device Provider

3-1 Overview

This provider implements the profiles listed to support PCI devices installed in HP servers.

The following table details the profiles implemented and files installed by this provider.

Table 3-1 Overview

Implemented Profiles	• DMTF: PCI Device Profile (DSP1075) 1.0.0a 09/2007 • DMTF: Physical Asset Profile • HP: Location Profile 1.0

3-2 Use Cases

See DMTF PCI Device Profile for Use Cases.

3-3 Class Implementations

The following classes and properties are implemented as specified in the following tables for HP Server platforms where available. The classes below describe PCI Device.

3-3-1 SMX_PCIDevice

SMX_PCIDevice is used to model PCI devices on HP Servers. There is an instance of this class for each logical PCI device present in the system.

Table 3-2 Class: SMX_PCIDevice

Property name	Property implementation
CIM_ManagedElement	
Caption	A user-friendly description for this PCI device provided by the operating system
Description	A user-friendly description for this PCI device provided by the operating system
ElementName	A hardware ID for this PCI device provided by the operating system
CIM_ManagedSystemElement	
Name	A hardware ID for this PCI device provided by the operating system

Table 3-2 Class: SMX_PCIDevice

Property name	Property implementation
CIM_LogicalDevice	
CreationClassName	SMX_PCIDevice
DeviceID	Unique identifier for this PCI device instance
SystemCreationClassName	SMX_ComputerSystem.CreationClassName
SystemName	SXM_ComputerSystem.Name
CIM_EnabledLogicalElement	
EnabledDefault	2 (Enabled)
EnabledState	5 (Not Applicable)
RequestedState	12 (Not Applicable)
CIM_PCIController	
Capabilities	An array of integers that indicates controller capabilities. • 0 (Unknown), • 1 (Other), • 2 (Supports 66MHz), • 3 (Supports User Definable Features) • 4 (Supports Fast Back-to-Back Transactions) • 5 (PCI-X Capable) • 6 (PCI Power Management Supported) • 7 (Message Signaled Interrupts Supported) • 8 (Parity Error Recovery Capable) • 9 (AGP Supported) • 10 (Vital Product Data Supported) • 11 (Provides Slot Identification) • 12 (Hot Swap Supported) • 13 (Supports PCI Express)
CapabilityDescriptions	An array of free-form strings that provides more detailed explanations for any of the PCIController features that are indicated in the Capabilities array. For example: Supports 66MHz, PCI-X Capable.

Table 3-2 Class: SMX_PCIDevice

Property name	Property implementation
ClassCode	The basic function of the PCI device - some code other than 6 (Bridge). Valid values include but are not limited to: • 1 (Mass Storage) • 2 (Network) • 3 (Display) • 4 (Multimedia) • 5 (Memory) • 8 (Base Peripheral) • 9 (Input) • 11 (Processor) • 12 (Serial Bus)
CacheLineSize	Specifies the system cache line size.
CIM_PCIDevice	
DomainNumber	The domain/segment number where this PCI device resides.
BusNumber	The bus number where this PCI device resides
DeviceNumber	The device number assigned to this PCI device for the bus
FunctionNumber	The function number for this PCI device
PCIDeviceID	PCI device ID as described in the configuration registers for this PCI device
Revision	Revision number as described in the configuration registers for this PCI device
SubsystemID	Subsystem ID as described in the configuration registers for this PCI device
SubsystemVendorID	Subsystem Vendor ID as described in the configuration registers for this PCI device
VendorID	Vendor ID as described in the configuration registers for this PCI device
HP_PCIDevice	
SMX_PCIDevice	
SubClassCode	**The basic sub-function of the PCI device. The value of the property is interpreted based on the value of the ClassCode byte.**

3-3-2 SMX_PCICard

SMX_PCICard is used to represent physical PCI adapter card installed on HP Servers. There is an instance of this class for each PCI adapter card present in the system.

Table 3-3 Class: SMX_PCICard

Property name	Property implementation
CIM_ManagedElement	
Caption	PCI Card *<cardNum>*
CIM_ManagedSystemElement	
Name	PCI Card *<cardNum>*
CIM_PhysicalElement	
CreationClassName	SMX_PCICard
Tag	PCI Card *<cardNum>*
Description	PCI Card *<cardNum>*
ElementName	PCI Card *<cardNum>*
CIM_PhysicalPackage	
RemovalConditions	2 (Not Applicable)
PackageType	9 (Module/Card)
VendorCompatibilityStrings	HPQ:PCICard
CIM_Card	
HostingBoard	False
HP_PCISlotCard	

3-3-3 SMX_PCISlot

SMX_PCISlot represents PCI device slots on HP Servers. There is an instance of this class for each PCI slot in the system (whether the slot is occupied or not).

Table 3-4 Class: HP_PCISlot

Property name	Property implementation
CIM_ManagedElement	
Caption	Same as name
CIM_ManagedSystemElement	
Name	For HP Integrity cellular servers: PCI Slot *<slotNum>* in Cabinet=*<cabNum>* Bay=*<bayNum>* Chassis=*<chassisNum>* For all other servers: PCI Slot=*<slotNum>* where *n* is the physical PCI slot number or PCI Mezanine=*<slotNum>* for mezanine card
CIM_PhysicalElement	

Table 3-4 Class: HP_PCISlot

Property name	Property implementation
CreationClassName	SMX_PCISlot
Tag	For HP Integrity Cellular Servers: SMX:PCISlot:<*cabNum*>:<*bayNum*>:<*chassisNum*>:<*slotNum*> For HP Blade Servers: HPQ:SMX_PCISlot:<*bladeNum*>:<*slotNum*> For all other servers: HPQ:SMX_PCISlot:<*slotNum*>
Description	Same as Name
ElementName	Same as Name
PoweredOn	True —If slot is powered on False—If slot is not powered
CIM_PhysicalConnector	
ConnectorLayout	7 (Slot)
ConnectorPinout	PCI—If 33 MHz PCI slot PCI-66—If 66 MHz PCI slot PCI-X—If PCI-X slot PCI Express—If PCI Express slot PCI Express Mezzanine—If in-blade Mezzanine slot
ConnectorType	43 (PCI)—If this is a 33 MHz PCI slot 80 (PCI-66MHZ)—If this is a 66 MHz PCI slot 98 (PCI-X)—If this is a PCI-X slot 1 (Other)—If this is a PCI Express slot
ConnectorDescription	Only initialized if ConnectorType == 1 (Other): PCI Express—If this is a PCI Express slot or PCI Express Mezzanine if mezzanine slot in a blade, otherwise this property is not set
OtherTypeDesciption	Deprecated in favor of ConnectorDescription
CIM_Slot	
Number	The physical PCI slot number
SupportsHotPlug	True—If slot supports PCI hot plug operations False—If slot does not support PCI hot plug operations
VendorCompatibilityStrings	HPQ:PCISlot
HP_PCISlot	

3-3-4 SMX_PCICardInSlot

SMX_PCICardInSlot is used to represent an association between SMX_PCICard and SMX_PCISlot that contains this PCI card.

Table 3-5 Class: SMX_PCICardInSlot

Property name	Property implementation
Antecedent	References SMX_PCISlot
Dependent	References SMX_PCICard

3-3-5 SMX_RealizesPCIDevice

SMX_RealizesPCIDevice is used to represent an association between SMX_PCIDevice and SMX_PCICard that realizes this PCI device.

Table 3-6 Class: SMX_RealizesPCIDevice

Property name	Property implementation
Antecedent	References SMX_PCICard
Dependent	References SMX_PCIDevice

3-3-6 SMX_SystemPCISlot

SMX_SystemPCISlot is used to represent an association between SMX_PCISlot and the computer system that contains this PCI slot.

Table 3-7 Class: SMX_SystemPCISlot

Property name	Property implementation
GroupComponent	References SMX_ComputerSystem
PartComponent	References SMX_PCISlot

3-3-7 SMX_SystemPCIDevice

SMX_SystemPCIDevice is used to represent an association between SMX_PCIDevice and the computer system that contains this PCI device.

Table 3-8 Class: SMX_SystemPCIDevice

Property name	Property implementation
GroupComponent	References SMX_ComputerSystem
PartComponent	References SMX_PCIDevice

3-3-8 SMX_PCISlotLocation

SMX_PCISLotLocation is used to model PCI slot locations on HP Servers. The Windows specific implementation class is SMX_PCISlotLocation.

Table 3-9 Class: SMX_PCISlotLocation

Property name	Property implementation
CIM_ManagedElement	
Caption	Same as ElementLocationTag.
Description	Same as ElementLocationTag.
ElementName	Same as ElementLocationTag.
CIM_Location	
Name	Unique identifier of the form: HPQ:SMX_PCISlotLocation:*<unique_id>*
PhysicalPosition	Opaque key. Example for slot 6 in cabinet 1, bay 2 chassis 3: 01-02-03-FF-FF-06-FF-85 For Slot 2 in a non-cellular in this system: FF-FF-FF-FF-FF-02-FF-85
HP_Location	
ElementLocationTagDesc	0 (Hood Tag)
ElementLocationTag	Text representing the controller location. Examples: • **Cellular Servers** Slot *<slot_number>* in Cabinet=*<cab>* Bay=*<bay>* Chassis=*<chassis>* • **Blade Servers** Mezzanine: *<slot_number>* in Blade: *<blade_num>* • **All other HP Servers** PCI Slot Loation Slot=*<slot_number>* Or PCI Slot Location Mezzanine=*<slot_number>*
LocationInfoDesc for HP Integrity Cellular Servers	Array of enumerated values describing context of information at comparable index in LocationInformation array 0, 1, 2, or 3. LocationInfoDesc[0] per LocationInfornation[0]. **Cellular Servers** 3 (PCI Slot) 6 (Chassis) 2 (Interconnect Bay) 7 (Cabinet)

Table 3-9 Class: SMX_PCISlotLocation

Property name	Property implementation
LocationInfoDesc for BladeSystem servers	Array of enumerated values describing context of information at comparable index in LocationInformation array 0 & 1. LocationInfoDesc[0] per LocationInfornation[0]. **Blade servers** 1 (Mezzanine Slot) 14 (Blade)
LocationInfoDesc for all other servers	Array of enumerated values describing context of information at comparable index in LocationInformation array 0. LocationInfoDesc[0] per LocationInfornation[0]. 3 (PCI Slot)
LocationInformation	Array of text values representing the location components that describe this Ethernet Controller Physical location. LocationInfoDesc[0] per LocationInfornation[0]. Cross-reference with LocationInfoDescription array to determine what type of location information is represented

3-3-9 SMX_PCISlotElementLocation

SMX_PCISlotElementLocation is used to represent an association between SMX_PCISlotLocation and SMX_PCISlotLocation.

Table 3-10 Class: SMX_PCISlotElementLocation

Property name	Property implementation
Element	References SMX_PCISlot
PhysicalLocation	References SMX_PCISlotLocation

3-4 Supported indications

There are no indications specific to the PCI device implementation.

4 Smart Array

4-1 Overview

The HP Smart Array data sheet describes both host based Smart Array HBAs and externally attached MSA enclosures, such as MSA60/70.

NOTE: This provider excludes externally attached MSA controllers, such as MSA500 and fibre attached devices, for example MSA1000 or MSA

The following profiles are implemented, and the following files are installed by this provider.

Table 4-1 Overview

Profile name	Organization	Version
HP Smart Array Profile (P00121)	HP WBEM TC	1.0.0

4-2 Use cases

For use cases, see the HP Smart Array Profile (P00121).

This provider implements a read-only version of the profiles referenced. Configuration functionality is not supported by this provider. This is in accordance with the SNIA profiles, because HP does not advertise and ConfigurationService type classes.

4-3 Class implementations

The following sections define the supported properties for the Smart Array provider. Details for each property can be found in the HP Smart Array profile (P00121) and associated MOF file.

4-3-1 SMX_SAArraySystem

SMX_SAArraySystem implements the HPSA_ArraySystem class and represents the top level system. There is one instance per HBA.

Table 4-2 Class: SMX_SAArraySystem (CIM_ComputerSystem)

Property name	Property implementation
CIM_ManagedElement	

Table 4-2 Class: SMX_SAArraySystem (CIM_ComputerSystem)

Property name	Property implementation
ElementName	Controller/Storage System name and location Examples: Smart Array in Slot=3, for internal Smart Array Embedded Controller=7 for embedded controller where 7 is the internal identifier for the embedded controller
CIM_ManagedSystemElement	
OperationalStatus[0]	Overall status of the Array System and attached devices. This is calculated per the algorithm desciribed in the HP Smart Array Profile. 0 (Unknown) 2 (OK) 3 (Degraded) 6 (Error)
StatusDescriptions[0]	More info for OperationalStatus result. This provides a short decription to identify who is contributing to non-OK status. Examples: Controller Failure Logical Drive Failure Storage Enclosure Failure Controller Non-Failure Problem Physical Drive Non-Failure Problem Logical Drive Non-Failure Problem Storage Enclosure Non-Failure Problem Array is operating properly Array status is unknown
CIM_LogicalElement	
CIM_EnabledLogicalElement	
EnabledDefault	2 (Enabled)
EnabledState	5 (Not Applicable)
RequestedState	12 (Not Applicable)
CIM_System	
CreationClassName	SMX_SAArraySystem
Name	Controller Serial Number Note: EMBEDDED-<id> is reported if there is no Serial Number for device is local i.e embedded on motherboard. PCISLOT-<*Slot number*> is reported if there is no Serial Number for device is local i.e.PCI occupies slot.
NameFormat	Other
CIM_ComputerSystem	

Table 4-2 Class: SMX_SAArraySystem (CIM_ComputerSystem)

Property name	Property implementation
Dedicated	Dedicated[0]: 3 (Storage) Dedicated[1]: 15 (Block Server)
IdentifyingDescriptions	Other Vendor Specific Name
OtherIdentifyingInfo	Controller Serial Number Note: EMBEDDED-<id> is reported if there is no Serial Number for device is local i.e embedded on motherboard. PCISLOT-<*Slot number*> is reported if there is no Serial Number for device is local i.e.PCI occupies slot.
Identify()	See HP Smart Array Profile

4-3-2 SMX_SAArrayController

SMX_SAArrayController implements the HPSA_ArrayController class and represents the controller. There is one per HBA and might have multiple controllers.

Table 4-3 Class: SMX_SAArrayController (CIM_ComputerSystem)

Property name	Property implementation
CIM_ManagedElement	
ElementName	Controller name and location Examples: Smart Array in Slot=3, for internal Smart Array Embedded Controller=7 for embedded controller where 7 is the internal identifier for the embedded controller
CIM_ManagedSystemElement	
OperationalStatus[0]	Status for Array Controller 0 (Unknown) 2 (OK) 3 (Degraded) 6 (Error)
CIM_LogicalElement	
CIM_EnabledLogicalElement	
EnabledDefault	2 (Enabled)
EnabledState	5 (Not Applicable)
RequestedState	12 (Not Applicable)
CIM_System	
CreationClassName	SMX_SAArrayController

Table 4-3 Class: SMX_SAArrayController (CIM_ComputerSystem)

Property name	Property implementation
Name	Controller Serial Number Note: EMBEDDED-<*id*> is reported if there is no Serial Number for device is local i.e embedded on motherboard. PCISLO-<*Slot number*> is reported if there is no Serial Number for device is local. For example, PCI occupies slot.
NameFormat	Other
CIM_ComputerSystem	
Dedicated	Dedicated[0] 0 (Not Dedicated)
HPSA_Arraycontroller	
ADGSupported	See HP Smart Array Profile
BatteryStatus	See HP Smart Array Profile
CacheBoardPresent	See HP Smart Array Profile
CacheHasBattery	See HP Smart Array Profile
AcceleratorBackupPowerSource	See HP Smart Array Profile
CacheParityReadErrors	See HP Smart Array Profile
CacheParityWriteErrors	See HP Smart Array Profile
CacheReadPercent	See HP Smart Array Profile
CacheSerialNumber	See HP Smart Array Profile
CacheSizeTotal	See HP Smart Array Profile
CacheState	See HP Smart Array Profile
CacheStatus	See HP Smart Array Profile
CacheWritePercent	See HP Smart Array Profile
ControllerStatus	See HP Smart Array Profile
ExpandPriority	See HP Smart Array Profile
NumberOfPorts	See HP Smart Array Profile
NumberOfInternalPorts	See HP Smart Array Profile
NumberOfExternalPorts	See HP Smart Array Profile
RebuildPriority	See HP Smart Array Profile

4-3-3 SMX_SAStorageVolume

SMX_SAStorageVolume implements the HPSA_StorageVolume class and represents the Logical Volumes configured on the Smart Array.

Table 4-4 Class: SMX_SAStorageVolume (CIM_StorageVolume)

Property name	Property implementation
CIM_ManagedElement	
ElementName	Logical drive number with raid description (for example, Logical Volume 1 (RAID 1+0)
CIM_ManagedSystemElement	
Name	VPD Pg83 identifier for the volume.
CIM_LogicalElement	
CIM_EnabledLogicalElement	
EnabledDefault	2 (Enabled)
EnabledState	5 (Not Applicable)
RequestedState	12 (Not Applicable)
CIM_LogicalDevice	
CreationClassName	SMX_SAStorageVolume
DeviceID	Opaque Key
SystemCreationClassName	SMX_SAArraySystem
SystemName	SMX_SAArraySystem.Name
CIM_StorageExtent	
ConsumableBlocks	0
BlockSize	Block Size in bytes
DataRedundancy	1 (RAID 0, RAID 5, RAID 6, RAID 50, RAID 60) 2 (RAID 1+0)
DeltaReservation	0
ExtentStatus[0]	This indicates extended status for the volume. 2 (None) 11 (Rebuild – Volume is currently rebuilding data)
IsBasedOnUnderlyingRedundancy	False
NoSinglePointOfFailure	True – RAID 1 or above False – RAID 0
NumberOfBlocks	Total Number of blocks on the volume.
PackageRedundancy	0 (RAID 0) 1 (RAID 1+0, RAID 5) 2 (RAID 6, RAID 50, RAID 60)
CIM_Storagevolume	
NameFormat	2 (VPD83NAA6)
HPSA_Storagevolume	
Accelerator	See HP Smart Array Profile

Table 4-4 Class: SMX_SAStorageVolume (CIM_StorageVolume)

Property name	Property implementation
Deleteable	See HP Smart Array Profile
FaultTolerance	See HP Smart Array Profile
OperationalStatus[0, 1]	Volume status. DMTF defined value is populated in index[0] and extended status is poplulated in index[1] per HP Smart Array Profile.
OSName	Corresponding OS name for this volume.
StripeSize	See HP Smart Array Profile
Identify()	See HP Smart Array Profile

4-3-4 SMX_SADiskDrive

SMX_SADiskDrive implements the HPSA_DiskDrive class and represents the Hard drives connected to Smart Array controllers.

Table 4-5 Class: SMX_SADiskDrive (CIM_DiskDrive)

Property name	Property implementation
CIM_ManagedElement	
ElementName	Disk location (for example, Port: 1E Box 1 Bay: 5)
CIM_ManagedSystemElement	
Name	Drive Serial Number
OperationalStatus[0]	Drive status, DMTF defined value is populated in indes (0) and extended status is populated in index (1) per HP Smart Array Profile
CIM_LogicalElement	
CIM_EnabledLogicalElement	
EnabledDefault	2 (Enabled)
EnabledState	5 (Not Applicable)
RequestedState	12 (Not Applicable)
CIM_LogicalDevice	
CreationClassName	SMX_SADiskDrive
DeviceID	Opaque value
SystemCreationClassName	SMX_SAArraySystem
SystemName	SMX_SAArraySystem.Name
TotalPowerOnHours	Number of service hours logged for the drive
CIM_MediaAccessDevice	
CIM_DiskDrive	

Table 4-5 Class: SMX_SADiskDrive (CIM_DiskDrive)

Property name	Property implementation
HPSA_DiskDrive	
OperationalStatus[1]	See HP Smart Array Profile
DriveConfiguration	See HP Smart Array Profile
DriveHasMNPData	See HP Smart Array Profile
DriveInterface	See HP Smart Array Profile
DrivePlacement	See HP Smart Array Profile
DriveRotationalSpeed	See HP Smart Array Profile
NegotiatedDataWidth	See HP Smart Array Profile
NegotiatedSpeed	See HP Smart Array Profile
Identify()	See HP Smart Array Profile

4-3-5 SMX_SAStorageExtent

SMX_SAStorageExtent implements the HPSA StorageExtent class represents the consumable storage that is available on a disk drive. There is one instance per disk drive.

Table 4-6 Class: SMX_SAStorageExtent (CIM_StorageExtent)

Property name	Property implementation
CIM_ManagedElement	
ElementName	Disk location For example, Port: 1E Box 1 Bay: 5
CIM_ManagedSystemElement	
Name	Serial number of drive
OperationalStatus[0]	Operational Status for the disk drive: • 0 (Unknown) • 2 (OK) • 5 (Predictive Failure) • 6 (Error)
CIM_LogicalElement	
CIM_EnabledLogicalElement	
EnabledDefault	2 (Enabled)
EnabledState	5 (Not Applicable)
RequestedState	12 (Not Applicable)
CIM_LogicalDevice	
CreationClassName	SMX_SAStorageExtent

Table 4-6 Class: SMX_SAStorageExtent (CIM_StorageExtent)

Property name	Property implementation
DeviceID	Opaque ID
SystemCreationClassName	SMX_SAArraySystem
SystemName	SMX_SAArraySystem.Name
CIM_StorageExtent	
BlockSize	Block size in bytes
ConsumableBlocks	Total number of blocks on disk drive
ExtentStatus[0]	Indicates extended status for the disk drive Possible values: 2 (None) 11 (Rebuild—Disk drive is currently rebuilding data)
NumberOfBlocks	Total number of blocks on disk drive
Primordial	Set to True
TotalPowerOnHours	Total service hours reported disk drive
HPSA_StorageExtent	

4-3-6 SMX_SADiskDriveFirmware

SMX_SADiskDriveFirmware implements the HPSA DiskDriveFirmware class and represents the firmware installed on a disk drive. There is one instance per disk drive.

Table 4-7 Class: SMX_SADiskDriveFirmware (CIM_SoftwareIdentity)

Property name	Property implementation
Element name	Disk Drive Firmware
CIM_ManagedSystemElement	
Name	Disk Drive Firmware
CIM_LogicalElement	
Caption	Disk Drive Firmware
Description	Disk Drive Firmware
CIM_SoftwareIdentity	
ClassificationDescriptions[0]	Disk Drive Firmware
Classifications[0]	10 (Firmware)
InstanceID	Opaque key
Manufacturer	Disk drive vendor string

Table 4-7 Class: SMX_SADiskDriveFirmware (CIM_SoftwareIdentity)

Property name	Property implementation
IdentityInfoType	[0]CIM:SoftwareFamily [1]HPQ:SoftwareCategory
IdentityInfoValue	[0]HPQ:<*TargetType value*> [1] Storage Device
VersionString	Drive firmware as reported from SCSI identify command
HPSA_DiskDriveFirmware	

4-3-7 SMX_SAPhysicalPackage

SMX_SAPhysicalPackage implements the HPSA_PhysicalPackage class and represents the overall physical package for the array system as a whole. There is one instance per HBA or Storage Subsystem.

Table 4-8 Class: SMX _SAPhysicalPackage (CIM_PhysicalPackage)

Property name	Property implementation
CIM_ManagedElement	
ElementName	Controller/Storage System name and location For example, Smart Array in Slot=3 for internal or Smart Array Embedded Controller=7 for embedded controller where 7 is the internal identifier for the embedded controller
Description	Host Based RAID Controller (For Internal Controller)
CIM_ManagedSystemElement	
Name	See Serial number implementation
CIM_PhysicalElement	
CreationClassName	SMX_SAPhysicalPackage
Manufacturer	Controller vendor string
Model	Controller model string
PartNumber	N/A—Not Available for this implementation
SerialNumber	Controller Serial number for HBAs
Tag	Opaque Key
Version	N/A—Not Available for this implementation
CIM_PhysicalPackage	
RemovalConditions	2 (Not Applicable)
HPSA_PhysicalPackage	

4-3-8 SMX_SAArrayControllerPhysicalPackage

SMX_SAArrayControllerPhysicalPackage implements the HPSA_ArrayControllerPhysicalPackage class and represents the physical aspects of any Smart Array controller. There is one instance per HBA or one per controller in an external Storage subsystem.

Table 4-9 Class: SMX_SAArrayControllerPhysicalPackage (CIM_PhysicalPackage)

Property name	Property implementation
CIM_ManagedElement	
ElementName	Controller name and location For example, Smart Array in Slot=3 for internal or Smart Array Embedded Controller=7 for embedded controller where 7 is the internal identifier for the embedded controller
CIM_ManagedSystemElement	
Name	Controller Serial number
CIM_PhysicalElement	
CreationClassName	SMX_SAArrayControllerPhysicalPackage
Manufacturer	Controller vendor string
Model	Controller model string
PartNumber	N/A —Not Available for this implementation
SerialNumber	Controller Serial number
Tag	Opaque Key
Version	N/A — Not Available for this implementation
CIM_PhysicalPackage	
RemovalConditions	2 (Not Applicable)
HPSA_ ArrayControllerPhysicalPackage	

4-3-9 SMX_SADiskPhysicalPackage

SMX_SADiskPhysicalPackage implements the HPSA_DiskPhysicalPackage class and represents the physical aspects of the disk drive. There is one instance per disk drive.

Table 4-10 Class: SMX_SADiskPhysicalPackage (CIM_PhysicalPackage)

Property name	Property implementation
CIM_ManagedElement	
ElementName	Disk location For example, Port: 1E Box 1 Bay: 5
CIM_ManagedSystemElement	

Table 4-10 Class: SMX_SADiskPhysicalPackage (CIM_PhysicalPackage)

Property name	Property implementation
Name	Disk location For example, Port: 1E Box 1 Bay: 5
CIM_PhysicalElement	
CreationClassName	SMX_SADiskPhysicalPackage
Manufacturer	Drive vendor string
Model	Drive model string
PartNumber	N/A—Not Available in this implementation
SerialNumber	Drive serial number
Tag	Opaque Key
Version	N/A—Not Available in this implementation
CIM_PhysicalPackage	
HotSwappable	TRUE—Drive is hot swappable FALSE—Drive is not hot swappable
RemovalConditions	2 (Not Applicable) 3 (Removable when off) 4 (Removable when on or off)
HPSA_ DiskPhysicalPackage	

4-3-10 SMX_SAStorageEnclosure

SMX_SAStorageEnclosure implements the HPSA_StorageEnclosure class and represents the physical chassis for an internal or externally attached enclosure.

Table 4-11 Class: SMX_SAStorageEnclosure (HP_StorageEnclosure)

Property name	Property implementation
CIM_ManagedElement	
ElementName	Port: <*m*> Box: <*n*>, where <*m*> is the port and <*n*> is the box number
CIM_ManagedSystemElement	
Name	Port: <*m*> Box: <*n*>, where <*m*> is the port and <*n*> is the box number
CIM_PhysicalElement	
CreationClassName	SMX_SAStorageEnclosure
Manufacturer	Enclosure vendor string HP N/A, if not available

Table 4-11 Class: SMX_SAStorageEnclosure (HP_StorageEnclosure)

Property name	Property implementation
Model	Enclosure model string ProLiant 6L6I N/A, if not available
PartNumber	N/A—Not Available in this implementation
SerialNumber	Enclosure Serial Number N/A is reported if there is no serial number (for example, internal enclosures).
Tag	Opaque key
Version	N/A—Not Available in this implementation
CIM_PhysicalPackage	
RemovalConditions	2 (Not Applicable)
CIM_PhysicalFrame	
CIM_Chassis	
HP_StorageEnclosure	
Location	See HP Storage Enclosure Profile
HPSA_StorageEnclosure	

4-3-11 SMX_SAStorageEnclosureProcessor

SMX_SAStorageEnclosureProcessor HPSA_StorageEnclosureProcessor class and represents the management processor within a Storage Enclosure. This instance will contain the operational status for all managed components in the enclosure if applicable.

Table 4-12 Class: SMX_SAStorageEnclosureProcessor (CIM_ComputerSystem)

Property name	Property implementation
CIM_ManagedElement	
ElementName	Port: <*m*> Box: <*n*>, where <*m*> is the port and <*n*> is the box number
CIM_ManagedSystemElement	

Table 4-12 Class: SMX_SAStorageEnclosureProcessor (CIM_ComputerSystem)

Property name	Property implementation

OperationalStatus[0,1, 2, 3]	Operational status for enclosure and associated power supplies, fans, and sensors.
	The use of OperationalStatus is described in the HP Storage Enclosure Profile. Index values are populated as follows:
	• Index[0]—Enclosure status:
	  ○ 0 (Unknown)
	  ○ 2 (OK)
	  ○ 3 (Degraded)
	  ○ 6 (Error)
	• Index[1]—Fan status (See Profile)
	• Index[2]—Power Supply status (See Profile)
	• Index[3]—Temp Sensor Status (See Profile)
	Note: Operational status for Fan, Power and Temp Sensor is "not detected" for internal storage enclosure(s) of the local controller(s), for example, PCI or Embedded

CIM_LogicalElement	
CIM_EnabledLogicalElement	
EnabledDefault	2 (Enabled)
EnabledState	5 (Not Applicable)
RequestedState	12 (Not Applicable)
CIM_System	
CreationClassName	SMX_SAStorageEnclosureProcessor
Name	Opaque Key
NameFormat	Other
CIM_ComputerSystem	
Dedicated[0]	2 (Other)
IdentifyingDescriptions[0]	Other Vendor Specific Name
OtherDedicatedDescriptions[0]	SDE—Indicates Storage Device Enclosure
OtherIdentifyingInfo[0]	Port Number:BoxNumber enclosure is attached to 1E:1
HPSA_StorageEnclosureProcessor	

4-3-12 SMX_SAPortController

SMX_SAPortController HPSA_PortController class and represent the HBA in the host system. There is one instance per HBA.

Table 4-13 Class: SMX_SAPortController (CIM_PortController)

Property name	Property implementation
CIM_ManagedElement	
ElementName	Controller name and location For example, Smart Array in Slot=3 or Smart Array Embedded Controller=7 for embedded controller where 7 is the internal identifier for the embedded controller
CIM_ManagedSystemElement	
CIM_LogicalElement	
CIM_EnabledLogicalElement	
EnabledDefault	2 (Enabled)
EnabledState	5 (Not applicable)
RequestedState	12 (Not applicable)
CIM_LogicalDevice	
CreationClassName	SMX_SAPortController
DeviceID	Controller serial number
SystemCreationClassName	SMX_SAArraySystem
SystemName	SMX_SAArraySystem.Name
CIM_Controller	
CIM_PortController	
ControllerType	1 (Other)
OtherControllerType	SCSI – Parallel SCSI HBA SAS/SATA – SAS/SATA HBA
HPSA_PortController	

4-3-13 SMX_SADAPort

SMX_SADAPort implements the HPSA_DAPort class and represents the front-end port for an HBA in the host system. Direct Attached implies that the array controller is attached to a local bus on the host (for example, PCI).

Table 4-14 Class: SMX_SADAPort (CIM_DAport)

Property name	Property implementation
CIM_ManagedElement	

Table 4-14 Class: SMX_SADAPort (CIM_DAport)

Property name	Property implementation
ElementName	Controller name and location Smart Array in Slot=3 Smart Array Embedded Controller =7 embedded controller where 7 is the internal indntifier for the embedded controller
CIM_ManagedSystemElement	
OperationalStatus[0]	Port status: • 0 (Unknown) • 2 (OK) • 6 (Error)
CIM_LogicalElement	
CIM_EnabledLogicalElement	
EnabledDefault	2 (Enabled)
EnabledState	5 (Not applicable)
RequestedState	12 (Not applicable)
CIM_LogicalDevice	
CreationClassName	SMX_SADAPort
DeviceID	Opaque key
SystemCreationClassName	SMX_SAArraySystem
SystemName	SMX_SAArraySystem.Name
CIM_LogicalPort	
UsageRestriction	**2(Front-End Only)**
CIM_DAPort	
HPSA_DAPort	

4-3-14 SMX_SAFirmware

SMX_SAFirmware implements the HPSA_Firmware class and represents the firmware installed on a Smart Array controller.

Table 4-15 Class: SMX_ SAFirmware (CIM_SoftwareIdentity)

Property name	Property implementation
CIM_ManagedElement	
ElementName	Array Controller Firmware
CIM_ManagedSystemElement	
Name	Array Controller Firmware

Table 4-15 Class: SMX_ SAFirmware (CIM_SoftwareIdentity)

Property name	Property implementation
CIM_LogicalElement	
Caption	Array Controller Firmware
Description	Array Controller Firmware
CIM_SoftwareIdentity	
ClassificationDescriptions[0]	Array Controller Firmware
Classifications[0]	10 (Firmware)
InstanceID	Opaque key
Manufacturer	Controller Vendor string
IdentityInfoType	[0]CIM:SoftwareFamily [1]HPQ:SoftwareCategory
IdentityInfoValue	[0]HPQ:<*TargetType value*> [1] Storage Controller
VersionString	Controller F/W version string
HPSA_Firmware	

4-3-15 SMX_SAEnclosureFirmware

SMX_SAEnclosureFirmware implements the HPSA_EnclosureFirmware class and represents the firmware installed on a Smart Array Enclosure.

Table 4-16 Class: SMX_SAEnclosureFirmware (CIM_SoftwareIdentity)

Property name	Property implementation
CIM_ManagedElement	
ElementName	Storage Enclosure Processor Firmware
CIM_ManagedSystemElement	
Name	Storage Enclosure Processor Firmware
CIM_LogicalElement	
Caption	Storage Enclosure Processor Firmware
Description	Storage Enclosure Processor Firmware
CIM_SoftwareIdentity	
ClassificationDescriptions[0]	Storage Enclosure Processor Firmware
Classifications[0]	10 (Firmware)
InstanceID	Opaque key
Manufacturer	Enclosure vendor string

Table 4-16 Class: SMX_SAEnclosureFirmware (CIM_SoftwareIdentity)

Property name	Property implementation
IdentityInfoType	CIM:SoftwareFamily HPQ:SoftwareCategory
IdentityInfoValue	HPQ:<*TargetType value*> [1] Storage Device
VersionString	Enclosure firmware string
HPSA_EnclosureFirmware	

4-3-16 SMX_SAPrimordialPool

SMX_SAPrimordialPool implements the HPSA_PrimordialPool class and represents the total raw storage managed by the array controller. There is one instance per array system.

Table 4-17 Class: SMX_SAPrimordialPool (CIM_StoragePool)

Property name	Property implementation
CIM_ManagedElement	
ElementName	Controller name and location: pool identifier (for example, Smart Array in Slot=3: Primordial Pool Smart Array Embedded Controller=7: Primordial Pool" for embedded controller where 7 is the internal identifier for the embedded controller)
CIM_ManagedSystemElement	
CIM_LogicalElement	
CIM_StoragePool	
InstanceID	Opaque key
PoolID	Controller serial number
Primordial	Always set to TRUE
RemainingManagedSpace	Remaining raw space on controller. This is calculated by summing the remaining space on all drives attached to the controller.
TotalManagedSpace	Total raw space available to controller. This is calculated by summing the total space on all drives connected to this controller.
HPSA_PrimordialPool	

4-3-17 SMX_SAStoragePool

SMX_SAStoragePool implements the HPSA_StoragePool class and represents any concrete storage pools created on an array controller. There is one instance per RAID set.

Table 4-18 Class: SMX_SAStoragePool (CIM_StoragePool)

Property name	Property implementation
CIM_ManagedElement	
ElementName	Controller name and location: pool identifier (for example, Smart Array in Slot=3: Array 0, or Smart Array Embedded Controller=7 Array 0 for embedded controller where 7 is the internal identifier for the embedded controller)
CIM_ManagedSystemElement	
CIM_LogicalElement	
CIM_StoragePool	
InstanceID	Opaque key
PoolID	Controller serial number:<*n*>, where <*n*> is the array number as supplied from API
Primordial	Always set to FALSE
RemainingManagedSpace	Remaining raw space in current pool
TotalManagedSpace	Total raw space managed by this pool
HPSA_StoragePool	

4-3-18 SMX_SAMediaAccessStatData

SMX_SAMediaAccessStatData implements the HPSA_MediaAccessStatData and represents the Monitoring and Performance data counters on HP Disk Drives.

Table 4-19 SMX_SAMediaAccessStatData (CIM_MediaAccessStatData)

Property name	Property implementation
CIM_ManagedElement	
CIM_StatisticalData	
InstanceID	Opaque key
SampleInterval	00000000000000.000000:000
CIM_MediaAccessStatData	
HPSA_MediaAccessStatData	
AbortedCommands	See HP Smart Array Profile
BadTargetErrors	See HP Smart Array Profile
DRQTimeOuts	See HP Smart Array Profile
ECCRecoveredReadErrors	See HP Smart Array Profile
ElementName	Disk location (For example, Port: 1E Box 1 Bay: 5)
FailedReadRecovers	See HP Smart Array Profile

Table 4-19 SMX_SAMediaAccessStatData (CIM_MediaAccessStatData)

Property name	Property implementation
FailedWriteRecovers	See HP Smart Array Profile
FormatErrors	See HP Smart Array Profile
HardReadErrors	See HP Smart Array Profile
HardwareErrors	See HP Smart Array Profile
HardWriteErrors	See HP Smart Array Profile
HotPlugCount	See HP Smart Array Profile
MediaFailures	See HP Smart Array Profile
NotReadyErrors	See HP Smart Array Profile
OtherTimeOuts	See HP Smart Array Profile
SCSIBusFaults	See HP Smart Array Profile
SectorsRead	See HP Smart Array Profile
SectorsWritten	See HP Smart Array Profile
SeekCount	See HP Smart Array Profile
SeekErrors	See HP Smart Array Profile
ServiceHours	See HP Smart Array Profile
SpinUpErrors	See HP Smart Array Profile
RetryRecoveredReadErrors	See HP Smart Array Profile
RetryRecoveredWriteErrors	See HP Smart Array Profile

4-3-19 SMX_SAStorageSetting

SMX_SAStorageSetting implements the HPSA_StorageSetting class and represents the current raid configuration for a Storage Volume. There is one instance per Storage Volume.

Table 4-20 Class: SMX_SAStorageSetting (CIM_StorageSetting)

Property name	Property implementation
CIM_ManagedElement	
ElementName	RAID <*n*>, where <*n*> is the raid description • Examples: • RAID 0 • RAID 1+0 • RAID 5 • RAID 6
CIM_SettingData	
InstanceID	Opaque key

Table 4-20 Class: SMX_SAStorageSetting (CIM_StorageSetting)

Property name	Property implementation
CIM_StorageSetting	
ChangeableType	0 (Not Changeable)
DataRedundancyGoal	1 (RAID 0, RAID 5, RAID 6, RAID 50, RAID 60) 2 (RAID 1+0)
DataRedundancyMax	1 (RAID 0, RAID 5, RAID 6, RAID 50, RAID 60) 2 (RAID 1+0)
DataRedundancyMin	1 (RAID 0, RAID 5, RAID 6, RAID 50, RAID 60) 2 (RAID 1+0)
DeltaReservationGoal	0
DeltaReservationMax	0
DeltaReservationMin	0
NoSinglePointOfFailure	FALSE – RAID 0 TRUE – RAID 1+0, RAID 5, RAID 6
PackageRedundancyGoal	0 (RAID 0) 1 (RAID 1+0, RAID 5) 2 (RAID 6, RAID 50, RAID 60)
PackageRedundancyMax	0 (RAID 0) 1 (RAID 1+0, RAID 5) 2 (RAID 6, RAID 50, RAID 60)
PackageRedundancyMin	0 (RAID 0) 1 (RAID 1+0, RAID 5) 2 (RAID 6, RAID 50, RAID 60)
HPSA_StorageSetting	

4-3-20 SMX_SADriveCage

SMX_SADriveCage implements the HPSA_DriveCage class and represents the drive cage assembly and backplane within a storage enclosure. Multiple instances might occur within a duplexed enclosure.

Table 4-21 Class: SMX_SADriveCage (CIM_PhysicalPackage)

Property name	Property implementation
CIM_ManagedElement	
ElementName	Port <*n*>, where <*n*> is the name of the port this drive cage is connected For example, Port J3
CIM_ManagedSystemElement	

Table 4-21 Class: SMX_SADriveCage (CIM_PhysicalPackage)

Property name	Property implementation
Name	Serial Number of drive cage N/A—When serial number is not available
CIM_PhysicalElement	
CreationClassName	SMX_SADriveCage
Manufacturer	Drive Cage Vendor string
Model	Drive Cage Model string
PartNumber	N/A—Not available in this implementation
Tag	Opaque key
SerialNumber	Enclosure Serial number
Version	N/A—Not available in this implementation
CIM_PhysicalPackage	
RemovalConditions	2 (Not Applicable)
HP_DriveCage	
BackplaneSpeed	See HP Smart Array Profile
DriveBays	See HP Smart Array Profile
DuplexLocation	See HP Smart Array Profile
HPSA_DriveCage	

4-3-21 SMX_SASCSIProtocolEndpoint

SMX_SASCSIProtocolEndpoint implements the HPSA_SCSIProtocolEndpoint class and represents an access point to storage resources.

Table 4-22 Class: SMX_SASCSIProtocolEndpoint (CIM_SCSIProtocolEndpoint)

Property name	Property implementation
CIM_ManagedElement	
ElementName	Controller name and location (for example, Smart Array in Slot=3, or Smart Array Embedded Controller=7 for embedded controller where 7 is the internal identifier for the embedded controller)
CIM_ManagedSystemElement	
CIM_LogicalElement	
CIM_EnabledLogicalElement	
EnabledDefault	2 (Enabled)
RequestedState	12 (Not Applicable)
CIM_ServiceAccessPoint	

Table 4-22 Class: SMX_SASCSIProtocolEndpoint (CIM_SCSIProtocolEndpoint)

Property name	Property implementation
CreationClassName	SMX_SASCSIProtocolEndpoint
Name	HBA Serial Number
SystemCreationClassName	SMX_SAArraySystem
SystemName	SMX_SAArraySystem.Name
CIM_ProtocolEndpoint	
ProtocolIFType	1(Other)
OtherTypeDescription	SCSI
CIM_SCSIProtocolEndpoint	
ConnectionType	1 (Other)
OtherConnectionType	PCI
Role	0 (Unknown) 2 (Initiator) 3 (Target) 4 (Both Initiator and Target)
HPSA_SCSIProtocolEndpoint	

4-3-22 SMX_SASCSIProtocolController

SMX_SASCSIProtocolController implements the HPSA_SCSIProtocolController class and represents a view a SCSI resources on the Array Controller.

Table 4-23 Class: SMX_SASCSIProtocolController (CIM_SCSIProtocolController)

Property name	Property implementation
CIM_ManagedElement	
ElementName	Controller name and location (for example, Smart Array in Slot=3, Smart Array Embedded Controller=7 for embedded controller where 7 is the internal identifier for the embedded controller)
CIM_ManagedSystemElement	
OperationalStatus[0]	Operational status of the controller 0 (Unknown) 2 (OK) 6 (Error)
CIM_LogicalElement	
CIM_EnabledLogicalElement	
EnabledDefault	2 (Enabled)
EnabledState	5 (Not Applicable)

Table 4-23 Class: SMX_SASCSIProtocolController (CIM_SCSIProtocolController)

Property name	Property implementation
RequestedState	12 (Not Applicable)
CIM_LogicalDevice	
CreationClassName	SMX_SASCSIProtocolController
DeviceID	Opaque key
SystemCreationClassName	SMX_SAArraySystem
SystemName	SMX_SAArraySystem.Name
CIM_ProtocolController	
MaxUnitsControlled	32
CIM_SCSIProtocolController	
HPSA_SCSIProtocolController	

4-3-23 SMX_SARedundancySet

SMX_SARedundancySet implements the HPSA_RedundancySet class and represents controller redundancy if there is more than one controller in a redundant configuration (for example, MSA500 with two controllers.)

Table 4-24 Class: SMX_SARedundancySet (CIM_RedundancySet)

Property name	Property implementation
CIM_ManagedElement	
ElementName	Storage System name and location
CIM_Collection	
CIM_SystemSpecificCollection	
InstanceID	Opaque key
CIM_RedundancySet	
LoadBalanceAlgorithm	2 (No Load Balancing)
RedundancyStatus	2 (Fully Redundant) 4 (Redundancy Lost)
TypeOfSet[0]	4 (Sparing)
HPSA_RedundancySet	

4-3-24 SMX_SAStorageRedundancySet

SMX_SAStorageRedundancySet implements the HPSA_StorageRedundancySet class and represents disk sparing aspect of a RAID configuration. There is an instance for every raid set that has spare drives configured.

Table 4-25 Class: SMX_SAStorageRedundancySet (CIM_StorageRedundancySet)

Property name	Property implementation
CIM_ManagedElement	
ElementName	Storage Redundancy Set
CIM_Collection	
CIM_SystemSpecificCollection	
InstanceID	Opaque key
CIM_RedundancySet	
LoadBalanceAlgorithm	2 (No Load Balancing)
MaxNumberSupported	0
MinNumberNeeded	0
RedundancyStatus	2 (Fully Redundant) 4 Redundancy lost)
TypeOfSet[0]	5 (Limited Sparing)
CIM_StorageRedundancySet	
HPSA_StorageRedundancySet	

4-3-25 SMX_SAStorageSpecificCollection

SMX_SAStorageSpecificCollection implements the HPSA_StorageSpecificCollection class and represents a collection of Smart Array controllers that have been grouped together to report consolidated status.

Table 4-26 Class: SMX_StorageSpecificCollection (HP_GroupHostedCollection)

Property name	Property implementation
CIM_ManagedElement	
Caption	Storage Array Consolidated Status
Description	Storage Array Consolidated Status
ElementName	Storage Array Consolidated Status
CIM_Collection	
CIM_SystemSpecificCollection	
InstanceID	Opaque key
HP_GroupSystemSpecificCollection	
GroupOperationalStatus[0]	Consolidated status for all array controllers. See section 9.10 Consolidated status example of HP Smart Array profile for details on how this value is calculated.
GroupStatusDescriptions[0]	Description of failure

Table 4-26 Class: SMX_StorageSpecificCollection (HP_GroupHostedCollection)

Property name	Property implementation
HPSA_StorageSpecificCollection	

4-3-26 SMX_SADriveCageLocation

SMX_SADriveCageLocation implements the HPSA_DriveCageLocation class and represents a location string for the drive cage.

Table 4-27 Class: SMX_SADriveCageLocation (HP_Location)

Property name	Property implementation
CIM_ManagedElement	
Caption	Drive Cage
Description	Drive Cage
ElementName	Drive Cage
CIM_Location	
Name	Opaque key
PhysicalPosition	Opaque key
HP_Location	
ElementLocationTag	Duplex Top, Duplex Bottom, Non Duplex
ElementLocationTagDesc	22 (Drive Cage)
LocationInformation[0]	HBA Port identifier Examples: • J3 • 2I • 1E
LocationInfoDesc[0]	Port
HPSA_DriveCageLocation	

4-3-27 SMX_SAArraySystemLocation

SMX_SAArraySystemLocation implements the HPSA_ArraySystemLocation class and represents a location string for the array system.

Table 4-28 Class: SMX_SAArraySystemLocation (HP_Location)

Property name	Property implementation
CIM_ManagedElement	

Table 4-28 Class: SMX_SAArraySystemLocation (HP_Location)

Property name	Property implementation
Caption	Controller name and location Examples: • Smart Array in Slot=3, for internal • Smart Array Embedded Controller=7 for embedded controller where 7 is the internal identifier for the embedded controller
Description	Controller name and location Examples: Smart Array in Slot=3, for internal Smart Array Embedded Controller=7 for embedded controller where 7 is the internal identifier for the embedded controller
ElementName	Controller name and location Examples: • Smart Array in Slot=3, for internal • Smart Array Embedded Controller=7 for embedded controller where 7 is the internal identifier for the embedded controller
CIM_Location	
Name	Opaque key
PhysicalPosition	Opaque key
HP_Location	
ElementLocationTag	PCI Slot Number—When Adapter is specified in ElementLocationTagDesc Chassis Name—When Chassis is specified in ElementLocationTagDesc
ElementLocationTagDesc	23 (Adapter)—For internal HBAs 3 (Chassis)—For External Storage systems
LocationInformation[0]	For internal HBAs: PCI Slot number Examples: • 3—PCI Slot 3 • 0—Embedded on Motherboard Not Required for External Storage systems
LocationInfoDesc[0]	3 (PCI Slot)—For internal HBAs Not required for External Storage Systems
HPSA_ArraySystemLocation	

4-3-28 SMX_SADiskDriveLocation

SMX_SADiskDriveLocation implements the HPSA_DiskDriveLocation class and represents a location string for the disk drive.

Table 4-29 Class: SMX_SADiskDriveLocation (HP_Location)

Property name	Property implementation
CIM_ManagedElement	
Caption	Controller name, Drive Type and Disk Location For example, Smart Array E500 Physical Drive – Port: 1E Box 1 Bay: 5
Description	Controller name, Drive Type and Disk Location For example, Smart Array E500 Physical Drive – Port: 1E Box 1 Bay: 5
ElementName	Controller name, Drive Type and Disk Location For example, Smart Array E500 Physical Drive – Port: 1E Box 1 Bay: 5
CIM_Location	
Name	Opaque key
PhysicalPosition	Opaque key
HP_Location	
ElementLocationTag	Bay Number of Disk Drive— When Bay is specified in ElementLocationTagDesc.
ElementLocationTagDesc	20 (Bay)—When firmware supports Bay numbering
HPSA_DiskDriveLocation	

4-3-29 SMX_SAArrayControllerLocation

SMX_SAArrayControllerLocation implements the HPSA_ArrayControllerLocation class and represents a location string for the array controller.

Table 4-30 Class: SMX_SArrayControllerLocation (HP_Location)

Property name	Property implementation
CIM_ManagedElement	
Caption	Controller name and location Examples: • Smart Array in Slot=3, for internal • Smart Array Embedded Controller=7 for embedded controller where 7 is the internal identifier for the embedded controller
Description	Controller name and location Examples: • Smart Array in Slot=3, for internal • Smart Array Embedded Controller=7 for embedded controller where 7 is the internal identifier for the embedded controller

Table 4-30 Class: SMX_SArrayControllerLocation (HP_Location)

Property name	Property implementation
ElementName	Controller name and location Examples: • Smart Array in Slot=3, for internal • Smart Array Embedded Controller=7 for embedded controller where 7 is the internal identifier for the embedded controller
CIM_Location	
Name	Opaque key
PhysicalPosition	Opaque key
HP_Location	
ElementLocationTag	for Internal HBAs: PCI Slot Number Examples: • Slot=3 – for adapter in PCI Slot 3 • Embedded Controller=7 – for Embedded adapter where 7 is the internal identifier for the embedded controller
ElementLocationTagDesc	23 (Adapter)—For Internal HBAs
LocationInformation[0]	For internal HBAs: PCI Slot number Examples: • 3—PCI Slot 3 • 0—Embedded on Motherboard
LocationInfoDesc[0]	3 (PCI Slot)—For internal HBAs (Embedded Device) – for internal HBA embedded on Motherboard
HPSA_ArrayControllerLocation	

4-3-30 SMX_SAStorageCapabilities

SMX_SAStorageCapabilities implements the HPSA_StorageCapabilities class and represents the possible capabilities of a Storage Pool.

Table 4-31 Class: SMX_SAStorageCapabilities (CIM_StorageCapabilities)

Property name	Property implementation
CIM_ManagedElement	

Table 4-31 Class: SMX_SAStorageCapabilities (CIM_StorageCapabilities)

Property name	Property implementation
ElementName	For Primodial Pools: Controller name and location Examples: • Smart Array in Slot=3, for internal • Smart Array Embedded Contoller=7 for embedded controller where 7 is the internal identifier for the embedded controller For Concrete Pools: Controller name and location:Array identifier Examples: • Smart Array in Slot=3: Array – 0, for internal • Smart Array Embedded Controller=7: Array - 0" for embedded controller where 7 is the internal identifier for the embedded controller
CIM_Capabilities	
InstanceID	Key: Opaque key
CIM_StorageCapabilities	
DataRedundancyDefault	1—When number of drives is an odd number) 2—When number of drives is an even number (For example, pool can be configured for mirroring.)
DataRedundancyMax	1—When number of drives is an odd number 2—When number of drives is an even number (For example, Pool can be configured for mirroring.)
DataRedundancyMin	1
DeltaReservationDefault	0
DeltaReservationMax	0
DeltaReservationMin	0
ElementType	5 (Storage Pool)
NoSinglePointOfFailure	True—When number of drives > 1 (For example, pool can be configured for redundancy.) False—When number of drives <= 1
NoSinglePointOfFailureDefault	True—When number of drives > 1 (For example, pool can be configured for redundancy.) False—When number of drives <= 1
PackageRedundancyDefault	0 (When number of drives <= 1) 1 (When number of drives = 2 or 3) 2 (When number of drives > 3)
PackageRedundancyMax	0 (When number of drives <= 1) 1 (When number of drives = 2 or 3) 2 (When number of drives > 3)
PackageRedundancyMin	0
HPSA_StorageCapabilities	

4-3-31 SMX_SAProduct

SMX_SAProduct implements the HPSA_Product class and represents the top level marketing information for the Array System.

Table 4-32 Class: SMX_SAProduct (CIM_Product)

Property name	Property implementation
CIM_ManagedElement	
ElementName	Controller name and location Examples: • Smart Array in Slot=3, for internal • Smart Array Embedded Controller=7 for embedded controller where 7 is the internal identifier for the embedded controller
CIM_Product	
IdentifyingNumber	Opaque key
Name	String representing the Marketing name
Vendor	HP
Version	Firmware version of HBA or Storage System
HPSA_Product	

4-3-32 SMX_SAStorageEnclosureLocation

SMX_SAStorageEnclosureLocation implements the HPSA_StorageEnclosureLocation class and represents a location string for the enclosure.

Table 4-33 Class: SMX_SAStorageEnclosureLocation (HP_Location)

Property name	Property implementation
ElementName	Enclosure location Port <*m*> Box <*n*>, where <*m*> is the port and <*n*> is the box number
Caption	Enclosure location Port <*m*> Box <n>, where <*m*> is the port and <*n*> is the box number
Description	Enclosure location Port <*m*> Box <*n*>, where <*m*> is the port and <n> is the box number
Name	Key
PhysicalPosition	Key

Table 4-33 Class: SMX_SAStorageEnclosureLocation (HP_Location)

Property name	Property implementation
ElementLocationTag	Unknown for Undetermined External for external enclosures Internal for drive cages located within the host chassis
ElementLocationTagDesc	19 (Box)
HPSA_StorageEnclosureLocation	

4-3-33 SMX_SATSASPort

SMX_SATSASPort implements the HPSA_TSASPort class and represents the initiator port for the HBA.

Table 4-34 Class: Class: SMX_SATSASPort (HPSA_TSASPort)

Property name	Property implementation
ElementName	Port unique index, where unique index is a unique index across all ports on a single drive.
Caption	Port unique index, where unique index is a unique index across all ports on a single drive.
OperationalStatus[0]	Port status 0 (Unknown) 2 (OK) 6 (Error)
EnabledDefault	2 (Enabled
EnabledState	5 (Not Applicable)
RequestedState	12 (Not Applicable)
CreationClassName	“SMX_SATSASPort”
DeviceID	Same value as HPSA_TSASSCSIProtocolEndpoint.Name property of the instance associated through HPSA_TSASPortTSASSCSIPE
SystemCreationClassName	“SMX_SAArraySystem”
SystemName	SMX_SAArraySystem.Name
UsageRestriction	4 (Not Restricted)
PortType	94 (SAS)
HPSA_SAISASPort	

4-3-34 SMX_SATSASSCSIProtocolEndpoint

SMX_SATSASSCSIProtocolEndpointPort implements the HPSA_TSASSCSIProtocolEndpoint class and represents an access point to storage resources.

Table 4-35 Class: SMX_SATSASSCSIProtocolEndpoitPort (HPSA_TSASSCSIProtocolEndpoint)

Property name	Property implementation
ElementName	Protocol Endpoint for xxx, where xxx is the value populated in the caption property of the instance of HPSA_TSASPort associated to this instance through the association HPSA_TSASPortTSASSCSIPE
Caption	Protocol Endpoint for xxx, where xxx is the value populated in the caption property of the instance of HPSA_TSASPort associated to this instance through the association HPSA_TSASPortTSASSCSIPE
EnabledDefault	2 (Enabled
RequestedState	12 (Not Applicable)
CreationClassName	"SMX_SATSASSCSIProtocolEndpoint"
SystemCreationClassName	"SMX_SAArraySystem"
SystemName	SMX_SAArraySystem.Name
ProtocolIFType	1 (Other)
OtherTypeDescription	"SCSI"
Role	3 (Target)
HPSA_SATSASSCSIProtocolEndpoint	

4-3-35 SMX_SAISASPort

SMX_SAISASPort implements the HPSA_ISASPort class and represents the initiator port for the HBA.

Table 4-36 Class: Class: SMX_SAISASPort (HPSA_ISASPort)

Property name	Property implementation
ElementName	Port: port m where <*m*> is the port number
Caption	Port: port m where <*m*> is the port number
OperationalStatus[0]	Port status 0 (Unknown) 2 (OK) 6 (Error)
EnabledDefault	2 (Enabled
EnabledState	5 (Not Applicable)
RequestedState	12 (Not Applicable)
CreationClassName	"SMX_SAISASPort"

Table 4-36 Class: Class: SMX_SAISASPort (HPSA_ISASPort)

Property name	Property implementation
DeviceID	HPSA_PortController.DeviceID>:<port #>, where <HPSA_PortController.DeviceID> is the DeviceID property of the instance of HPSA_PortController associated to this instance through the association HPSA_PortControllerISASPort and <port #> is the port number for the port. This is the same value that is concatenated to the caption and related properties. The following are examples of an array controller with 2 external ports: PH77MW3991:1E PH77MW3991:2E
SystemCreationClassName	"SMX_SAArraySystem"
SystemName	SMX_SAArraySystem.Name
UsageRestriction	4 (Not Restricted)
PortType	94 (SAS)
	HPSA_SAISASPort

4-3-36 SMX_SAISASSCSIProtocolEndpoint

SMX_SAISASSCSIProtocolEndpointPort implements the HPSA_ISASSCSIProtocolEndpoint class and represents an access point to storage resources.

Table 4-37 Class: SMX_SAISASSCSIProtocolEndpoitPort (HPSA_ISASSCSIProtocolEndpoint)

Property name	Property implementation
ElementName	Protocol Endpoint for xxx, where xxx is the value populated in the caption property of the instance of HPSA_ISASPort associated to this instance through the association HPSA_ISASPortISASSCSIPE
Caption	Protocol Endpoint for xxx, where xxx is the value populated in the caption property of the instance of HPSA_ISASPort associated to this instance through the association HPSA_ISASPortISASSCSIPE
EnabledDefault	2 (Enabled
RequestedState	12 (Not Applicable)
CreationClassName	"SMX_SAISASSCSIProtocolEndpoint"
SystemCreationClassName	"SMX_SAArraySystem"
SystemName	SMX_SAArraySystem.Name
ProtocolIFType	1 (Other)
OtherTypeDescription	"SCSI"
Role	2 (Initiator)

Table 4-37 Class: SMX_SAISASSCSIProtocolEndpoitPort (HPSA_ISASSCSIProtocolEndpoint)

Property name	Property implementation
	HPSA_SAISASSCSIProtocolEndpoint

4-3-37 SMX_SAISASPortISASSCSIProtocolEndPoint (Association)

Table 4-38 Class: SMX_SAISASPortISASSCSIProtocolEndpoint (CIM_DeviceSAPImplementation)

Property name	Property implementation
Antecedent	SMX_SAISASPort
Dependent	SMX_SASASISASSCSIProtocolEndpoint

4-3-38 SMX_SAArraySystemISASSCSIProtocolEndpoint (Association)

Table 4-39 Class: SMX_SAArraySystemISASSCSIProtoclEndpoint (CIM_SystemDevice)

Property name	Property implementation
Antecedent	SMX_SAArraySystem
Dependent	SMX_SAISASSCSIProtocolEndpoint

4-3-39 SMX_SAArraySystemISASPort (Association)

Table 4-40 Class: SMX_SAArraySystemISASPort (CIM_SystemDevice)

Property name	Property implementation
GroupComponent	SMX_SAArraySystem
PartComponent	SMX_SAISASPort

4-3-40 SMX_SATSASPortTSASSCSIProtocolEndPoint (Association)

Table 4-41 Class: SMX_SATSASPortTSASSCSIProtocolEndpoint (CIM_DeviceSAPImplementation)

Property name	Property implementation
Antecedent	SMX_SATSASPort
Dependent	SMX_SASASTSASSCSIProtocolEndpoint

4-3-41 SMX_SAArraySystemTSASSCSIProtocolEndpoint (Association)

Table 4-42 Class: SMX_SAArraySystemTSASSCSIProtocolEndpoint (CIM_SystemDevice)

Property name	Property implementation
Antecedent	SMX_SAArraySystem
Dependent	SMX_SATSASSCSIProtocolEndpoint

4-3-42 SMX_SAArraySystemTSASPort (Association)

Table 4-43 Class: SMX_SAArraySystemTSASPort (CIM_SystemDevice)

Property name	Property implementation
GroupComponent	SMX_SAArraySystem
PartComponent	SMX_SATSASPort

4-3-43 SMX_SADiskDriveTSASCSIProtocolEndpoint (Association)

Table 4-44 Class: SMX_SADiskDriveTSASSCSIProtocolEndpoint (CIM_SAPAvailableForElement)

Property name	Property implementation
AvailableSap	SMX_SATSASSCSIProtocolEndpoint
ManagedElement	SMX_SADiskDrive

4-3-44 SMX_SASCSIInitiatorTargetLogicalUnitPath (Association)

Table 4-45 Class: SMX_SASCSIInitiatorTargetLogicalUnitPath (CIM_InitiatorTargetLogicalUnitPath)

Property name	Property implementation
Initiator	SMX_SAISASSCSIProtocolEndpoint
Target	SMX_SATSASSCSIProtocolEndpoint
LogicalUnit	SMX_SAStorageExtent
State	0 (Unknown) if the path status cannot be ascertained
	2 (active) if the path is active and health
	5 (path error) if the path has an error condition
	3 (passive) path is health but is not active or is the standby path

4-3-45 SMX_SAArraySystemRedundancySet (Association)

Table 4-46 Class: SMX_SAArraySystemRedundancySet (CIM_ConcreteIdentity)

Property name	Property implementation

Table 4-46 Class: SMX_SAArraySystemRedundancySet (CIM_ConcreteIdentity)

SameElement	SMX_SARedundancySet
SystemElement	SMX_SAArraySystem

4-3-46 SMX_SAStorageVolumeStorageSetting (Association)

Table 4-47 Class: SMX_SAStorageVolumeStorageSetting (CIM_ElementSettingData)

Property name	Property implementation
ManagedElement	SMX_SAStorageVolume
SettingData	SMX_SAStorageSetting
IsCurrent	1 (Set to Is Current)
IsDefault	1 (Set to Is Default)

4-3-47 SMX_SAPrimordialPoolStorageCapabilities (Association)

Table 4-48 Class: SMX_SAPrimordialPoolStorageCapabilities (CIM_ElementCapabilities)

Property name	Property implementation
Capabilities	SMX_SAStorageCapabilities
ManagedElement	SMX_ SAPrimordialPool

4-3-48 SMX_SAStoragePoolStorageCapabilities (Association)

Table 4-49 Class: SMX_SAStoragePoolStorageCapabilities (CIM_ElementCapabilities)

Property name	Property implementation
Capabilities	SMX_SAStorageCapabilities
ManagedElement	SMX_ SAStoragePool

4-3-49 SMX_SAArraySystemStorageEnclosureProcessor (Association)

Table 4-50 Class: SMX_SAPrimordialPoolStorageCapabilities (CIM_ElementCapabilities)

Property name	Property implementation
GroupComponent	SMX_SAArraySystem
PartComponent	SMX_SAStorageEnclosureProcessor

4-3-50 SMX_SAArraySystemSCSIProtocolController (Association)

Table 4-51 Class: SMX_SAArraySystemSCSIProtocolController (CIM_SystemDevice)

Property name	Property implementation
GroupComponent	SMX_SAArraySystem
PartComponent	SMX_ SASCSIProtocolController

4-3-51 SMX_SAArraySystemPortController (Association)

Table 4-52 Class: SMX_SAArraySystemPortController (CIM_Logicaldentity)

Property name	Property implementation
SameElement	SMX_SAArraySystem
SystemElement	SMX_ SAPortController

4-3-52 SMX_SAArraySystemDiskDrive (Association)

Table 4-53 Class: SMX_SAArraySystemDiskDrive (CIM_SystemDevice)

Property name	Property implementation
GroupComponent	SMX_SAArraySystem
PartComponent	SMX_ SADiskDrive

4-3-53 SMX_SAArraySystemStorageVolume (Association)

Table 4-54 Class: SMX_SAArraySystemStorageVolume (CIM_SystemDevice)

Property name	Property implementation
GroupComponent	SMX_SAArraySystem
PartComponent	SMX_ SAStorageVolume

4-3-54 SMX_SAArraySystemStorageExtent (Association)

Table 4-55 Class: SMX_SAArraySystemStorageExtent (CIM_SystemDevice)

Property name	Property implementation
GroupComponent	SMX_SAArraySystem
PartComponent	SMX_ SAStorageExtent

4-3-55 SMX_SAArraySystemDAPort (Association)

Table 4-56 Class: SMX_SAArraySystemDAPort (CIM_SystemDevice)

Property name	Property implementation
GroupComponent	SMX_SAArraySystem
PartComponent	SMX_ SADAPort

4-3-56 SMX_SAArraySystemPrimordialPool (Association)

Table 4-57 Class: SMX_SAArraySystemPrimordialPool (CIM_HostedStoragePool)

Property name	Property implementation
GroupComponent	SMX_SAArraySystem
PartComponent	SMX_SAPrimordialPool

4-3-57 SMX_SAArraySystemStoragePool (Association)

Table 4-58 Class: SMX_ SAArraySystemStoragePool (CIM_HostedStoragePool)

Property name	Property implementation
GroupComponent	SMX_SAArraySystem
PartComponent	SMX_SAStoragePool

4-3-58 SMX_SAComputerSystemArraySystem (Association)

Table 4-59 Class: SMX_ SAComputerSystemArraySystem (CIM_ComponentCS)

Property name	Property implementation
GroupComponent	HP_ComputerSystem
PartComponent	SMX_SAArraySystem

4-3-59 SMX_SAArraySystemArrayController (Association)

Table 4-60 Class: SMX_ SAArraySystemArrayController (CIM_ComponentCS)

Property name	Property implementation
GroupComponent	SMX_SAArraySystem
PartComponent	SMX_SAArrayController

4-3-60 SMX_SAStorageEnclosureStorageEnclosureProcessor (Association)

Table 4-61 Class: SMX_SAStorageEnclosureStorageEnclosureProcessor (CIM_systemPackaging)

Property name	Property implementation
Antecedent	SMX_SAStorageEnclosure
Dependent	SMX_SAStorageEnclosureProcessor

4-3-61 SMX_SAProductPhysicalPackage (Association)

Table 4-62 Class: SMX_ SAArraySystemArrayController (CIM_ComponentCS)

Property name	Property implementation
GroupComponent	SMX_SAProduct
PartComponent	SMX_SAPhysicalPackage

4-3-62 SMX_SAStorageEnclosureDriveCage (Association)

Table 4-63 Class: SMX_SAStorageEnclosureDriveCage (CIM_Container)

Property name	Property implementation
GroupComponent	SMX_SAStorageEnclosure
PartComponent	SMX_SADriveCage

4-3-63 SMX_SAPhysicalPackageArrayControllerPhysicalPackage (Association)

Table 4-64 Class: SMX_SAPhysicalPackageArrayControllerPhysicalPackage (CIM_Container)

Property name	Property implementation
GroupComponent	SMX_SAPhysicalPackage
PartComponent	SMX_SAArrayControllerPhysicalPackage

4-3-64 SMX_SAPhysicalPackageStorageEnclosure (Association)

Table 4-65 Class: SMX_SAPhysicalPackageStorageEnclosure (CIM_Container)

Property name	Property implementation
GroupComponent	SMX_SAPhysicalPackage

Table 4-65 Class: SMX_SAPhysicalPackageStorageEnclosure (CIM_Container)

PartComponent	SMX_SAStorageEnclosure

4-3-65 SMX_SADriveCageDiskPhysicalPackage (Association)

Table 4-66 Class: SMX__SADriveCageDiskPhysicalPackage (CIM_Container)

Property name	Property implementation
GroupComponent	SMX_SADriveCage
PartComponent	SMX_SADiskPhysicalPackage

4-3-66 SMX_SAStoragePoolStorageExtent (Association)

Table 4-67 Class: SMX_SAStoragePoolStorageExtent (CIM_ConcreteComponent)

Property name	Property implementation
GroupComponent	SMX_SAStoragePool
PartComponent	SMX_SAStorageExtent

4-3-67 SMX_SAStorageSpecificCollectionArraySystem (Association)

Table 4-68 Class: SMX_SAStorageSpecificCollectionArraySystem (CIM_MemberOfCollection)

Property name	Property implementation
Collection	SMX_SAStorageSpecificCollection
Member	SMX_SAArraySystem

4-3-68 SMX_SAStorageRedundancySetStorageExtent (Association)

Table 4-69 Class: SMX_SAStorageRedundancySetStorageExtent (CIM_MemberOfCollection)

Property name	Property implementation
Collection	SMX_SAStorageRedundancySet
Member	SMX_SAStorageExtent

4-3-69 SMX_SAArraySystemFirmware (Association)

Table 4-70 Class: SMX_SAArraySystemFirmware (CIM_InstalledSoftwareIdentity)

Property name	Property implementation
InstalledSoftware	SMX_SAFirmware
System	SMX_SAArraySystem

4-3-70 SMX_SASCSIProtocolControllerStorageVolume (Association)

Table 4-71 Class: SMX_SASCSIProtocolControllerStorageVolume (CIM_ProtocolControllerForUnit)

Property name	Property implementation
Antecedent	SMX_SASCSIProtocolController
Dependent	SMX_SAStorageVolume
DeviceAccess	2 (Read Write)
DeviceNumber	Device LUN number

4-3-71 SMX_SAFirmwareArraySystem (Association)

Table 4-72 Class: SMX_SAFirmwareArraySystem (CIM_ElementSoftwareIdentity)

Property name	Property implementation
Antecedent	SMX_SAFirmware
Dependent	SMX_SAArraySystem
ElementSoftwareStatus	ElementSoftwareStatus[0]: 2 (Current) ElementSoftwareStatus[1]: 6 (Installed)

4-3-72 SMX_SAStorageEnclosureProcessorEnclosureFirmware (Association)

Table 4-73 Class: SMX_SAStorageEnclosureProcessorEnclosureFirmware (CIM_ElementSoftwareIdentity)

Property name	Property implementation
Antecedent	SMX_SAEnclosureFirmware
Dependent	SMX_SAStorageEnclosureProcessor

Table 4-73 Class: SMX_SAStorageEnclosureProcessorEnclosureFirmware (CIM_ElementSoftwareIdentity)

ElementSoftwareStatus	ElementSoftwareStatus[0]: 2 (Current) ElementSoftwareStatus[1]: 6 (Installed)

4-3-73 SMX_SADiskDriveDiskDriveFirmware (Association)

Table 4-74 Class: SMX_SADiskDriveDiskDriveFirmware (CIM_ElementSoftwareIdentity)

Property name	Property implementation
Antecedent	SMX_SADiskDriveFirmware
Dependent	SMX_SADiskDrive
ElementSoftwareStatus	ElementSoftwareStatus[0]: 2 (Current) ElementSoftwareStatus[1]: 6 (Installed)

4-3-74 SMX_SADiskDriveStorageExtent (Association)

Table 4-75 Class: SMX_SADiskDriveStorageExtent (CIM_MediaPresent)

Property name	Property implementation
Antecedent	SMX_SADiskDrive
Dependent	SMX_SAStorageExtent

4-3-75 SMX_SADiskPhysicalPackageDiskDrive (Association)

Table 4-76 Class: SMX_SADiskPhysicalPackageDiskDrive (CIM_Realizes)

Property name	Property implementation
Antecedent	SMX_SADiskPhysicalPackage
Dependent	SMX_SADiskDrive

4-3-76 SMX_SAStoragePoolStorageVolume (Association)

Table 4-77 Class: SMX_SAStoragePoolStorageVolume (CIM_AllocatedFromStoragePool)

Property name	Property implementation
Antecedent	SMX_SAStoragePool

Table 4-77 Class: SMX_SAStoragePoolStorageVolume (CIM_AllocatedFromStoragePool)

Dependent	SMX_SAStorageVolume
SpaceConsumed	Bytes consumed by volume

4-3-77 SMX_SAPrimordialPoolStoragePool (Association)

Table 4-78 Class: SMX_SAPrimordialPoolStoragePool (CIM_AllocatedFromStoragePool)

Property name	Property implementation
Antecedent	SMX_SAPrimordialPool
Dependent	SMX_SAStoragePool
SpaceConsumed	Bytes consumed by storage pool

4-3-78 SMX_SASpareExtentStorageExtent (Association)

Table 4-79 Class: SMX_SASpareExtentStorageExtent (CIM_Spared)

Property name	Property implementation
Antecedent	SMX_SAStorageExtent
Dependent	SMX_SAStorageExtent

4-3-79 SMX_SASpareExtentStorageRedundancySet (Association)

Table 4-80 Class: SASpareExtentStorageRedundancySet (CIM_IsSpare)

Property name	Property implementation
Antecedent	SMX_SAStorageExtent
Dependent	SMX_SAStorageRedundancySet

4-3-80 SMX_SAStorageExtentStorageVolume (Association)

Table 4-81 Class: SMX_SAStorageExtentStorageVolume (CIM_BasedOn)

Property name	Property implementation
Antecedent	SMX_SAStorageExtent
Dependent	SMX_SAStorageVolume

4-3-81 SMX_SADAPortSCSIProtocolEndpoint (Association)

Table 4-82 Class: SMX_SADAPortSCSIProtocolEndpoint (CIM_DeviceSAPImplementation)

Property name	Property implementation
Antecedent	SMX_SADAPort
Dependent	SMX_SASCSIProtocolEndpoint

4-3-82 SMX_SAStorageGroupHostedCollection (Association)

Table 4-83 Class: SMX_ SAStorageGroupHostedCollection (HP_GroupHostedCollection)

Property name	Property implementation
Antecedent	HP_ComputerSystem
Dependent	SMX_SAStorageSpecificCollection

4-3-83 SMX_SAPhysicalPackageArraySystem (Association)

Table 4-84 Class: SMX_SAPhysicalPackageArraySystem (CIM_ComputerSystemPackage)

Property name	Property implementation
Antecedent	SMX_SAPhysicalPackage
Dependent	SMX_SAArraySystem

4-3-84 SMX_SAArrayControllerPhysicalPackageArrayController (Association)

Table 4-85 Class: SMX_SAArrayControllerPhysicalPackageArrayController (CIM_ComputerSystemPackage)

Property name	Property implementation
Antecedent	SMX_SAArrayControllerPhysicalPackage
Dependent	SMX_SAArrayController

4-3-85 SMX_SADiskDriveMediaAccessStatData (Association)

Table 4-86 Class: SMX_SADiskDriveMediaAccessStatData (CIM_ElementStatisticalData)

Property name	Property implementation
ManagedElement	SMX_SADiskDrive
Stats	SMX_SAMediaAccessStatData

4-3-86 SMX_SAArrayControllerPhysicalPackageArrayControllerLocation (Association)

Table 4-87 Class: SMX_SAArrayControllerPhysicalPackageArrayControllerLocation (CIM_PhysicalElementLocation)

Property name	Property implementation
Element	SMX_SAArrayControllerPhysicalPackage
PhysicalLocation	SMX_SAArrayControllerLocation

4-3-87 SMX_SAPhysicalPackageArraySystemLocation (Association)

Table 4-88 Class: SMX_SAPhysicalPackageArraySystemLocation (CIM_PhysicalElementLocation)

Property name	Property implementation
Element	SMX_SAPhysicalPackage
PhysicalLocation	SMX_SAArraySystemLocation

4-3-88 SMX_SADriveCageDriveCageLocation (Association)

Table 4-89 Class: SMX_SADriveCageDriveCageLocation (CIM_PhysicalElementLocation)

Property name	Property implementation
Element	SMX_SADriveCage
PhysicalLocation	SMX_SADriveCageLocation

4-3-89 SMX_SADiskPhysicalPackageDiskDriveLocation (Association)

Table 4-90 Class: SMX_SADiskPhysicalPackageDiskDriveLocation (CIM_PhysicalElementLocation)

Property name	Property implementation
Element	SMX_SADiskPhysicalPackage
PhysicalLocation	SMX_SADiskDriveLocation

4-3-90 SMX_SASCSIProtocolEndpointSCSIProtocolController (Association)

Table 4-91 Class: SMX_SASCSIProtocolEndpointSCSIProtocolController (CIM_SAPAvailableForElement)

Property name	Property implementation
AvailableSAP	SMX_SASCSIProtocolEndpoint
ManagedElement	SMX_SASCSIProtocolController

4-3-91 SMX_SAStorageEnclosureEnclosureLocation (Association)

Table 4-92 Class: SMX_SAStorageEnclosureEnclosureLocation (CIM_PhysicalElementLocation)

Property name	Property implementation
Element	SMX_SAStorageEnclosure
PhysicalLocation	SMX_SAStorageEnclosureLocation

4-4 Supported indications

4-4-1 HP_DeviceIndication: Physical Drive Status Changed to OK

Table 4-93 HP_DeviceIndication: Physical Drive Status Changed to OK

Property name	Property implementation
CIM_Indication	
IndicationIdentifier	GUID string generated at indication
PerceivedSeverity	2 (Informational)
IndicationTime	Time of indication
CIM_AlertIndication	
Description	Physical Drive status has changed to a status of OK.
AlertingMangedElement	WBEM path of the SMX_SADiskDrive class
AlertingElementFormat	2 (CIMObjectPath)
AlertType	5 (Device Alert)
EventID	201
EventTime	Time of the event or time of the indication if event time is unknown
ProviderName	HP SmartArray
RecommendedActions	No action required.
SystemName	Name of the computer system generating the indication

Table 4-93 HP_DeviceIndication: Physical Drive Status Changed to OK

Property name	Property implementation
SystemCreationClassName	CreationClassName of the computer system generating the indication
HP_AlertIndication	
Summary	Physical Drive status is OK
EventCategory	6 (Primary Storage)
ProbableCause	1 (other)
ProbableCauseDescription	Phusical Drive status chaned to OK
NetworkAddresses	Contains a list of all IP addresses of the computer systems generating the indiction
OSType	SMX_OperatingSyste.OSType
OSVersion	Operating system version of the computer system generating the indication in the format, <*major*>.<*minor*>.<*build*>
ProviderVersion	2.2.0.0
SystemFirmwareVersion	Firmware version of the computer system generating the indication
SystemSerialNumber	Serial number of the computer system generating the indication
SystemProductID	Product ID of the computer system generating the indication
SystemModel	Model name of the computer system generating the indication
SystemGUID	Platform GUID of the computer system generating the indication
ImpactedDomain	3 (Enclosure) for c-Class blade systems 4 (System) for all other systems Note: When ImpactedDomain is 3 (Enclosure) the properties indicated with (*) are populated.
BladeBay *	HP_BladeCSLocation.LocationInformation[0]
BladeName *	HP_ComputerSystem.Name
EnclosureName *	HP_BladeEnclosureCS.Name
RackName *	Rack name if one exists
RackUID *	Rack Unique Identifier if one exists
SystemVirtualSerialNumber	Conditional property containing the virtual system serial number string when running in a Virtual Connect environment
SystemVirtualUUID	Conditional property containing the virtual system UUID when running in a Virtual Connect environment

Table 4-93 HP_DeviceIndication: Physical Drive Status Changed to OK

Property name	Property implementation
HP_HardwareIndication	
HWFirmwareVersion	Physical Disk F/W version string
HWLogicalLocation	Physical Disk Location string For example, Port:1E Box: 1 Bay 5
HWPhysicalLocation	Physical Location of the Failed Drive (Bay Number)
HWSerialNumber	Physical Disk Serial Number
HP_DeviceIndication	
DeviceModel	Physical Disk Model string
DeviceControllerLogicalLocation	Controller Location For example, SmartArray 642 in Slot 2
VariableNames	Failure Description DriveInterface LastFailureDescription
VariableTypes[]	String (1) uint16 (4)
VariableValues[]	FailureDescription short description of the failure Drive interface HPSA_DiskDrive.DriveInterface LastFailureDescription – last failure reason string from the drive. HPSA_DiskDrive.OperationalStatus[1]

4-4-2 HP_DeviceIndication: Physical Drive Status Changed to ERROR

Table 4-94 HP_DeviceIndication: Physical Drive Status Changed to ERROR

Property name	Property implementation
CIM_Indication	
IndicationIdentifier	GUID string generated at indication
CIM_Indication	
IndicationIdentifier	GUID string generated at the time of indication
PerceivedSeverity	Severity 5 (Major)
IndicationTime	Time of indication
CIM_AlertIndication	
Description	Physical drive status has changed to Error

4-4-2 HP_DeviceIndication: Physical Drive Status Changed to ERROR

Table 4-94 HP_DeviceIndication: Physical Drive Status Changed to ERROR

Property name	Property implementation
AlertingMangedElement	WBEM Path of SMX_SADiskDrive class
AlertingElementFormat	2 (CIMObjectPath)
AlertType	5 (Device Alert)
EventID	202
EventTime	Time of the event or time of the indication if event time unknown
ProviderName	HP Smart Array
RecommendedActions	Check for failed or removed physical drives.
SystemName	Name of the computer system generating the indication
SystemCreationClassName	CreationClassName of the computer system generating the indication
HP_AlertIndication	
Summary	Physical Drive status is now Error
EventCategory	6 (Primary Storage)
ProbableCause	86 (Disk Failure)
ProbableCauseDescription	Physical Drive Status Changed to Error
NetworkAddresses	Contains a list of all the IP addresses of the computer system generating the indication
OSType	SMX_OperatingSystem.OSType
OSVersion	The operating system version of the computer system generating the indication in the following format: *<major>.<minor>.<build>*
ProviderVersion	2.2.0.0
SystemFirmwareVersion	Firmware version of the computer system generating the indication
SystemSerialNumber	Serial number of the computer system generating the indication
SystemProductID	Product ID of the computer system generating the indication
SystemModel	Model name of the computer system generating the indication
SystemGUID	Platform GUID of the computer system generating the indication

4-4-2 HP_DeviceIndication: Physical Drive Status Changed to ERROR

Table 4-94 HP_DeviceIndication: Physical Drive Status Changed to ERROR

Property name	Property implementation
ImpactedDomain	3 (Enclosure) for c-Class blade systems 4 (System) for all other systems Note: When ImpactedDomain is 3 (Enclosure) the properties indicated with (*) are populated.
BladeBay *	HP_BladeCSLocation.LocationInformation[0]
BladeName *	HP_ComputerSystem.Name
EnclosureName *	HP_BladeEnclosureCS.Name
RackName *	Rack name if one exists
RackUID *	Rack Unique Identifier if one exists
SystemVirtualSerialNumber	Conditional property containing the virtual system serial number string when running in a Virtual Connect environment
SystemVirtualUUID	Conditional property containing the virtual system UUID when running in a Virtual Connect environment
HP_HardwareIndication	
HWFirmwareVersion	Physical Disk F/W version string
HWLogicalLocation	Physical Disk Location string For exmaple, Port:1E Box: 1 Bay 5
HWPhysicalLocation	Physical Location of the Failed Drive (Bay Number)
HWSerialNumber	Physical Disk Serial Number
VariableNames[]	FailureDescription DriveInterface LastFailureDescription
VariableTypes[]	String (1) uint16 (4)
VariableValues[]	FailureDescription short description of the failure Drive interface HPSA_DiskDrive.DriveInterface LastFailureDescription – last failure reason string from the drive. HPSA_DiskDrive.OperationalStatus[1]
HP_DeviceIndication	
DeviceModel	Physical Disk Model string

4-4-2 HP_DeviceIndication: Physical Drive Status Changed to ERROR

Table 4-94 HP_DeviceIndication: Physical Drive Status Changed to ERROR

Property name	Property implementation
DeviceControllerLogicalLocation	Controller Location For example, SmartArray 642 in Slot 2, Smart Array P400 Embedded Controller=7" for embedded controller where 7 is the internal identifier for the embedded controller

4-4-3 HP_DeviceIndication: Physical Drive Status Changed to REBUILDING

Table 4-95 HP_DeviceIndication: Physical Drive Status Changed to REBUILDING

Property name	Property implementation
CIM_Indication	
IndicationIdentifier	GUID string generated at the time of indication
PerceivedSeverity	2 (Informational)
IndicationTime	Time of indication
CIM_AlertIndication	
Description	Physical drive status has changed to Rebuilding. Data is now being rebuilt onto this drive from the array system.
AlertingMangedElement	WBEM Path of SMX_SADiskDrive class
AlertingElementFormat	2 (CIMObjectPath)
AlertType	5 (Device Alert)
EventID	203
EventTime	Time of the event or time of the indication if event time unknown
ProviderName	HP Smart Array
RecommendedActions	No action is recommend ed.
SystemName	Name of the computer system generating the indication
SystemCreationClassName	CreationClassName of the computer system generating the indication
HP_AlertIndication	
Summary	Physical Drive status is now Rebuilding

4-4-3 HP_DeviceIndication: Physical Drive Status Changed to REBUILDING

Table 4-95 HP_DeviceIndication: Physical Drive Status Changed to REBUILDING

Property name	Property implementation
EventCategory	6 (Primary Storage)
ProbableCause	1 (Other)
ProbableCauseDescription	Physical Drive Status Changed to Rebuilding
NetworkAddresses	Contains a list of all the IP addresses of the computer system generating the indication
OSType	SMX_OperatingSystem.OSType
OSVersion	The operating system version of the computer system generating the indication in the following format: *<major>.<minor>.<build>*
ProviderVersion	2.2.0.0
SystemFirmwareVersion	Firmware version of the computer system generating the indication
SystemSerialNumber	Serial number of the computer system generating the indication
SystemProductID	Product ID of the computer system generating the indication
SystemModel	Model name of the computer system generating the indication
SystemGUID	Platform GUID of the computer system generating the indication
ImpactedDomain	3 (Enclosure) for c-Class blade systems 4 (System) for all other systems Note: When ImpactedDomain is 3 (Enclosure) the properties indicated with (*) are populated.
BladeBay *	HP_BladeCSLocation.LocationInformation[0]
BladeName *	HP_ComputerSystem.Name
EnclosureName *	HP_BladeEnclosureCS.Name
RackName *	Rack name if one exists
RackUID *	Rack Unique Identifier if one exists
SystemVirtualSerialNumber	Conditional property containing the virtual system serial number string when running in a Virtual Connect environment
SystemVirtualUUID	Conditional property containing the virtual system UUID when running in a Virtual Connect environment
HP_HardwareIndication	

4-4-3 HP_DeviceIndication: Physical Drive Status Changed to REBUILDING

Table 4-95 HP_DeviceIndication: Physical Drive Status Changed to REBUILDING

Property name	Property implementation
HWFirmwareVersion	Physical Disk F/W version string
HWLogicalLocation	Physical Disk Location string for example, Port:1E Box: 1 Bay 5
HWPhysicalLocation	Physical Location of the Failed Drive (Bay Number)
HWSerialNumber	Physical Disk Serial Number
VariableNames[]	FailureDescription DriveInterface LastFailureDescription
VariableTypes[]	String (1) uint16 (4)
VariableValues[]	FailureDescription short description of the failure Drive interface HPSA_DiskDrive.DriveInterface LastFailureDescription – last failure reason string from the drive. HPSA_DiskDrive.OperationalStatus[1]
HP_DeviceIndication	
DeviceModel	Physical Disk Model string
DeviceControllerLogicalLocation	Controller Location For exmaple, SmartArray 642 in Slot 2, Smart Array P400 Embedded Controller=7" for embedded controller where 7 is the internal identifier for the embedded controller

4-4-4 HP_DeviceIndication: Physical Drive Status Changed to PREDICTIVE FAILURE

Table 4-96 HP_DeviceIndication: Physical Drive Status Changed to PREDICTIVE FAILURE

Property name	Property implementation
CIM_Indication	
IndicationIdentifier	GUID string generated at the time of indication
PerceivedSeverity	5 (Major)
IndicationTime	Time of indication
CIM_AlertIndication	

4-4-4 HP_DeviceIndication: Physical Drive Status Changed to PREDICTIVE FAILURE

Table 4-96 HP_DeviceIndication: Physical Drive Status Changed to PREDICTIVE FAILURE

Property name	Property implementation
Description	Physical drive status has changed to Predictive Failure
AlertingMangedElement	WBEM Path of SMX_SADiskDrive class
AlertingElementFormat	2 (CIMObjectPath)
AlertType	5 (Device Alert)
EventID	203
EventTime	Time of the event or time of the indication if event time unknown
ProviderName	HP Smart Array
RecommendedActions	Replace drive immediately to avoid loss of data
SystemName	Name of the computer system generating the indication
SystemCreationClassName	CreationClassName of the computer system generating the indication
HP_AlertIndication	
Summary	Physical Drive status Predictive Failure
EventCategory	6 (Primary Storage)
ProbableCause	86 (Disk Failure)
ProbableCauseDescription	Physical Drive Status Changed to Predictive Failure
NetworkAddresses	Contains a list of all the IP addresses of the computer system generating the indication
OSType	SMX_OperatingSystem.OSType
OSVersion	The operating system version of the computer system generating the indication in the following format: *<major>.<minor>.<build>*
ProviderVersion	2.2.0.0
SystemFirmwareVersion	Firmware version of the computer system generating the indication
SystemSerialNumber	Serial number of the computer system generating the indication
SystemProductID	Product ID of the computer system generating the indication
SystemModel	Model name of the computer system generating the indication

4-4-4 HP_DeviceIndication: Physical Drive Status Changed to PREDICTIVE FAILURE

Table 4-96 HP_DeviceIndication: Physical Drive Status Changed to PREDICTIVE FAILURE

Property name	Property implementation
SystemGUID	Platform GUID of the computer system generating the indication
ImpactedDomain	3 (Enclosure) for c-Class blade systems 4 (System) for all other systems NOTE: When ImpactedDomain is 3 (Enclosure) the properties indicated with (*) are populated.
BladeBay *	HP_BladeCSLocation.LocationInformation[0]
BladeName *	HP_ComputerSystem.Name
EnclosureName *	HP_BladeEnclosureCS.Name
RackName *	Rack name if one exists
RackUID *	Rack Unique Identifier if one exists
SystemVirtualSerialNumber	Conditional property containing the virtual system serial number string when running in a Virtual Connect environment
SystemVirtualUUID	Conditional property containing the virtual system UUID when running in a Virtual Connect environment
HP_HardwareIndication	
HWFirmwareVersion	Physical Disk F/W version string
HWLogicalLocation	Physical Disk Location string For example, Port:1E Box: 1 Bay 5
HWPhysicalLocation	Physical Location of the Failed Drive (Bay Number)
HWSerialNumber	Physical Disk Serial Number
VariableNames[]	FailureDescription DriveInterface LastFailureDescription
VariableTypes[]	String (1) uint16 (4)
VariableValues[]	FailureDescription short description of the failure Drive interface HPSA_DiskDrive.DriveInterface LastFailureDescription – last failure reason string from the drive. HPSA_DiskDrive.OperationalStatus[1]
HP_DeviceIndication	
DeviceModel	Physical Disk Model string

4-4-4 HP_DeviceIndication: Physical Drive Status Changed to PREDICTIVE FAILURE

Table 4-96 HP_DeviceIndication: Physical Drive Status Changed to PREDICTIVE FAILURE

Property name	Property implementation
DeviceControllerLogicalLocation	Controller Location For example, SmartArray 642 in Slot 2 Smart Array P400 Embedded Controller=7" for embedded controller where 7 is the internal identifier for the embedded controller

4-4-5 HPSA_StorageVolumeIndication: Logical Drive Status Changed to OK

Table 4-97 HPSA_StorageVolumeIndication : Logical Drive Status Changed to OK

Property name	Property implementation
CIM_Indication	
IndicationIdentifier	GUID string generated at the time of indication
PerceivedSeverity	2 (Informational)
IndicationTime	Time of indication
CIM_AlertIndication	
Description	A logical drive status has changed from a non OK state to OK
AlertingMangedElement	WBEM Path of SMX_SAStorageVolume
AlertingElementFormat	2 (CIMObjectPath)
AlertType	5 (Device Alert)
EventID	101
EventTime	Time of the event or time of the indication if event time unknown
ProviderName	HP Smart Array
RecommendedActions	No action is recommended
SystemName	Name of the computer system generating the indication
SystemCreationClassName	CreationClassName of the computer system generating the indication
HP_AlertIndication	
Summary	Logical drive status OK

4-4-5 HPSA_StorageVolumeIndication: Logical Drive Status Changed to OK

Table 4-97 HPSA_StorageVolumeIndication : Logical Drive Status Changed to OK

Property name	Property implementation
EventCategory	6 (Primary Storage)
ProbableCause	1 (Other)
ProbableCauseDescription	Logical Drive status changed to OK
NetworkAddresses	Contains a list of all the IP addresses of the computer system generating the indication
OSType	SMX_OperatingSystem.OSType
OSVersion	The operating system version of the computer system generating the indication in the following format: *<major>.<minor>.<build>*
ProviderVersion	2.2.0.0
SystemFirmwareVersion	Firmware version of the computer system generating the indication
SystemSerialNumber	Serial number of the computer system generating the indication
SystemProductID	Product ID of the computer system generating the indication
SystemModel	Model name of the computer system generating the indication
SystemGUID	Platform GUID of the computer system generating the indication
ImpactedDomain	3 (Enclosure) for c-Class blade systems 4 (System) for all other systems NOTE: When ImpactedDomain is 3 (Enclosure) the properties indicated with (*) are populated.
BladeBay *	HP_BladeCSLocation.LocationInformation[0]
BladeName *	HP_ComputerSystem.Name
EnclosureName *	HP_BladeEnclosureCS.Name
RackName *	Rack name if one exists
RackUID *	Rack Unique Identifier if one exists
SystemVirtualSerialNumber	Conditional property containing the virtual system serial number string when running in a Virtual Connect environment
SystemVirtualUUID	Conditional property containing the virtual system UUID when running in a Virtual Connect environment

4-4-5 HPSA_StorageVolumeIndication: Logical Drive Status Changed to OK

Table 4-97 HPSA_StorageVolumeIndication : Logical Drive Status Changed to OK

Property name	Property implementation
HP_HardwareIndication	
HWLogicalLocation	**Logical drive number and RAID level. For example, LogicalDrive 1 (RAID 1+0)**
VariableNames	**FailureDescription**
VariableTypes	**String (1)**
VariableValues	**FailureDescription-short description of the failure**
HP_DeviceIndication	
HPSA_StorageVolumeIndication	
DeviceOperationalStatus	Current OperationalStatus values for Storage Volume DeviceOperationalStatus[0]: SMX_SAStorageVolume.OperationalStatus[0] DeviceOperationalStatus[1]: SMX_SAStorageVolume.OperationalStatus[1] (This index is only populated if there is additional Vendor unique status available)
DeviceOperationalStatusPrevious	Previous OperationalStatus values for Storage Volume DeviceOperationalStatusPrevious[0]: SMX_SAStorageVolume.OperationalStatus[0] DeviceOperationalStatusPrevious[1]: SMX_SAStorageVolume.OperationalStatus[1] (This index is only populated if there is additional Vendor unique status available)

4-4-6 SMX_SAStorageVolumeIndication: Logical Drive Status Changed to ERROR

Table 4-98 SMX_SAStorageVolumeIndication: Logical Drive Status Changed to ERROR

Property name	Property implementation
CIM_Indication	
IndicationIdentifier	GUID string generated at the time of indication
PerceivedSeverity	5 (Major)
IndicationTime	Time of indication
CIM_AlertIndication	

4-4-6 SMX_SAStorageVolumeIndication: Logical Drive Status Changed to ERROR

Table 4-98 SMX_SAStorageVolumeIndication: Logical Drive Status Changed to ERROR

Property name	Property implementation
Description	A logical drive status has changed to Error.
AlertingMangedElement	WBEM Path of SMX_SAStorageVolume Class
AlertingElementFormat	2 (CIMObjectPath)
AlertType	5 (Device Alert)
EventID	102
EventTime	Time of the event or time of the indication if event time unknown
ProviderName	HP Smart Array
RecommendedActions	Check for failed or removed physical drives.
SystemName	Name of the computer system generating the indication
SystemCreationClassName	CreationClassName of the computer system generating the indication
HP_AlertIndication	
Summary	Logical drive status error
EventCategory	6 (Primary Storage)
ProbableCause	86 (Disk Failure)
ProbableCauseDescription	Logical Drive Status Changed to Error
NetworkAddresses	Contains a list of all the IP addresses of the computer system generating the indication
OSType	SMX_OperatingSystem.OSType
OSVersion	The operating system version of the computer system generating the indication in the following format: *<major>.<minor>.<build>*
ProviderVersion	2.2.0.0
SystemFirmwareVersion	Firmware version of the computer system generating the indication
SystemSerialNumber	Serial number of the computer system generating the indication
SystemProductID	Product ID of the computer system generating the indication
SystemModel	Model name of the computer system generating the indication
SystemGUID	Platform GUID of the computer system generating the indication

4-4-6 SMX_SAStorageVolumeIndication: Logical Drive Status Changed to ERROR

Table 4-98 SMX_SAStorageVolumeIndication: Logical Drive Status Changed to ERROR

Property name	Property implementation
ImpactedDomain	3 (Enclosure) for c-Class blade systems 4 (System) for all other systems NOTE: When ImpactedDomain is 3 (Enclosure) the properties indicated with (*) are populated.
BladeBay *	HP_BladeCSLocation.LocationInformation[0]
BladeName *	HP_ComputerSystem.Name
EnclosureName *	HP_BladeEnclosureCS.Name
RackName *	Rack name if one exists
RackUID *	Rack Unique Identifier if one exists
SystemVirtualSerialNumber	Conditional property containing the virtual system serial number string when running in a Virtual Connect environment
SystemVirtualUUID	Conditional property containing the virtual system UUID when running in a Virtual Connect environment
HP_HardwareIndication	
HWLogicalLocation	**Logical drive number and RAID Level for example LogicalDrive 1 (Raid 1+0)**
VariableNames[]	FailureDescription
VariableTypes[]	String (1)
VariableValues[]	FailureDescription short description of the failure
HP_DeviceIndication	
SMX_StorageVolumeIndication	
DeviceOperationalStatus	Current OperationalStatus values for Storage Volume DeviceOperationalStatus[0]: SMX_SAStorageVolume.OperationalStatus[0] DeviceOperationalStatus[1]: SMX_SAStorageVolume.OperationalStatus[1] (This index is only populated if there is addional Vendor unique status available)

4-4-6 SMX_SAStorageVolumeIndication: Logical Drive Status Changed to ERROR

Table 4-98 SMX_SAStorageVolumeIndication: Logical Drive Status Changed to ERROR

Property name	Property implementation
DeviceOperationalStatusPrevious	Previous OperationalStatus values for Storage Volume DeviceOperationalStatusPrevious[0]: SMX_SAStorageVolume.OperationalStatus[0] DeviceOperationalStatusPrevious[1]: SMX_SAStorageVolume.OperationalStatus[1] (This index is only populated if there is addional Vendor unique status available)

4-4-7 SMX_SAStorageVolumeIndication: Logical Drive Status Changed to Degraded

Table 4-99 SMX_SAStorageVolumeIndication: Logical Drive Status Changed to Degraded

Property name	Property implementation
CIM_Indication	
IndicationIdentifier	GUID string generated at the time of indication
PerceivedSeverity	2 (Info)
IndicationTime	Time of indication
CIM_AlertIndication	
Description	A logical drive is in a degraded state, Device is still servicing I/O but redundancy may be degraded or lost
AlertingMangedElement	WBEM Path of SMX_SAStorageVolume Class
AlertingElementFormat	2 (CIMObjectPath)
AlertType	5 (Device Alert)
EventID	103
EventTime	Time of the event or time of the indication if event time unknown
ProviderName	HP Smart Array
RecommendedActions	Check status of physical drives. Degraded status may be caused by failed or missing physical drives, or a data recovery operation on one or more physical drives.
SystemName	Name of the computer system generating the indication

4-4-7 SMX_SAStorageVolumeIndication: Logical Drive Status Changed to Degraded

Table 4-99 SMX_SAStorageVolumeIndication: Logical Drive Status Changed to Degraded

Property name	Property implementation
SystemCreationClassName	CreationClassName of the computer system generating the indication
HP_AlertIndication	
Summary	Logical drive status in degraded state
EventCategory	6 (Primary Storage)
ProbableCause	86 (Disk Failure)
ProbableCauseDescription	Logical State Changed to Degraded
NetworkAddresses	Contains a list of all the IP addresses of the computer system generating the indication
OSType	SMX_OperatingSystem.OSType
OSVersion	The operating system version of the computer system generating the indication in the following format: *<major>.<minor>.<build>*
ProviderVersion	2.2.0.0
SystemFirmwareVersion	Firmware version of the computer system generating the indication
SystemSerialNumber	Serial number of the computer system generating the indication
SystemProductID	Product ID of the computer system generating the indication
SystemModel	Model name of the computer system generating the indication
SystemGUID	Platform GUID of the computer system generating the indication
ImpactedDomain	3 (Enclosure) for c-Class blade systems 4 (System) for all other systems Note: When ImpactedDomain is 3 (Enclosure) the properties indicated with (*) are populated.
BladeBay *	HP_BladeCSLocation.LocationInformation[0]
BladeName *	HP_ComputerSystem.Name
EnclosureName *	HP_BladeEnclosureCS.Name
RackName *	Rack name if one exists
RackUID *	Rack Unique Identifier if one exists

4-4-7 SMX_SAStorageVolumeIndication: Logical Drive Status Changed to Degraded

Table 4-99 SMX_SAStorageVolumeIndication: Logical Drive Status Changed to Degraded

Property name	Property implementation
SystemVirtualSerialNumber	Conditional property containing the virtual system serial number string when running in a Virtual Connect environment
SystemVirtualUUID	Conditional property containing the virtual system UUID when running in a Virtual Connect environment
HP_HardwareIndication	
HWHWLogicalLocation	**Logical drive number and RAID Level for example LogicalDrive 1 (Raid 1+0)**
VariableNames[]	FailureDescription
VariableTypes[]	String (1)
VariableValues[]	FailureDescription short description of the failure
HP_DeviceIndication	
SMX_SAStorageVolumeIndication	
DeviceOperationalStatus	Current OperationalStatus values for Storage Volume DeviceOperationalStatus[0]: SMX_SAStorageVolume.OperationalStatus[0] DeviceOperationalStatus[1]: SMX_SAStorageVolume.OperationalStatus[1] (This index is only populated if there is addional Vendor unique status available)
DeviceOperationalStatusPrevious	Previous OperationalStatus values for Storage Volume DeviceOperationalStatusPrevious[0]: SMX_SAStorageVolume.OperationalStatus[0] DeviceOperationalStatusPrevious[1]: SMX_SAStorageVolume.OperationalStatus[1] (This index is only populated if there is addional Vendor unique status available)

4-4-8 HP_DeviceIndication: Controller Status Changed to OK

Table 4-100 HP_DeviceIndication: Controller Status Changed to OK

Property name	Property implementation
CIM_Indication	
IndicationIdentifier	GUID string generated at the time of indication
PerceivedSeverity	2 (Informational)
IndicationTime	Time of indication
CIM_AlertIndication	
Description	A Smart Array controller status has changed from non-OK to OK.
AlertingMangedElement	WBEM Path to SMX_SAArrayController class.
AlertingElementFormat	2 (CIMObjectPath)
AlertType	5 (Device Alert)
EventID	1
EventTime	Time of the event or time of the indication if event time unknown
ProviderName	HP Smart Array
RecommendedActions	No action is recommended.
SystemName	Name of the computer system generating the indication
SystemCreationClassName	CreationClassName of the computer system generating the indication
HP_AlertIndication	
Summary	Controller status OK
EventCategory	6 (Primary Storage)
ProbableCause	1 (Other)
ProbableCauseDescription	Array Controller Status Changed to OK
NetworkAddresses	Contains a list of all the IP addresses of the computer system generating the indication
OSType	SMX_OperatingSystem.OSType
OSVersion	The operating system version of the computer system generating the indication in the following format: *<major>.<minor>.<build>*
ProviderVersion	2.2.0.0
SystemFirmwareVersion	Firmware version of the computer system generating the indication
SystemSerialNumber	Serial number of the computer system generating the indication
SystemProductID	Product ID of the computer system generating the indication
SystemModel	Model name of the computer system generating the indication

4-4-8 HP_DeviceIndication: Controller Status Changed to OK

Table 4-100 HP_DeviceIndication: Controller Status Changed to OK

Property name	Property implementation
SystemGUID	Platform GUID of the computer system generating the indication
ImpactedDomain	3 (Enclosure) for c-Class blade systems 4 (System) for all other systems Note: When ImpactedDomain is 3 (Enclosure) the properties indicated with (*) are populated.
BladeBay *	HP_BladeCSLocation.LocationInformation[0]
BladeName *	HP_ComputerSystem.Name
EnclosureName *	HP_BladeEnclosureCS.Name
RackName *	Rack name if one exists
RackUID *	Rack Unique Identifier if one exists
SystemVirtualSerialNumber	Conditional property containing the virtual system serial number string when running in a Virtual Connect environment
SystemVirtualUUID	Conditional property containing the virtual system UUID when running in a Virtual Connect environment
HP_HardwareIndication	
HWFirmwareVersion	Array Controller F/W version string
HWLogicalLocation	Array Controller Location string For example, Smart Array P600 in Slot 5
HWManufacturer	Array Controller Manufacturer string
HWSerialNumber	Array Controller Serial Number
VariableNames[]	FailureDescription CacheSizeTotal CacheSerialNumber
VariableTypes[]	String (1) uint32 (5)
VariableValues[]	FailureDescription short description of the failure CacheSizeTotal HPSA_ArrayController.CacheSizeTotal CacheSerialNumber HPSA_ArrayController.CacheSerialNumber
HP_DeviceIndication	
DeviceModel	Array Controller Model string

4-4-9 HP_DeviceIndication: Controller Status Changed to ERROR

Table 4-101 HP_DeviceIndication: Controller Status Changed to ERROR

Property name	Property implementation
CIM_Indication	
IndicationIdentifier	GUID string generated at the time of indication
PerceivedSeverity	5 (Major)
IndicationTime	Time of indication
CIM_AlertIndication	
Description	A Smart Array controller status has changed to Error.
AlertingMangedElement	WBEM Path to SMX_SAArrayController class.
AlertingElementFormat	2 (CIMObjectPath)
AlertType	5 (Device Alert)
EventID	2
EventTime	Time of the event or time of the indication if event time unknown
ProviderName	HP Smart Array
RecommendedActions	Check controller status and run diagnostics.
SystemName	Name of the computer system generating the indication
SystemCreationClassName	CreationClassName of the computer system generating the indication
HP_AlertIndication	
Summary	Controller status Error
EventCategory	6 (Primary Storage)
ProbableCause	24 (I/O device error))
ProbableCauseDescription	Array Controller Status Changed to Error
NetworkAddresses	Contains a list of all the IP addresses of the computer system generating the indication
OSType	SMX_OperatingSystem.OSType
OSVersion	The operating system version of the computer system generating the indication in the following format: *<major>.<minor>.<build>*
ProviderVersion	2.2.0.0
SystemFirmwareVersion	Firmware version of the computer system generating the indication

4-4-9 HP_DeviceIndication: Controller Status Changed to ERROR

Table 4-101 HP_DeviceIndication: Controller Status Changed to ERROR

Property name	Property implementation
SystemSerialNumber	Serial number of the computer system generating the indication
SystemProductID	Product ID of the computer system generating the indication
SystemModel	Model name of the computer system generating the indication
SystemGUID	Platform GUID of the computer system generating the indication
ImpactedDomain	3 (Enclosure) for c-Class blade systems 4 (System) for all other systems Note: When ImpactedDomain is 3 (Enclosure) the properties indicated with (*) are populated.
BladeBay *	HP_BladeCSLocation.LocationInformation[0]
BladeName *	HP_ComputerSystem.Name
EnclosureName *	HP_BladeEnclosureCS.Name
RackName *	Rack name if one exists
RackUID *	Rack Unique Identifier if one exists
SystemVirtualSerialNumber	Conditional property containing the virtual system serial number string when running in a Virtual Connect environment
SystemVirtualUUID	Conditional property containing the virtual system UUID when running in a Virtual Connect environment
HP_HardwareIndication	
HWFirmwareVersion	Array Controller F/W version string
HWLogicalLocation	Array Controller Location string For example, Smart Array P600 in Slot 5 Smart Array P400 Embedded Controller=7" for embedded controller where 7 is the internal identifier for the embedded controller
HWManufacturer	Array Controller Manufacturer string
HWSerialNumber	Array Controller Serial Number
VariableNames[]	FailureDescription CacheSizeTotal CacheSerialNumber

4-4-9 HP_DeviceIndication: Controller Status Changed to ERROR

Table 4-101 HP_DeviceIndication: Controller Status Changed to ERROR

Property name	Property implementation
VariableTypes[]	String (1) uint32 (5)
VariableValues[]	FailureDescription short description of the failure CacheSizeTotal HPSA_ArrayController.CacheSizeTotal CacheSerialNumber HPSA_ArrayController.CacheSerialNumber
HP_DeviceIndication	
DeviceModel	Array Controller Model string

4-4-10 HP_DeviceIndication: Controller Battery Status Change - OK

Table 4-102 HP_DeviceIndication: Controller Battery Status Change - OK

Property name	Property implementation
CIM_Indication	
IndicationIdentifier	GUID string generated at indication
PerceivedSeverity	2 (info)
IndicationTime	Time of indication
CIM_AlertIndication	
Description	Array Controller Battery Status has changed to a status of OK.
AlertingMangedElement	WBEM path to the SMX_SAArrayController class.
AlertingElementFormat	2 (CIMObjectPath)
AlertType	5 (Device Alert)
EventID	6
EventTime	Time of the event or time of the indication if event time unknown
ProviderName	HP SmartArray
RecommendedActions	No action needed.
SystemName	Name of the computer system generating the indication
SystemCreationClassName	CreationClassName of the computer system generating the indication

4-4-10 HP_DeviceIndication: Controller Battery Status Change - OK

Table 4-102 HP_DeviceIndication: Controller Battery Status Change - OK

Property name	Property implementation
HP_AlertIndication	
Summary	Controller battery status change to OK
EventCategory	6 (Primary Storage)
ProbableCause	1 (other)
ProbableCauseDescription	Controller Battery Status Changed to OK
NetworkAddresses	Contains a list of all the IP addresses (IPv4 and IPv6) of the computer system generating the indication
OSType	SMX_OperatingSystem.OSType
OSVersion	Operating system version of the computer system generating the indication in the format, <*major*>.<*minor*>.<*build*>
ProviderVersion	2.2.0.0
SystemFirmwareVersion	Firmware version of the computer system generating the indication
SystemSerialNumber	Serial number of the computer system generating the indication
SystemProductID	Product ID of the computer system generating the indication
SystemModel	Model name of the computer system generating the indication
SystemGUID	Platform GUID of the computer system generating the indication
ImpactedDomain	3 (Enclosure) for c-Class blade systems 4 (System) for all other systems When ImpactedDomain is 3 (Enclosure), the properties indicated with (*) are populated.
BladeBay *	HP_BladeCSLocation.LocationInformation[0]
BladeName *	HP_ComputerSystem.Name
EnclosureName *	HP_BladeEnclosureCS.Name
RackName *	Rack name if one exists
RackUID *	Rack Unique Identifier if one exists
SystemVirtualSerialNumber	Conditional property containing the virtual system serial number string when running in a Virtual Connect environment

4-4-10 HP_DeviceIndication: Controller Battery Status Change - OK

Table 4-102 HP_DeviceIndication: Controller Battery Status Change - OK

Property name	Property implementation
SystemVirtualUUID	Conditional property containing the virtual system UUID when running in a Virtual Connect environment
HP_HardwareIndication	
HWFirmwareVersion	Array Controller firmware version string
HWLogicalLocation	Array Controller Location string For example, Smart Array P600 in Slot 5 Smart Array P400 Embedded Controller=7" for embedded controller where 7 is the internal identifier for the embedded controller
HWManufacturer	Array Controller Manufacturer string
HWSerialNumber	Array Controller Serial Number
VariableNames[]	FailureDescription CacheSizeTotal CacheSerialNumber
VariableTypes[]	String (1) uint32 (5)
VariableValues[]	FailureDescription short description of the failure CacheSizeTotal HPSA_ArrayController.CacheSizeTotal CacheSerialNumber HPSA_ArrayController.CacheSerialNumber
HP_DeviceIndication	
DeviceModel	Array Controller Model string

4-4-11 HP_DeviceIndication: Controller Battery status changed to not fully charged

Table 4-103 HP_DeviceIndication: Controller Battery status changed to not fully charged

Property name	Property implementation
CIM_Indication	
IndicationIdentifier	GUID string generated at indication
PerceivedSeverity	3 (Warning)
IndicationTime	Time of indication
CIM_AlertIndication	

4-4-11 HP_DeviceIndication: Controller Battery status changed to not fully charged

Table 4-103 HP_DeviceIndication: Controller Battery status changed to not fully charged

Property name	Property implementation
Description	A Smart Array controller Battery status has changed to Not Fully Charged.
AlertingMangedElement	WBEM path to the SMX_SAArrayController class.
AlertingElementFormat	2 (CIMObjectPath)
AlertType	5 (Device Alert)
EventID	7
EventTime	Time of the event or time of the indication if event time unknown
ProviderName	HP Smart Array
RecommendedActions	Check Battery operation allow time for the battery to become fully charged.
SystemName	Name of the computer system generating the indication
SystemCreationClassName	CreationClassName of the computer system generating the indication
HP_AlertIndication	
Summary	Controller Battery Status set to Not fully charged
EventCategory	6 (Primary Storage)
ProbableCause	99 (low battery)
ProbableCauseDescription	Controller Battery Status Changed to Not Fully Charged
NetworkAddresses	Contains a list of all the IP addresses of the computer system generating the indication
OSType	SMX_OperatingSystem.OSType
OSVersion	Operating system version of the computer system generating the indication in the format, <*major*>.<*minor*>.<*build*>
ProviderVersion	2.2.0.0
SystemFirmwareVersion	Firmware version of the computer system generating the indication
SystemSerialNumber	Serial number of the computer system generating the indication
SystemProductID	Product ID of the computer system generating the indication

4-4-11 HP_DeviceIndication: Controller Battery status changed to not fully charged

Table 4-103 HP_DeviceIndication: Controller Battery status changed to not fully charged

Property name	Property implementation
SystemModel	Model name of the computer system generating the indication
SystemGUID	Platform GUID of the computer system generating the indication
ImpactedDomain	3 (Enclosure) for c-Class blade systems 4 (System) for all other systems When ImpactedDomain is 3 (Enclosure), the properties indicated with (*) are populated.
BladeBay *	HP_BladeCSLocation.LocationInformation[0]
BladeName *	HP_ComputerSystem.Name
EnclosureName *	HP_BladeEnclosureCS.Name
RackName *	Rack name if one exists
RackUID *	Rack Unique Identifier if one exists
SystemVirtualSerialNumber	Conditional property containing the virtual system serial number string when running in a Virtual Connect environment
SystemVirtualUUID	Conditional property containing the virtual system UUID when running in a Virtual Connect environment
HP_HardwareIndication	
HWFirmwareVersion	Array Controller firmware version string
HWLogicalLocation	Array Controller Location string For example, Smart Array P600 in Slot 5 Smart Array P400 Embedded Controller=7" for embedded controller where 7 is the internal identifier for the embedded controller
HWManufacturer	Array Controller Manufacturer string
HWSerialNumber	Array Controller Serial Number
VariableNames[]	FailureDescription CacheSizeTotal CacheSerialNumber
VariableTypes[]	String (1) uint32 (5)
VariableValues[]	FailureDescription short description of the failure CacheSizeTotal HPSA_ArrayController.CacheSizeTotal CacheSerialNumber HPSA_ArrayController.CacheSerialNumber

4-4-11 HP_DeviceIndication: Controller Battery status changed to not fully charged

Table 4-103 HP_DeviceIndication: Controller Battery status changed to not fully charged

Property name	Property implementation
HP_DeviceIndication	
DeviceModel	Array Controller Model string

4-4-12 HP_DeviceIndication: Controller Battery status changed to Failed

Table 4-104 HP_DeviceIndication: Controller Battery status changed to Failed

Property name	Property implementation
CIM_Indication	
IndicationIdentifier	GUID string generated at the time of indication
PerceivedSeverity	5 (major)
IndicationTime	Time of indication
CIM_AlertIndication	
Description	A Smart Array controller battery status changed to Failed.
AlertingMangedElement	WBEM Path to SMX_SAArrayController class.
AlertingElementFormat	2 (CIMObjectPath)
AlertType	5 (Device Alert)
EventID	8
EventTime	Time of the event or time of the indication if event time unknown
ProviderName	HP SmartArray
RecommendedActions	Check battery connection - replace if necessary.
SystemName	Name of the computer system generating the indication
SystemCreationClassName	CreationClassName of the computer system generating the indication
HP_AlertIndication	
Summary	Controller Battery Status set to Failed.
EventCategory	6 (Primary Storage)
ProbableCause	92 (battery failure)

4-4-12 HP_DeviceIndication: Controller Battery status changed to Failed

Table 4-104 HP_DeviceIndication: Controller Battery status changed to Failed

Property name	Property implementation
ProbableCauseDescription	Controller Battery Status Changed to Failed
NetworkAddresses	Contains a list of all the IP addresses of the computer system generating the indication
OSType	SMX_OperatingSystem.OSType
OSVersion	Operating system version of the computer system generating the indication in the format, <*major*>.<*minor*>.<*build*>
ProviderVersion	2.2.0.0
SystemFirmwareVersion	Firmware version of the computer system generating the indication
SystemSerialNumber	Serial number of the computer system generating the indication
SystemProductID	Product ID of the computer system generating the indication
SystemModel	Model name of the computer system generating the indication
SystemGUID	Platform GUID of the computer system generating the indication
ImpactedDomain	3 (Enclosure) for c-Class blade systems 4 (System) for all other systems When ImpactedDomain is 3 (Enclosure), the properties indicated with (*) are populated.
BladeBay *	HP_BladeCSLocation.LocationInformation[0]
BladeName *	HP_ComputerSystem.Name
EnclosureName *	HP_BladeEnclosureCS.Name
RackName *	Rack name if one exists
RackUID *	Rack Unique Identifier if one exists
SystemVirtualSerialNumber	Conditional property containing the virtual system serial number string when running in a Virtual Connect environment
SystemVirtualUUID	Conditional property containing the virtual system UUID when running in a Virtual Connect environment
HP_HardwareIndication	
HWFirmwareVersion	Array Controller firmware version string

4-4-12 HP_DeviceIndication: Controller Battery status changed to Failed

Table 4-104 HP_DeviceIndication: Controller Battery status changed to Failed

Property name	Property implementation
HWLogicalLocation	Array Controller Location string For example, Smart Array P600 in Slot 5 Smart Array P400 Embedded Controller=7" for embedded controller where 7 is the internal identifier for the embedded controller
HWManufacturer	Array Controller Manufacturer string
HWSerialNumber	Array Controller Serial Number
VariableNames[]	FailureDescription CacheSizeTotal CacheSerialNumber
VariableTypes[]	String (1) uint32 (5)
VariableValues[]	FailureDescription short description of the failure CacheSizeTotal HPSA_ArrayController.CacheSizeTotal CacheSerialNumber HPSA_ArrayController.CacheSerialNumber
HP_DeviceIndication	
DeviceModel	Array Controller Model string

4-4-13 HP_DeviceIndication: Controller Cache Status - OK

Table 4-105 HP_DeviceIndication: Controller Cache status changed to OK

Property name	Property implementation
CIM_Indication	
IndicationIdentifier	GUID string generated at the time of indication
PerceivedSeverity	2 (Info)
IndicationTime	Time of indication
CIM_AlertIndication	
Description	Smart Array Controller Cache Status has changed to a status of OK.
AlertingMangedElement	WBEM path to the SMX_SAArrayController class.
AlertingElementFormat	2 (CIMObjectPath)

4-4-13 HP_DeviceIndication: Controller Cache Status - OK

Table 4-105 HP_DeviceIndication: Controller Cache status changed to OK

Property name	Property implementation
AlertType	5 (Device Alert)
EventID	9
EventTime	Time of the event or time of the indication if event time unknown
ProviderName	HP SmartArray
RecommendedActions	No Action required
SystemName	Name of the computer system generating the indication
SystemCreationClassName	CreationClassName of the computer system generating the indication
HP_AlertIndication	
Summary	Array Controller Cache Status changed to OK.
EventCategory	6 (Primary Storage)
ProbableCause	0
ProbableCauseDescription	Controller Cache Status Changed to OK
NetworkAddresses	Contains a list of all the IP addresses of the computer system generating the indication
OSType	SMX_OperatingSystem.OSType
OSVersion	Operating system version of the computer system generating the indication in the format, <*major*>.<*minor*>.<*build*>
ProviderVersion	2.2.0.0
SystemFirmwareVersion	Firmware version of the computer system generating the indication
SystemSerialNumber	Serial number of the computer system generating the indication
SystemProductID	Product ID of the computer system generating the indication
SystemModel	Model name of the computer system generating the indication
SystemGUID	Platform GUID of the computer system generating the indication
ImpactedDomain	3 (Enclosure) for c-Class blade systems 4 (System) for all other systems When ImpactedDomain is 3 (Enclosure), the properties indicated with (*) are populated.

4-4-13 HP_DeviceIndication: Controller Cache Status - OK

Table 4-105 HP_DeviceIndication: Controller Cache status changed to OK

Property name	Property implementation
BladeBay *	HP_BladeCSLocation.LocationInformation[0]
BladeName *	HP_ComputerSystem.Name
EnclosureName *	HP_BladeEnclosureCS.Name
RackName *	Rack name if one exists
RackUID *	Rack Unique Identifier if one exists
SystemVirtualSerialNumber	Conditional property containing the virtual system serial number string when running in a Virtual Connect environment
SystemVirtualUUID	Conditional property containing the virtual system UUID when running in a Virtual Connect environment
HP_HardwareIndication	
HWFirmwareVersion	Array Controller firmware version string
HWLogicalLocation	Array Controller Location string For example, Smart Array P600 in Slot 5 Smart Array P400 Embedded Controller=7" for embedded controller where 7 is the internal identifier for the embedded controller
HWManufacturer	Array Controller Manufacturer string
HWSerialNumber	Array Controller Serial Number
VariableNames[]	FailureDescription CacheSizeTotal CacheSerialNumber
VariableTypes[]	String (1) uint32 (5)
VariableValues[]	FailureDescription short description of the failure CacheSizeTotal HPSA_ArrayController.CacheSizeTotal CacheSerialNumber HPSA_ArrayController.CacheSerialNumber
HP_DeviceIndication	
DeviceModel	Array Controller Model string

4-4-14 HP_DeviceIndication: Controller Cache status—Temporarily Disabled

Table 4-106 HP_DeviceIndication: Controller Cache status—Temporarily Disabled

Property name	Property implementation
CIM_Indication	
IndicationIdentifier	GUID string generated at the time of indication
PerceivedSeverity	2 (Info)
IndicationTime	Time of indication
CIM_AlertIndication	
Description	Smart Array Controller Cache Status is set to a status of Temporarily Disabled. This may be caused by a rebuild or configuration change, normal operation will return after background operations have completed.
AlertingMangedElement	WBEM path to the SMX_SAArrayController class.
AlertingElementFormat	2 (CIMObjectPath)
AlertType	5 (Device Alert)
EventID	10
EventTime	Time of the event or time of the indication if event time is unknown
ProviderName	HP SmartArray
RecommendedActions	No Action required
SystemName	Name of the computer system generating the indication
SystemCreationClassName	CreationClassName of the computer system generating the indication
HP_AlertIndication	
Summary	Array Controller Cache Status is set to Temporarily Disabled.
EventCategory	6 (Primary Storage)
ProbableCause	35 (Performance Degraded)
ProbableCauseDescription	Array Controller Cache Status Changed to Temporarily Disabled
NetworkAddresses	Contains a list of all the IP addresses of the computer system generating the indication
OSType	SMX_OperatingSystem.OSType
OSVersion	Operating system version of the computer system generating the indication in the format, <*major*>.<*minor*>.<*build*>
ProviderVersion	2.2.0.0

4-4-14 HP_DeviceIndication: Controller Cache status—Temporarily Disabled

Table 4-106 HP_DeviceIndication: Controller Cache status—Temporarily Disabled

Property name	Property implementation
SystemFirmwareVersion	Firmware version of the computer system generating the indication
SystemSerialNumber	Serial number of the computer system generating the indication
SystemProductID	Product ID of the computer system generating the indication
SystemModel	Model name of the computer system generating the indication
SystemGUID	Platform GUID of the computer system generating the indication
ImpactedDomain	3 (Enclosure) for c-Class blade systems 4 (System) for all other systems Note: When ImpactedDomain is 3 (Enclosure), the properties indicated with (*) are populated.
BladeBay *	HP_BladeCSLocation.LocationInformation[0]
BladeName *	HP_ComputerSystem.Name
EnclosureName *	HP_BladeEnclosureCS.Name
RackName *	Rack name if one exists
RackUID *	Rack Unique Identifier if one exists
SystemVirtualSerialNumber	Conditional property containing the virtual system serial number string when running in a Virtual Connect environment
SystemVirtualUUID	Conditional property containing the virtual system UUID when running in a Virtual Connect environment
HP_HardwareIndication	
HWFirmwareVersion	Array Controller firmware version string
HWLogicalLocation	Array Controller Location string For example, Smart Array P600 in Slot 5 Smart Array P400 Embedded Controller=7” for embedded controller where 7 is the internal identifier for the embedded controller
HWManufacturer	Array Controller Manufacturer string
HWSerialNumber	Array Controller Serial Number
VariableNames[]	FailureDescription CacheSizeTotal CacheSerialNumber

4-4-14 HP_DeviceIndication: Controller Cache status—Temporarily Disabled

Table 4-106 HP_DeviceIndication: Controller Cache status—Temporarily Disabled

Property name	Property implementation
VariableTypes[]	String (1) uint32 (5)
VariableValues[]	FailureDescription short description of the failure CacheSizeTotal HPSA_ArrayController.CacheSizeTotal CacheSerialNumber HPSA_ArrayController.CacheSerialNumber
HP_DeviceIndication	
DeviceModel	Array Controller Model string

4-4-15 HP_DeviceIndication: Controller Cache status—Permanently Disabled

Table 4-107 HP_DeviceIndication: Controller Cache status—Permanently Disabled

Property name	Property implementation
CIM_Indication	
IndicationIdentifier	GUID string generated at the time of indication
PerceivedSeverity	3 (Warning)
IndicationTime	Time of indication
CIM_AlertIndication	
Description	Array Controller Cache Status is set to a status of Permanently Disabled. Controller has detected a problem with the cache and has disabled the cache permanently.
AlertingMangedElement	WBEM path to the SMX_SAArrayController class.
AlertingElementFormat	2 (CIMObjectPath)
AlertType	5 (Device Alert)
EventID	11
EventTime	Time of the event or time of the indication if event time is unknown
ProviderName	HP SmartArray
RecommendedActions	Check Cache controller error code. Run diagnostics.
SystemName	Name of the computer system generating the indication
SystemCreationClassName	CreationClassName of the computer system generating the indication

4-4-15 HP_DeviceIndication: Controller Cache status—Permanently Disabled

Table 4-107 HP_DeviceIndication: Controller Cache status—Permanently Disabled

Property name	Property implementation
HP_AlertIndication	
Summary	Array Controller Cache Status is Permanently Disabled.
EventCategory	6 (Primary Storage)
ProbableCause	35 (Performance Degraded)
ProbableCauseDescription	Array Controller Cache Status Changed to Permanently Disabled
NetworkAddresses	Contains a list of all the IP addresses of the computer system generating the indication
OSType	SMX_OperatingSystem.OSType
OSVersion	Operating system version of the computer system generating the indication in the format, <*major*>.<*minor*>.<*build*>
ProviderVersion	2.2.0.0
SystemFirmwareVersion	Firmware version of the computer system generating the indication
SystemSerialNumber	Serial number of the computer system generating the indication
SystemProductID	Product ID of the computer system generating the indication
SystemModel	Model name of the computer system generating the indication
SystemGUID	Platform GUID of the computer system generating the indication
ImpactedDomain	3 (Enclosure) for c-Class blade systems 4 (System) for all other systems When ImpactedDomain is 3 (Enclosure), the properties indicated with (*) are populated.
BladeBay *	HP_BladeCSLocation.LocationInformation[0]
BladeName *	HP_ComputerSystem.Name
EnclosureName *	HP_BladeEnclosureCS.Name
RackName *	Rack name if one exists
RackUID *	Rack Unique Identifier if one exists
SystemVirtualSerialNumber	Conditional property containing the virtual system serial number string when running in a Virtual Connect environment
SystemVirtualUUID	Conditional property containing the virtual system UUID when running in a Virtual Connect environment

4-4-15 HP_DeviceIndication: Controller Cache status—Permanently Disabled

Table 4-107 HP_DeviceIndication: Controller Cache status—Permanently Disabled

Property name	Property implementation
HP_HardwareIndication	
HWFirmwareVersion	Array Controller firmware version string
HWLogicalLocation	Array Controller Location string For example, Smart Array P600 in Slot 5 Smart Array P400 Embedded Controller=7" for embedded controller where 7 is the internal identifier for the embedded controller
HWManufacturer	Array Controller Manufacturer string
HWSerialNumber	Array Controller Serial Number
VariableNames[]	FailureDescription CacheSizeTotal CacheSerialNumber
VariableTypes[]	String (1) uint32 (5)
VariableValues[]	FailureDescription short description of the failure CacheSizeTotal HPSA_ArrayController.CacheSizeTotal CacheSerialNumber HPSA_ArrayController.CacheSerialNumber
HP_DeviceIndication	
DeviceModel	Array Controller Model string

4-4-16 HP_DeviceIndication: Enclosure Power Supply status changed to Non Redundant

Table 4-108 HP_DeviceIndication: Enclosure Power Supply status changed to Non Redundant

Property name	Property implementation
CIM_Indication	
IndicationIdentifier	GUID string generated at the time of indication
PerceivedSeverity	3 (Warning)
IndicationTime	Time of indication
CIM_AlertIndication	
Description	Storage Enclosure Power Subsystem status has changed to a Non Redundant Status
AlertingMangedElement	WBEM path of the SMX_SAStorageEnclosureProcessor

4-4-16 HP_DeviceIndication: Enclosure Power Supply status changed to Non Redundant

Table 4-108 HP_DeviceIndication: Enclosure Power Supply status changed to Non Redundant

Property name	Property implementation
AlertingElementFormat	2 (CIMObjectPath)
AlertType	5 (Device Alert)
EventID	301
EventTime	Time of the event or time of the indication if event time unknown
ProviderName	HP SmartArray
RecommendedActions	Check status of all enclosure power supplies. Problem may be caused by a failed power supply. Add or replace power supplies as necessary.
SystemName	Name of the computer system generating the indication
SystemCreationClassName	CreationClassName of the computer system generating the indication
HP_AlertIndication	
Summary	Power Supply Status changed to Non-Redundant.
EventCategory	17 (Primary Storage Power)
ProbableCause	89 (Power Supply Failure)
ProbableCauseDescription	Redundant Power Supply Status Changed to Non-Redundant
NetworkAddresses	Contains a list of all the IP addresses of the computer system generating the indication
OSType	SMX_OperatingSystem.OSType
OSVersion	Operating system version of the computer system generating the indication in the format, <*major*>.<*minor*>.<*build*>
ProviderVersion	2.2.0.0
SystemFirmwareVersion	Firmware version of the computer system generating the indication
SystemSerialNumber	Serial number of the computer system generating the indication
SystemProductID	Product ID of the computer system generating the indication
SystemModel	Model name of the computer system generating the indication
SystemGUID	Platform GUID of the computer system generating the indication

4-4-16 HP_DeviceIndication: Enclosure Power Supply status changed to Non Redundant

Table 4-108 HP_DeviceIndication: Enclosure Power Supply status changed to Non Redundant

Property name	Property implementation
ImpactedDomain	3 (Enclosure) for c-Class blade systems 4 (System) for all other systems When ImpactedDomain is 3 (Enclosure), the properties indicated with (*) are populated.
BladeBay *	HP_BladeCSLocation.LocationInformation[0]
BladeName *	HP_ComputerSystem.Name
EnclosureName *	HP_BladeEnclosureCS.Name
RackName *	Rack name if one exists
RackUID *	Rack Unique Identifier if one exists
SystemVirtualSerialNumber	Conditional property containing the virtual system serial number string when running in a Virtual Connect environment
SystemVirtualUUID	Conditional property containing the virtual system UUID when running in a Virtual Connect environment
HP_HardwareIndication	
HWLogicalLocation	Enclosure Location string For example, Port 1I Box 1
HWSerialNumber	Enclosure Serial Number
HP_DeviceIndication	
DeviceModel	Enclosure Model string

4-4-17 HP_DeviceIndication: Enclosure Power Supply status changed to OK (Redundant)

Table 4-109 HP_DeviceIndication: Enclosure Power Supply status changed to OK (Redundant)

Property name	Property implementation
CIM_Indication	
IndicationIdentifier	GUID string generated at the time of indication
PerceivedSeverity	2 (Info)
IndicationTime	Time of indication
CIM_AlertIndication	

4-4-17 HP_DeviceIndication: Enclosure Power Supply status changed to OK (Redundant)

Table 4-109 HP_DeviceIndication: Enclosure Power Supply status changed to OK (Redundant)

Property name	Property implementation
Description	A Storage Enclosure Power Subsystem has changed to Fully Redundant
AlertingMangedElement	WBEM Path of SMX_SAStorageEnclosureProcessor
AlertingElementFormat	2 (CIMObjectPath)
AlertType	5 (Device Alert)
EventID	302
EventTime	Time of the event or time of the indication if event time unknown
ProviderName	HP SmartArray
RecommendedActions	No action required.
SystemName	Name of the computer system generating the indication
SystemCreationClassName	CreationClassName of the computer system generating the indication
HP_AlertIndication	
Summary	Power Supply Status changed to OK – Redundant Power Supply
EventCategory	17 (Primary Storage Power)
ProbableCause	1 (Other)
ProbableCauseDescription	Redundant Power Supply Status Changed to OK
NetworkAddresses	Contains a list of all the IP addresses (IPv4 and IPv6) of the computer system generating the indication
OSType	SMX_OperatingSystem.OSType
OSVersion	Operating system version of the computer system generating the indication in the format, <*major*>.<*minor*>.<*build*>
ProviderVersion	2.2.0.0
SystemFirmwareVersion	Firmware version of the computer system generating the indication
SystemSerialNumber	Serial number of the computer system generating the indication
SystemProductID	Product ID of the computer system generating the indication
SystemModel	Model name of the computer system generating the indication

4-4-17 HP_DeviceIndication: Enclosure Power Supply status changed to OK (Redundant)

Table 4-109 HP_DeviceIndication: Enclosure Power Supply status changed to OK (Redundant)

Property name	Property implementation
SystemGUID	Platform GUID of the computer system generating the indication
ImpactedDomain	3 (Enclosure) for c-Class blade systems 4 (System) for all other systems When ImpactedDomain is 3 (Enclosure), the properties indicated with (*) are populated.
BladeBay *	HP_BladeCSLocation.LocationInformation[0]
BladeName *	HP_ComputerSystem.Name
EnclosureName *	HP_BladeEnclosureCS.Name
RackName *	Rack name if one exists
RackUID *	Rack Unique Identifier if one exists
SystemVirtualSerialNumber	Conditional property containing the virtual system serial number string when running in a Virtual Connect environment
SystemVirtualUUID	Conditional property containing the virtual system UUID when running in a Virtual Connect environment
HP_HardwareIndication	
HWLogicalLocation	Enclosure Location string For example, Port 1I Box 1
HWSerialNumber	Enclosure Serial Number
HP_DeviceIndication	
DeviceModel	Enclosure Model string

4-4-18 HP_DeviceIndication: Enclosure Power Supply status changed to Redundant Degraded

Table 4-110 HP_DeviceIndication: Enclosure Power Supply status changed to Redundant Degraded

Property name	Property implementation
CIM_Indication	
IndicationIdentifier	GUID string generated at indication
PerceivedSeverity	3 (Warning)
IndicationTime	Time of indication

4-4-18 HP_DeviceIndication: Enclosure Power Supply status changed to Redundant Degraded

Table 4-110 HP_DeviceIndication: Enclosure Power Supply status changed to Redundant Degraded

Property name	Property implementation
CIM_AlertIndication	
Description	A Storage Enclosure Power Subsystem has changed to Degraded Redundancy.
AlertingMangedElement	WBEM Path of SMX_SAStorageEnclosureProcessor
AlertingElementFormat	2 (CIMObjectPath)
AlertType	5 (Device Alert)
EventID	303
EventTime	Time of the event or time of the indication if event time unknown
ProviderName	HP SmartArray
RecommendedActions	Check status of all enclosure power supplies. Ensure that power supplies have not failed. Add or replace power supplies as necessary.
SystemName	Name of the computer system generating the indication
SystemCreationClassName	CreationClassName of the computer system generating the indication
HP_AlertIndication	
Summary	Power Supply Status changed to Redundant Degraded.
EventCategory	17 (Primary Storage Power)
ProbableCause	89 (Power supply failure)
ProbableCauseDescription	Redundant Power Supply Degraded
NetworkAddresses	Contains a list of all the IP addresses of the computer system generating the indication
OSType	SMX_OperatingSystem.OSType
OSVersion	Operating system version of the computer system generating the indication in the format, <*major*>.<*minor*>.<*build*>
ProviderVersion	2.2.0.0
SystemFirmwareVersion	Firmware version of the computer system generating the indication
SystemSerialNumber	Serial number of the computer system generating the indication
SystemProductID	Product ID of the computer system generating the indication

4-4-18 HP_DeviceIndication: Enclosure Power Supply status changed to Redundant Degraded

Table 4-110 HP_DeviceIndication: Enclosure Power Supply status changed to Redundant Degraded

Property name	Property implementation
SystemModel	Model name of the computer system generating the indication
SystemGUID	Platform GUID of the computer system generating the indication
ImpactedDomain	3 (Enclosure) for c-Class blade systems 4 (System) for all other systems When ImpactedDomain is 3 (Enclosure), the properties indicated with (*) are populated.
BladeBay *	HP_BladeCSLocation.LocationInformation[0]
BladeName *	HP_ComputerSystem.Name
EnclosureName *	HP_BladeEnclosureCS.Name
RackName *	Rack name if one exists
RackUID *	Rack Unique Identifier if one exists
SystemVirtualSerialNumber	Conditional property containing the virtual system serial number string when running in a Virtual Connect environment
SystemVirtualUUID	Conditional property containing the virtual system UUID when running in a Virtual Connect environment
HP_HardwareIndication	
HWLogicalLocation	Enclosure Location string For example, Port 1I Box 1
HWSerialNumber	Enclosure Serial Number
HP_DeviceIndication	
DeviceModel	Enclosure Model string

4-4-19 HP_DeviceIndication: Enclosure Temperature sensor status changed to OK

Table 4-111 HP_DeviceIndication: Enclosure Temperature sensor status changed to OK

Property name	Property implementation
CIM_Indication	
IndicationIdentifier	GUID string generated at indication

4-4-19 HP_DeviceIndication: Enclosure Temperature sensor status changed to OK

Table 4-111 HP_DeviceIndication: Enclosure Temperature sensor status changed to OK

Property name	Property implementation
PerceivedSeverity	2 (Info)
IndicationTime	Time of indication
CIM_AlertIndication	
Description	A Storage Enclosure Temperature sensor status changed from Non-OK to a status of OK.
AlertingMangedElement	WBEM Path of SMX_SAStorageEnclosureProcessor
AlertingElementFormat	2 (CIMObjectPath)
AlertType	5 (Device Alert)
EventID	307
EventTime	Time of the event or time of the indication if event time unknown
ProviderName	HP SmartArray
RecommendedActions	No Action required.
SystemName	Name of the computer system generating the indication
SystemCreationClassName	CreationClassName of the computer system generating the indication
HP_AlertIndication	
Summary	Temperature sensor Status changed to OK
EventCategory	24 (Primary Storage Cooling)
ProbableCause	1 (Other)
ProbableCauseDescription	Temperture Status Changed to OK
NetworkAddresses	Contains a list of all the IP addresses (IPv4 and IPv6) of the computer system generating the indication
OSType	SMX_OperatingSystem.OSType
OSVersion	Operating system version of the computer system generating the indication in the format, *<major>.<minor>.<build>*
ProviderVersion	2.2.0.0
SystemFirmwareVersion	Firmware version of the computer system generating the indication
SystemSerialNumber	Serial number of the computer system generating the indication

4-4-19 HP_DeviceIndication: Enclosure Temperature sensor status changed to OK

Table 4-111 HP_DeviceIndication: Enclosure Temperature sensor status changed to OK

Property name	Property implementation
SystemProductID	Product ID of the computer system generating the indication
SystemModel	Model name of the computer system generating the indication
SystemGUID	Platform GUID of the computer system generating the indication
ImpactedDomain	3 (Enclosure) for c-Class blade systems 4 (System) for all other systems When ImpactedDomain is 3 (Enclosure), the properties indicated with (*) are populated.
BladeBay *	HP_BladeCSLocation.LocationInformation[0]
BladeName *	HP_ComputerSystem.Name
EnclosureName *	HP_BladeEnclosureCS.Name
RackName *	Rack name if one exists
RackUID *	Rack Unique Identifier if one exists
SystemVirtualSerialNumber	Conditional property containing the virtual system serial number string when running in a Virtual Connect environment
SystemVirtualUUID	Conditional property containing the virtual system UUID when running in a Virtual Connect environment
HP_HardwareIndication	
HWLogicalLocation	Enclosure Location string For example, Port 1I Box 1
HWSerialNumber	Enclosure Serial Number
HP_DeviceIndication	
DeviceModel	Enclosure Model string

4-4-20 HP_DeviceIndication: Enclosure Temperature sensor status changed to Warning

Table 4-112 HP_DeviceIndication: Enclosure Temperature sensor status changed to Warning

Property name	Property implementation
CIM_Indication	

4-4-20 HP_DeviceIndication: Enclosure Temperature sensor status changed to Warning

Table 4-112 HP_DeviceIndication: Enclosure Temperature sensor status changed to Warning

Property name	Property implementation
IndicationIdentifier	GUID string generated at indication
PerceivedSeverity	3 (Warning)
IndicationTime	Time of indication
CIM_AlertIndication	
Description	A Storage Enclosure Temperature sensor status changed to Warning Condition. This indicates the enclosure temperature is above normal, otherwise enclosure is still operating normally.
AlertingMangedElement	WBEM Path of SMX_SAStorageEnclosureProcessor
AlertingElementFormat	2 (CIMObjectPath)
AlertType	5 (Device Alert)
EventID	308
EventTime	Time of the event or time of the indication if event time unknown
ProviderName	HP SmartArray
RecommendedActions	Verify that the system is adequately ventilated. Check for proper room temperature and internal/external airflow. Add or repair fans and air baffling if necessary.
SystemName	Name of the computer system generating the indication
SystemCreationClassName	CreationClassName of the computer system generating the indication
HP_AlertIndication	
Summary	Temperature sensor status changed to Warning Condition.
EventCategory	24 (Primary Storage Cooling)
ProbableCause	51 (Temperature Unacceptable)
ProbableCauseDescription	Temperature Status Changed to Warning Condition
NetworkAddresses	Contains a list of all the IP addresses of the computer system generating the indication
OSType	SMX_OperatingSystem.OSType
OSVersion	Operating system version of the computer system generating the indication in the format, *<major>.<minor>.<build>*

4-4-20 HP_DeviceIndication: Enclosure Temperature sensor status changed to Warning

Table 4-112 HP_DeviceIndication: Enclosure Temperature sensor status changed to Warning

Property name	Property implementation
ProviderVersion	2.2.0.0
SystemFirmwareVersion	Firmware version of the computer system generating the indication
SystemSerialNumber	Serial number of the computer system generating the indication
SystemProductID	Product ID of the computer system generating the indication
SystemModel	Model name of the computer system generating the indication
SystemGUID	Platform GUID of the computer system generating the indication
ImpactedDomain	3 (Enclosure) for c-Class blade systems 4 (System) for all other systems When ImpactedDomain is 3 (Enclosure), the properties indicated with (*) are populated.
BladeBay *	HP_BladeCSLocation.LocationInformation[0]
BladeName *	HP_ComputerSystem.Name
EnclosureName *	HP_BladeEnclosureCS.Name
RackName *	Rack name if one exists
RackUID *	Rack Unique Identifier if one exists
SystemVirtualSerialNumber	Conditional property containing the virtual system serial number string when running in a Virtual Connect environment
SystemVirtualUUID	Conditional property containing the virtual system UUID when running in a Virtual Connect environment
HP_HardwareIndication	
HWLogicalLocation	Enclosure Location string For example, Port 1I Box 1
HWSerialNumber	Enclosure Serial Number
HP_DeviceIndication	
DeviceModel	Enclosure Model string

4-4-21 HP_DeviceIndication: Enclosure Temperature sensor status changed to Critical

Table 4-113 HP_DeviceIndication: Enclosure Temperature sensor status changed to Critical

Property name	Property implementation
CIM_Indication	
IndicationIdentifier	GUID string generated at indication
PerceivedSeverity	5 (major)
IndicationTime	Time of indication
CIM_AlertIndication	
Description	A Storage Enclosure Temperature sensor status has changed to Critical. An enclosure temperature is reaching the maximum allowed temperature for normal operation. A shutdown is imminent. Action is required before loss of data occurs
AlertingMangedElement	WBEM Path of SMX_SAStorageEnclosureProcessor
AlertingElementFormat	2 (CIMObjectPath)
AlertType	5 (Device Alert)
EventID	309
EventTime	Time of the event or time of the indication if event time unknown
ProviderName	HP SmartArray
RecommendedActions	Ensure that the system is adequately ventilated. Check for proper room temperature and internal/external airflow. Add or repair fans and air baffling if necessary.
SystemName	Name of the computer system generating the indication
SystemCreationClassName	CreationClassName of the computer system generating the indication
HP_AlertIndication	
Summary	Temperature sensor Status changed to Critical.
EventCategory	24 (Primary Storage Cooling)
ProbableCause	51 (Temperature Unnacceptable)
ProbableCauseDescription	Temperature Status Changed to Critical
NetworkAddresses	Contains a list of all the IP addresses of the computer system generating the indication
OSType	SMX_OperatingSystem.OSType

4-4-21 HP_DeviceIndication: Enclosure Temperature sensor status changed to Critical

Table 4-113 HP_DeviceIndication: Enclosure Temperature sensor status changed to Critical

Property name	Property implementation
OSVersion	Operating system version of the computer system generating the indication in the format, *<major>.<minor>.<build>*
ProviderVersion	2.2.0.0
SystemFirmwareVersion	Firmware version of the computer system generating the indication
SystemSerialNumber	Serial number of the computer system generating the indication
SystemProductID	Product ID of the computer system generating the indication
SystemModel	Model name of the computer system generating the indication
SystemGUID	Platform GUID of the computer system generating the indication
ImpactedDomain	3 (Enclosure) for c-Class blade systems 4 (System) for all other systems When ImpactedDomain is 3 (Enclosure), the properties indicated with (*) are populated.
BladeBay *	HP_BladeCSLocation.LocationInformation[0]
BladeName *	HP_ComputerSystem.Name
EnclosureName *	HP_BladeEnclosureCS.Name
RackName *	Rack name if one exists
RackUID *	Rack Unique Identifier if one exists
SystemVirtualSerialNumber	Conditional property containing the virtual system serial number string when running in a Virtual Connect environment
SystemVirtualUUID	Conditional property containing the virtual system UUID when running in a Virtual Connect environment
HP_HardwareIndication	
HWLogicalLocation	Enclosure Location string For example, Port 1I Box 1
HWSerialNumber	Enclosure Serial Number
HP_DeviceIndication	
DeviceModel	Enclosure Model string

4-4-22 HP_DeviceIndication: Enclosure Fan status changed to OK

Table 4-114 HP_DeviceIndication: Enclosure Fan status changed to OK

Property name	Property implementation
CIM_Indication	
IndicationIdentifier	GUID string generated at indication
PerceivedSeverity	2 (Info)
IndicationTime	Time of indication
CIM_AlertIndication	
Description	A Storage Enclosure Fan status changed from a status of Non-OK to a status of OK.
AlertingMangedElement	WBEM Path of SMX_SAStorageEnclosureProcessor
AlertingElementFormat	2 (CIMObjectPath)
AlertType	5 (Device Alert)
EventID	304
EventTime	Time of the event or time of the indication if event time is unknown
ProviderName	HP SmartArray
RecommendedActions	No action required
SystemName	Name of the computer system generating the indication
SystemCreationClassName	CreationClassName of the computer system generating the indication
HP_AlertIndication	
Summary	Fan Status OK
EventCategory	24 (Primary Storage Cooling)
ProbableCause	1 (Other)
ProbableCauseDescription	Fan Status Changed to OK
NetworkAddresses	Contains a list of all the IP addresses of the computer system generating the indication
OSType	SMX_OperatingSystem.OSType
OSVersion	Operating system version of the computer system generating the indication in the format, *<major>.<minor>.<build>*
ProviderVersion	2.2.0.0

4-4-22 HP_DeviceIndication: Enclosure Fan status changed to OK

Table 4-114 HP_DeviceIndication: Enclosure Fan status changed to OK

Property name	Property implementation
SystemFirmwareVersion	Firmware version of the computer system generating the indication
SystemSerialNumber	Serial number of the computer system generating the indication
SystemProductID	Product ID of the computer system generating the indication
SystemModel	Model name of the computer system generating the indication
SystemGUID	Platform GUID of the computer system generating the indication
ImpactedDomain	3 (Enclosure) for c-Class blade systems 4 (System) for all other systems When ImpactedDomain is 3 (Enclosure), the properties indicated with (*) are populated.
BladeBay *	HP_BladeCSLocation.LocationInformation[0]
BladeName *	HP_ComputerSystem.Name
EnclosureName *	HP_BladeEnclosureCS.Name
RackName *	Rack name if one exists
RackUID *	Rack Unique Identifier if one exists
SystemVirtualSerialNumber	Conditional property containing the virtual system serial number string when running in a Virtual Connect environment
SystemVirtualUUID	Conditional property containing the virtual system UUID when running in a Virtual Connect environment
HP_HardwareIndication	
HWLogicalLocation	Enclosure Location string For example, Port 1I Box 1
HWSerialNumber	Enclosure Serial Number
HP_DeviceIndication	
DeviceModel	Enclosure Model string

4-4-23 HP_DeviceIndication: Enclosure Fan status changed to Degraded

Table 4-115 HP_DeviceIndication: Enclosure Fan status changed to Degraded

Property name	Property implementation
CIM_Indication	
IndicationIdentifier	GUID string generated at indication
PerceivedSeverity	3 (Warning)
IndicationTime	Time of indication
CIM_AlertIndication	
Description	A Storage Enclosure Fan status changed to a status of Degraded. An enclosure has detected there may a problem with one or more of the fans.
AlertingMangedElement	WBEM Path of SMX_SAStorageEnclosureProcessor
AlertingElementFormat	2 (CIMObjectPath)
AlertType	5 (Device Alert)
EventID	305
EventTime	Time of the event or time of the indication if event time unknown
ProviderName	HP SmartArray
RecommendedActions	Ensure that the system is adequately ventilated. Check for proper room temperature and internal/external airflow. Add or repair fans and air baffling if necessary.
SystemName	Name of the computer system generating the indication
SystemCreationClassName	CreationClassName of the computer system generating the indication
HP_AlertIndication	
Summary	Fan Status changed to Degraded.
EventCategory	24 (Primary Storage Cooling)
ProbableCause	94 (Fan failure)
ProbableCauseDescription	Fan Degraded
NetworkAddresses	Contains a list of all the IP addresses (IPv4 and IPv6) of the computer system generating the indication
OSType	SMX_OperatingSystem.OSType
OSVersion	Operating system version of the computer system generating the indication in the format, *<major>.<minor>.<build>*

4-4-23 HP_DeviceIndication: Enclosure Fan status changed to Degraded

Table 4-115 HP_DeviceIndication: Enclosure Fan status changed to Degraded

Property name	Property implementation
ProviderVersion	2.2.0.0
SystemFirmwareVersion	Firmware version of the computer system generating the indication
SystemSerialNumber	Serial number of the computer system generating the indication
SystemProductID	Product ID of the computer system generating the indication
SystemModel	Model name of the computer system generating the indication
SystemGUID	Platform GUID of the computer system generating the indication
ImpactedDomain	3 (Enclosure) for c-Class blade systems 4 (System) for all other systems When ImpactedDomain is 3 (Enclosure), the properties indicated with (*) are populated.
BladeBay *	HP_BladeCSLocation.LocationInformation[0]
BladeName *	HP_ComputerSystem.Name
EnclosureName *	HP_BladeEnclosureCS.Name
RackName *	Rack name if one exists
RackUID *	Rack Unique Identifier if one exists
SystemVirtualSerialNumber	Conditional property containing the virtual system serial number string when running in a Virtual Connect environment
SystemVirtualUUID	Conditional property containing the virtual system UUID when running in a Virtual Connect environment
HP_HardwareIndication	
HWLogicalLocation	Enclosure Location string For example, Port 1I Box 1
HWSerialNumber	Enclosure Serial Number
HP_DeviceIndication	
DeviceModel	Enclosure Model string

4-4-24 HP_DeviceIndication: Enclosure Fan status changed to Failure

Table 4-116 HP_DeviceIndication: Enclosure Fan status changed to Failure

Property name	Property implementation
CIM_Indication	
IndicationIdentifier	GUID string generated at the time of indication
PerceivedSeverity	5 (major)
IndicationTime	Time of indication
CIM_AlertIndication	
Description	A Storage Enclosure Fan status changed to a status of Failure. An enclosure has detected a failure in the fan subsystem and there is insufficient fan capability to ensure normal operation.
AlertingMangedElement	WBEM Path of SMX_SAStorageEnclosureProcessor
AlertingElementFormat	2 (CIMObjectPath)
AlertType	5 (Device Alert)
EventID	306
EventTime	Time of the event or time of the indication if event time unknown
ProviderName	HP SmartArray
RecommendedActions	Verify that the system is adequately ventilated. Check for proper room temperature and internal/external airflow. Add or repair fans and air baffling if necessary.
SystemName	Name of the computer system generating the indication
SystemCreationClassName	CreationClassName of the computer system generating the indication
HP_AlertIndication	
Summary	Fan status error
EventCategory	24 (Primary Storage Cooling)
ProbableCause	94 (Fan failure)
ProbableCauseDescription	Fan Failure
NetworkAddresses	Contains a list of all the IP addresses of the computer system generating the indication
OSType	SMX_OperatingSystem.OSType
OSVersion	Operating system version of the computer system generating the indication in the following format, *<major>.<minor>.<build>*

4-4-24 HP_DeviceIndication: Enclosure Fan status changed to Failure

Table 4-116 HP_DeviceIndication: Enclosure Fan status changed to Failure

Property name	Property implementation
ProviderVersion	2.2.0.0
SystemFirmwareVersion	Firmware version of the computer system generating the indication
SystemSerialNumber	Serial number of the computer system generating the indication
SystemProductID	Product ID of the computer system generating the indication
SystemModel	Model name of the computer system generating the indication
SystemGUID	Platform GUID of the computer system generating the indication
ImpactedDomain	3 (Enclosure) for c-Class blade systems 4 (System) for all other systems When ImpactedDomain is 3 (Enclosure), the properties indicated with (*) are populated.
BladeBay *	HP_BladeCSLocation.LocationInformation[0]
BladeName *	HP_ComputerSystem.Name
EnclosureName *	HP_BladeEnclosureCS.Name
RackName *	Rack name if one exists
RackUID *	Rack Unique Identifier if one exists
SystemVirtualSerialNumber	Conditional property containing the virtual system serial number string when running in a Virtual Connect environment
SystemVirtualUUID	Conditional property containing the virtual system UUID when running in a Virtual Connect environment
HP_HardwareIndication	
HWLogicalLocation	Enclosure Location string For example, Port 1I Box 1
HWSerialNumber	Enclosure Serial Number
HP_DeviceIndication	
DeviceModel	Enclosure Model string

5 Smart Array View Class

5-1 Overview

The HP Smart Array View Class data sheet describes host based Smart Array HBA's and the attached devices. The current View Class implementation does not support externally attached Smart Array based MSA devices. For example, MSA500, or MSA20.

5-2 Class Implementations

5-2-1 HPVC_SAController

HPVC_SAController represents the Smart Array HBA. There will be one instance per HBA.

Table 5-1 Class: HPVC_SAController

Property name	Property implementation
CIM_ManagedElement	
ElementName	Controller product name and controller index For example, HP Smart Array P400 Controller : HPSA1 Note: Each Smart Array controller should have a unique controller index. Index is an integer that starts from 1.
CIM_ManagedSystemElement	
HealthState	0 (Unknown) 5 (OK) 10 (Degraded/Warning) 15 (Minor Failure) 20 (Major Failure) 25 (Critical Failure) 30 (Non-recoverable Error)
CIM_LogicalElement	
CIM_EnabledLogicalElement	
CIM_System	
CreationClassName	HPVC_SAController
Name	vmwControllerX Note: VMware Virtual Infrastructure Client requires the name to be vmwControllerX, where X can be any string. In our case, string X should match the controller name reported in HPVC_SAController→ElementName. For example, vmwControllerHPSA1

Table 5-1 Class: HPVC_SAController

Property name	Property implementation
CIM_ComputerSystem	
VMware_Controller	
HPVC_SAController	

5-2-2 HPVC_SAControllerFirmware

HPVC_SAControllerFirmware represents Smart Array controller firmware. There is one instance per HBA.

Table 5-2 Class: HPVC_SAControllerFirmware

Property name	Property implementation
CIM_ManagedElement	
ElementName	Smart Array Controller X Note: VMware Virtual Infrastructure client requires controller name string X matches "vmwControllerX" reported in HPVC_SAController→Name. For example, Smart Array Controller HPSA1
CIM_ManagedSystemElement	
Name	Smart Array Controller X Firmware
CIM_LogicalElement	
Caption	**Smart Array Controller X Firmware**
CIM_SoftwareIdentity	
InstanceID	HPQ:Smart Array Controller X
Manufacturer	HP
VersionString	Smart Array controller firmware version For example, 4.12
HPVC_SAControllerFirmware	

5-2-3 HPVC_SABattery

HPVC_SABattery represents Smart Array controller battery.

Table 5-3 Class: HPVC_SABattery

Property name	Property implementation
CIM_ManagedElement	
ElementName	Battery on HPSA X

Table 5-3 Class: HPVC_SABattery

Property name	Property implementation
CIM_ManagedSystemElement	
CIM_LogicalElement	
CIM_LogicalDevice	
CreationClassName	HPVC_SABattery
DeviceID	Battery on HPSA X
SystemCreationClassName	SMX_ComputerSystem
SystemName	Server host name
CIM_Battery	
BatteryStatus	1(Other) 2(Unknown) 3(Fully Charged) 4(Low) 5(Critical) 6(Charging) 7(Charging and High) 8(Charging and Low) 9(Charging and Critical) 10(Undefined) 11(Partially Charged) 12(Learning) 13(Overcharged)
VMware_Battery	
HPVC_SABattery	

5-2-4 HPVC_SAStorageExtent

HPVC_SAStorageExtent represents physical disk attached to Smart Array controller. There is one instance per physical disk.

Table 5-4 Class: HPVC_SAStorageExtent

Property name	Property implementation
CIM_ManagedElement	
Name	Serial number

Table 5-4 Class: HPVC_SAStorageExtent

Property name	Property implementation
HealthState	0 (Unknown) 5 (OK) 10 (Degraded/Warning) 15 (Minor Failure) 20 (Major Failure) 25 (Critical Failure) 30 (Non-recoverable Error)
CIM_LogicalElement	
Caption	Disk Y on HPSA X
CIM_EnabledLogicalElement	
CIM_LogicalDevice	
CreationClassName	HPVC_SAStorageExtent
DeviceID	HPVC_SAStorageExtent-<model>-<serial number> For example, HPVC_SAStorageExtent-HPDG072BB975-3NP2TCCF000098402P95
SystemCreationClassName	SMX_ComputerSystem
SystemName	Server host name
CIM_StorageExtent	
BlockSize	Block size in bytes
NumberOfBlocks	Total number of blocks on disk drive
Primordial	Set to True
VMware_StorageExtent	
HPVC_SAStorageExtent	

5-2-5 HPVC_SAStorageVolume

HPVC_SAStorageExtent represents logical volumes configured on Smart Array controller. There will be one instance per logical volume.

Table 5-5 Class: HPVC_SAStorageVolume

Property name	Property implementation
CIM_ManagedElement	

Table 5-5 Class: HPVC_SAStorageVolume

Property name	Property implementation
ElementName	Logical Volume Y on HPSA X : RAID level : Capacity : Associated Physical Disks : Detailed Status Associated Physical Disks reports a list of physical disks that are associated with this logical volume. Physical disk's index should match the one reported in HPVC_StorageExtent→Element Name. Detailed Status shows detailed volume status information when this logical volume is degraded or failed. When logical volume is in an OK condition, this field should be an empty string. For example, Logical Volume 1 on HPSA 1 : RAID 0 : 68GB : Disk 1, 3, 4 : Interim Recovery
CIM_ManagedSystemElement	
HealthState	0 (Unknown) 5 (OK) 10 (Degraded/Warning) 15 (Minor Failure) 20 (Major Failure) 25 (Critical Failure) 30 (Non-recoverable Error)
CIM_LogicalElement	
CIM_EnabledLogicalElement	
CIM_LogicalDevice	
CreationClassName	HPVC_SAStorageVolume
DeviceID	HPVC_SAStorageVolume-<unique volume ID> For example, HPVC_SAStorageVolume-600508b1001046395656463645 4e0007
SystemCreationClassName	SMX_ComputerSystem
SystemName	Server host name
CIM_StorageExtent	
BlockSize	Block size in bytes
NumberOfBlocks	Total number of blocks on disk drive
Primordial	Set to True
CIM_StorageVolume	
VMware_StorageVolume	
HPVC_SAStorageVolume	

6 SMX_SAS HBA Provider

6-1 Overview

The following chapters define the supported properties for the SAS HBA provider. For details of each property, see the HP SAS HBA profile (P00122) and associated MOF file.

6-1-1 SMX_SASArraySystem

SMX_SASArraySystem represents the top level system. There is one instance per HBA.

Table 6-1 Class: SMX_SASArraySystem (CIM_ComputerSystem)

Property name	Property implementation
CIM_ManagedElement	
ElementName	Controller name and location For example, HP 8 INT Port SAS/SATA HBA in Slot 3
CIM_ManagedSystemElement	
OperationalStatus[0]	Overall status of the Array System and attached devices. This is calculated as per the algorithm described in the HP SAS HBA Profile. • 0 (Unknown) • 2 (OK) • 3 (Degraded) • 6 (Error)
CIM_LogicalElement	
CIM_EnabledLogicalElement	
EnabledDefault	2 (Enabled)
EnabledState	5 (Not Applicable)
RequestedState	12 (Not Applicable)
CIM_System	
CreationClassName	SMX_SASArraySystem
Name	Controller Serial Number
NameFormat	Other
CIM_ComputerSystem	
Dedicated	• Dedicated[0]: 3 (Storage) • Dedicated[1]: 15 (Block Server)
IdentifyingDescriptions	Other Vendor Specific Name

Table 6-1 Class: SMX_SASArraySystem (CIM_ComputerSystem)

Property name	Property implementation
OtherIdentifyingInfo	Controller Serial Number

6-1-2 SMX_SASArrayController

SMX_SASArrayController represents the controller. There is one per HBA.

Table 6-2 Class: SMX_SASArrayController (CIM_ComputerSystem)

Property name	Property implementation
CIM_ManagedElement	
ElementName	Controller name and location For example, HP 8 INT Port SAS/SATA HBA in Slot 3
CIM_ManagedSystemElement	
OperationalStatus[0]	Status for Array Controller • 0 (Unknown) • 2 (OK) • 6 (Error)
CIM_LogicalElement	
CIM_EnabledLogicalElement	
EnabledDefault	2 (Enabled)
EnabledState	5 (Not Applicable)
RequestedState	12 (Not Applicable)
CIM_System	
CreationClassName	SMX_SASArrayController
Name	Controller Serial Number
NameFormat	Other
CIM_ComputerSystem	
Dedicated	0 (Not Dedicated)
IdentifyingDescriptions	Other Vendor Specific Name
OtherIdentifyingInfo	Controller Serial Number

6-1-3 SMX_SASStorageVolume

SMX_SASStorageVolume represents the Logical Volumes configured on the SAS HBA.

Table 6-3 Class: SMX_SASStorageVolume (CIM_StorageVolume)

Property name	Property implementation
CIM_ManagedElement	
ElementName	Logical drive number with raid description For example, Logical Volume 1 (RAID 1)
CIM_ManagedSystemElement	
Name	Concatenation of Vendor + Model + SerialNumber+Logical Drive number For example, HP+HP 8 INT Port SAS/SATA HBA+C007760405+LD1
CIM_LogicalElement	
CIM_EnabledLogicalElement	
EnabledDefault	2 (Enabled)
EnabledState	5 (Not Applicable)
RequestedState	12 (Not Applicable)
CIM_LogicalDevice	
CreationClassName	SMX_SASStorageVolume
DeviceID	Opaque Key
SystemCreationClassName	SMX_SASArraySystem
SystemName	SMX_SASArraySystem.Name
CIM_StorageExtent	
ConsumableBlocks	Total Number of blocks on the volume.
BlockSize	Block Size in bytes
DataRedundancy	• 1 (for RAID 0) • 2 (for RAID 1)
DeltaReservation	Set to a value of 0
ExtentStatus[0]	This will indicate extended status for the volume. • 2 (None) • 11 (Rebuild – Volume is currently rebuilding data)
IsBasedOnUnderlyingRedundancy	False
NoSinglePointOfFailure	• True—RAID 1 or above • False—RAID 0
NumberOfBlocks	Total Number of blocks on the volume.
PackageRedundancy	• 0 (RAID 0) • 1 (RAID 1)
Primordial	• TRUE • FALSE (Always set this value to False)

Table 6-3 Class: SMX_SASStorageVolume (CIM_StorageVolume)

Property name	Property implementation
CIM_Storagevolume	
NameFormat	7 (SNVM)
SMX_SASStoragevolume	
Deleteable	See HP SAS HBA Profile
FaultTolerance	See HP SAS HBA Profile
OperationalStatus[0]	Volume status • 0 (Unknown) • 2 (OK) • 3 (Degraded) - RAID redundancy lost or rebuilding data • 6 (Error)
OSName	Corresponding OS name for this volume

6-1-4 SMX_SASDiskDrive

SMX_SASDiskDrive represents the hard drives connected to SAS HBA controllers.

Table 6-4 Class: SMX_SASDiskDrive (CIM_DiskDrive)

Property name	Property implementation
CIM_ManagedElement	
ElementName	Disk location For example, Port 1E Box 1 Bay 2
CIM_ManagedSystemElement	
Name	SAS Address
OperationalStatus[0]	Operational Status for the disk drive • 0 (Unknown) • 2 (OK) • 5 (Predictive Failure) • 6 (Error)
CIM_LogicalElement	
CIM_EnabledLogicalElement	
EnabledDefault	2 (Enabled)
EnabledState	5 (Not Applicable)
RequestedState	12 (Not Applicable)
CIM_LogicalDevice	

Table 6-4 Class: SMX_SASDiskDrive (CIM_DiskDrive)

Property name	Property implementation
CreationClassName	SMX_SASDiskDrive
DeviceID	Opaque value
SystemCreationClassName	SMX_SASArraySystem
SystemName	SMX_SASArraySystem.Name
CIM_MediaAccessDevice	
CIM_DiskDrive	
SMX_SASDiskDrive	
DriveConfiguration	See HP SAS HBA Profile
DriveHasMNPData	See HP SAS HBA Profile
DriveInterface	See HP SAS HBA Profile
DrivePlacement	See HP SAS HBA Profile
DriveRotationalSpeed	See HP SAS HBA Profile
Description	• Unknown (If neither SAS or SATA) • SAS (If disk drive interface is SAS) • SATA (If disk drive interface is SATA)
NegotiatedDataWidth	0
NegotiatedSpeed	0

6-1-5 SMX_SASStorageExtent

SMX_SASStorageExtent represents the consumable storage that is available on a disk drive. There is one instance per disk drive.

Table 6-5 Class: SMX_SASStorageExtent (CIM_StorageExtent)

Property name	Property implementation
CIM_ManagedElement	
ElementName	Disk location For example, Port 1E Box 1 Bay 2
CIM_ManagedSystemElement	
Name	Serial number of drive
OperationalStatus[0]	Operational Status for the disk drive • 0 (Unknown) • 2 (OK) • 5 (Predictive Failure) • 6 (Error)

Table 6-5 Class: SMX_SASStorageExtent (CIM_StorageExtent)

Property name	Property implementation
CIM_LogicalElement	
CIM_EnabledLogicalElement	
EnabledDefault	2 (Enabled)
EnabledState	5 (Not Applicable)
RequestedState	12 (Not Applicable)
CIM_LogicalDevice	
CreationClassName	SMX_SASStorageExtent
DeviceID	Opaque ID
SystemCreationClassName	SMX_SASArraySystem
SystemName	SMX_SASArraySystem.Name
CIM_StorageExtent	
BlockSize	Block size in bytes
ConsumableBlocks	Total number of blocks on disk drive
ExtentStatus[0]	Indicates extended status for the disk drive • 2 (None) • 11 (Rebuild – disk drive is currently rebuilding data)
NumberOfBlocks	Total number of blocks on disk drive
Primordial	Set to True
SMX_SASStorageExtent	
OSName	Corresponding OS name for drives that are not part of RAID set

6-1-6 SMX_SASDiskDriveFirmware

SMX_SASDiskDriveFirmware represents the firmware installed on a disk drive. There is one instance per disk drive.

Table 6-6 Class: SMX_SASDiskDriveFirmware (CIM_SoftwareIdentity)

Property name	Property implementation
CIM_ManagedElement	
ElementName	TargetType value
CIM_ManagedSystemElement	
Name	Disk Drive Firmware

Table 6-6 Class: SMX_SASDiskDriveFirmware (CIM_SoftwareIdentity)

Property name	Property implementation
CIM_LogicalElement	
Caption	Disk Drive Firmware
Description	Disk Drive Firmware
CIM_SoftwareIdentity	
ClassificationDescriptions[0]	Disk Drive Firmware
Classifications[0]	10 (Firmware)
InstanceID	Opaque key
Manufacturer	Disk drive vendor string
IdentityInfoType	[0]CIM:SoftwareFamily [1]HPQ:SoftwareCategory
IdentityInfoValue	[0]HPQ:<TargetType value> [1]Storage Device
VersionString	Drive firmware as reported from SCSI identify command
IsEntity	False(always set to False)
SMX_SASDiskDriveFirmware	

6-1-7 SMX_SASPhysicalPackage

SMX_SASPhysicalPackage represents the overall physical package for the HBA as a whole. There is one instance per HBA.

Table 6-7 Class: SMX_SASPhysicalPackage (CIM_PhysicalPackage)

Property name	Property implementation
CIM_ManagedElement	
ElementName	Controller name and location
Description	Host Based RAID Controller
CIM_ManagedSystemElement	
Name	Controller Serial Number
CIM_PhysicalElement	
CreationClassName	SMX_SASPhysicalPackage
Manufacturer	Controller vendor string

Table 6-7 Class: SMX_SASPhysicalPackage (CIM_PhysicalPackage)

Property name	Property implementation
Model	Controller model string
PartNumber	N/A–Not available for this implementation
SerialNumber	Controller Serial Number
Tag	HBA Serial number
CIM_PhysicalPackage	
RemovalConditions	2 (Not Applicable)
SMX_SASPhysicalPackage	

6-1-8 SMX_SASDiskPhysicalPackage

SMX_SASDiskPhysicalPackage represents the physical aspects of the disk drive. There is one instance per disk drive.

Table 6-8 Class: SMX_SASDiskPhysicalPackage (CIM_PhysicalPackage)

Property name	Property implementation
CIM_ManagedElement	
ElementName	Disk location, for example, Port 1E Box 1 Bay 5
CIM_ManagedSystemElement	
Name	Disk location, for example, Port 1E Box 1 Bay 5
CIM_PhysicalElement	
CreationClassName	SMX_SASDiskPhysicalPackage
Caption	Disk location, for example, Port 1E Box 1 Bay 5
Manufacturer	Drive vendor string
Model	Drive model string
PartNumber	N/A—Not available in this implementation
SerialNumber	Drive serial number
Tag	Controller Serial number (SerialNumber: PhysicalDriveDeviceNumber)
Version	N/A—Not available in this implementation
CIM_PhysicalPackage	
HotSwappable	• TRUE—Drive is hot swappable • FALSE—Drive is not hot swappable

Table 6-8 Class: SMX_SASDiskPhysicalPackage (CIM_PhysicalPackage)

Property name	Property implementation
RemovalConditions	• 0 (Unknown) • 2 (Not Applicable) • 3 (Removable when off) • 4 (Removable when on or off)
SMX_SASDiskPhysicalPackage	

6-1-9 SMX_SASPortController

SMX_SASPortController represent the HBA in the host system. There is one instance per HBA.

Table 6-9 Class: SMX_SASPortController (CIM_PortController)

Property name	Property implementation
CIM_ManagedElement	
ElementName	Controller name and location, for example, HP 8 INT Port SAS/SATA HBA in Slot 3
CIM_ManagedSystemElement	
CIM_LogicalElement	
CIM_EnabledLogicalElement	
EnabledDefault	2 (Enabled)
EnabledState	5 (Not Applicable)
RequestedState	12 (Not Applicable)
CIM_LogicalDevice	
CreationClassName	SMX_SASPortController
DeviceID	Controller serial number
SystemCreationClassName	SMX_SASArraySystem
SystemName	SMX_SASArraySystem.Name
CIM_Controller	
CIM_PortController	
ControllerType	1 (Other)
OtherControllerType	SAS/SATA
SMX_SASPortController	

6-1-10 SMX_SASDAPort

SMX_SASDAPort represents the front-end port for an HBA in the host system. Direct Attached implies that the array controller is attached to a local bus on the host (for example, PCI).

Table 6-10 Class: SMX_SASDAPort (CIM_DAPort)

Property name	Property implementation
CIM_ManagedElement	
ElementName	Controller name and location, for example, HP 8 INT Port SAS/SATA HBA in Slot 3
CIM_ManagedSystemElement	
OperationalStatus[0]	Port status • 0 (Unknown) • 2 (OK) • 6 (Error)
CIM_LogicalElement	
CIM_EnabledLogicalElement	
EnabledDefault	2 (Enabled)
EnabledState	5 (Not Applicable)
RequestedState	12 (Not Applicable)
CIM_LogicalDevice	
CreationClassName	SMX_SASDAPort
DeviceID	Opaque key
SystemCreationClassName	SMX_SASArraySystem
SystemName	SMX_SASArraySystem.Name
CIM_LogicalPort	
UsageRestriction	2 (Front-End Only)
CIM_DAPort	
PortType	82 (PCI)
SMX_SASDAPort	

6-1-11 SMX_SASFirmware

SMX_SASFirmware represents the firmware installed on a SAS HBA controller.

Table 6-11 Class: SMX_SASFirmware (CIM_SoftwareIdentity)

Property name	Property implementation
CIM_ManagedElement	

Table 6-11 Class: SMX_SASFirmware (CIM_SoftwareIdentity)

Property name	Property implementation
ElementName	TargetType value Set to controller model
CIM_ManagedSystemElement	
Name	HBA Firmware
CIM_LogicalElement	
Caption	HBA Firmware
Description	HBA Firmware
CIM_SoftwareIdentity	
ClassificationDescriptions[0]	HBA Firmware
Classifications[0]	10 (Firmware)
InstanceID	Opaque key
Manufacturer	Controller Vendor string
IdentityInfoType	[0]CIM:SoftwareFamily [1] HPQ:SoftwareCategory
IdentityInfoValue	[0]HPQ:<TargetType value> Set to controller model [1]:Storage Controller
VersionString	Controller firmware version string
IsEntity	False (always set to False)
SMX_SASFirmware	

6-1-12 SMX_SASPrimordialPool

SMX_SASPrimordialPool represents the total raw storage managed by the array controller that is assigned to Raid volumes.

Table 6-12 Class: SMX_SASPrimordialPool (CIM_StoragePool)

Property name	Property implementation
CIM_ManagedElement	
ElementName	Controller name and location: pool identifier. For example, HP 8 INT Port SAS/SATA HBA in Slot 3: Primordial Pool
CIM_ManagedSystemElement	
CIM_LogicalElement	
CIM_StoragePool	

Table 6-12 Class: SMX_SASPrimordialPool (CIM_StoragePool)

Property name	Property implementation
InstanceID	Opaque key
PoolID	Controller serial number
Primordial	TRUE
RemainingManagedSpace	0
TotalManagedSpace	Total raw space available to controller. This is calculated by summing the total space on all raid drives connected to this controller.
SMX_SASPrimordialPool	

6-1-13 SMX_SASPrimordialPoolNoRaid

SMX_SASPrimordialPoolNoRaid represents the total raw storage managed by the array controller that is not assigned to raid volumes.

Table 6-13 Class: SMX_SASPrimordialPoolNoRaid (CIM_StoragePool)

Property name	Property implementation
CIM_ManagedElement	
ElementName	Controller name and location: pool identifier For example, HP 8 INT Port SAS/SATA HBA in Slot 3: Primordial Pool (No Raid)
CIM_ManagedSystemElement	
CIM_LogicalElement	
CIM_StoragePool	
InstanceID	Opaque key
PoolID	Controller serial number + :NORAID
Primordial	TRUE
RemainingManagedSpace	0
TotalManagedSpace	Total raw space available to controller. This is calculated by summing the total space on all non raid drives connected to this controller.
SMX_SASPrimordialPoolNoRaid	

6-1-14 SMX_SASStoragePool

SMX_SASStoragePool represents any concrete storage pools created on an array controller. There is one instance per HBA for this implementation.

Table 6-14 Class: SMX_SASStoragePool (CIM_StoragePool)

Property name	Property implementation
CIM_ManagedElement	
ElementName	Controller name and location: pool identifier For example, HP 8 INT Port SAS/SATA HBA in Slot 3: Storage Pool
CIM_ManagedSystemElement	
CIM_LogicalElement	
CIM_StoragePool	
InstanceID	Opaque key
PoolID	Controller serial number:1
Primordial	FALSE
RemainingManagedSpace	0
TotalManagedSpace	Total raw space managed by this pool
SMX_SASStoragePool	

6-1-15 SMX_SASStorageSetting

SMX_SASStorageSetting represents the current raid configuration for a Storage Volume. There is one instance per Storage Volume.

Table 6-15 Class: SMX_SASStorageSetting (CIM_StorageSetting)

Property name	Property implementation
CIM_ManagedElement	
ElementName	RAID <*n*>, where <*n*> is the raid description • RAID 0 • RAID 1
CIM_SettingData	
InstanceID	Opaque key
CIM_StorageSetting	
ChangeableType	0 (Not Changeable)
DataRedundancyGoal	• 1 (RAID 0) • 2 (RAID 1)
DataRedundancyMax	• 1 (RAID 0) • 2 (RAID 1)
DataRedundancyMin	• 1 (RAID 0) • 2 (RAID 1)

Table 6-15 Class: SMX_SASStorageSetting (CIM_StorageSetting)

Property name	Property implementation
DeltaReservationGoal	0
DeltaReservationMax	0
DeltaReservationMin	0
NoSinglePointOfFailure	• FALSE—RAID 0 • TRUE—RAID 1
PackageRedundancyGoal	• 0 (RAID 0) • 1 (RAID 1)
PackageRedundancyMax	• 0 (RAID 0) • 1 (RAID 1)
PackageRedundancyMin	• 0 (RAID 0) • 1 (RAID 1)
SMX_SASStorageSetting	

6-1-16 SMX_SASSCSIProtocolEndpoint

SMX_SASSCSIProtocolEndpoint represents an access point to storage resources.

Table 6-16 Class: SMX_SASSCSIProtocolEndpoint (CIM_SCSIProtocolEndpoint)

Property name	Property implementation
CIM_ManagedElement	
ElementName	Controller name and location For example, HP 8 INT Port SAS/SATA HBA in Slot 3
CIM_ManagedSystemElement	
CIM_LogicalElement	
CIM_EnabledLogicalElement	
EnabledDefault	2 (Enabled)
RequestedState	12 (Not Applicable)
CIM_ServiceAccessPoint	
CreationClassName	SMX_SASSCSIProtocolEndpoint
Name	HBA Serial Number
SystemCreationClassName	SMX_SASArraySystem
SystemName	SMX_SASArraySystem.Name
CIM_ProtocolEndpoint	
ProtocolIFType	0 (Unknown)

Table 6-16 Class: SMX_SASSCSIProtocolEndpoint (CIM_SCSIProtocolEndpoint)

Property name	Property implementation
CIM_SCSIProtocolEndpoint	
ConnectionType	1 (Other)
OtherConnectionType	PCI
Role	4 (Both Initiator and Target)
SMX_SASSCSIProtocolEndpoint	

6-1-17 SMX_SASSCSIProtocolController

SMX_SASSCSIProtocolController represents a view a SCSI resources on the controller.

Table 6-17 Class: SMX_SASSCSIProtocolController (CIM_SCSIProtocolController)

Property name	Property implementation
CIM_ManagedElement	
ElementName	Controller name and location For example, HP 8 INT Port SAS/SATA HBA in Slot 3
CIM_ManagedSystemElement	
OperationalStatus[0]	Operational status of the controller • 0 (Unknown) • 2 (OK) • 6 (Error)
CIM_LogicalElement	
CIM_EnabledLogicalElement	
EnabledDefault	2 (Enabled)
EnabledState	5 (Not Applicable)
RequestedState	12 (Not Applicable)
CIM_LogicalDevice	
CreationClassName	SMX_SASSCSIProtocolController
DeviceID	Opaque key
SystemCreationClassName	SMX_SASArraySystem
SystemName	SMX_SASArraySystem.Name
CIM_ProtocolController	
MaxUnitsControlled	2
CIM_SCSIProtocolController	
SMX_SASSCSIProtocolController	

6-1-18 SMX_SASStorageRedundancySet

SMX_SASStorageRedundancySet represents disk sparing aspect of a RAID configuration. There is an instance for every raid set that has spare drives configured.

Table 6-18 Class: SMX_SASStorageRedundancySet (CIM_StorageRedundancySet)

Property name	Property implementation
CIM_ManagedElement	
ElementName	Storage Redundancy Set
CIM_Collection	
CIM_SystemSpecificCollection	
InstanceID	Opaque key
CIM_RedundancySet	
LoadBalanceAlgorithm	2 (No Load Balancing)
MaxNumberSupported	0
MinNumberNeeded	0
RedundancyStatus	• 2 (Fully Redundant) • 4 (Redundancy Lost)
TypeOfSet[0]	5 (Limited Sparing)
CIM_StorageRedundancySet	
SMX_SASStorageRedundancySet	

6-1-19 SMX_SASStorageSpecificCollection

SMX_SASStorageSpecificCollection represents a collection of SAS HBA controllers that are grouped together to report consolidated status.

Table 6-19 Class: SMX_SASStorageSpecificCollection (HP_GroupHostedCollection)

Property name	Property implementation
CIM_ManagedElement	
Caption	SAS HBA Consolidated Status
Description	A consolidated OperationalStatus for all SMX_SASArraySystem instances
ElementName	SAS HBA Consolidated Status
CIM_Collection	
CIM_SystemSpecificCollection	

Table 6-19 Class: SMX_SASStorageSpecificCollection (HP_GroupHostedCollection)

Property name	Property implementation
InstanceID	Opaque key
HP_GroupSystemSpecificCollection	
GroupOperationalStatus	Consolidated status for all array controllers. See HP SAS HBA profile for details on how this is calculated
GroupStatusDescriptions	Description of GroupOperationalStatus
SMX_SASStorageSpecificCollection	

6-1-20 SMX_SASArraySystemLocation

SMX_SASArraySystemLocation represents a location string for the HBA.

Table 6-20 Class: SMX_SASArraySystemLocation (HP_Location)

Property name	Property implementation
CIM_ManagedElement	
Caption	Controller name and location For example, HP 8 INT Port SAS/SATA HBA in Slot 3
Description	Controller name and location For example, HP 8 INT Port SAS/SATA HBA in Slot 3
ElementName	Controller name and location For example, HP 8 INT Port SAS/SATA HBA in Slot 3
CIM_Location	
Name	Opaque key
PhysicalPosition	Opaque key
HP_Location	
ElementLocationTag	PCI Slot number
ElementLocationTagDesc	23 (Adapter)
LocationInformation	PCI Slot number For example, 3—PCI Slot 3
LocationInfoDesc	3 (PCI Slot)
SMX_SASArraySystemLocation	

6-1-21 SMX_SASDiskDriveLocation

SMX_SASDiskDriveLocation represents a location string for the disk drive.

Table 6-21 Class: SMX_SASDiskDriveLocation (HP_Location)

Property name	Property implementation
CIM_ManagedElement	
Caption	Disk location For example, Port 1E Box 1 Bay 2 Or Port 1E Device 8 when bay number is not available
Description	Disk location For example, Port 1E Box 1 Bay 2 Or Port 1E Device 8 when bay number is not available
ElementName	Disk location For example, Port 1E Box 1 Bay 2 Or Port 1E Device 8 when bay number is not available
CIM_Location	
Name	Opaque key
PhysicalPosition	Opaque key
HP_Location	
ElementLocationTag	Bay Number or SCSI ID of Disk
ElementLocationTagDesc	20 (Bay) or 21 (SCSI ID)
SMX_SASDiskDriveLocation	

6-1-22 SMX_SASStorageCapabilities

SMX_SASStorageCapabilities represents the possible capabilities of a Storage Pool.

Table 6-22 Class: SMX_SASStorageCapabilities (CIM_StorageCapabilities)

Property name	Property implementation
CIM_ManagedElement	
ElementName	• For Primodial Pools Controller name and location, for example, HP 8 INT Port SAS/SATA HBA in Slot 3 for internal • For Concrete Pools Controller name and location:Array identifier, for example, HP 8 INT Port SAS/SATA HBA in Slot 3: Storage Pool for internal
CIM_Capabilities	
InstanceID	Opaque key
CIM_StorageCapabilities	

Table 6-22 Class: SMX_SASStorageCapabilities (CIM_StorageCapabilities)

Property name	Property implementation
DataRedundancyDefault	• 0 (When Pool is NonRAID) • 1 (When number of drives = 1) • 2 (When number of drives > 1) For example, Pool can be configured for redundancy.
DataRedundancyMax	• 0 (When Pool is NonRAID) • 1 (When number of drives = 1) • 2 (When number of drives > 1) For example, Pool can be configured for redundancy.
DataRedundancyMin	• 0 (When Pool is NonRAID) • 1 (No single point of failure RAID)
DeltaReservationDefault	0
DeltaReservationMax	0
DeltaReservationMin	0
ElementType	5 (Storage Pool)
NoSinglePointOfFailure	• True—When number of drives > 1 (For example, Pool can be configured for redundancy.) • False—When number of drives = 1 or Pool is NonRAID
NoSinglePointOfFailureDefault	• True—When number of drives > 1 (For example, Pool can be configured for redundancy.) • False—When number of drives = 1 or Pool is NonRAID
PackageRedundancyDefault	• 0 (When Pool is NonRAID) • 1 (When number of drives = 1) • 2 (When number of drives > 1)
PackageRedundancyMax	• 0 (When Pool is NonRAID) • 1 (When number of drives = 1) • 2 (When number of drives > 1)
PackageRedundancyMin	0
SMX_SASStorageCapabilities	

6-1-23 SMX_SASProduct

SMX_SASProduct represents the marketing information for the HBA.

Table 6-23 Class: SMX_SASProduct (CIM_Product)

Property name	Property implementation
CIM_ManagedElement	

Table 6-23 Class: SMX_SASProduct (CIM_Product)

Property name	Property implementation
ElementName	Controller name and location For example, HP 8 INT Port SAS/SATA HBA in Slot 3, for internal
CIM_Product	
IdentifyingNumber	Opaque key
Name	String representing the Marketing Name
Vendor	HP
Version	Firmware version of HBA
SMX_SASProduct	

6-1-24 SMX_SASDriveCage

SMX_SASDriveCage represents the drive cage assembly and back plane within a storage enclosure. There can be multiple instances within a duplexed enclosure.

Table 6-24 Class: SMX_SASDriveCage (CIM_PhysicalPackage)

Property name	Property implementation
CIM_ManagedElement	
ElementName	Port <*m*> *Box* <*n*>, where <*m*> is the name of the port this drive cage is connected and <*n*> is the Box Number For example, Port IE Box 1
CIM_ManagedSystemElement	
Name	Serial Number of drive cage N/A—when serial number is not available
CIM_PhysicalElement	
CreationClassName	SMX_SASDriveCage
Manufacturer	Drive Cage Vendor string
Model	Drive Cage Model string
PartNumber	N/A–Not available in this implementation
Tag	Opaque key
SerialNumber	Enclosure Serial number
Version	N/A–Not available in this implementation
CIM_PhysicalPackage	
RemovalConditions	2 (Not Applicable)

Table 6-24 Class: SMX_SASDriveCage (CIM_PhysicalPackage)

Property name	Property implementation
HP_DriveCage	
BackplaneSpeed	See profile
DriveBays	See profile
DuplexLocation	See profile
SMX_SASDriveCage	

6-1-25 SMX_SASEnclosureFirmware

SMX_SASEnclosureFirmware represents the firmware installed on a MSA Enclosure.

Table 6-25 Class: SMX_SASEnclosureFirmware (CIM_SoftwareIdentity)

Property name	Property Implemenation
CIM_ManagedElement	
ElementName	TargetType value
CIM_ManagedSystemElement	
Name	Storage Enclosure Firmware
CIM_LogicalElement	
Caption	Storage Enclosure Firmware
Description	Storage Enclosure Firmware
CIM_SoftwareIdentity	
ClassificationDescriptions[0]	Storage Enclosure Firmware
Classifications[0]	10 (Firmware)
InstanceID	Opaque key
Manufacturer	Enclosure Vendor string
IdentityInfoType	[0]CIM:SoftwareFamily [1] HPQ:SoftwareCategory
IdentityInfoValue	[0]HPQ:<TargetType value> [1] Storage Device
VersionString	Enclosure firmware string
SMX_SASEnclosureFirmware	

6-1-26 SMX_SASStorageEnclosure

SMX_SASStorageEnclosure represents the physical chassis for an internal or externally attached enclosure.

Table 6-26 Class: SMX_SASStorageEnclosure (HP_StorageEnclosure)

Property name	Property implementation
CIM_ManagedElement	
ElementName	Port: <m> Box: <n>, where <m> is the port and <n> is the box number
CIM_ManagedSystemElement	
Name	Port: <m> Box: <n>, where <m> is the port and <n> is the box number
CIM_PhysicalElement	
CreationClassName	SMX_SASStorageEnclosure
Manufacturer	Enclosure vendor string • HP • N/A, if not available
Model	Enclosure model string • MSA50 -10D25G1 • N/A, if not available
PartNumber	N/A—Not available in this implementation
SerialNumber	Enclosure Serial Number N/A is reported if there is no serial number (for example, internal enclosures).
Tag	Opaque key
Version	N/A—Not available in this implementation
CIM_PhysicalPackage	
RemovalConditions	2 (Not Applicable)
CIM_PhysicalFrame	
CIM_Chassis	
HP_StorageEnclosure	
Location	See HP Storage Enclosure Profile
SMX_SASStorageEnclosure	

6-1-27 SMX_SASStorageEnclosureProcessor

SMX_SASStorageEnclosureProcessor represents the management processor within a Storage Enclosure. This instance contains the operational status for all managed components in the enclosure if applicable.

Table 6-27 Class: SMX_SASStorageEnclosureProcessor (CIM_ComputerSystem)

Property name	Property implementation
CIM_ManagedElement	
ElementName	Port: <m> Box: <n>, where <m> is the port and <n> is the box number
CIM_ManagedSystemElement	

OperationalStatus[0,1, 2, 3]	Operational status for enclosure and associated power supplies, fans, and sensors.
	The use of OperationalStatus is described in the HP Storage Enclosure Profile. Index values are populated as follows:
	• Index[0]—Enclosure status:
	  ○ 0 (Unknown)
	  ○ 2 (OK)
	  ○ 3 (Degraded)
	  ○ 6 (Error)
	• Index[1]—Fan status (See Profile)
	• Index[2]—Power Supply status (See Profile)
	• Index[3]—Temp Sensor Status (See Profile)

CIM_LogicalElement	
CIM_EnabledLogicalElement	
EnabledDefault	2 (Enabled)
EnabledState	5 (Not Applicable)
RequestedState	12 (Not Applicable)
CIM_System	
CreationClassName	SMX_SASStorageEnclosureProcessor
Name	Opaque Key
NameFormat	Other
CIM_ComputerSystem	
Dedicated[0]	2 (Other)
IdentifyingDescriptions[0]	Other Vendor Specific Name
OtherDedicatedDescriptions[0]	SDE - indicates Storage Device Enclosure
OtherIdentifyingInfo[0]	Vendor:SerialNumber enclosure is attached to For example, HP:2SUJ1029
SMX_SASStorageEnclosureProcessor	

6-1-28 SMX_SASStorageEnclosureLocation

SMX_SASStorageEnclosureLocation represents a location string for the enclosure.

Table 6-28 Class: HPAS_StorageEnclosureLocation (HP_Location)

Property name	Property implementation
ElementName	Enclosure location For example, Port 1E Box 1
Caption	Enclosure location For example, Port 1E Box 1
Description	Enclosure location For example, Port 1E Box 1
Name	Key
PhysicalPosition	Key
ElementLocationTag	• Unknown for Undetermined • External for external enclosures • Internal for drive cages located within the host chassis
ElementLocationTagDesc	19 (Box)

6-1-29 SMX_SASDriveCageDiskDrive (Association)

Table 6-29 Class: SMX_SASDriveCageDiskDrive (CIM_Container)

Property name	Property implementation
GroupComponent	SMX_SASDriveCage
PartComponent	SMX_SASDiskPhysicalPackage

6-1-30 SMX_SASStorageEnclosureDriveCage (Association)

Table 6-30 Class: SMX_SASStorageEnclosureDriveCage (CIM_Container)

Property name	Property implementation
GroupComponent	SMX_SASStorageEnclosure
PartComponent	SMX_SASDriveCage

6-1-31 SMX_SASStorageEnclosureEnclosureLocation (Association)

Table 6-31 Class: SMX_SASStorageEnclosureEnclosureLocation (CIM_PhysicalElementLocation)

Property name	Property implementation
Element	SMX_SASStorageEnclosure
PhysicalLocation	SMX_SASStorageEnclosureLocation

6-1-32 SMX_SASArraySystemStorageEnclosureProcessor (Association)

Table 6-32 Class: SMX_SASArraySystemStorageEnclosureProcessor (CIM_SystemComponent)

Property name	Property implementation
GroupComponent	SMX_SASArraySystem
PartComponent	SMX_SASStorageEnclosureProcessor

6-1-33 SMX_SASStorageEnclosureProcessorEnclosureFirmware (Association)

Table 6-33 Class: SMX_SASStorageEnclosureProcessorEnclosureFirmware (CIM_ElementSoftwareIdentity)

Property name	Property implementation
Antecedent	SMX_SASEnclosureFirmware
Dependent	SMX_SASStorageEnclosureProcessor
ElementSoftwareStatus	• ElementSoftwareStatus[0]: 2 (Current) • ElementSoftwareStatus[1]: 6 (Installed)

6-1-34 SMX_SASStorageEnclosureStorageEnclosureProcessor (Association)

Table 6-34 Class: SMX_SASStorageEnclosureStorageEnclosureProcessor (CIM_systemPackaging)

Property name	Property implementation
Antecedent	SMX_SASStorageEnclosure
Dependent	SMX_SASStorageEnclosureProcessor

6-1-35 SMX_SASStorageVolumeStorageSetting (Association)

Table 6-35 Class: SMX_SASStorageVolumeStorageSetting (CIM_ElementSettingData)

Property name	Property implementation
ManagedElement	SMX_SASStorageVolume
SettingData	SMX_SASStorageSetting
IsCurrent	1 (Is Current)
IsDefault	1 (Is Default)

6-1-36 SMX_SASPrimordialPoolStorageCapabilities (Association)

Table 6-36 Class: SMX_SASPrimordialPoolStorageCapabilities (CIM_ElementCapabilities)

Property name	Property implementation
Capabilities	SMX_SASStorageCapabilities
ManagedElement	SMX_SASPrimordialPool

6-1-37 SMX_SASPrimordialPoolNoRaidStorageCapabilities (Association)

Table 6-37 Class: SMX_SASPrimordialPoolNoRaidStorageCapabilities (CIM_ElementCapabilities)

Property name	Property implementation
Capabilities	SMX_SASStorageCapabilities
ManagedElement	SMX_SASPrimordialPoolNoRaid

6-1-38 SMX_SASStoragePoolStorageCapabilities (Association)

Table 6-38 Class: SMX_SASStoragePoolStorageCapabilities (CIM_ElementCapabilities)

Property name	Property implementation
Capabilities	SMX_SASStorageCapabilities
ManagedElement	SMX_SASStoragePool

6-1-39 SMX_SASArraySystemSCSIProtocolController (Association)

Table 6-39 Class: SMX_SASArraySystemSCSIProtocolController (CIM_SystemDevice)

Property name	Property implementation
GroupComponent	SMX_SASArraySystem
PartComponent	SMX_SASSCSIProtocolController

6-1-40 SMX_SASArraySystemPortController (Association)

Table 6-40 Class: SMX_SASArraySystemPortController (CIM_LogicalIdentity)

Property name	Property implementation
SameElement	SMX_SASArraySystem
SystemElement	SMX_SASPortController

6-1-41 SMX_SASArraySystemDiskDrive (Association)

Table 6-41 Class: SMX_SASArraySystemDiskDrive (CIM_SystemDevice)

Property name	Property implementation
GroupComponent	SMX_SASArraySystem
PartComponent	SMX_SASDiskDrive

6-1-42 SMX_SASArraySystemStorageVolume (Association)

Table 6-42 Class: SMX_SASArraySystemStorageVolume (CIM_SystemDevice)

Property name	Property implementation
GroupComponent	SMX_SASArraySystem
PartComponent	SMX_SASStorageVolume

6-1-43 SMX_SASArraySystemStorageExtent (Association)

Table 6-43 Class: SMX_SASArraySystemStorageExtent (CIM_SystemDevice)

Property name	Property implementation
GroupComponent	SMX_SASArraySystem
PartComponent	SMX_SASStorageExtent

6-1-44 SMX_SASArraySystemDAPort (Association)

Table 6-44 Class: SMX_SASArraySystemDAPort (CIM_SystemDevice)

Property name	Property implementation
GroupComponent	SMX_SASArraySystem
PartComponent	SMX_SASDAPort

6-1-45 SMX_SASArraySystemPrimordialPool (Association)

Table 6-45 Class: SMX_SASArraySystemPrimordialPool (CIM_HostedStoragePool)

Property name	Property implementation
GroupComponent	SMX_SASArraySystem
PartComponent	SMX_SASPrimordialPool

6-1-46 SMX_SASArraySystemPrimordialPoolNoRaid (Association)

Table 6-46 Class: SMX_SASArraySystemPrimordialPoolNoRaid (CIM_HostedStoragePool)

Property name	Property implementation
GroupComponent	SMX_SASArraySystem
PartComponent	SMX_SASPrimordialPoolNoRaid

6-1-47 SMX_SASArraySystemStoragePool (Association)

Table 6-47 Class: SMX_SASArraySystemStoragePool (CIM_HostedStoragePool)

Property name	Property implementation

Table 6-47 Class: SMX_SASArraySystemStoragePool (CIM_HostedStoragePool)

Property name	Property implementation
GroupComponent	SMX_SASArraySystem
PartComponent	SMX_SASStoragePool

6-1-48 SMX_SASComputerSystemArraySystem (Association)

Table 6-48 Class: SMX_SASComputerSystemArraySystem (CIM_ComponentCS)

Property name	Property implementation
GroupComponent	HP_ComputerSystem
PartComponent	SMX_SASArraySystem

6-1-49 SMX_SASArraySystemArrayController (Association)

Table 6-49 Class: SMX_SASArraySystemArrayController (CIM_ComponentCS)

Property name	Property implementation
GroupComponent	SMX_SASArraySystem
PartComponent	SMX_SASArrayController

6-1-50 SMX_SASProductPhysicalPackage (Association)

Table 6-50 Class: SMX_SASProductPhysicalPackage (CIM_ProductPhysicalPackage)

Property name	Property implementation
GroupComponent	SMX_SASProduct
PartComponent	SMX_SASPhysicalPackage

6-1-51 SMX_SASStoragePoolStorageExtent (Association)

Table 6-51 Class: SMX_SASStoragePoolStorageExtent (CIM_ConcreteComponent)

Property name	Property implementation
GroupComponent	SMX_SASStoragePool

Table 6-51 Class: SMX_SASStoragePoolStorageExtent (CIM_ConcreteComponent)

Property name	Property implementation
PartComponent	SMX_SASStorageExtent

6-1-52 SMX_SASPrimordialPoolStorageExtent (Association)

Table 6-52 Class: SMX_SASPrimordialPoolStorageExtent (CIM_ConcreteComponent)

Property name	Property implementation
GroupComponent	SMX_SASPrimordialPool
PartComponent	SMX_SASStorageExtent

6-1-53 SMX_SASPrimordialPoolNoRaidStorageExtent (Association)

Table 6-53 Class: SMX_SASPrimordialPoolNoRaidStorageExtent (CIM_ConcreteComponent)

Property name	Property implementation
GroupComponent	SMX_SASPrimordialPoolNoRaid
PartComponent	SMX_SASStorageExtent

6-1-54 SMX_SASStorageSpecificCollectionArraySystem (Association)

Table 6-54 Class: SMX_SASStorageSpecificCollectionArraySystem (CIM_MemberOfCollection)

Property name	Property implementation
Collection	SMX_SASStorageSpecificCollection
Member	SMX_SASArraySystem

6-1-55 SMX_SASStorageRedundancySetStorageExtent (Association)

Table 6-55 Class: SMX_SASStorageRedundancySetStorageExtent (CIM_MemberOfCollection)

Property name	Property implementation
Collection	SMX_SASStorageRedundancySet
Member	SMX_SASStorageExtent

6-1-56 SMX_SASArraySystemFirmware (Association)

Table 6-56 Class: SMX_SASArraySystemFirmware (CIM_InstalledSoftwareIdentity)

Property name	Property implementation
InstalledSoftware	SMX_SASFirmware
System	SMX_SASArraySystem

6-1-57 SMX_SASSCSIProtocolControllerStorageVolume (Association)

Table 6-57 Class: SMX_SASSCSIProtocolControllerStorageVolume (CIM_ProtocolControllerForUnit)

Property name	Property implementation
Antecedent	SMX_SASSCSIProtocolController
Dependent	SMX_SASStorageVolume
DeviceNumber	Device LUN number
DeviceAccess	2 (Read Write)

6-1-58 SMX_SASFirmwareArraySystem (Association)

Table 6-58 Class: SMX_SASFirmwareArraySystem (CIM_ElementSoftwareIdentity)

Property name	Property implementation
Antecedent	SMX_SASFirmware
Dependent	SMX_SASArraySystem
ElementSoftwareStatus	• ElementSoftwareStatus[0]: 2 (Current) • ElementSoftwareStatus[1]: 6 (Installed)

6-1-59 SMX_SASDiskDriveDiskDriveFirmware (Association)

Table 6-59 Class: SMX_SASDiskDriveDiskDriveFirmware (CIM_ElementSoftwareIdentity)

Property name	Property implementation
Antecedent	SMX_SASDiskDriveFirmware
Dependent	SMX_SASDiskDrive
ElementSoftwareStatus	• ElementSoftwareStatus[0]: 2 (Current) • ElementSoftwareStatus[1]: 6 (Installed)

6-1-60 SMX_SASDiskPhysicalPackageDiskDrive (Association)

Table 6-60 Class: SMX_SASDiskPhysicalPackageDiskDrive (CIM_Realizes)

Property name	Property implementation
Antecedent	SMX_SASDiskPhysicalPackage
Dependent	SMX_SASDiskDrive

6-1-61 SMX_SASStoragePoolStorageVolume (Association)

Table 6-61 Class: SMX_SASStoragePoolStorageVolume (CIM_AllocatedFromStoragePool)

Property name	Property implementation
Antecedent	SMX_SASStoragePool
Dependent	SMX_SASStorageVolume
SpaceConsumed	Bytes consumed by volume

6-1-62 SMX_SASPrimordialPoolStoragePool (Association)

Table 6-62 Class: SMX_SASPrimordialPoolStoragePool (CIM_AllocatedFromStoragePool)

Property name	Property implementation
Antecedent	SMX_SASPrimordialPool
Dependent	SMX_SASStoragePool
SpaceConsumed	Bytes consumed by storage pool

6-1-63 SMX_SASSpareExtentStorageRedundancySet (Association)

Table 6-63 Class: SMX_SASSpareExtentStorageRedundancySet (CIM_IsSpare)

Property name	Property implementation
Antecedent	SMX_SASStorageExtent
Dependent	SMX_SASStorageRedundancySet

6-1-64 SMX_SASStorageExtentStorageVolume (Association)

Table 6-64 Class: SMX_SASStorageExtentStorageVolume (CIM_BasedOn)

Property name	Property implementation
Antecedent	SMX_SASStorageExtent
Dependent	SMX_SASStorageVolume

6-1-65 SMX_SASDAPortSCSIProtocolEndpoint (Association)

Table 6-65 Class: SMX_SASDAPortSCSIProtocolEndpoint (CIM_DeviceSAPImplementation)

Property name	Property implementation
Antecedent	SMX_SASDAPort
Dependent	SMX_SASSCSIProtocolEndpoint

6-1-66 SMX_SASStorageGroupHostedCollection (Association)

Table 6-66 Class: SMX_SASStorageGroupHostedCollection (HP_GroupHostedCollection)

Property name	Property implementation
Antecedent	HP_ComputerSystem
Dependent	SMX_SASStorageSpecificCollection

6-1-67 SMX_SASPhysicalPackageArraySystem (Association)

Table 6-67 Class: SMX_SASPhysicalPackageArraySystem (CIM_ComputerSystemPackage)

Property name	Property implementation
Antecedent	SMX_SASPhysicalPackage

Table 6-67 Class: SMX_SASPhysicalPackageArraySystem (CIM_ComputerSystemPackage)

Property name	Property implementation
Dependent	SMX_SASArraySystem

6-1-68 SMX_SASPhysicalPackageArraySystemLocation (Association)

Table 6-68 Class: SMX_SASPhysicalPackageArraySystemLocation (CIM_PhysicalElementLocation)

Property name	Property implementation
Element	SMX_SASPhysicalPackage
Physical Location	SMX_SASArraySystemLocation

6-1-69 SMX_SASDiskPhysicalPackageDiskDriveLocation (Association)

Table 6-69 Class: SMX_SASDiskPhysicalPackageDiskDriveLocation (CIM_PhysicalElementLocation)

Property name	Property implementation
Element	SMX_SASDiskPhysicalPackage
PhysicalLocation	SMX_SASDiskDriveLocation

6-1-70 SMX_SASSCSIProtocolEndpointSCSIProtocolController (Association)

Table 6-70 Class: SMX_SASSCSIProtocolEndpointSCSIProtocolController (CIM_SAPAvailableForElement)

Property name	Property implementation
AvailableSAP	SMX_SASSCSIProtocolEndpoint
ManagedElement	SMX_SASSCSIProtocolController

6-2 Supported indications

6-2-1 SAS HBA status OK

Table 6-71 HP_DeviceIndication: SAS HBA status OK

Property name	Property implementation
CIM_Indication	
IndicationIdentifier	GUID string generated at the time of indication
PreceivedSeverity	2 (Informational)
IndicationTime	Time of indication
CIM_AlertIndication	
Description	A SAS/SATA HBA status has changed from non-OK to OK.
AlertingMangedElement	WBEM Path of controller
AlertingElementFormat	2 (CIMObjectPath)
AlertType	5 (Device Alert)
EventID	1
EventTime	Time of the event or time of the indication if event time unknown
ProviderName	HP SAS
RecommendedActions	No action is recommended.
SystemName	Name of the computer system generating the indication
SystemCreationClassName	CreationClassName of the computer system generating the indication
HP_AlertIndication	
Summary	HBA status OK
EventCategory	11 (I/O Adapter)
ProbableCause	1 (Other)
ProbableCauseDescription	HBA Status Changed to OK
ProviderVersion	Provider version generating the indication in the format, <major>.<minor>.<revision>.<build>
NetworkAddresses	Contains a list of all the IP addresses (IPv4 and IPv6) of the computer system generating the indication
OSType	• • On ESXi, 39(VM) • On Linux, 36 (Linux)
OSVersion	The operating system version of the computer system generating the indication in the format: <major>.<minor>.<build>

Table 6-71 HP_DeviceIndication: SAS HBA status OK

Property name	Property implementation
SystemFirmwareVersion	Firmware version of the computer system generating the indication
SystemSerialNumber	Serial number of the computer system generating the indication
SystemProductID	Product ID of the computer system generating the indication
SystemModel	Model name of the computer system generating the indication
SystemGUID	Platform GUID of the computer system generating the indication
ImpactedDomain	• 3 (Enclosure) for c-Class blade systems • 4 (System) for all other systems When ImpactedDomain is 3 (Enclosure), the properties indicated with (*) are populated.
BladeBay *	HP_BladeCSLocation.LocationInformation[0]
BladeName *	HP_ComputerSystem.Name
EnclosureName *	HP_BladeEnclosureCS.Name
RackName *	Rack name if one exists
RackUID *	Rack Unique Identifier if one exists
SystemVirtualSerialNumber	Conditional property containing the virtual system serial number string when running in a Virtual Connect environment
SystemVirtualUUID	Conditional property containing the virtual system UUID when running in a Virtual Connect environment
HP_HardwareIndication	
HWFirmwareVersion	Controller firmware version string
HWLogicalLocation	Controller Location string For example, Slot 3
HWManufacturer	Controller Manufacturer string
HWSerialNumber	Controller Serial Number
HP_DeviceIndication	
DeviceModel	Controller Model string

6-2-2 SAS HBA in Error state

Table 6-72 HP_DeviceIndication: SAS HBA in Error state

Property name	Property implementation
CIM_Indication	
IndicationIdentifier	GUID string generated at the time of indication
PreceivedSeverity	Severity • 5 (Major)
IndicationTime	Time of indication
CIM_AlertIndication	
Description	A SAS/SATA HBA status has changed to Error.
AlertingMangedElement	WBEM Path of controller
AlertingElementFormat	2 (CIMObjectPath)
AlertType	5 (Device Alert)
EventID	2
EventTime	Time of the event or time of the indication if event time unknown
ProviderName	HP SAS
RecommendedActions	Replace the HBA.
SystemName	Name of the computer system generating the indication
SystemCreationClassName	CreationClassName of the computer system generating the indication
HP_AlertIndication	
Summary	HBA status Error
EventCategory	11 (I/O Adapter)
ProbableCause	2 (Adapter/Card Error)
ProbableCauseDescription	HBA Status Changed to Error
ProviderVersion	Provider version generating the indication in the format, <major>.<minor>.<revision>.<build>
NetworkAddresses	Contains a list of all the IP addresses (IPv4 and IPv6) of the computer system generating the indication
OSType	• • On ESXi, 39(VM) • On Linux, 36 (Linux)
OSVersion	The operating system version of the computer system generating the indication in the format: <major>.<minor>.<build>
SystemFirmwareVersion	Firmware version of the computer system generating the indication

Table 6-72 HP_DeviceIndication: SAS HBA in Error state

Property name	Property implementation
SystemSerialNumber	Serial number of the computer system generating the indication
SystemProductID	Product ID of the computer system generating the indication
SystemModel	Model name of the computer system generating the indication
SystemGUID	Platform GUID of the computer system generating the indication
ImpactedDomain	• 3 (Enclosure) for c-Class blade systems • 4 (System) for all other systems When ImpactedDomain is 3 (Enclosure) the properties indicated with (*) are populated.
BladeBay *	HP_BladeCSLocation.LocationInformation[0]
BladeName *	HP_ComputerSystem.Name
EnclosureName *	HP_BladeEnclosureCS.Name
RackName *	Rack name if one exists
RackUID *	Rack Unique Identifier if one exists
SystemVirtualSerialNumber	Conditional property containing the virtual system serial number string when running in a Virtual Connect environment
SystemVirtualUUID	Conditional property containing the virtual system UUID when running in a Virtual Connect environment
HP_HardwareIndication	
HWFirmwareVersion	Controller firmware version string
HWLogicalLocation	Controller Location string For example, Slot 3
HWManufacturer	Controller Manufacturer string
HWSerialNumber	Controller Serial Number
HP_DeviceIndication	
DeviceModel	Controller Model string

6-2-3 Physical Drive Status OK

Table 6-73 HP_DeviceIndication: Physical Drive status OK

Property name	Property implementation
CIM_Indication	

Table 6-73 HP_DeviceIndication: Physical Drive status OK

Property name	Property implementation
IndicationIdentifier	GUID string generated at the time of indication
PreceivedSeverity	2 (Informational)
IndicationTime	Time of indication
CIM_AlertIndication	
Description	A physical drive status has changed from non-OK to OK.
AlertingMangedElement	WBEM Path of disk drive
AlertingElementFormat	2 (CIMObjectPath)
AlertType	5 (Device Alert)
EventID	201
EventTime	Time of the event or time of the indication if event time unknown
ProviderName	HP SAS
RecommendedActions	No action is recommended.
SystemName	Name of the computer system generating the indication
SystemCreationClassName	CreationClassName of the computer system generating the indication
HP_AlertIndication	
Summary	Physical Drive Status is now OK
EventCategory	6 (Primary Storage)
ProbableCause	1 (Other)
ProbableCauseDescription	Physical Drive Status Changed to OK
ProviderVersion	Provider version generating the indication in the format, <major>.<minor>.<revision>.<build>
OSType	• • On ESXi, 39 (VM) • OnLinux, 36 (Linux)
OSVersion	The operating system version of the computer system generating the indication in the format: <major>.<minor>.<build>
SystemFirmwareVersion	Firmware version of the computer system generating the indication
SystemSerialNumber	Serial number of the computer system generating the indication
SystemProductID	Product ID of the computer system generating the indication

Table 6-73 HP_DeviceIndication: Physical Drive status OK

Property name	Property implementation
SystemModel	Model name of the computer system generating the indication
SystemGUID	Platform GUID of the computer system generating the indication
VariableNames	• VariableNames[0]: FailureDescription • VariableNames[1]: DriveInterface
VariableTypes	• VariableTypes[0]: 1 (String) • VariableTypes[1]: 4 (uint16)
VariableValues	• VariableValues[0]: Short Description of failure • VariableValues[1]: HPSA_DiskDrive.DriveInterface In some cases, the property VariableValues can have N/A or "" values.
ImpactedDomain	• 3 (Enclosure) for c-Class blade systems • 4 (System) for all other systems When ImpactedDomain is 3 (Enclosure), the properties indicated with (*) are populated.
BladeBay *	HP_BladeCSLocation.LocationInformation[0]
BladeName *	HP_ComputerSystem.Name
EnclosureName *	HP_BladeEnclosureCS.Name
RackName *	Rack name if one exists
RackUID *	Rack Unique Identifier if one exists
SystemVirtualSerialNumber	Conditional property containing the virtual system serial number string when running in a Virtual Connect environment
SystemVirtualUUID	Conditional property containing the virtual system UUID when running in a Virtual Connect environment
HP_HardwareIndication	
HWFirmwareVersion	Disk firmware version string
HWLogicalLocation	Disk Location string For example, Bay 3
HWManufacturer	Disk Manufacturer string
HWSerialNumber	Disk Serial Number
HP_DeviceIndication	
DeviceModel	Disk Model string

6-2-4 Physical Drive status ERROR

Table 6-74 HP_DeviceIndication: Physical Drive status ERROR

Property name	Property implementation
CIM_Indication	
IndicationIdentifier	GUID string generated at the time of indication
PreceivedSeverity	Severity For example, 5 (Major)
IndicationTime	Time of indication
CIM_AlertIndication	
Description	A physical drive status has changed to Error.
AlertingMangedElement	WBEM Path of disk drive
AlertingElementFormat	2 (CIMObjectPath)
AlertType	5 (Device Alert)
EventID	202
EventTime	Time of the event or time of the indication if event time unknown
ProviderName	HP SAS
RecommendedActions	Check for failed or removed physical drives.
SystemName	Name of the computer system generating the indication
SystemCreationClassName	CreationClassName of the computer system generating the indication
HP_AlertIndication	
Summary	Physical drive status Error
EventCategory	6 (Primary Storage)
ProbableCause	86 (Disk Failure)
ProbableCauseDescription	Physical Drive Status Changed to Error
ProviderVersion	Provider version generating the indication in the format, <major>.<minor>.<revision>.<build>
NetworkAddresses	Contains a list of all the IP addresses (IPv4 and IPv6) of the computer system generating the indication
OSType	• • On ESXi, 39 (VM) • On Linux, 36 (Linux)
OSVersion	The operating system version of the computer system generating the indication in the following format: <major>.<minor>.<build>
SystemFirmwareVersion	Firmware version of the computer system generating the indication

Table 6-74 HP_DeviceIndication: Physical Drive status ERROR

Property name	Property implementation
SystemSerialNumber	Serial number of the computer system generating the indication
SystemProductID	Product ID of the computer system generating the indication
SystemModel	Model name of the computer system generating the indication
SystemGUID	Platform GUID of the computer system generating the indication
VariableNames	FailureDescription
VariableTypes	1 (String)
VariableValues	Short Description of failure In some cases, the property VariableValues can have N/A or "" values.
ImpactedDomain	• 3 (Enclosure) for c-Class blade systems • 4 (System) for all other systems When ImpactedDomain is 3 (Enclosure), the properties indicated with (*) are populated.
BladeBay *	HP_BladeCSLocation.LocationInformation[0]
BladeName *	HP_ComputerSystem.Name
EnclosureName *	HP_BladeEnclosureCS.Name
RackName *	Rack name if one exists
RackUID *	Rack Unique Identifier if one exists
SystemVirtualSerialNumber	Conditional property containing the virtual system serial number string when running in a Virtual Connect environment
SystemVirtualUUID	Conditional property containing the virtual system UUID when running in a Virtual Connect environment
HP_HardwareIndication	
HWFirmwareVersion	Disk firmware version string
HWLogicalLocation	Disk Location string For example, Bay 3
HWManufacturer	Disk Manufacturer string
HWSerialNumber	Disk Serial Number
HP_DeviceIndication	
DeviceModel	Disk Model string

6-2-5 Physical Drive status REBUILDING

Table 6-75 HP_DeviceIndication: Physical Drive status REBUILDING

Property name	Property implementation
CIM_Indication	
IndicationIdentifier	GUID string generated at the time of indication
PreceivedSeverity	Severity For example, 2 (Information)
IndicationTime	Time of indication
CIM_AlertIndication	
Description	A physical drive status has changed to Rebuilding. Data is now being rebuilt onto this drive from the RAID set.
AlertingMangedElement	WBEM Path of disk drive
AlertingElementFormat	2 (CIMObjectPath)
AlertType	5 (Device Alert)
EventID	203
EventTime	Time of the event or time of the indication if event time unknown
ProviderName	HP SAS
RecommendedActions	No action is recommended.
SystemName	Name of the computer system generating the indication
SystemCreationClassName	CreationClassName of the computer system generating the indication
HP_AlertIndication	
Summary	Physical drive rebuilding
EventCategory	6 (Primary Storage)
ProbableCause	1 (Other)
ProbableCauseDescription	Physical Drive Rebuilding
ProviderVersion	Provider version generating the indication in the format, <major>.<minor>.<revision>.<build>
NetworkAddresses	Contains a list of all the IP addresses (IPv4 and IPv6) of the computer system generating the indication
OSType	• • On ESXi, 39 (VM) • On Linux, 36 (Linux)
OSVersion	The operating system version of the computer system generating the indication in the following format: <major>.<minor>.<build>

Table 6-75 HP_DeviceIndication: Physical Drive status REBUILDING

Property name	Property implementation
SystemFirmwareVersion	Firmware version of the computer system generating the indication
SystemSerialNumber	Serial number of the computer system generating the indication
SystemProductID	Product ID of the computer system generating the indication
SystemModel	Model name of the computer system generating the indication
SystemGUID	Platform GUID of the computer system generating the indication
VariableNames	FailureDescription
VariableTypes	1 (String)
VariableValues	Short Description of failure In some cases, the property VariableValues can have N/A or "" values.
ImpactedDomain	• 3 (Enclosure) for c-Class blade systems • 4 (System) for all other systems When ImpactedDomain is 3 (Enclosure), the properties indicated with (*) are populated.
BladeBay *	HP_BladeCSLocation.LocationInformation[0]
BladeName *	HP_ComputerSystem.Name
EnclosureName *	HP_BladeEnclosureCS.Name
RackName *	Rack name if one exists
RackUID *	Rack Unique Identifier if one exists
SystemVirtualSerialNumber	Conditional property containing the virtual system serial number string when running in a Virtual Connect environment
SystemVirtualUUID	Conditional property containing the virtual system UUID when running in a Virtual Connect environment
HP_HardwareIndication	
HWFirmwareVersion	Disk firmware version string
HWLogicalLocation	Disk Location string For example, Bay 3
HWManufacturer	Disk Manufacturer string
HWSerialNumber	Disk Serial Number
HP_DeviceIndication	
DeviceModel	Disk Model string

6-2-6 Physical Drive status PREDICTIVE FAILURE

Table 6-76 HP_DeviceIndication: Drive status PREDICTIVE FAILURE

Property name	Property implementation
CIM_Indication	
IndicationIdentifier	GUID string generated at the time of indication
PreceivedSeverity	5 (Major)
IndicationTime	Time of indication
CIM_AlertIndication	
Description	A physical drive status has changed to Predictive Failure.
AlertingMangedElement	WBEM Path of disk drive
AlertingElementFormat	2 (CIMObjectPath)
AlertType	5 (Device Alert)
EventID	204
EventTime	Time of the event or time of the indication if event time unknown
ProviderName	HP SAS
RecommendedActions	Replace drive immediately to avoid loss of data.
SystemName	Name of the computer system generating the indication
SystemCreationClassName	CreationClassName of the computer system generating the indication
HP_AlertIndication	
Summary	Physical drive predictive failure
EventCategory	6 (Primary Storage)
ProbableCause	86 (Disk Failure)
ProbableCauseDescription	Physical Drive Predictive Failure
ProviderVersion	Provider version generating the indication in the format, <major>.<minor>.<revision>.<build>
NetworkAddresses	Contains a list of all the IP addresses (IPv4 and IPv6) of the computer system generating the indication
OSType	• On ESXi, 39 (VM) • On Linux, 36 (Linux)
OSVersion	The operating system version of the computer system generating the indication in the following format: <major>.<minor>.<build>
SystemFirmwareVersion	Firmware version of the computer system generating the indication

Table 6-76 HP_DeviceIndication: Drive status PREDICTIVE FAILURE

Property name	Property implementation
SystemSerialNumber	Serial number of the computer system generating the indication
SystemProductID	Product ID of the computer system generating the indication
SystemModel	Model name of the computer system generating the indication
SystemGUID	Platform GUID of the computer system generating the indication
VariableNames	FailureDescription
VariableTypes	1 (String)
VariableValues	Short Description of failure In some cases, the property VariableValues can have N/A or "" values.
ImpactedDomain	• 3 (Enclosure) for c-Class blade systems • 4 (System) for all other systems When ImpactedDomain is 3 (Enclosure), the properties indicated with (*) are populated.
BladeBay *	HP_BladeCSLocation.LocationInformation[0]
BladeName *	HP_ComputerSystem.Name
EnclosureName *	HP_BladeEnclosureCS.Name
RackName *	Rack name if one exists
RackUID *	Rack Unique Identifier if one exists
SystemVirtualSerialNumber	Conditional property containing the virtual system serial number string when running in a Virtual Connect environment
SystemVirtualUUID	Conditional property containing the virtual system UUID when running in a Virtual Connect environment
HP_HardwareIndication	
HWFirmwareVersion	Disk firmware version string
HWLogicalLocation	Disk Location string For example, Bay 3
HWManufacturer	Disk Manufacturer string
HWSerialNumber	Disk Serial Number
HP_DeviceIndication	
DeviceModel	Disk Model string

6-2-7 Logical Drive status OK

Table 6-77 HP_DeviceIndication: Logical Drive status OK

Property name	Property implementation
CIM_Indication	
IndicationIdentifier	GUID string generated at the time of indication
PreceivedSeverity	2 (Informational)
IndicationTime	Time of indication
CIM_AlertIndication	
Description	A logical drive status has changed from non-OK to OK.
AlertingMangedElement	WBEM Path of Storage Volume
AlertingElementFormat	2 (CIMObjectPath)
AlertType	5 (Device Alert)
EventID	101
EventTime	Time of the event or time of the indication if event time unknown
ProviderName	HP SAS
RecommendedActions	No action is recommended.
SystemName	Name of the computer system generating the indication
SystemCreationClassName	CreationClassName of the computer system generating the indication
HP_AlertIndication	
Summary	Logical Drive status OK
EventCategory	6 (Primary Storage)
ProbableCause	1 (Other)
ProbableCauseDescription	Logical Drive Status Changed to OK
ProviderVersion	Provider version generating the indication in the format, <major>.<minor>.<revision>.<build>
NetworkAddresses	List of all the IP addresses of the computer system generating the indication
OSType	• • On ESXi, 39 (VM) • On Linux, 36 (Linux)
OSVersion	The operating system version of the computer system generating the indication in the following format: <major>.<minor>.<build>
SystemFirmwareVersion	Firmware version of the computer system generating the indication

Table 6-77 HP_DeviceIndication: Logical Drive status OK

Property name	Property implementation
SystemSerialNumber	Serial number of the computer system generating the indication
SystemProductID	Product ID of the computer system generating the indication
SystemModel	Model name of the computer system generating the indication
SystemGUID	Platform GUID of the computer system generating the indication
ImpactedDomain	• 3 (Enclosure) for c-Class blade systems • 4 (System) for all other systems When ImpactedDomain is 3 (Enclosure), the properties indicated with (*) are populated.
BladeBay *	HP_BladeCSLocation.LocationInformation[0]
BladeName *	HP_ComputerSystem.Name
EnclosureName *	HP_BladeEnclosureCS.Name
RackName *	Rack name if one exists
RackUID *	Rack Unique Identifier if one exists
SystemVirtualSerialNumber	Conditional property containing the virtual system serial number string when running in a Virtual Connect environment
SystemVirtualUUID	Conditional property containing the virtual system UUID when running in a Virtual Connect environment

6-2-8 Logical Drive status ERROR

Table 6-78 HP_DeviceIndication: Logical Drive status ERROR

Property name	Property implementation
CIM_Indication	
IndicationIdentifier	GUID string generated at the time of indication
PreceivedSeverity	5 (Major)
IndicationTime	Time of indication
CIM_AlertIndication	
Description	A logical drive status has changed to Error.
AlertingMangedElement	WBEM Path of Storage Volume
AlertingElementFormat	2 (CIMObjectPath)
AlertType	5 (Device Alert)

Table 6-78 HP_DeviceIndication: Logical Drive status ERROR

Property name	Property implementation
EventID	102
EventTime	Time of the event or time of the indication if event time unknown
ProviderName	HP SAS
RecommendedActions	Check for failed or removed physical drives.
SystemName	Name of the computer system generating the indication
SystemCreationClassName	CreationClassName of the computer system generating the indication
HP_AlertIndication	
Summary	Logical drive status Error
EventCategory	6 (Primary Storage)
ProbableCause	86 (Disk Failure)
ProbableCauseDescription	Logical Drive Status Changed to Error
ProviderVersion	Provider version generating the indication in the format, <major>.<minor>.<revision>.<build>
NetworkAddresses	Contains a list of all the IP addresses (IPv4 and IPv6) of the computer system generating the indication
OSType	• • On ESXi, 39 (VM) • On Linux, 36 (Linux)
OSVersion	The operating system version of the computer system generating the indication in the following format: <major>.<minor>.<build>
SystemFirmwareVersion	Firmware version of the computer system generating the indication
SystemSerialNumber	Serial number of the computer system generating the indication
SystemProductID	Product ID of the computer system generating the indication
SystemModel	Model name of the computer system generating the indication
SystemGUID	Platform GUID of the computer system generating the indication
ImpactedDomain	• 3 (Enclosure) for c-Class blade systems • 4 (System) for all other systems When ImpactedDomain is 3 (Enclosure), the properties indicated with (*) are populated.
BladeBay *	HP_BladeCSLocation.LocationInformation[0]

Table 6-78 HP_DeviceIndication: Logical Drive status ERROR

Property name	Property implementation
BladeName *	HP_ComputerSystem.Name
EnclosureName *	HP_BladeEnclosureCS.Name
RackName *	Rack name if one exists
RackUID *	Rack Unique Identifier if one exists
SystemVirtualSerialNumber	Conditional property containing the virtual system serial number string when running in a Virtual Connect environment
SystemVirtualUUID	Conditional property containing the virtual system UUID when running in a Virtual Connect environment

6-2-9 Logical Drive status Degraded

Table 6-79 HP_DeviceIndication: Logical Drive is in a degraded state

Property name	Property implementation
CIM_Indication	
IndicationIdentifier	GUID string generated at the time of indication
PreceivedSeverity	3 (Warning)
IndicationTime	Time of indication
CIM_AlertIndication	
Description	A logical drive is in a degraded state. Device is still servicing I/O, but redundancy may be degraded or lost.
AlertingMangedElement	WBEM Path of Storage Volume
AlertingElementFormat	2 (CIMObjectPath)
AlertType	5 (Device Alert)
EventID	103
EventTime	Time of the event or time of the indication if event time unknown
ProviderName	HP SAS
RecommendedActions	Check status of physical drives. Degraded status may be caused by failed or missing physical drives, or a data recovery operation on one or more physical drives.
SystemName	Name of the computer system generating the indication
SystemCreationClassName	CreationClassName of the computer system generating the indication

Table 6-79 HP_DeviceIndication: Logical Drive is in a degraded state

Property name	Property implementation
HP_AlertIndication	
Summary	Logical drive degraded state
EventCategory	6 (Primary Storage)
ProbableCause	86 (Disk Failure)
ProbableCauseDescription	Logical Drive State Changed to Degraded
ProviderVersion	Provider version generating the indication in the format, <major>.<minor>.<revision>.<build>
NetworkAddresses	Contains a list of all the IP addresses (IPv4 and IPv6) of the computer system generating the indication
OSType	• • On ESXi, 39 (VM) • On Linux, 36 (Linux)
OSVersion	The operating system version of the computer system generating the indication in the following format: <major>.<minor>.<build>
SystemFirmwareVersion	Firmware version of the computer system generating the indication
SystemSerialNumber	Serial number of the computer system generating the indication
SystemProductID	Product ID of the computer system generating the indication
SystemModel	Model name of the computer system generating the indication
SystemGUID	Platform GUID of the computer system generating the indication
ImpactedDomain	• 3 (Enclosure) for c-Class blade systems • 4 (System) for all other systems When ImpactedDomain is 3 (Enclosure), the properties indicated with (*) are populated.
BladeBay *	HP_BladeCSLocation.LocationInformation[0]
BladeName *	HP_ComputerSystem.Name
EnclosureName *	HP_BladeEnclosureCS.Name
RackName *	Rack name if one exists
RackUID *	Rack Unique Identifier if one exists
SystemVirtualSerialNumber	Conditional property containing the virtual system serial number string when running in a Virtual Connect environment

Table 6-79 HP_DeviceIndication: Logical Drive is in a degraded state

Property name	Property implementation
SystemVirtualUUID	Conditional property containing the virtual system UUID when running in a Virtual Connect environment

6-2-10 Enclosure Power Supply status changed to Non Redundant

Table 6-80 HP_DeviceIndication: Enclosure Power Supply status changed to Non Redundant

Property name	Property implementation
CIM_Indication	
IndicationIdentifier	GUID string generated at the time of indication
PerceivedSeverity	3 (Warning)
IndicationTime	Time of indication
CIM_AlertIndication	
Description	A Storage Enclosure Power Subsystem status has changed to non-redundant.
AlertingMangedElement	WBEM Path of HP_StorageEnclosureProcessor
AlertingElementFormat	2 (CIMObjectPath)
AlertType	5 (Device Alert)
EventID	301
EventTime	Time of the event or time of the indication if event time unknown
ProviderName	HP SAS
RecommendedActions	Check status of all enclosure power supplies. Ensure that power supplies have not failed. Add or replace power supplies as necessary.
SystemName	Name of the computer system generating the indication
SystemCreationClassName	CreationClassName of the computer system generating the indication
HP_AlertIndication	
Summary	Power Supply status Non-Redundant
EventCategory	17 (Primary Storage Power)
ProbableCause	89 (Power Supply Failure)
ProbableCauseDescription	Redundant Power Supply Status Changed to Non-Redundant

Table 6-80 HP_DeviceIndication: Enclosure Power Supply status changed to Non Redundant

Property name	Property implementation
ProviderVersion	Provider version generating the indication in the format, <major>.<minor>.<revision>.<build>
NetworkAddresses	List of all the IP addresses of the computer system generating the indication
OSType	• • On ESXi, 39(VM) • On Linux, 36 (Linux)
OSVersion	The operating system version of the computer system generating the indication in the following format: <major>.<minor>.<build>
SystemFirmwareVersion	Firmware version of the computer system generating the indication
SystemSerialNumber	Serial number of the computer system generating the indication
SystemProductID	Product ID of the computer system generating the indication
SystemModel	Model name of the computer system generating the indication
SystemGUID	Platform GUID of the computer system generating the indication
VariableNames	FailureDescription
VariableTypes	1 (String)
VariableValues	Short Description of failure In some cases, the property VariableValues can have N/A or "" values.
ImpactedDomain	• 3 (Enclosure) for c-Class blade systems • 4 (System) for all other systems When ImpactedDomain is 3 (Enclosure), the properties indicated with (*) are populated.
BladeBay *	HP_BladeCSLocation.LocationInformation[0]
BladeName *	HP_ComputerSystem.Name
EnclosureName *	HP_BladeEnclosureCS.Name
RackName *	Rack name if one exists
RackUID *	Rack Unique Identifier if one exists
SystemVirtualSerialNumber	Conditional property containing the virtual system serial number string when running in a Virtual Connect environment
SystemVirtualUUID	Conditional property containing the virtual system UUID when running in a Virtual Connect environment

Table 6-80 HP_DeviceIndication: Enclosure Power Supply status changed to Non Redundant

Property name	Property implementation
HP_HardwareIndication	
HWLogicalLocation	Enclosure Location string For example, Port 1I Box 1
HWSerialNumber	Enclosure Serial Number
HP_DeviceIndication	
DeviceModel	Enclosure Model string

6-2-11 Enclosure Power Supply Status changed to OK (Redundant)

Table 6-81 HP_DeviceIndication: Enclosure Power Supply status changed to OK (Redundant)

Property name	Property implementation
CIM_Indication	
IndicationIdentifier	GUID string generated at the time of indication
PerceivedSeverity	2 (Info)
IndicationTime	Time of indication
CIM_AlertIndication	
Description	A Storage Enclosure Power Supply has changed to Fully Redundant.
AlertingMangedElement	WBEM Path of SMX_SASStorageEnclosureProcessor
AlertingElementFormat	2 (CIMObjectPath)
AlertType	5 (Device Alert)
EventID	302
EventTime	Time of the event or time of the indication if event time unknown
ProviderName	HP SAS
RecommendedActions	No action is recommended.
SystemName	Name of the computer system generating the indication
SystemCreationClassName	CreationClassName of the computer system generating the indication
HP_AlertIndication	
Summary	Redundant power supply status OK
EventCategory	17 (Primary Storage Power)

Table 6-81 HP_DeviceIndication: Enclosure Power Supply status changed to OK (Redundant)

Property name	Property implementation
ProbableCause	1 (Other)
ProbableCauseDescription	Redundant Power Supply Status Changed to OK
ProviderVersion	Provider version generating the indication in the format, <major>.<minor>.<revision>.<build>
NetworkAddresses	Contains a list of all the IP addresses (IPv4 and IPv6) of the computer system generating the indication
OSType	• • On ESXi, 39(VM) • On Linux, 36 (Linux)
OSVersion	The operating system version of the computer system generating the indication in the following format: <major>.<minor>.<build>
SystemFirmwareVersion	Firmware version of the computer system generating the indication
SystemSerialNumber	Serial number of the computer system generating the indication
SystemProductID	Product ID of the computer system generating the indication
SystemModel	Model name of the computer system generating the indication
SystemGUID	Platform GUID of the computer system generating the indication
VariableNames	FailureDescription
VariableTypes	1 (String)
VariableValues	Short Description of failure In some cases, the property VariableValues can have N/A or “” values.
ImpactedDomain	• 3 (Enclosure) for c-Class blade systems • 4 (System) for all other systems When ImpactedDomain is 3 (Enclosure), the properties indicated with (*) are populated.
BladeBay *	HP_BladeCSLocation.LocationInformation[0]
BladeName *	HP_ComputerSystem.Name
EnclosureName *	HP_BladeEnclosureCS.Name
RackName *	Rack name if one exists
RackUID *	Rack Unique Identifier if one exists
SystemVirtualSerialNumber	Conditional property containing the virtual system serial number string when running in a Virtual Connect environment

Table 6-81 HP_DeviceIndication: Enclosure Power Supply status changed to OK (Redundant)

Property name	Property implementation
SystemVirtualUUID	Conditional property containing the virtual system UUID when running in a Virtual Connect environment
HP_HardwareIndication	
HWLogicalLocation	Enclosure Location string For example, Port 1I Box 1
HWSerialNumber	Enclosure Serial Number
HP_DeviceIndication	
DeviceModel	Enclosure Model string

6-2-12 Enclosure Power Supply Status changed to Redundant Degraded

Table 6-82 HP_DeviceIndication: Enclosure Power Supply status changed to Redundant Degraded

Property name	Property implementation
CIM_Indication	
IndicationIdentifier	GUID string generated at the time of indication
PerceivedSeverity	3 (Warning)
IndicationTime	Time of indication
CIM_AlertIndication	
Description	A Storage Enclosure Power Supply status has changed to Degraded Redundancy.
AlertingMangedElement	WBEM Path of SMX_SASStorageEnclosureProcessor
AlertingElementFormat	2 (CIMObjectPath)
AlertType	5 (Device Alert)
EventID	303
EventTime	Time of the event or time of the indication if event time unknown
ProviderName	HP SAS
RecommendedActions	Check status of all enclosure power supplies. Ensure that power supplies have not failed. Add or replace power supplies as necessary.
SystemName	Name of the computer system generating the indication
SystemCreationClassName	CreationClassName of the computer system generating the indication

Table 6-82 HP_DeviceIndication: Enclosure Power Supply status changed to Redundant Degraded

Property name	Property implementation
HP_AlertIndication	
Summary	Power supply status Redundant Degraded
EventCategory	17 (Primary Storage Power)
ProbableCause	89 (Power supply failure)
ProbableCauseDescription	Redundant Power Supply Degraded
ProviderVersion	Provider version generating the indication in the format, <major>.<minor>.<revision>.<build>
NetworkAddresses	Contains a list of all the IP addresses (IPv4 and IPv6) of the computer system generating the indication
OSType	• • On ESXi, 39(VM) • On Linux, 36 (Linux)
OSVersion	The operating system version of the computer system generating the indication in the format: <major>.<minor>.<build>
SystemFirmwareVersion	Firmware version of the computer system generating the indication
SystemSerialNumber	Serial number of the computer system generating the indication
SystemProductID	Product ID of the computer system generating the indication
SystemModel	Model name of the computer system generating the indication
SystemGUID	Platform GUID of the computer system generating the indication
VariableNames	FailureDescription
VariableTypes	1 (String)
VariableValues	Short Description of failure In some cases, the property VariableValues can have N/A or “” values.
ImpactedDomain	• 3 (Enclosure) for c-Class blade systems • 4 (System) for all other systems When ImpactedDomain is 3 (Enclosure), the properties indicated with (*) are populated.
BladeBay *	HP_BladeCSLocation.LocationInformation[0]
BladeName *	HP_ComputerSystem.Name
EnclosureName *	HP_BladeEnclosureCS.Name
RackName *	Rack name if one exists

Table 6-82 HP_DeviceIndication: Enclosure Power Supply status changed to Redundant Degraded

Property name	Property implementation
RackUID *	Rack Unique Identifier if one exists
SystemVirtualSerialNumber	Conditional property containing the virtual system serial number string when running in a Virtual Connect environment
SystemVirtualUUID	Conditional property containing the virtual system UUID when running in a Virtual Connect environment
HP_HardwareIndication	
HWLogicalLocation	Enclosure Location string For example, Port 1I Box 1
HWSerialNumber	Enclosure Serial Number
HP_DeviceIndication	
DeviceModel	Enclosure Model string

6-2-13 Enclosure Temperature sensor Status changed to OK

Table 6-83 HP_DeviceIndication: Enclosure Temperature sensor status changed to OK

Property name	Property implementation
CIM_Indication	
IndicationIdentifier	GUID string generated at the time of indication
PerceivedSeverity	2 (Info)
IndicationTime	Time of indication
CIM_AlertIndication	
Description	A Storage Enclosure Temperature sensor Status changed from non-OK to OK.
AlertingMangedElement	WBEM Path of SMX_SASStorageEnclosureProcessor
AlertingElementFormat	2 (CIMObjectPath)
AlertType	5 (Device Alert)
EventID	307
EventTime	Time of the event or time of the indication if event time unknown
ProviderName	HP SAS
RecommendedActions	No action is recommended.
SystemName	Name of the computer system generating the indication
SystemCreationClassName	CreationClassName of the computer system generating the indication

Table 6-83 HP_DeviceIndication: Enclosure Temperature sensor status changed to OK

Property name	Property implementation
HP_AlertIndication	
Summary	Temperature sensor status OK
EventCategory	24 (Primary Storage Cooling)
ProbableCause	1 (Other)
ProbableCauseDescription	Temperature Status Changed to OK
NetworkAddresses	Contains a list of all the IP addresses (IPv4 and IPv6) of the computer system generating the indication
OSType	• • On ESXi, 39(VM) • On Linux, 36 (Linux)
OSVersion	The operating system version of the computer system generating the indication in the format: <major>.<minor>.<build>
ProviderVersion	Provider version generating the indication in the format, <major>.<minor>.<revision>.<build>
SystemFirmwareVersion	Firmware version of the computer system generating the indication
SystemSerialNumber	Serial number of the computer system generating the indication
SystemProductID	Product ID of the computer system generating the indication
SystemModel	Model name of the computer system generating the indication
SystemGUID	Platform GUID of the computer system generating the indication
VariableNames	FailureDescription
VariableTypes	1 (String)
VariableValues	Short Description of failure In some cases, the property VariableValues can have N/A or “” values.
ImpactedDomain	• 3 (Enclosure) for c-Class blade systems • 4 (System) for all other systems When ImpactedDomain is 3 (Enclosure), the properties indicated with (*) are populated.
BladeBay *	HP_BladeCSLocation.LocationInformation[0]
BladeName *	HP_ComputerSystem.Name
EnclosureName *	HP_BladeEnclosureCS.Name
RackName *	Rack name if one exists

Table 6-83 HP_DeviceIndication: Enclosure Temperature sensor status changed to OK

Property name	Property implementation
RackUID *	Rack Unique Identifier if one exists
SystemVirtualSerialNumber	Conditional property containing the virtual system serial number string when running in a Virtual Connect environment
SystemVirtualUUID	Conditional property containing the virtual system UUID when running in a Virtual Connect environment
HP_HardwareIndication	
HWLogicalLocation	Enclosure Location string For example, Port 1I Box 1
HWSerialNumber	Enclosure Serial Number
HP_DeviceIndication	
DeviceModel	Enclosure Model string

6-2-14 Enclosure Temperature sensor status changed to Warning

Table 6-84 HP_DeviceIndication: Enclosure Temperature sensor status changed to Warning

Property name	Property implementation
CIM_Indication	
IndicationIdentifier	GUID string generated at the time of indication
PerceivedSeverity	3 (Warning)
IndicationTime	Time of indication
CIM_AlertIndication	
Description	A Storage Enclosure Temperature sensor Status changed to Warning Condition. This indicates the enclosure temperature is above normal, otherwise enclosure is still operating normally.
AlertingMangedElement	WBEM Path of SMX_SASStorageEnclosureProcessor
AlertingElementFormat	2 (CIMObjectPath)
AlertType	5 (Device Alert)
EventID	308
EventTime	Time of the event or time of the indication if event time unknown
ProviderName	HP SAS

Table 6-84 HP_DeviceIndication: Enclosure Temperature sensor status changed to Warning

Property name	Property implementation
RecommendedActions	Ensure that the system is adequately ventilated. Check for proper room temperature and internal/external airflow. Add or repair fans and air baffling if necessary.
SystemName	Name of the computer system generating the indication
SystemCreationClassName	CreationClassName of the computer system generating the indication
HP_AlertIndication	
Summary	Temperature sensor status Warning Condition
EventCategory	24 (Primary Storage Cooling)
ProbableCause	51 (Temperature Unacceptable)
ProbableCauseDescription	Temperature Status Changed to Warning Condition
NetworkAddresses	Contains a list of all the IP addresses (IPv4 and IPv6) of the computer system generating the indication
OSType	• • On ESXi, 39(VM) • On Linux, 36 (Linux)
OSVersion	The operating system version of the computer system generating the indication in the format: <major>.<minor>.<build>
ProviderVersion	Provider version generating the indication in the format, <major>.<minor>.<revision>.<build>
SystemFirmwareVersion	Firmware version of the computer system generating the indication
SystemSerialNumber	Serial number of the computer system generating the indication
SystemProductID	Product ID of the computer system generating the indication
SystemModel	Model name of the computer system generating the indication
SystemGUID	Platform GUID of the computer system generating the indication
VariableNames	FailureDescription
VariableTypes	1 (String)
VariableValues	Short Description of failure In some cases, the property VariableValues can have N/A or “” values.

Table 6-84 HP_DeviceIndication: Enclosure Temperature sensor status changed to Warning

Property name	Property implementation
ImpactedDomain	• 3 (Enclosure) for c-Class blade systems • 4 (System) for all other systems When ImpactedDomain is 3 (Enclosure), the properties indicated with (*) are populated.
BladeBay *	HP_BladeCSLocation.LocationInformation[0]
BladeName *	HP_ComputerSystem.Name
EnclosureName *	HP_BladeEnclosureCS.Name
RackName *	Rack name if one exists
RackUID *	Rack Unique Identifier if one exists
SystemVirtualSerialNumber	Conditional property containing the virtual system serial number string when running in a Virtual Connect environment
SystemVirtualUUID	Conditional property containing the virtual system UUID when running in a Virtual Connect environment
HP_HardwareIndication	
HWLogicalLocation	Enclosure Location string For example, Port 1I Box 1
HWSerialNumber	Enclosure Serial Number
HP_DeviceIndication	
DeviceModel	Enclosure Model string

6-2-15 Enclosure Temperature sensor Status Changed to Critical

Table 6-85 HP_DeviceIndication: Enclosure Temperature sensor status changed to Critical

Property name	Property implementation
CIM_Indication	
IndicationIdentifier	GUID string generated at the time of indication
PerceivedSeverity	5 (major)
IndicationTime	Time of indication
CIM_AlertIndication	
Description	A Storage Enclosure Temperature sensor status has changed to Critical. An enclosure temperature is reaching the maximum allowed temperature for normal operation. A shutdown is imminent. Action is required before loss of data occurs.
AlertingMangedElement	WBEM Path of SMX_SASStorageEnclosureProcessor

Table 6-85 HP_DeviceIndication: Enclosure Temperature sensor status changed to Critical

Property name	Property implementation
AlertingElementFormat	2 (CIMObjectPath)
AlertType	5 (Device Alert)
EventID	309
EventTime	Time of the event or time of the indication if event time unknown
ProviderName	HP SAS
RecommendedActions	Ensure that the system is adequately ventilated. Check for proper room temperature and internal/external airflow. Add or repair fans and air baffling if necessary.
SystemName	Name of the computer system generating the indication
SystemCreationClassName	CreationClassName of the computer system generating the indication
HP_AlertIndication	
Summary	Temperature sensor status Critical
EventCategory	24 (Primary Storage Cooling)
ProbableCause	51 (Temperature Unacceptable)
ProbableCauseDescription	Temperature Status Changed to Critical
NetworkAddresses	Contains a list of all the IP addresses (IPv4 and IPv6) of the computer system generating the indication
OSType	• • On ESXi, 39(VM) • On Linux, 36 (Linux)
OSVersion	The operating system version of the computer system generating the indication in the format: <major>.<minor>.<build>
ProviderVersion	Provider version generating the indication in the format, <major>.<minor>.<revision>.<build>
SystemFirmwareVersion	Firmware version of the computer system generating the indication
SystemSerialNumber	Serial number of the computer system generating the indication
SystemProductID	Product ID of the computer system generating the indication
SystemModel	Model name of the computer system generating the indication
SystemGUID	Platform GUID of the computer system generating the indication

Table 6-85 HP_DeviceIndication: Enclosure Temperature sensor status changed to Critical

Property name	Property implementation
VariableNames	FailureDescription
VariableTypes	1 (String)
VariableValues	Short Description of failure In some cases, the property VariableValues can have N/A or "" values.
ImpactedDomain	• 3 (Enclosure) for c-Class blade systems • 4 (System) for all other systems When ImpactedDomain is 3 (Enclosure), the properties indicated with (*) are populated.
BladeBay *	HP_BladeCSLocation.LocationInformation[0]
BladeName *	HP_ComputerSystem.Name
EnclosureName *	HP_BladeEnclosureCS.Name
RackName *	Rack name if one exists
RackUID *	Rack Unique Identifier if one exists
SystemVirtualSerialNumber	Conditional property containing the virtual system serial number string when running in a Virtual Connect environment
SystemVirtualUUID	Conditional property containing the virtual system UUID when running in a Virtual Connect environment
HP_HardwareIndication	
HWLogicalLocation	Enclosure Location string For example, Port 1I Box 1
HWSerialNumber	Enclosure Serial Number
HP_DeviceIndication	
DeviceModel	Enclosure Model string

6-2-16 Enclosure Fan Status Changed to OK

Table 6-86 HP_DeviceIndication: Enclosure Fan status changed to OK

Property name	Property implementation
CIM_Indication	
IndicationIdentifier	GUID string generated at the time of indication
PerceivedSeverity	2 (Info)
IndicationTime	Time of indication
CIM_AlertIndication	

Table 6-86 HP_DeviceIndication: Enclosure Fan status changed to OK

Property name	Property implementation
Description	A Storage Enclosure Fan status has changed from a non-OK state to OK.
AlertingMangedElement	WBEM Path of SMX_SASStorageEnclosureProcessor
AlertingElementFormat	2 (CIMObjectPath)
AlertType	5 (Device Alert)
EventID	304
EventTime	Time of the event or time of the indication if event time unknown
ProviderName	HP SAS
RecommendedActions	No action is recommended.
SystemName	Name of the computer system generating the indication
SystemCreationClassName	CreationClassName of the computer system generating the indication
HP_AlertIndication	
Summary	Fan status OK
EventCategory	24 (Primary Storage Cooling)
ProbableCause	1 (Other)
ProbableCauseDescription	Fan Status Changed to OK
NetworkAddresses	Contains a list of all the IP addresses (IPv4 and IPv6) of the computer system generating the indication
OSType	• • On ESXi, 39(VM) • On Linux, 36 (Linux)
OSVersion	The operating system version of the computer system generating the indication in the format: <major>.<minor>.<build>
ProviderVersion	Provider version generating the indication in the format, <major>.<minor>.<revision>.<build>
SystemFirmwareVersion	Firmware version of the computer system generating the indication
SystemSerialNumber	Serial number of the computer system generating the indication
SystemProductID	Product ID of the computer system generating the indication
SystemModel	Model name of the computer system generating the indication
SystemGUID	Platform GUID of the computer system generating the indication

Table 6-86 HP_DeviceIndication: Enclosure Fan status changed to OK

Property name	Property implementation
VariableNames	FailureDescription
VariableTypes	1 (String)
VariableValues	Short Description of failure In some cases, the property VariableValues can have N/A or "" values.
ImpactedDomain	• 3 (Enclosure) for c-Class blade systems • 4 (System) for all other systems When ImpactedDomain is 3 (Enclosure), the properties indicated with (*) are populated.
BladeBay *	HP_BladeCSLocation.LocationInformation[0]
BladeName *	HP_ComputerSystem.Name
EnclosureName *	HP_BladeEnclosureCS.Name
RackName *	Rack name if one exists
RackUID *	Rack Unique Identifier if one exists
SystemVirtualSerialNumber	Conditional property containing the virtual system serial number string when running in a Virtual Connect environment
SystemVirtualUUID	Conditional property containing the virtual system UUID when running in a Virtual Connect environment
HP_HardwareIndication	
HWLogicalLocation	Enclosure Location string For example, Port 1I Box 1
HWSerialNumber	Enclosure Serial Number
HP_DeviceIndication	
DeviceModel	Enclosure Model string

6-2-17 Enclosure Fan status changed to Degraded

Table 6-87 HP_DeviceIndication: Enclosure Fan status changed to Degraded

Property name	Property implementation
CIM_Indication	
IndicationIdentifier	GUID string generated at the time of indication
PerceivedSeverity	3 (Warning)
IndicationTime	Time of indication
CIM_AlertIndication	

Table 6-87 HP_DeviceIndication: Enclosure Fan status changed to Degraded

Property name	Property implementation
Description	A Storage Enclosure Fan status has changed to Degraded. An enclosure has detected there might be a problem with one or more of the fans.
AlertingMangedElement	WBEM Path of SMX_SASStorageEnclosureProcessor
AlertingElementFormat	2 (CIMObjectPath)
AlertType	5 (Device Alert)
EventID	305
EventTime	Time of the event or time of the indication if event time unknown
ProviderName	HP SAS
RecommendedActions	Ensure that the system is adequately ventilated. Check for proper room temperature and internal/external airflow. Add or repair fans and air baffling if necessary.
SystemName	Name of the computer system generating the indication
SystemCreationClassName	CreationClassName of the computer system generating the indication
HP_AlertIndication	
Summary	Fan status Degraded
EventCategory	24 (Primary Storage Cooling)
ProbableCause	94 (Fan failure)
ProbableCauseDescription	Fan Degraded
ProviderVersion	Provider version generating the indication in the format, <major>.<minor>.<revision>.<build>
NetworkAddresses	Contains a list of all the IP addresses (IPv4 and IPv6) of the computer system generating the indication
OSType	• • On ESXi, 39(VM) • On Linux, 36 (Linux)
OSVersion	The operating system version of the computer system generating the indication in the format: <major>.<minor>.<build>
SystemFirmwareVersion	Firmware version of the computer system generating the indication
SystemSerialNumber	Serial number of the computer system generating the indication
SystemProductID	Product ID of the computer system generating the indication

Table 6-87 HP_DeviceIndication: Enclosure Fan status changed to Degraded

Property name	Property implementation
SystemModel	Model name of the computer system generating the indication
SystemGUID	Platform GUID of the computer system generating the indication
VariableNames	FailureDescription
VariableTypes	1 (String)
VariableValues	Short Description of failure In some cases, the property VariableValues can have N/A or "" values.
ImpactedDomain	• 3 (Enclosure) for c-Class blade systems • 4 (System) for all other systems When ImpactedDomain is 3 (Enclosure), the properties indicated with (*) are populated.
BladeBay *	HP_BladeCSLocation.LocationInformation[0]
BladeName *	HP_ComputerSystem.Name
EnclosureName *	HP_BladeEnclosureCS.Name
RackName *	Rack name if one exists
RackUID *	Rack Unique Identifier if one exists
SystemVirtualSerialNumber	Conditional property containing the virtual system serial number string when running in a Virtual Connect environment
SystemVirtualUUID	Conditional property containing the virtual system UUID when running in a Virtual Connect environment
HP_HardwareIndication	
HWLogicalLocation	Enclosure Location string For example, Port 1I Box 1
HWSerialNumber	Enclosure Serial Number
HP_DeviceIndication	
DeviceModel	Enclosure Model string

6-2-18 Enclosure Fan Status change to Failure

Table 6-88 HP_DeviceIndication: Enclosure Fan status changed to Failure

Property name	Property implementation
CIM_Indication	
IndicationIdentifier	GUID string generated at the time of indication

Table 6-88 HP_DeviceIndication: Enclosure Fan status changed to Failure

Property name	Property implementation
PerceivedSeverity	5 (major)
IndicationTime	Time of indication
CIM_AlertIndication	
Description	A Storage Enclosure Fan Status changed to Failure. An enclosure has detected a failure in the fan subsystem and there is insufficient fan capability to ensure normal operation.
AlertingMangedElement	WBEM Path of SMX_SASStorageEnclosureProcessor
AlertingElementFormat	2 (CIMObjectPath)
AlertType	5 (Device Alert)
EventID	306
EventTime	Time of the event or time of the indication if event time unknown
ProviderName	HP SAS
RecommendedActions	Ensure that the system is adequately ventilated. Check for proper room temperature and internal/external airflow. Add or repair fans and air baffling if necessary.
SystemName	Name of the computer system generating the indication
SystemCreationClassName	CreationClassName of the computer system generating the indication
HP_AlertIndication	
Summary	Fan status Error
EventCategory	24 (Primary Storage Cooling)
ProbableCause	94 (Fan failure)
ProbableCauseDescription	Fan Failure
ProviderVersion	Provider version generating the indication in the format, <major>.<minor>.<revision>.<build>
NetworkAddresses	Contains a list of all the IP addresses (IPv4 and IPv6) of the computer system generating the indication
OSType	• • On ESXi, 39(VM) • On Linux, 36 (Linux)
OSVersion	The operating system version of the computer system generating the indication in the format: <major>.<minor>.<build>
SystemFirmwareVersion	Firmware version of the computer system generating the indication

Table 6-88 HP_DeviceIndication: Enclosure Fan status changed to Failure

Property name	Property implementation
SystemSerialNumber	Serial number of the computer system generating the indication
SystemProductID	Product ID of the computer system generating the indication
SystemModel	Model name of the computer system generating the indication
SystemGUID	Platform GUID of the computer system generating the indication
VariableNames	FailureDescription
VariableTypes	1 (String)
VariableValues	Short Description of failure In some cases, the property VariableValues can have N/A or "" values.
ImpactedDomain	• 3 (Enclosure) for c-Class blade systems • 4 (System) for all other systems When ImpactedDomain is 3 (Enclosure), the properties indicated with (*) are populated.
BladeBay *	HP_BladeCSLocation.LocationInformation[0]
BladeName *	HP_ComputerSystem.Name
EnclosureName *	HP_BladeEnclosureCS.Name
RackName *	Rack name if one exists
RackUID *	Rack Unique Identifier if one exists
SystemVirtualSerialNumber	Conditional property containing the virtual system serial number string when running in a Virtual Connect environment
SystemVirtualUUID	Conditional property containing the virtual system UUID when running in a Virtual Connect environment
HP_HardwareIndication	
HWLogicalLocation	Enclosure Location string For example, Port 1I Box 1
HWSerialNumber	Enclosure Serial Number
HP_DeviceIndication	
DeviceModel	Enclosure Model string

7 Base Server

7-1 Overview

The SMX Base Server provider implements and extends CIM classes described in this document to model the base server. These classes provide computational information and capabilities and serve as an aggregation point to associate one or more elements that make up a base server, such as: Fans, Power Supplies, Processor and Memory (Volatile and/or Non-Volatile Storage).

Table 6-1 Implemented Profiles

Profile name	Organization	Version
HP Base Server Profile (P00105)	HP WBEM TC	1.1.0
HP Base Server Physical Asset Profile (P00114)	HP WBEM TC	1.1.0
HP Software Inventory (P00127)	HP WBEM TC	1.0.1

7-2 Namespaces

The provider returns instances in the `root/hpq` namespace.

7-3 Class Implementations

- SMX_ComputerSystem
- SMX_ComputerSystemChassis
- SMX_ComputerSystemPackage
- SMX_OperatingSystem
- SMX_RunningOS
- SMX_InstalledOS
- SMX_SMXSoftwareIdentity
- SMX_SMXInstalledSoftwareIdentity
- SMX_SystemFirmware
- SMX_SystemInstalledFirmwareIdentity
- SMX_SystemElementFirmwareIdentity

7-3-1 SMX_ComputerSystem

SMX_ComputerSystem implements the class HP_ComputerSystem to model the base server. There is only one instance of SMX_ComputerSystem instantiated on a server..

Table 7-2 Class: SMX_ComputerSystem Properties

Property name	**Property implementation**

Table 7-2 Class: SMX_ComputerSystem Properties

CIM_ManagedElement	
Caption	Computer system DNS name returned by uname
Description	Computer system DNS name returned by uname
ElementName	Computer system DNS name returned by uname
CIM_ManagedSystemElement	
Status	Same as OpertionaStatus (0)
OperationalStatus	OperationalStatus[0] contains the computer system consolidated status and indicates the worst status of connected subsystems. OperationalStatus[0] contains one of the following: • 0 (Unknown) • 1 (Other) • 2 (OK) • 3 (Degraded) • 6 (Error) • 10 (Stopped) The status values of the subsystems that make up the overall operational status are contained in OperationalStatus[1-n]. See the descriptions for GroupOperationalStatus for the list of possible values.
OperationalStatusClassNames	`OperationalStatusClassNames[0]` contains the computer system class name, SMX_ComputerSystem.CreationClassName. The class name of the HP_GroupSystemSpecificCollection class for the subsystems that make up the overall operational status reported in OperationalStatus[1-n] are contained in `OperationalStatusClassNames[1-n]`. See the datasheets for each provider for the value of each class name.

Table 7-2 Class: SMX_ComputerSystem Properties

StatusDescriptions	StatusDescriptions[0] contains one of the following corresponding to OperationalStatus[0]: • One or more of the subsystems that make up this computer system have an OperationalStatus value of Unknown. • One or more of the subsystems that make up this computer system have an OperationalStatus value of Other. • One or more of the subsystems that make up this computer system have an OperationalStatus value of Degraded. • One or more of the subsystems that make up this computer system have an OperationalStatus value of Error. • One or more of the subsystems that make up this computer system have an OperationalStatus value of Stopped. The status descriptions of the subsytems that make up overall operational status are contained in OperationalStatus(1-n). These are set to: • Unknown • OK • Degrqaded • Error • Stopped • Predictive Failure
HealthState	0 (Unknown) 5 (OK) 10 (Degraded) 20 (Major Failure)
CIM_LogicalElement	
CIM_EnabledLogicalElement	
EnabledState	5 (Not Applicable)
RequestedState	12 (Not Applicable)
EnabledDefault	2 (Enabled)
CIM_System	
CreationClassName	SMX_ComputerSystem
Roles	Computer system roles string: initialized to not set
CIM_ComputerSystem	

Table 7-2 Class: SMX_ComputerSystem Properties

OtherIdentifyingInfo	OtherIdentifyingInfo[0]: *<GUID_String>* where *<GUID_String>* is the computer system physical GUID string OtherIdentifyingInfo[1]: *<MAC_String>* where *<MAC_String>* is the computer system MAC address OtherIdentifyingInfo[2]: *<Model_String>:<Serial Number String>* where *<Model_String>* is the computer system model string; and *<Serial Number String>* is the computer system physical serial number string OtherIdentifyingInfo[3]: *<Tag_String>* where *<Tag_String>* is the computer system asset tag string OtherIdentifyingInfo[4]: *<ID_String>* where *<ID_String>* is the computer system physical GUID string OtherIdentifyingInfo[5]: *<ProductID_String>* where *<ProductID_String>* is SMX_ComputerSystemChassis.ProductID OtherIdentifyingInfo[6]: *<Target_String>* where *<Target_String>* is an opaque string used by the providers
IdentifyingDescriptions	IdentifyingDescriptions[0]: CIM:GUID IdentifyingDescriptions[1]: CIM:MAC IdentifyingDescriptions[2]: CIM:Model:SerialNumber IdentifyingDescriptions[3]: CIM:Tag IdentifyingDescriptions[4] CIM:CorrelatableID IdentifyingDescriptions[5] HPQ:ProductID IdentifyingDescriptions[6] HPQ:SMXTarget
Dedicated	0 (Not Dedicated)
HP_ComputerSystem	
Name	Computer system DNS name returned by uname
NameFormat	DNSName

Table 7-2 Class: SMX_ComputerSystem Properties

PrimaryOwnerName	Computer system primary owner name string; initialized to **not set**.
PrimaryOwnerContact	Computer system primary owner contact string; initialized to **not set**).
PrimaryOwnerPager	Computer system primary owner pager string; initialized to **not set**.
SecondaryOwnerContact	Computer system secondary owner contact string; initialized to **not set**.
SecondaryOwnerName	Computer system secondary owner name string; initialized to **not set**.
SecondaryOwnerPager	Computer system secondary owner pager string; initialized to **not set**.
LocationIndicator	State of the computer system Unit Identifier (UID) LED • 0 (Unknown) • 2 (On) • 3 (Off) • 5 (Alternating)
SerialNumber	The computer system physical serial number string.
IdentifyingNumber	The computer system physical GUID string.
Model	The computer system model string.
	SMX_ComputerSystem

Table 7-3 Class: Implemented methods for SMX_ComputerSystem Class

Method Name	Method Implementation
SendTestIndication	[IN} EventID, number of test event to send: 101 – Send Information Test Indication 102 – Send Warning Test Indication 103 – Send Critical Test Indication Return 0 - request to send indication successful 1 – method unsupported 2 – request to send indication failed 3 – provider is busy processing previously requested indication. Try again. Exceptions: CIM_ERR_INVALID_PARAMETER - EventID is not one of the defined values

7-3-2 SMX_ComputerSystemChassis

SMX_ComputerSystemChassis implements the class HP_ComputerSystemChassis to model the physical system chassis. There is only one instance of SMX_ComputerSystemChassis instantiated on a server.

Table 7-4 Class: SMX_ComputerSystemChassis

Property name	Property implementation
CIM_PhysicalElement	
Tag	Unique value for instance, for example 1
CreationClassName	SMX_ComputerSystemChassis
ElementName	Computer system product name (model) string
Manufacturer	Computer manufacturer string
Model	Computer system product name (model) string
SerialNumber	Computer system physical serial number
UserTracking	Computer system asset tag string (writable property; persistent across reboots)
Name	Computer system product name (model) string
Status	OK
StatusDescriptions	Description of the state of the chassis, for example System is functional.
Description	General description of the chassis, for example Physical Package for this system.
OperationalStatus	2 (OK)
PoweredOn	True
CIM_PhysicalPackage	
RemovalConditions	2 (Not Applicable)
PackageType	3 (Chassis/Frame)
CIM_PhysicalFrame	
CIM_Chassis	
ChassisPackageType	See MOF for definitions. This value is retrieved from SMBIOS.
ChassisTypeDescription	See MOF for definitions. This value is retrieved from SMBIOS
RackMountable	0 (Unknown) 1 (True) 2 (False)
HP_ComputerSystemChassis	
ProductID	Computer system product ID string (for example, 123456-123)

Table 7-4 Class: SMX_ComputerSystemChassis

Property name	Property implementation
VirtualUUID[]	If Synergy is enabled, this will contain the logical UUID for the system.
VirtualSerialNumber	If Synergy is enabled, this will contain the logical Serial Number for the system.
TPMModule	Indicates the installed and enabled state of the Trusted Platform Module 1 (Other) 2 (Absent) 3 (Present and Enabled) 4 (Present but Disabled)
SMX_ComputerSystemChassis	

7-3-3 SMX_ComputerSystemPackage

SMX_ComputerSystemPackage implements the class HP_ComputerSystemPackage and associates instances of SMX_ComputerSystem and SMX_ComputerSystemChassis. There is only one instance of SMX_ComputerSystemPackage instantiated on a server.

Table 7-5 Class: SMX_ComputerSystemPackage

Property name	Property implementation
CIM_Dependency	
CIM_SystemPackaging	
CIM_ComputerSystemPackage	
PlatformGUID	Computer system physical UUID value from SMBIOS
HP_ComputerSystemPackage	
Antecedent	ref: SMX_ComputerSystemChassis
Dependent	ref: SMX_ComputerSystem
SMX_ComputerSystemPackage	

7-3-4 SMX_OperatingSystem

SMX_OperatingSystem implements the class CIM_OperatingSystem to model the system operating system. There is only one instance of SMX_OperatingSystem instantiated on a server.

Table 7-6 Class: SMX_OperatingSystem

Property name	Property implementation
CIM_ManagedElement	
Caption	On ESX, output of vmware –v On Linux, first line of /etc/issue

Table 7-6 Class: SMX_OperatingSystem

Property name	Property implementation
Description	Output of uname -v
ElementName	Output of uname -s
CIM_ManagedSystemElement	
OperationalStatus	2 (OK)
StatusDescriptions	StatusDescriptions[0] will contain the value map string corresponding to OperationalStatus[0]: For example: OK
Status	OK
HealthState	5 (OK)
PrimaryStatus	1 (OK)
CIM_LogicalElement	
CIM_EnabledLogicalElement	
EnabledState	2 (Enabled)
RequestedState	0 (Unknown)
EnabledDefault	2 (Enabled)
TransitioningToState	12 (Not Applicable)
CIM_OperatingSystem	
CSName	SMX_ComputerSystem.Name
CSCreationClassName	SMX_ComputerSystem.CreationClassName
Name	Output of uname -s
CreationClassName	SMX_OperatingSystem
Version	Output of uname -r
OtherTypeDescription	On ESX, Embedded On Linux, NULL
OSType	On ESX, 39(VM) On Linux, 36 (Linux)
LocalDateTime	Current time
LastBootUpDateTime	Time when the operating system was last booted
SMX_OpertingSystem	

7-3-5 SMX_RunningOS

SMX_RunningOS implements the class CIM_RunningOS and associates the SMX_ComputerSystem instance and an SMX_OperatingSystem instance.

Table 7-7 Class: SMX_RunningOS

Property name	Property implementation
CIM_RunningOS	
Antecedent	ref: CIM_OperatingSystem
Dependent	ref: CIM_ComputerSystem
SMX_RunningOS	

7-3-6 SMX_InstalledOS

SMX_InstalledOS implements the class CIM_InstalledOS and associates the SMX_ComputerSystem instance and an SMX_OperatingSystem instance.

Table 7-8 Class: SMX_InstalledOS

Property name	Property implementation
CIM_InstalledOS	
PartComponent	ref: CIM_OperatingSystem
GroupComponent	ref: CIM_ComputerSystem
SMX_InstalledOS	

7-3-7 SMX_SMXSoftwareIdentity

SMX_SMXSoftwareIdentity implements the class HP_SoftwareIdentity to model the SMX software identification information.

Table 7-9 Class: SMX_SoftwareIdentity

Property name	Property implementation
CIM_ManagedElement	
Caption	Short description of the SMX product, for example: HP Standards Management eXtensions (SMX)
Description	Description of the SMX product, for example: HPs Standards Management eXtensions (SMX) are WBEM Providers, using DMTF standard profiles.
ElementName	hp-smx
CIM_ManagedSystemElement	
OperationalStatus	2 (OK)
StatusDescriptions	0 Description of the installation status of the software identity, for example: SMX is installed properly
Status	OK

Table 7-9 Class: SMX_SoftwareIdentity

Property name	Property implementation
HealthState	5 (OK)
CIM_LogicalElement	
CIM_SoftwareIdentity	
InstanceID	Opaque string using HPQ as OrgID, for example: HPQ:SMX_SMXSoftwareIdentity-1
MajorVersion	The first numeric value in the VersionString
MinorVersion	The second numeric value in the VersionString
RevisionNumber	The third numeric value in the Versionstring
VersionString	Version of SMX, for example, 02.00.00
Manufacturer	Hewlett-Packard
Classifications[0]	5 (Instrumentation)
IsEntity	True
TargetOSTypes[0]	On ESX, 39(VM) On Linux, 36 (Linux)
IdentityInfoType[]	IdentityInfoType[0] will contain the following: CIM:SoftwareFamily IdentityInfoType[1] will contain the following: HPQ:SoftwareCategory
IdentityInfoValue[]	IdentityInfoValue[0] will contain the following: HPQ:hp-smx IdentityInfoValue[1] will contain the following: System Management
HP_SoftwareIdentity	
SMX_SMXSoftwareIdentity	

7-3-8 SMX_SMXInstalledSoftwareIdentity

SMX_SMXInstalledSoftwareIdentity implements the class CIM_InstalledSoftwareIdentity and associates the SMX_ComputerSystem instance and an SMX_SMXSoftwareIdentity instance.

Table 7-10 Class: SMX_SMXInstalledSoftwareIdentity

Property name	Property implementation
CIM_InstalledSoftwareIdentity	
InstalledSoftware	ref: CIM_SoftwareIdentity
System	ref: CIM_ComputerSystem

Table 7-10 Class: SMX_SMXInstalledSoftwareIdentity

Property name	Property implementation
SMX_SMXInstalledSoftwareIdentity	

7-3-9 SMX_SystemFirmware

SMX_SystemFirmware implements the class HP_SoftwareIdentity and describes the firmware found on the server system.

Table 7-11 Class: SMX_SystemFirmware

Property name	Property implementation
CIM_ManagedElement	
Caption	A description of the firmware. For example, on ProLiant: System ROM Firmware-<*family_code*> (<*state*>) where <*family_code*> is the system ROM family code and <*state*> is either Active or Redundant For example, System ROM Firmware-P31 (Active) For example, System ROM Firmware-P31 (Redundant)
Description	A description of the firmware.
ElementName	A description of the firmware.
CIM_ManagedSystemElement	
Name	A name for the firmware.
OperationalStatus	2 (OK)
StatusDescriptions	StatusDescriptions[0] will contain the following corresponding to OperationalStatus[0]: System Firmware Status: OK
HealthState	5 (OK)
CIM_LogicalElement	
CIM_SoftwareIdentity	
InstanceID	Opaque string using HPQ as OrgID, for example: HPQ:SMX_SystemFirmware:<*n*> where <*n*> is used to identify the instance For example, HPQ:SMX_SystemFirmware:1
MajorVersion	The firmware major version
MinorVersion	The firmware minor version
VersionString	The firmware version
Manufacturer	Hewlett-Packard
Classifications	11 (Bios/FCode)
ClassificationDescriptions	System Firmware

Table 7-11 Class: SMX_SystemFirmware

Property name	Property implementation
IdentityInfoValue	On ProLiant, this will contain: HPQ:<*family_code*> where <*family_code*> is the system ROM family code For example, HPQ:P31 On Integrity, this will contain: HPQ:<ElementName>
IdentityInfoType	CIM:SoftwareFamily
ReleaseDate	*YYYYMMDD*******.********** where *YYYY* is the 4 digit year, *MM* is the 2 digit month, and *DD* is the 2 digit day
SMX_SystemFirmware	

7-3-10 SMX_SystemInstalledFirmwareIdentity

HP_SystemInstalledFirmwareIdentity extends the class CIM_InstalledSoftwareIdentity and associates the HP_ComputerSystem instance and an SMX_SystemFirmware instance.

Table 7-12 Class: SMX_SystemInstalledFirmwareIdentity

Property name	Property implementation
CIM_InstalledSoftwareIdentity	
SMX_SystemInstalledFirmwareIdentity	
InstalledSoftware	ref:SMX_SystemFirmware
System	ref: HP_ComputerSystem

7-3-11 SMX_SystemElementFirmwareIdentity

HP_SystemElementFirmwareIdentity implements the class HP_ElementSoftwareIdentity and associates the HP_ComputerSystem instance and SMX_SystemFirmware instances.

Table 7-13 Class: SMX_SystemElementFirmwareIdentity

Property name	Property implementation
CIM_Dependency	
CIM_ElementSoftwareIdentity	
UpgradeCondition	3 (Owner Upgradeable)

Table 7-13 Class: SMX_SystemElementFirmwareIdentity

Property name	Property implementation
ElementSoftwareStatus	The ElementSoftwareStatus array will contain the following if the Antecedent refers to an instance of an Active Firmware: ElementSoftwareStatus[0]: 6 (Installed) ElementSoftwareStatus[1]: 2 (Current) The ElementSoftwareStatus array will contain the following if the Antecedent refers to an instance of a Redundant Firmware: ElementSoftwareStatus[0]: 6 (Installed) ElementSoftwareStatus[1]: 4 (Fallback)
SMX_SystemElementFirmwareIdentity	
Antecedent	ref: SMX_SystemFirmware
Dependent	ref: HP_ComputerSystem

7-4 Supported indications

The following table describes the properties that are common to all of the SMX Base Server Provider indications that are implement for server platforms, where available.

Table 7-14 Provider Indication Common Properties

Property name	Property implementation
CIM_Indication	
IndicationIdentifier	GUID string generated at the time of the indication
IndicationTime	Time of indication
CIM_AlertIndication	
EventTime	Time of the event or time of the indication if event time unknown
SystemName	SMX_ComputerSystem.Name
SystemCreationClassName	SMX_ComputerSystem.CreationClassName
HP_AlertIndication	
ProviderVersion	Provider Version in the format VV.UU.FF. for example, 01.05.00
NetworkAddresses	Contains a list of all the IP addresses of the computer system generating the indication
OSType	On ESX, 39 (VM) On Linux, 36 (Linux)

Table 7-14 Provider Indication Common Properties

Property name	Property implementation
OSVersion	The operating system version of the computer system generating the indication in the following format: *<major>.<minor>.<build>*
SystemFirmwareVersion	Array of firmware versions of the computer system generating the indication
SystemSerialNumber	Serial number of the computer system generating the indication
SystemProductID	Product ID of the computer system generating the indication
SystemModel	Model name of the computer system generating the indication
SystemGUID	Platform GUID of the computer system generating the indication

7-4-1 HP_DeviceIndication: WBEM Providers Started

The following tables describe the SMX Base Server Provider indications that are implemented for all server platforms.

Table 7-15 HP_DeviceIndication: WBEM Providers Started

Property name	Property implementation
CIM_Indication	
PerceivedSeverity	2 (Informational)
CIM_AlertIndication	
Description	SMX WBEM Providers have started
AlertType	5 (Device Alert)
EventID	1
ProviderName	HP WBEM
RecommendedActions	No action is recommended.
HP_AlertIndication	
Summary	WBEM Providers started
ProbableCause	1 (Other)
ProbableCauseDescription	WBEM Providers Started

7-4-2 HP_DeviceIndication: WBEM Providers Informational Test Indication

Table 7-16 HP_DeviceIndication: WBEM Providers Informational Test Indication

Property name	Property implementation
CIM_Indication	
PerceivedSeverity	2 (Informational)
CIM_AlertIndication	
Description	This is an information test event
AlertType	5 (Device Alert)
EventID	1
ProviderName	HP Test
RecommendedActions	No action is recommended.
HP_AlertIndication	
Summary	Test Event
ProbableCause	1 (Other)
ProbableCauseDescription	Test Indication

7-4-3 HP_DeviceIndication: WBEM Providers Warning Test Indication

Table 7-17 HP_DeviceIndication: WBEM Providers Warning Test Indication

Property name	Property implementation
CIM_Indication	
PerceivedSeverity	3 (Warning)
CIM_AlertIndication	
Description	This is a warning test event
AlertType	5 (Device Alert)
EventID	2
ProviderName	HP Test
RecommendedActions	No action is recommended.
HP_AlertIndication	
Summary	Test Event

7-4-3 HP_DeviceIndication: WBEM Providers Warning Test Indication

Table 7-17 HP_DeviceIndication: WBEM Providers Warning Test Indication

Property name	Property implementation
ProbableCause	1 (Other)
ProbableCauseDescription	Test Indication

7-4-4 HP_DeviceIndication: WBEM Providers Critical Test Indication

Table 7-18 HP_DeviceIndication: WBEM Providers Critical Test Indication

Property name	Property implementation
CIM_Indication	
PerceivedSeverity	6 (Critical)
CIM_AlertIndication	
Description	This is a Critical Test Event
AlertType	5 (Device Alert)
EventID	3
ProviderName	HP Test
RecommendedActions	No action is recommended.
HP_AlertIndication	
Summary	Test Event
ProbableCause	1 (Other)
ProbableCauseDescription	Test Indication

7-4-5 HP_DeviceIndication: ASR Reboot Occurred

Table 7-19 HP_DeviceIndication: ASR Reboot Occurred

Property name	Property implementation
CIM_Indication	
PerceivedSeverity	5 (Major)

7-4-5 HP_DeviceIndication: ASR Reboot Occurred

Table 7-19 HP_DeviceIndication: ASR Reboot Occurred

Property name	Property implementation
CIM_AlertIndication	
Description	"The system has rebooted from an Automatic Server Recovery (ASR) event."
AlertType	5 (Device Alert)
EventID	"1"
ProviderName	"HP Recovery"
RecommendedActions	"Determine the nature of the ASR event and take corrective action."
HP_AlertIndication	
Summary	"ASR reboot occurred."
EventCategory	16 (System Power)
ProbableCause	111 (Timeout)
ProbableCauseDescription	"ASR Reboot occurred"

7-4-6 HP_DeviceIndication: Thermal Reboot Occurred

Table 7-20 HP_DeviceIndication: Thermal Reboot Occurred

Property name	Property implementation
CIM_Indication	
PerceivedSeverity	5 (Major)
CIM_AlertIndication	
Description	"The system has rebooted from thermal shutdown event."
AlertType	5 (Device Alert)
EventID	"2"
ProviderName	"HP Recovery"
RecommendedActions	"Replace any failed or removed fans. Insure the air flow into, out of, and within the system chassis is not obstructed."
HP_AlertIndication	

7-4-6 HP_DeviceIndication: Thermal Reboot Occurred

Table 7-20 HP_DeviceIndication: Thermal Reboot Occurred

Property name	Property implementation
Summary	"Thermal reboot occurred."
EventCategory	16 (System Power)
ProbableCause	51 (Temperature Unacceptable)
ProbableCauseDescription	"Thermal Reboot occurred"

7-4-7 HP_DeviceIndication: POST Occurred

Table 7-21 HP_DeviceIndication: POST Occurred

Property name	Property implementation
CIM_Indication	
PerceivedSeverity	5 (Major)
CIM_AlertIndication	
Description	"Power-On Self-Test errors occurred during the last system startup."
AlertType	5 (Device Alert)
EventID	"1"
ProviderName	"HP POST"
RecommendedActions	"Determine the nature of the POST error and take corrective action."
HP_AlertIndication	
Summary	"POST errors occurred."
EventCategory	4 (System Hardware)
ProbableCause	8 (Configuration/Customization Error)
ProbableCauseDescription	"POST Errors occurred"
VariableNames	VariableNames[0]: "POST Error Code" VariableNames[1]: "POST Error String"
VariableTypes	VariableTypes[0]: 3 (uint8) VariableTypes[1]: 1 (string)
VariableValues	VariableValues[0]: The POST error code as specified by the System ROM VariableValues[1]: The POST error string as specified by the System ROM

8 CPU

8-1 Overview

The following table details these profiles implemented and files installed by this provider.

Table 7-1 Overview

Implemented Profiles	HP CPU Profile (P00106) HP CPU Consolidated Status Profile (P00107) HP CPU Physical Asset Profile (P00108) HP Location Profile (P00124)

8-2 Namespaces

This provider returns instances in the `root/hpq` namespace.

8-3 Class Implementations

- SMX_Processor
- SMX_ProcessorCapabilities
- SMX_ProcessorCore
- SMX_HardwareThread
- SMX_ProcessorCacheMemory
- SMX_SystemProcessor
- SMX_ProcessorElementCapabilities
- SMX_ProcessorCoreComponent
- SMX_HWThreadComponent
- SMX_AssociatedProcessorCacheMemory
- SMX_ProcessorCollection
- SMX_HostedProcessorCollection
- SMX_MemberOfProcessorCollection
- SMX_ProcessorChip
- SMX_RealizesProcessor
- SMX_SystemPhysicalProcessor
- SMX_ProcessorLocation
- SMX_ProcessorElementLocation

8-3-1 SMX_Processor

SMX_Processor extends the class CIM_Processor to model the system processors.

Table 7-2 Class: HP_Processor Properties

Property name	Property implementation
CIM_ManagedElement	
Caption	Processor in ProcessorBaord=a, where a is the slot number Processor in CPUSocket=b on System Mainboard, where b is the socket number Processor in Socket=b on ProcessorBaord=a where a is the slot number and b is the socket number
Description	*<processor brand string>* (x86 Family x Model y Stepping z), where *<processor brand string>* is the processor brand string, x is the processor family number, y is the processor model number and z is the processor stepping number Example: Manufacture: Intel(R) Family: Xeon(TM) 3.06GHz (x86 Family 15 Model 2 Stepping 7)
ElementName	Processor in ProcessorBaord=a, where a is the slot number Processor in CPUSocket=b on System Mainboard, where b is the socket number Processor in CPUSocket=b on ProcessorBaord=a, where a is the slot number and b is the socket number
CIM_ManagedSystemElement	
Name	Processor in ProcessorBoard=a, where a is the slot number Processor in CPUSocket=b, on System Mainboard where b is the socket number Processor in CPUSocket=b on ProcessorBaord= a, where a is the slot number and b is the socket number
OperationalStatus	0 (Unknown) 2 (OK), when CPU is enabled and operational 5 (Predictive Failure), when IML error information is logged for this CPU 6 (Error), when CPU is disabled through POST error 10 (Stopped), when CPU is disabled through RBSU
StatusDescriptions	StatusDescriptions[0] text per OperationalStatus[0]: Unknown OK Error Stopped Predictive Failure

Table 7-2 Class: HP_Processor Properties

Property name	Property implementation
HealthState	0 (Unknown), when OperationalStatus[0]=0 (Unknown) 5 (OK), when OperationalStatus[0]=2 (OK) 15 (Minor Failure), when OperationalStatus[0]=10 (Stopped) 20 (Major Failure), when OperationalStatus[0]=5 (Predictive Failure) 25 (Critical Failure), when OperationalStatus[0]=6 (Error)
CIM_LogicalElement	
CIM_EnabledLogicalElement	
EnabledState	2 (Enabled)
RequestedState	12 (Not Applicable)
EnabledDefault	2 (Enabled)
CIM_LogicalDevice	
SystemCreationClassName	SMX_ComputerSystem
SystemName	Computer system name
CreationClassName	SMX_Processor
DeviceID	Proc n, where n is the processor number
CIM_Processor	
CPUStatus	1 (CPU Enabled) 2 (CPU Disabled by User using BIOS Setup) 3 (CPU Disabled By BIOS (POST Error) 4 (CPU Idle) 7 (Other)
Family	Processor family number from SMBIOS (for example, 179 for Intel(R) Xeon(TM))
MaxClockSpeed	Maximum clock speed in MHz(for example, 3600)
CurrentClockSpeed	Current clock speed in MHz (for example, 3066)
DataWidth	For x86 processors: 32 For x64 processors: 64
AddressWidth	For x86 processors: 32 For x64 processors: 64
ExternalBusClockSpeed	External bus clock speed in MHz (for example, 533)
Characteristics	For x86 processors: Characteristics[0]: 3 (32-bit Capable) For x64 processors: ○ Characteristics[0]: 3 (32-bit Capable) ○ Characteristics[1]: 2 (64-bit Capable)

Table 7-2 Class: HP_Processor Properties

Property name	Property implementation
NumberOfEnabledCores	Number of enabled and operational cores for this processor (for example, 1, 2, 4)
Stepping	Stepping for processor
Role	Processor Role
Unique ID	Unique identifier for processor
HP_Processor	
SMX_Processor	

8-3-2 SMX_ProcessorCapabilities

SMX_ProcessorCapabilities extends the class CIM_ProcessorCapabilities to model the processor capabilities.

Table 8-3 Class: SMX_ProcessorCapabilities

Property name	Property implementation
CIM_ManagedElement	
Caption	Processor Capabilities
Description	Processor Capabilities
CIM_Capabilities	
InstanceID	HPQ:SMX_ProcessorCapabilities:n, where n is a unique, number.
ElementName	Processor Capabilities
CIM_EnabledLogicalElementCapabilities	
ElementNameEditSupported	0 (False)
RequestedStatesSupported	None
CIM_ProcessorCapabilities	
NumberOfProcessorCores	Number of processor cores (for example, 1, 2, 4)
NumberOfHardwareThreads	Number of hardware threads (for example, 1, 2)
HP_ProcessorCapabilities	
SMX_ProcessorCapabilities	

8-3-3 SMX_ProcessorCore

SMX_ProcessorCore extends the class CIM_ProcessorCore to model the processor cores.

Table 8-4 Class: SMX_ProcessorCore

Property name	Property implementation
CIM_ManagedElement	
Caption	Processor:p - Core:c, where p is the processor number and c is the core number
Description	*<processor brand string>* (x86 Family x Model y Stepping z) (Processor:p - Core:c), where <processor brand string> is the processor brand string, x is the processor family number, y is the processor model number, z is the processor stepping number, p is the processor number, and c is the core number Example: Manufacturer: Intel (R) Family:Intel(R) Xeon(TM) 3.06GHz (x86 Family 15 Model 2 Stepping 7) (Processor:1 – Core:2)
ElementName	Processor:p - Core:c where p is the processor number and c is the core number
CIM_ManagedSystemElement	
Name	Processor:p – Core:c, where p is the processor number and c is the core number
OperationalStatus	0 (Unknown) 2 (OK), when CPU is enabled and operational 5 (Predictive Failure), when IML error information is logged for this CPU 6 (Error), when CPU is disabled through POST error 10 (Stopped), when CPU is disabled through RBSU
StatusDescriptions	StatusDescriptions[0] text per OperationalStatus[0]: Unknown. OK Predictive Failure Error Stopped
HealthState	0 (Unknown), when OperationalStatus[0]=0 (Unknown) 5 (OK), when OperationalStatus[0]=2 (OK) 15 (Minor Failure), when OperationalStatus[0]=10 (Stopped) 20 (Major Failure), when OperationalStatus[0]=5 (Predictive Failure) 25 (Critical Failure), when OperationalStatus[0]=6 (Error)
CIM_LogicalElement	
CIM_EnabledLogicalElement	
EnabledState	2 (Enabled)
RequestedState	12 (Not Applicable)
EnabledDefault	2 (Enabled)

Table 8-4 Class: SMX_ProcessorCore

Property name	Property implementation
CIM_ProcessorCore	
InstanceID	HPQ:SMX_ProcessorCore:Proc:p Core:c, where p is the processor number and c is the core number.
CoreEnabledState	2 (Core Enabled)
Characteristics	For x86 processors: Characteristics[0]: 3 (32-bit Capable) For x64 processors: ○ Characteristics[0]: 3 (32-bit Capable) ○ Characteristics[1]: 2 (64-bit Capable)
HP_ProcessorCore	
Bootstrap	False True
SMX_ProcessorCore	

8-3-4 SMX_HardwareThread

SMX_HardwareThread extends the class CIM_HardwareThread to model the hardware threads.

Table 8-5 Class: SMX_HardwareThread

Property name	Property implementation
CIM_ManagedElement	
Caption	Processor:p – Core:c - Thread :t, where p is the processor number, c is the core number, and t is the thread number
Description	*<processor brand string>* (x86 Family x Model y Stepping z) (Processor:p – Core:c – Thread:t), where <processor brand string> is the processor brand string, x is the processor family number, y is the processor model number, z is the processor stepping number, p is the processor number, c is the core number, and t is the thread number Example: Manufacture: Intel(R) Family Intel(R) Xeon(TM) 3.06GHz (x86 Family 15 Model 2 Stepping 7) (Processor:1 – Core:2)
ElementName	Processor:p – Core:c – Thread:t, where p is the processor number, c is the core number, and t is the thread number
CIM_ManagedSystemElement	
Name	Processor:p – Core:c – Thread:t, where p is the processor number, c is the core number, and t is the thread number

Table 8-5 Class: SMX_HardwareThread

Property name	Property implementation
OperationalStatus	0 (Unknown) 2 (OK), when CPU is enabled and operational 5 (Predictive Failure), when IML error information is logged for this CPU 6 (Error), when CPU is disabled through POST error 10 (Stopped), when CPU is disabled through RBSU
StatusDescriptions	StatusDescriptions[0] text per OperationalStatus[0]: Unknown OK Error Stopped Predictive Failure
HealthState	0 (Unknown), when OperationalStatus[0]=0 (Unknown) 5 (OK), when OperationalStatus[0]=2 (OK) 15 (Minor Failure), when OperationalStatus[0]=10 (Stopped) 20 (Major Failure), when OperationalStatus[0]=5 (Predictive Failure) 25 (Critical Failure), when OperationalStatus[0]=6 (Error)
CIM_LogicalElement	
CIM_EnabledLogicalElement	
EnabledState	2 (Enabled)
RequestedState	12 (Not Applicable)
EnabledDefault	2 (Enabled)
CIM_HardwareThread	
InstanceID	HPQ:SMX_HardwareThread: Proc:p Core:c Thread:t where *p* is the processor number, *c* is the core number and t is the thread number
HP_HardwareThread	
SMX_HardwareThread	

8-3-5 SMX_CacheMemory

SMX_CacheMemory implements the class HP_CacheMemory which extends CIM_Memory to model the processor caches.

Table 8-6 Class: SMX_CacheMemory

Property name	Property implementation
CIM_ManagedElement	

Table 8-6 Class: SMX_CacheMemory

Property name	Property implementation
Caption	One of the following: Level x Data Cache, where x is the cache level number Level x Insturction Cache, where x is the cache level number Level x Unified Cache, where x is the cache level number Examples: Level 1 Data Cache Level 2 Unified Cache
Description	Level x Data Cache, where x is the cache level number. Level x Insturction Cache where x is the cache level number Level x Unified Cache, where x is the cache level number Level 1 Data Cache Level 2 Unified Cache
ElementName	Level x Data Cache, where x is the cache level number Level x Unified Cache, where x is the cache level number Examples: Level 1 Data Cache Level 2 Unified Cache
CIM_ManagedSystemElement	
OperationalStatus	0 (Unknown) 2 (OK), when CPU is enabled and operational 5 (Predictive Failure), when IML error information is logged for this CPU 6 (Error), when CPU is disabled through POST error 10 (Stopped), when CPU is disabled through RBSU
StatusDescriptions	StatusDescriptions[0] text per OperationalStatus[0]: Unknown OK Stopped Error Predictive Failure
HealthState	0 (Unknown), when OperationalStatus[0]=0 (Unknown) 5 (OK), when OperationalStatus[0]=2 (OK) 15 (Minor Failure), when OperationalStatus[0]=10 (Stopped) 20 (Major Failure), when OperationalStatus[0]=5 (Predictive Failure) 25 (Critical Failure), when OperationalStatus[0]=6 (Error)
CIM_LogicalElement	

Table 8-6 Class: SMX_CacheMemory

Property name	Property implementation
CIM_EnabledLogicalElement	
EnabledState	5 (Not Applicable)
RequestedState	12 (Not Applicable)
EnabledDefault	2 (Enabled)
CIM_LogicalDevice	
SystemCreationClassName	SMX_ComputerSystem
SystemName	Computer system name
CreationClassName	SMX_CacheMemory
DeviceID	One of the following: Proc p, Level x <*type*> Cache, where p is the processor number, x is the cache level number, and <*type*> is the cache type (Data, Instruction, or Unified) Proc p, Core c, Level x <*type*> Cache, where p is the processor number, c is the core number, x is the cache level number, and <*type*> is the cache type (Data, Instruction, or Unified) Examples: Proc 1, Level 1 Data Cache Proc 1, Core 2, Level 2 Unified Cache
CIM_StorageExtent	
BlockSize	1 – number of bytes in a block
NumberOfBlocks	Number of blocks in this cache (for example, 8192 or 524288)
Primordial	0 (False)
CIM_Memory	
HP_CacheMemory	
SMX_ProcessorCacheMemory	

8-3-6 SMX_SystemProcessor

SMX_SystemProcessor extends the class CIM_SystemDevice and associates the SMX_ComputerSystem instance and SMX_Processor instances.

Table 8-7 Class: SMX_SystemProcessor

Property name	Property implementation
CIM_Component	
CIM_SystemComponent	
CIM_SystemDevice	

Table 8-7 Class: SMX_SystemProcessor

Property name	Property implementation
HP_SystemProcessor	
SMX_SystemProcessor	
GroupComponent	ref: SMX_ComputerSystem
PartComponent	ref: SMX_Processor

8-3-7 SMX_ProcessorElementCapabilities

SMX_ProcessorElementCapabilities extends the class CIM_ElementCapabilities and associates SMX_Processor instances and SMX_ProcessorCapabilities instances.

Table 8-8 Class: HP_ProcessorElement Capabilities

Property name	Property implementation
CIM_ElementCapabilities	
HP_ProcessorElementCapabilities	
SMX_ProcessorElementCapabilities	
ManagedElement	ref: SMX_Processor
Capabilities	ref: SMX_ProcessorCapabilities

8-3-8 SMX_ProcessorCoreComponent

SMX_ProcessorCoreComponent extends the class CIM_ConcreteComponent and associates an SMX_Processor instance with SMX_ProcessorCore instances.

Table 8-9 Class: SMX_ProcessorCoreComponent

Property name	Property implementation
CIM_Component	
CIM_ConcreteComponent	
HP_ProcessorCoreComponent	
SMX_ProcessorCoreComponent	
GroupComponent	ref: SMX_Processor
PartComponent	ref: SMX_ProcessorCore

8-3-9 SMX_HWThreadComponent

SMX_HWThreadComponent extends the class CIM_ConcreteComponent and associates an SMX_ProcessorCore instance with SMX_HardwareThread instances.

Table 8-10 Class: SMX_HWThreadComponent

Property name	Property implementation
CIM_Component	
CIM_ConcreteComponent	
HP_HWThreadComponent	
SMX_HWThreadComponent	
GroupComponent	ref: SMX_ProcessorCore
PartComponent	ref: SMX_HardwareThread

8-3-10 SMX_AssociatedProcessorCacheMemory

SMX_AssociatedProcessorCacheMemory extends the class CIM_AssociatedCacheMemory. SMX_AssociatedProcessorCacheMemory associates an SMX_Processor instance with an SMX_CacheMemory instance.

Table 8-11 Class: SMX_AssociatedProcessorCacheMemory

Property name	Property implementation
CIM_Dependency	
CIM_AssociatedMemory	
CIM_AssociatedCacheMemory	
Level	0 (Unknown) 1 (Other) 2 (Not Applicable) 3 (Primary) 4 (Secondary) 5 (Tertiary)
WritePolicy	0 (Unknown) 1 (Other) 2 (Write Back) 3 (Write Through) 4 (Varies with Address) 5 (Determination Per I/O)
CacheType	0 (Unknown) 1 (Other) 2 (Instruction) 3 (Data) 4 (Unified)

Table 8-11 Class: SMX_AssociatedProcessorCacheMemory

Property name	Property implementation
Read Policy	0 (Unknown) 1 (Other) 2 (Read) 3 (Read-Ahead) 4 (Read and Read-Ahead) 5 (Determination Per I/O)
Associativity	0 (Unknown) 1 (Other) 2 (Direct Mapped) 3 (2-way Set-Associative) 4 (4-way Set-Associative) 5 (Fully Associative) 6 (8-way Set-Associative) 7 (16-way Set-Associative)
HP_AssociatedCacheMemory	
HP_AssociatedProcessorCacheMemory	
SMX_AssociatedProcessorCacheMemory	
Antecedent	ref: SMX_CacheMemory
Dependent	ref: SMX_Processor

8-3-11 SMX_ProcessorCollection

SMX_ProcessorCollection extends the class HP_GroupSystemSpecificCollection.

Table 8-12 Class: SMX_ProcessorCollection

Property name	Property implementation
CIM_ManagedElement	
Description	A collection of processor packages with group aggregate status
ElementName	SMX_ProcessorCollection
CIM_Collection	
CIM_SystemSpecificCollection	
InstanceID	HPQ SMX_ProcessorCollection-1
HP_GroupSystemSpecificCollection	
Caption	Processor Package Collection

Table 8-12 Class: SMX_ProcessorCollection

Property name	Property implementation
GroupOperationalStatus	GroupOperationalStatus[0] contains the processors consolidated status. GroupOperationalStatus[0] will contain one of the following: 0 (Unknown) 1 (Other) 2 (OK) 3 (Degraded) 5 (Predictive Failure) 6 (Error) 10 (Stopped) The status values of the processors that make up the overall group operational status are contained in GroupOperationalStatus[1-n]. See the descriptions for OperationalStatus for members of the processor collection for the list of possible values
GroupStatusDescriptions	GroupStatusDescriptions[0] text per GroupOperationalStatus[0]: Unknown Other OK Degraded Predicted Failure Failed Stopped The status descriptions of the processors that make up the overall operational status are contained in OperationalStatus[1-n]. See the descriptions for GroupStatusDescriptions for members of the processor collection for the list of possible values.
HP_ProcessorCollection	
SMX_ProcessorCollection	

8-3-12 SMX_HostedProcessorCollection

SMX_HostedProcessorCollection extends the class HP_GroupHostedCollection and associates the SMX_ComputerSystem instance with the SMX_ProcessorCollection instance.

Table 8-13 Class: SMX_HostedProcessorCollection

Property name	Property implementation
CIM_Dependency	
CIM_HostedDependency	
CIM_HostedCollection	
HP_GroupHostedCollection	

Table 8-13 Class: SMX_HostedProcessorCollection

Property name	Property implementation
SMX_HostedProcessorCollection	
Antecedent	ref: SMX_ComputerSystem
Dependent	ref: SMX_ProcessorCollection

8-3-13 SMX_MemberOfProcessorCollection

SMX_MemberOfProcessorCollection extends the class CIM_MemberOfCollection and associates the SMX_ProcessorCollection instance with an SMX_Processor instance.

Table 8-14 Class: SMX_MemberOfProcessorCollection

Property name	Property implementation
CIM_MemberOfCollection	
SMX_MemberOfProcessorCollection	
Member	ref: SMX_Processor
Collection	ref: SMX_ProcessorCollection

8-3-14 SMX_ProcessorChip

SMX_ProcessorChip extends the class CIM_Chip to model the physical processor chip.

Table 8-15 Class: SMX_ProcessorChip Properties

Property name	Property implementation
CIM_ManagedElement	
Caption	Processor in ProcessorBoard=*a*" where *a* is the slot number Processor in CPUSocket=*b* on System Mainboard" where *b* is the socket number Processor in CPUSocket=*b* on ProcessorBoard=*a*" where *a* is the slot number and *b* is the socket
CIM_ManagedSystemElement	
Name	Processor in ProcessorBoard=*a*" where *a* is the slot number Processor in CPUSocket=*b* on System Mainboard" where *b* is the socket number Processor in CPUSocket=*b* on ProcessorBoard=*a*" where *a* is the slot number and *b* is the socket number

Table 8-15 Class: SMX_ProcessorChip Properties

Property name	Property implementation
OperationalStatus	0 (Unknown) 2 (OK), when CPU is enabled and operational 5 (Predictive Failure), when IML error information is logged for this CPU 6 (Error), when CPU is disabled through POST error 10 (Stopped), when CPU is disabled through RBSU
StatusDescriptions	StatusDescriptions[0] text per OperationalStatus[0]: Unknown. OK Predicted Failiure Error Stopped
HealthState	0 (Unknown), when OperationalStatus[0]=0 (Unknown) 5 (OK), when OperationalStatus[0]=2 (OK) 15 (Minor Failure), when OperationalStatus[0]=10 (Stopped) 20 (Major Failure), when OperationalStatus[0]=5 (Predictive Failure) 25 (Critical Failure), when OperationalStatus[0]=6 (Error)
CIM_PhysicalElement	
Tag	*<manufacturer sting> <family string>* (CPUSocket=*b* on ProcessorBoard=*a*)" where *<manufacturer string>* is processor manufacturer name, *<family string>* is the processor family name string, *a* is the slot number and *b* is the socket number. *<manufacturer string> <family string>* (CPUSocket=*b* on System Mainboard)" where *<manufacturer string>* is processor manufacturer name, *<family string>* is the processor family name string and *b* is the socket number. *<manufacturer string> <family string>* (ProcessorBoard=*a*)" where *<family string>* is the processor family name string and *a* is the slot number. For example, Intel(R) Xeon(TM) Processor (Socket=2 on System Mainboard)
Description	*<processor brand string>* (x86 Family x Model y Stepping z), where *<processor brand string>* is the processor brand string, x is the processor family number, y is the processor model number and z is the processor stepping number Examples: Manufactuer: Intel (R)Family: Intel(R) Xeon(TM) 3.06GHz (x86 Family 15 Model 2 Stepping 7) x86 Family 15 Model 2 Stepping 7
CreationClassName	SMX_ProcessorChip

Table 8-15 Class: SMX_ProcessorChip Properties

Property name	Property implementation
ElementName	Processor in ProcessorBoard=*a*" where *a* is the slot number Processor in CPUSocket=*b* on System Mainboard" where *b* is the socket number Processor in CPUSocket=*b* on ProcessorBoard=*a*" where *a* is the slot number and *b* is the socket number
Manufacturer	processor manufacturer string from SMBIOS (for example, Intel or AMD)
Model	Model y, where y is the processor model number
Version	Model y Stepping z, where y is the processor model number, and z is the processor stepping number
PoweredOn	False – if CPU is disabled through RBSU or POST error True – if CPU is enabled
CanBeFRUed	False True
CIM_PhysicalComponent	
RemovalConditions	3 (Removable When Off)
CIM_Chip	
HP_ProcessorChip	
ProcessorChipRevision	Stepping z, where z is the processor stepping number
SMX_ProcessorChip	

8-3-15 SMX_RealizesProcessor

SMX_RealizesProcessor extends the class CIM_Realizes and associates SMX_Processor instances with SMX_ProcessorChip instances.

Table 8-16 Class: SMX_RealizesProcessor

Property name	Property implementation
CIM_Dependency	
CIM_Realizes	
HP_RealizesProcessor	
SMX_RealizesProcessor	
Antecedent	ref: SMX_ProcessorChip
Dependent	ref: SMX_Processor

8-3-16 SMX_SystemPhysicalProcessor

SMX_SystemPhysicalProcessor extends the class CIM_Container and associates the SMX_ComputerSystemChassis instance with SMX_ProcessorChip instances.

Table 8-17 Class: HP_SystemPhysicalProcessor

Property name	Property implementation
CIM_Component	
CIM_Container	
HP_SystemPhysicalProcessor	
SMX_SystemPhysicalProcessor	
GroupComponent	ref: SMX_ComputerSystemChassis
PartComponent	ref: SMX_ProcessorChip

8-3-17 SMX_ProcessorLocation

SMX_ProcessorLocation implements the class HP_Location which extends the class CIM_Location.

For ProLiant systems, processor location is denoted by the use of a slot number designator and a socket number designator. Either value might be zero, depending on the system:

- On older ProLiant systems, the processors are mounted on processor boards that fit in slots in the system. The slot number designator indicates the processor board slot where the processor is located. A socket number designator value of zero indicates one processor is mounted on a processor board. A nonzero socket number designator indicates the multiple processor board sockets where a processor is located.
- On modern ProLiant systems, processors are mounted in sockets on the system board. When the slot number designator is zero, the processors are located on the system board

The following properties are implemented.

Table 8-18 Class: SMX_ProcessorLocation

Property name	Property implementation
CIM_ManagedElement	
Caption	Processor in ProcesssorBoard=a, where a is the slot number Processor in CPUSocket=b, on System MainBoard where b is the socket number Processor in CPUSocket=b on Processorboard=a, where a is the slot number and b is the socket number
Description	<*processor brand string*> (x86 Family x Model y Stepping z), where <*processor brand string*> is the processor brand string, x is the processor family number, y is the processor model number and z is the processor stepping number Example: Intel(R) Xeon(TM) 3.06GHz (x86 Family 15 Model 2 Stepping 7)

Table 8-18 Class: SMX_ProcessorLocation

Property name	Property implementation
ElementName	Processor in ProcessorBaord=a, where a is the slot number Processor in CPUSocket=b on System MainBoard, where b is the socket number Processor in CPUSocket=b on ProcessorBoard=a where a is the slot number and b is the socket number
CIM_Location	
Name	HPQ:SMX_ProcessorLocation:a, where a is the slot number HPQ:SMX_ProcessorLocation:b, where b is the socket number HPQ:SMX_ProcessorLocation:a:b, where a is the slot number and b is the socket number
PhysicalPosition	a, where a is the slot number (when no socket number exists) b, where b is the socket number (when no slot number exists) a:b, where a is the slot number and b is the socket number
HP_Location	
ElementLocationTag	ProcessorBoard=*a*" where *a* is the slot number (when no socket number exists) CPUSocket=*b* on System Mainboard" where *b* is the socket number (when no slot number exists) CPUSocket=*b* on ProcessorBoard=*a* " where *a* is the slot number and *b* is the socket number
ElementLocationTagDesc	14 (Processor Module)
LocationInformation	If only socket number is available,LocationInformation[0]: "*b*" where *b* is the socket number If only slot number is available, LocationInformation[0]: "*a*" where *a* is the slot number If both socket and slot numbers are available, LocationInformation[0]:"*b*" where *b* is the socket number, LocationInfomation[1]:"*a*" where *a* is the slot number

Table 8-18 Class: SMX_ProcessorLocation

Property name	Property implementation
LocationInfoDesc	If only socket number is available, LocationInfoDesc[0]: 4 (Socket), indicates that the first element of the LocationInformation array contains the socket number If only slot number is available, LocationInfoDesc[0]: 0 (Slot), indicates that the first element of the LocationInformation array contains the slot number If both socket and slot numbers are available, LocationInfoDesc[0]: 4 (Socket), indicates that the first element of the LocationInformation array contains the socket number LocationInfoDesc[1]: 0 (Slot), indicates that the second element of the LocationInformation array contains the slot number
HP_ProcessorLocation	
SMX_ProcessorLocation	

8-3-18 SMX_ProcessorElementLocation

SMX_ProcessorElementLocation extends the class HP_ElementLocation and associates SMX_ProcessorChip instances with SMX_ProcessorLocation instances.

Table 8-19 Class: SMX_ProcessorElementLocation

Property name	Property implementation
CIM_ElementLocation	
HP_ElementLocation	
SMX_ProcessorElementLocation	
Element	ref: SMX_ProcessorChip
PhysicalLocation	ref: SMX_ProcessorLocation

8-4 Supported indications

The following table describes the properties that are common to all of the SMX CPU Provider indications that are implemented for server platforms, where available.

Table 8-20 Provider Indication Common Properties

Property name	Property implementation
CIM_Indication	

Table 8-20 Provider Indication Common Properties

Property name	Property implementation
IndicationIdentifier	GUID string generated at the time of indication
IndicationTime	Time of indication
CIM_AlertIndication	
EventTime	Time of the event or time of the indication if event time unknown
SystemName	SMX_ComputerSystem.Name
SystemCreationClassName	SMX_ComputerSystem.CreationClassName
HP_AlertIndication	
ProviderVersion	Provider Version in the format VV.UU.FF. for example, 01.05.00
NetworkAddresses	Contains a list of all the IP addresses of the computer system generating the indication
OSType	On ESX, 39 (VM) On Linux, 36 (Linux)
OSVersion	The operating system version of the computer system generating the indication in the following format: *<major>.<minor>.<build>*
SystemFirmwareVersion	Array of firmware versions of the computer system generating the indication
SystemSerialNumber	Serial number of the computer system generating the indication
SystemProductID	Product ID of the computer system generating the indication
SystemModel	Model name of the computer system generating the indication
SystemGUID	Platform GUID of the computer system generating the indication

8-4-1 HP_DeviceIndication: Processor Failed Post

Table 8-21 HP_DeviceIndication: Processor Failed Post

Property name	Property implementation
CIM_Indication	
PerceivedSeverity	4 (Minor)
CIM_AlertIndication	
Description	CPU Failed Power on Self Test (POST)

8-4-1 HP_DeviceIndication: Processor Failed Post

Table 8-21 HP_DeviceIndication: Processor Failed Post

Property name	Property implementation
AlertType	5 (Device Alert)
EventID	1
EventCategory	2 (Processor)
ProviderName	HP Processor
RecommendedActions	Replaced the failed processor
HP_AlertIndication	
Summary	CPU Failed Power on Self Test (POST)
ProbableCause	1 (Other)

8-4-2 HP_DeviceIndication: Processor Disabled by BIOS or EFI

Table 8-22 HP_DeviceIndication: Processor Disabled by BIOS or EFI

Property name	Property implementation
CIM_Indication	
PerceivedSeverity	4 (Minor)
CIM_AlertIndication	
Description	CPU has been disabled by BIOS or EFI
AlertType	5 (Device Alert)
EventID	2
EventCategory	2 (Processor)
ProviderName	HP Processor
RecommendedActions	Enable processor via BIOS or EFI
HP_AlertIndication	
Summary	CPU is disabled by BIOS or EFI
ProbableCause	1 (Other)

8-4-3 HP_DeviceIndication: Processor Predicted to fail

Table 8-23 HP_DeviceIndication: Processor Predicted to fail

Property name	Property implementation
CIM_Indication	
PerceivedSeverity	4 (Minor)
CIM_AlertIndication	
Description	CPU Predictive Failure Notification
AlertType	5 (Device Alert)
EventID	3
EventCategory	2 (Processor)
ProviderName	HP Processor
RecommendedActions	Replace the failing processor.
HP_AlertIndication	
Summary	CPU Predictive Failure detected
ProbableCause	1 (Other)

9 System Fan

9-1 Overview

The SMX System Fan provider implements the classes listed to support fans installed in servers.

The following table details the profiles implemented and files installed by this provider.

Table 9-1 Overview

Implemented Profiles	HP Fan Profile 1.0 (P102) HP Location Profile 1.0 (P124) HP Fan Physical Location Profile 1.0 (P115)

9-2 Namespaces

This provider returns instances in the `root/hpq` namespace..

9-3 Class Implementations

- SMX_Fan
- SMX_FanCollection
- SMX_FanRedundancySet
- SMX_MemberOfFanRedundancy
- SMX_HostedFanRedundancySet
- SMX_MemberOfFanCollection
- SMX_HostedFanCollection
- SMX_SystemFan
- SMX_FanLocation
- SMX_FanElementLocation
- SMX_FanModule
- SMX_SystemPhysicalFan
- SMX_RealizesFan
- SMX_FanSlot
- SMX_FanInSlot
- SMX_SystemFanSlot
- SMX_FanSpeedSensor
- SMX_AssociatedFanSensor
- SMX_SystemFanSensor

9-3-1 SMX_Fan

SMX_Fan is used to model fans on Servers. Please note: fan numbers for existing instances do not change when other fans are added and removed.

Table 9-2 Class: SMX_Fan

Property name	Property implementation
CIM_ManagedElement	
Caption	Short description of this fan from the name displayed by the MP or iLO and the location. For example: Fan 1 at CabinetFan=01
Description	Description of this fan, including ElementName, FanType and StatusDescription[0]. For example: *elementname* provides cooling for *fantype*. *statusdescription*. where *elementname* represents the value of ElementName , *fantype* represents the corresponding string value of the FanType enumeration and *statusdescription* represents the value of StatusDescriptions[0]
ElementName	Short description of this fan from the name displayed by the MP or iLO and the location. For example: Fan 1 at CabinetFan=01
CIM_ManagedSystemElement	
OperationalStatus[0]	2 (OK)—if fan is operating properly 3 (Degraded)—if fan is degraded 6 (Error)—if fan has failed
StatusDescriptions[0]	Description of the status of the fan correcponding to the OperationStatus Fan is operating properly—if OperationalStatus[0] is 2 (OK) Fan is degraded – if OperationalStatus[0] is 3 (Degraded Fan has failed—if OperationalStatus is 6 (Error)
HealthState	5 (OK)—if fan is operating properly 10 (Degraded) if fan is degraded 20 (Major Failure)—if fan has failed
Name	Unique name fo this fan Fan n, where n represents the number of the fan instance.
CIM_LogicalDevice	
CreationClassName	SMX_Fan
DeviceID	Unique identifier for this fan instance
SystemCreationClassName	SMX_ComputerSystem.CreationClassName

Table 9-2 Class: SMX_Fan

Property name	Property implementation
SystemName	SMX_ComputerSystem.Name
CIM_EnabledLogicalElement	
EnabledDefault	2 (Enabled)
EnabledState	5 (Not Applicable)
RequestedState	12 (Not Applicable)
CIM_CoolingDevice	
ActiveCooling	True
CIM_Fan	
VariableSpeed	True—if fan supports variable speed False—if fan does not support variable speed or is unknown
HP_Fan	
FanType	Enumeration describing the type of fan (see MOF)
CurrentSpeed	Speed of the fan in CurrentSpeedUnits.
CurrentSpeedUnits	Enumeration describing the units for CurrentSpeed. (see MOF)

9-3-2 SMX_FanCollection

SMX_FanCollection is used to model fan collections on Servers. There will be one instance of this class on systems modeling fans.

Table 9-3 Class: SMX_FanCollection

Property name	Property implementation
CIM_ManagedElement	
Caption	Cooling Collection
Description	This is a collection of all devices including fans that provide cooling. GroupStatusDescription., where GroupStatusDescription represents the value of the GroupStatusDescriptions[0] property
ElementName	Cooling Collection
CIM_SystemSpecificCollection	
InstanceID	Unique identifier for this cooling collection instance
HP_GroupSystemSpecificCollection	

Table 9-3 Class: SMX_FanCollection

Property name	Property implementation
GroupOperationalStatus[0]	Represents the most severe cooling redundancy status and non-fault tolerant fan operational status: 0 (Unknown)—if fan collection status is unknown 2 (OK)—if fans are operating properly 3 (Degraded)—if no SMX_Fan OperationalStatus[0] for all non-fault tolerant fans report 6 (Error) and SMX_FanRedundancy.RedundancyStatus for any cooling redundancy sets report 3 (Degraded Redundancy) or 4 (Redundancy Lost) and no cooling redundancy sets report 5 (Overall Failure).. 6 (Error)—if SMX_Fan.OperationalStatus[0] for any non-fault tolerant fans report 6 (Error) or SMX_FanredundancySet.RedundancyStatus for any cooling redundancy sets report 5 (Overall Failure). If the system starts up with a redundancy status set to 4 (Redundancy Lost) and no fans have been removed or failed, the GroupOperationalStatus is set to 2 (OK) because this is a valid configuration
GroupStatusDescriptions[0]	Unknown status for fans, if GroupOperationalStatus[0] is 0 (Unknown); Fans are operating properly, if GroupOperationalStatus[0] is 2 (OK); Fault tolerant fans are degraded, if GroupOperationalStatus[0] is 3 (Degraded); Fans have failed, if GroupOperationalStatus[0] is 6 (Error)

9-3-3 SMX_FanRedundancySet

SMX_FanRedundancySet is used to model fan redundancy sets on Servers.

Table 9-4 Class: SMX_FanRedundancySet

Property name	Property implementation
CIM_ManagedElement	
Caption	Short description of this redundancy set, for example Cooling Redundancy Set n Where n represents the number of the redundancy set instance
Description	Cooling Redundancy Set n is collection of fault tolerant fans that provide redundant cooling. n represents the number of the redundancy set instance
ElementName	User printable name for this colling redunance set. For example, Cooling Redundancy Set n, where n represents the number of the redundancy set instance
CIM_SystemSpecificCollection	

Table 9-4 Class: SMX_FanRedundancySet

Property name	Property implementation
InstanceID	Unique identifier for this cooling redundancy instance
CIM_RedundancySet	
MaxNumberSupported	Represents the maximum number of fans supported for this redundancy set
MinNumberNeeded	Represents the minimum number of fans needed to function
TypeOfSet	3 (Load Balanced)
LoadBalanceAlgorithm	0 (Unknown)
RedundancyStatus	0 (Unknown)—if the redundancy status is unknown 2 (Fully Redundant)—if the all fans in the set are operating properly and enough to achieve redundancy 3 (Degraded Redundancy)—if there are at least enough fans for the redundancy set to provide cooling, but fans have failed 4 (Redundancy Lost)—if there are not enough fans required to achieve redundancy, but enough for the redundancy set to provide cooling 5 (Overall Failure)—if there are not enough fans operating properly for the redundancy set to provide cooling.

9-3-4 SMX_MemberOfFanRedundancy

SMX_MemberOfFanRedundancy is used to represent an association between HP_Fan and HP_FanRedundancySet.

Table 9-5 Class: SMX_MemberOfFanRedundancy

Property name	Property implementation
Collection	References HP_FanRedundancy
Member	References HP_Fan

9-3-5 SMX_HostedFanRedundancySet

SMX_HostedFanRedundancySet is used to represent an association between HP_FanRedundancySet and the computer system that contains this redundancy set.

Table 9-6 Class: SMX_HostedCoolingRedundancySet

Property name	Property implementation
OwningElement	References HP_ComputerSystem
OwnedElement	References HP_FanRedundancy

9-3-6 SMX_MemberOfFanCollection

SMX_MemberOfFanCollection is used to represent an association between HP_Fan and HP_FanCollection.

Table 9-7 Class: SMX_MemberOfCoolingCollection

Property name	Property implementation
Collection	References HP_FanCollection
Member	References HP_Fan

9-3-7 SMX_HostedFanCollection

SMX_HostedFanCollection is used to represent an association between HP_FanCollection and the computer system that contains this collection.

Table 9-8 Class: SMX_HostedFanCollection

Property name	Property implementation
Antecedent	References HP_ComputerSystem
Dependent	References HP_FanCollection

9-3-8 SMX_SystemFan

SMX_SystemFan is used to represent an association between HP_Fan and the computer system that contains this fan.

Table 9-9 Class: SMX_SystemFan

Property name	Property implementation
GroupComponent	References HP_ComputerSystem
PartComponent	References HP_Fan

9-3-9 SMX_FanLocation

HP_FanLocation is used to model fan locations on Servers.

Table 9-10 Class: SMX_FanLocation

Property name	Property implementation
CIM_ManagedElement	
Caption	Short description of the fan location including the name displayed by the MP or iLO. For example: Fan 1 at CabinetFan=01

Table 9-10 Class: SMX_FanLocation

Property name	Property implementation
Description	Description of the fan location including the name displayed by the MP or iLO. For example: The location of the fan Fan 1. Please refer to the fan position CabinetFan=01 printed on the system.
ElementName	User displayable name of the fan location including the name displayed by the MP or iLO. For example: Fan 1 at CabinetFan=01
CIM_Location	
Name	Unique identifier for this fan location instance
PhysicalPosition	Opaque identifier for the physical position of this fan
HP_Location	
ElementLocationTag	Location string based on ElementLocationTagDescription. For example, on ProLiant CabinetFan=01.
ElementLocationTagDesc	On ProLiant: 0 (HoodTag)
LocationInfoDesc	Array of location descriptions:On ProLiant: 4 (Socket)
LocationInformation	Array of string representions of the location based on LocationInfoDesc.

9-3-10 SMX_FanElementLocation

SMX_FanElementLocation is used to represent an association between CIM_Location and CIM_ManagedElement.

Table 9-11 Class: SMX_FanElementLocation

Property name	Property implementation
Element	References CIM_ManagedElement
PhysicalLocation	References CIM_Location

9-3-11 SMX_FanModule

SMX_FanModule is used to model physical fans on Servers. Please note: Fan numbers for existing instances do not change when other fans are added and removed.

Table 9-12 Class: SMX_FanModule

Property name	Property implementation
CIM_ManagedElement	

Table 9-12 Class: SMX_FanModule

Property name	Property implementation
Caption	Short description of this fan from the name displayed by the MP or iLO and the location. For example: Fan 1 at CabinetFan=01
Description	Fan n provides cooling for FanType. StatusDescription where n represents the number of the fan instance, FanType represents the corresponding string value of the FanType enumeration and StatusDescription represents the value of StatusDescriptions[0]
ElementName	Short description of this fan from the name displayed by the MP or iLO and the location. For example: Fan 1 at CabinetFan=01
CIM_Managed SystemElement	
OperationalStatus[0]	2 (OK) – if fan is operating properly 3(Degraded) – if fan is degraded 6 (Error) – if fan has failed
StatusDescriptions[0]	Fan is operating properly – if OperationalStatus[0] is 2 (OK) Fan is degraded – if OpertionalStatus(0) is 3 (Dedgraded) Fan has failed – if OperationalStatus is 6 (Error)
HealthState	5 (OK) – if fan is operating properly; 10(Degraded) if fan is degraded 20 (Major Failure) – if fan has failed
Name	Fan n, where n represents the number of the fan instance
CIM_PhysicalElement	
CreationClassName	SMX_FanModule
Tag	Unique identifier for this fan instance
CIM_PhysicalPackage	
RemovalConditions	0 (Unknown) 3 (Removable when off) 4 (Removable when on or off)
PackageType	7 (Fan)

9-3-12 SMX_SystemPhysicalFan

SMX_SystemPhysicalFan class implements the HP_SystemPhysicalFan class and association the HP_ComputerSystemChassis instance with HP_FanModule.

Table 9-13 Class: SMX_SystemPhysicalFan

Property name	Property implementation

Table 9-13 Class: SMX_SystemPhysicalFan

Property name	Property implementation
GroupComponent	References HP_ComputerSystemChassis
PartComponent	References HP_FanModule

9-3-13 SMX_RealizesFan

The SMX_RealizesFan class implements the HP_RealizesFan class and associates the HP_Fan instance with HP_FanModule instances.

Table 9-14 Class: SMX_RealizesFan

Property name	Property implementation
Antecedent	References HP_FanModule
Dependent	References HP_Fan

9-3-14 SMX_FanSlot

SMX_FanSlot is used to model physical fan slots on Servers.

Table 9-15 Class: SMX_FanSlot

Property name	Property implementation
CIM_ManagedElement	
Caption	Short description of this fan slot from the name displayed by the MP or iLO and the location. For example: Fan 1 at CabinetFan=01
Description	Description of the fan slot, For example: Fan 1 at CabinetFan=01
ElementName	Name of the fan slot, For example: Fan 1 at CabinetFan=01
CIM_Managed SystemElement	
OperationalStatus[0]	2 (OK) – if fan slot is operating properly;
StatusDescriptions[0]	Fan slot is operating properly – if OperationalStatus[0] is 2 (OK);
HealthState	5 (OK) – if fan is operating properly;
Name	Name of the fan slot, Fan 1 at CabinetFan=01
CIM_PhysicalElement	
CreationClassName	SMX_FanSlot
Tag	Unique identifier for this fan slot
CIM_PhysicalPackage	

Table 9-15 Class: SMX_FanSlot

Property name	Property implementation
ConnectorLayout	6 (Slot)
Number	Where n represents the number of the fan slot

9-3-15 SMX_SystemFanSlot

SMX_SystemFanSlot class implements the HP_SystemFanSlot class and associates the HP_ComputerSystemChassis instance with HP_FanSlot.

Table 9-16 Class: SMX_SystemFanSlot

Property name	Property implementation
GroupComponent	References HP_ComputerSystemChassis
PartComponent	References HP_FanSlot

9-3-16 SMX_FanInSlot

The SMX_FanInSlot class implements the HP_FanInSlot class and associates the HP_FanSlot instance with HP_FanModule instances.

Table 9-17 Class: SMX_SystemFanInSlot

Property name	Property implementation
Antecedent	References HP_FanSlot
Dependent	References HP_FanModule

9-3-17 SMX_FanSpeedSensor

SMX_FanSlot is used to model fan speed.

Table 9-18 Class: SMX_FanSpeedSensor

Property name	Property implementation
CIM_ManagedElement	
Caption	Short description of this fan speed sensor from the name displayed by the MP or iLO and the location. For example: Fan speed sensor for Fan 1 at CabinetFan=01
Description	Description of the fan speed sensor including name displayed by the MP or iLO, the location and status, For example: Fan 1 detects fan speed. Located at CabinetFan=01. Fan speed sensor is operating properly.

Table 9-18 Class: SMX_FanSpeedSensor

Property name	Property implementation
ElementName	Short description of this fan speed sensor from the name displayed by the MP or iLO and the location. For example: Fan speed sensor for Fan 1 at CabinetFan=01
CIM_Managed SystemElement	
OperationalStatus[0]	2 (OK) – if fan sensor is operating properly;
StatusDescriptions[0]	Fan sensor is operating properly – if OperationalStatus[0] is 2 (OK);
HealthState	5 (OK) – if fan sensor is operating properly;
Name	Name of this fan speed sensor from the name displayed by the MP or iLO and the location. For example: Fan speed sensor for Fan 1 at CabinetFan=01
CIM_LogicalDevice	
CreationClassName	SMX_FanSpeedSensor
DeviceID	Unique identifier for this fan slot
SystemCreationClassName	HP_ComputerSystem.CreationClassName
SystemName	HP_ComputerSystem.Name
CIM_EnabledLogicalElement	
EnabledDefault	2 (Enabled)
EnabledState	5 (Not Applicable)
RequestedState	12 (Not Applicable)
CIM_Sensor	
SensorType	5 (Tachometer)
CurrentState	"Normal"
PossibleStates	Array can contain any of the following values: PossibleStates[0] = "Normal"
CIM_NumericSensor	
CurrentReading	Current reading of fan speed sensor
BaseUnits	19 (RPM) 65 (Percentage)
RateUnits	0 (None)
UnitModifier	0

9-3-18 SMX_SystemFanSensor

SMX_SystemFanSensor class implements the HP_SystemFanSensor class and associates the HP_ComputerSystem instance with HP_FanSpeedSensor.

Table 9-19 Class: SMX_SystemFanSensor

Property name	Property implementation
GroupComponent	References HP_ComputerSystem
PartComponent	References HP_FanSpeedSensor

9-3-19 SMX_AssociatedFanSensor

The SMX_AssociatedFanSensor class implements the HP_AssociatedFanSensor class and associates the HP_FanSpeedSensor instance with HP_Fan instances.

Table 9-20 Class: SMX_AssociatedFanSensor

Property name	Property implementation
Antecedent	References HP_FanSensor
Dependent	References HP_Fan

9-4 Supported indications

9-4-1 Provider Indication Common Properties

The following table describes the properties that are common to all of the SMX Fan Provider indications that are implemented for server platforms, where available.

Table 9-21 Provider Indication Common Properties

Property name	Property implementation
CIM_Indication	
IndicationIdentifier	GUID string generated at the time of the indication
IndicationTime	Time of indication
CIM_AlertIndication	
EventTime	Time of the event or time of the indication if event time unknown
SystemName	SMX_ComputerSystem.Name
SystemCreationClassName	SMX_ComputerSystem.CreationClassName
HP_AlertIndication	
ProviderVersion	Provider Version in the format VV.UU.FF. for example, 01.05.00
NetworkAddresses	Contains a list of all the IP addresses of the computer system generating the indication
OSType	On ESX, 39 (VM) On Linux, 36 (Linux)

Table 9-21 Provider Indication Common Properties

Property name	Property implementation
OSVersion	Operating system version of the computer system generating the indication in the format, *<major>.<minor>.<build>*
SystemFirmwareVersion	Array of firmware version of the computer system generating the indication
SystemSerialNumber	Serial number of the computer system generating the indication
SystemProductID	Product ID of the computer system generating the indication
SystemModel	Model name of the computer system generating the indication
SystemGUID	Platform GUID of the computer system generating the indication

9-4-2 HP_DeviceIndication: Fan Removed

The following indications are implemented for ProLiant server platforms where available. System Fan indications are described below.

Table 9-22 HP_DeviceIndication: Fan Removed

Property name	Property implementation
CIM_Indication	
PerceivedSeverity	2 (Information)
CIM_AlertIndication	
Description	A fan has been removed. (FanCaption), where FanCaption is the SMX_Fan.Caption for the fan that has been inserted
AlertingManagedElement	WBEM Path of the SMX_Fan instance
AlertingElementFormat	2 (CIMObjectPath)
AlertType	5 (Device Alert)
EventID	1
ProviderName	HP Cooling
RecommendedActions	Check the fan configuration and ensure that this fan was removed intentionally.
HP_AlertIndication	
Summary	Fan removed
EventCategory	23 (System Cooling)
ProbableCause	1 (Other)

Table 9-22 HP_DeviceIndication: Fan Removed

Property name	Property implementation
ProbableCauseDescription	Fan Removed

9-4-3 HP_DeviceIndication: Fan Inserted

Table 9-23 HP_DeviceIndication: Fan Inserted

Property name	Property implementation
CIM_Indication	
PerceivedSeverity	2 (Information)
CIM_AlertIndication	
Description	A fan has been inserted. (FanCaption), where FanCaption is the SMX_Fan.Caption for the fan that has been inserted
AlertingManagedElement	WBEM path of the SMX_Fan instance representing the inserted fan
AlertingElementFormat	2 (CIMObjectPath)
AlertType	5 (Device Alert)
EventID	2
ProviderName	HP Cooling
RecommendedActions	No action is recommended.
HP_AlertIndication	
Summary	Fan inserted
EventCategory	23 (System Cooling)
ProbableCause	1 (Other)
ProbableCauseDescription	Fan Inserted

9-4-4 HP_SensorHardwareIndication: Fan Failed

Table 9-24 HP_SensorHardwareIndication: Fan Failed

Property name	Property implementation
CIM_Indication	
PerceivedSeverity	5 (Major)
CIM_AlertIndication	

9-4-4 HP_SensorHardwareIndication: Fan Failed

Table 9-24 HP_SensorHardwareIndication: Fan Failed

Property name	Property implementation
Description	A fan has failed. Please check the failed fan and replace if necessary. (FanCaption), where FanCaption is the SMX_Fan.Caption for the fan that has failed
AlertingManagedElement	WBEM path of the SMX_Fan instance representing the failed fan
AlertingElementFormat	2 (CIMObjectPath)
AlertType	5 (Device Alert)
EventID	3
ProviderName	HP Cooling
RecommendedActions	Please check the failed fan and replace if necessary.
HP_AlertIndication	
Summary	Fan failed
EventCategory	23 (System Cooling)
ProbableCause	94 (Fan Failure)
ProbableCauseDescription	Fan Failed

9-4-5 HP_SensorHardwareIndication: Fan Repaired

Table 9-25 HP_SensorHardwareIndication: Fan Repaired

Property name	Property implementation
CIM_Indication	
PerceivedSeverity	2 (Information)
CIM_AlertIndication	
Description	A fan has been repaired. The fan is now operating properly. (FanCaption), where FanCaption is the SMX_Fan.Caption for the fan that has been repaired
AlertingManagedElement	WBEM path of the SMX_Fan instance representing the failed fan
AlertingElementFormat	2 (CIMObjectPath)
AlertType	5 (Device Alert)
EventID	4
ProviderName	HP Cooling
RecommendedActions	No action is recommended.

9-4-5 HP_SensorHardwareIndication: Fan Repaired

Table 9-25 HP_SensorHardwareIndication: Fan Repaired

Property name	Property implementation
HP_AlertIndication	
Summary	Fan repaired
EventCategory	23 (System Cooling)
ProbableCause	1 (Other)
ProbableCauseDescription	Fan Repaired

9-4-6 HP_DeviceIndication: Fan Degraded

Table 9-26 HP_DeviceIndication: Fan Degraded

Property name	Property implementation
CIM_Indication	
PerceivedSeverity	4 (Minor)
CIM_AlertIndication	
Description	A fan has degraded. (*FanCaption*) where *FanCaption* is the SMX_Fan.Caption for the fan that has degraded.
AlertingMangedElement	WBEM Path of SMX_Fan instance representing the degraded fan
AlertingElementFormat	2 (CIMObjectPath)
AlertType	5 (Device Alert)
EventID	9
ProviderName	HP Cooling
RecommendedActions	Check the degraded fan and replace if necessary.
HP_AlertIndication	
Summary	Fan Degraded
EventCategory	23 (System Cooling)
ProbableCause	1 (Other)
ProbableCauseDescription	Fan Degraded

9-4-7 HP_DeviceIndication: Fan Redundancy Reduced

Table 9-27 HP_DeviceIndication: Fan Redundancy Reduced

Property name	Property implementation
CIM_Indication	
PerceivedSeverity	2 (Information)
CIM_AlertIndication	
Description	A fault tolerant fan is no longer providing cooling for a cooling redundancy set. (*RedundancySetCaption*), where *RedundancySetCaption* represents the SMX_FanRedundancySet.Caption for the redundancy set with reduced redundancy.
AlertingManagedElement	WBEM path of the SMX_FanRedundancySet instance representing the redundancy set with reduced redundancy
AlertingElementFormat	2 (CIMObjectPath)
AlertType	5 (Device Alert)
EventID	5
ProviderName	HP Cooling
RecommendedActions	No action is recommended.
HP_AlertIndication	
Summary	Cooling redundancy reduced
EventCategory	23 (System Cooling)
ProbableCause	88 (Loss of Redundancy)
ProbableCauseDescription	Cooling Redundancy has been Reduced

9-4-8 HP_DeviceIndication: Fan Redundancy Lost

Table 9-28 HP_DeviceIndication: Fan Redundancy Lost

Property name	Property implementation
CIM_Indication	
PerceivedSeverity	4 (Minor)
CIM_AlertIndication	
Description	Cooling redundancy has been lost. (*RedundancySetCaption*), where *RedundancySetCaption* represents the SMX_FanRedundancySet. Caption for the redundancy set that lost redundancy.

9-4-8 HP_DeviceIndication: Fan Redundancy Lost

Table 9-28 HP_DeviceIndication: Fan Redundancy Lost

Property name	Property implementation
AlertingManagedElement	WBEM path of the SMX_FanRedundancySet instance representing the redundancy set where redundancy was lost.
AlertingElementFormat	2 (CIMObjectPath)
AlertType	5 (Device Alert)
EventID	6
ProviderName	HP Cooling
RecommendedActions	Check the fan configuration and check the status of the cooling redundancy. Ensure the system is being cooled adequately. Add or replace fans if necessary.
HP_AlertIndication	
Summary	Cooling redundancy lost
EventCategory	23 (System Cooling)
ProbableCause	88 (Loss of Redundancy)
ProbableCauseDescription	Cooling Redundancy has been Lost

9-4-9 HP_DeviceIndication: Fan Redundancy Restored

Table 9-29 HP_DeviceIndication: Fan Redundancy Restored

Property name	Property implementation
CIM_Indication	
PerceivedSeverity	2 (Information)
CIM_AlertIndication	
Description	Cooling redundancy for the system has been restored. (*RedundancySetCaption*), where *RedundancySetCaption* is SMX_FanRedundancySet. Caption of the cooling redundancy set with restored redundancy
AlertingManagedElement	WBEM path of the SMX_FanRedundancySet instance representing the cooling redundancy set with restored redundancy
AlertingElementFormat	2 (CIMObjectPath)
AlertType	5 (Device Alert)
EventID	8
ProviderName	HP Cooling

9-4-9 HP_DeviceIndication: Fan Redundancy Restored

Table 9-29 HP_DeviceIndication: Fan Redundancy Restored

Property name	Property implementation
RecommendedActions	No action is recommended.
HP_AlertIndication	
Summary	Cooling redundancy restored
EventCategory	23 (System Cooling)
ProbableCause	1 (Other)
ProbableCauseDescription	Cooling Redundancy has been Restored

9-4-10 HP_DeviceIndication: Fan Redundancy Failed

The redundancy failed indication is not supported on ProLiant systems since redundancy set failure, which is failure beyond redundancy lost, will cause system shutdown.

Table 9-30 HP_DeviceIndication: Fan Redundancy Failed

Property name	Property implementation
CIM_Indication	
PerceivedSeverity	5 (Major))
CIM_AlertIndication	
Description	Cooling redundancy for the system has failed. (*RedundancySetCaption*) where *RedundancySetCaption* is SMX_FanRedundancySet.Caption of the cooling redundancy set with failed redundancy
AlertingManagedElement	WBEM path of the SMX_FanRedundancySet instance representing the cooling redundancy set with failed redundancy
AlertingElementFormat	2 (CIMObjectPath)
AlertType	5 (Device Alert)
EventID	10
ProviderName	HP Cooling
RecommendedActions	Check the fan configuration and check the status of the cooling redundancy. Ensure the system is being cooled adequately. Add or replace fans if necessary.
HP_AlertIndication	
Summary	Cooling redundancy failed

9-4-10 HP_DeviceIndication: Fan Redundancy Failed

The redundancy failed indication is not supported on ProLiant systems since redundancy set failure, which is failure beyond redundancy lost, will cause system shutdown.

Table 9-30 HP_DeviceIndication: Fan Redundancy Failed

Property name	Property implementation
EventCategory	23 (System Cooling)
ProbableCause	88 (Loss of Redundancy)
ProbableCauseDescription	Cooling Redundancy has Failed

10 System Power Supply

10-1 Overview

The SMX Power Supply provider implements the HP Power Supply profile to model power supplies in systems.

The following table details the profiles implemented and files installed by this provider.

Table 10-1 Overview

Implemented Profiles	HP Power Supply Profile 1.0 (P103) HP Location Profile 1.0 (P124) HP Power Supply Physical Asset Profile 1.0 *(P116)*

10-2 Namespaces

This provider returns instances in the `root/hpq` namespace.

10-3 Class Implementations

- SMX_PowerSupply
- SMX_PowerCollection
- SMX_PowerRedundancySet
- SMX_MemberOfPowerRedundancy
- SMX_HostedPowerRedundancySet
- SMX_MemberOfPowerCollection
- SMX_HostedPowerCollection
- SMX_SystemPowerSupply
- SMX_PowerSupplyLocation
- SMX_PowerSupplyElementLocation
- SMX_PowerSupplyModule
- SMX_SystemPhysicalPowerSupply
- SMX_RealizesPowerSupply
- SMX_PowerSupplySlot
- SMX_SystemPowerSupplySlot
- SMX_PowerSupplyInSlot
- SMX_PowerControllerFirmware
- SMX_PowerControllerElementFirmwareIdentity
- SMX_PowerControllerInstalledFirmwareIdentity
- SMX_PowerMeter
- SMX_SystemPowerMeter

- SMX_AssociatedPowerMeter

10-3-1 SMX_PowerSupply

SMX_PowerSupply is used to model power supplies on Servers. Please note: power supply numbers for existing instances do not change when other power supplies are added and removed.

Table 10-2 Class: HP_PowerSupply

Property name	Property implementation
CIM_ManagedElement	
Caption	Short description of this power supply from the name displaed by the MP or iLO and its location. For example, Power Supply 1 at PowerSupplySlot=2 Power supply 1a at PowerSupplySlot=2
Description	Description of this power supply, including ElementName, PowerSupplyType and StatusDescription[0] and StatusDescription[1]. For example: *elementname* provides power for powersupply*type*. *statusdescription*. where *elementname* represents the value of ElementName, *powersupplytype* represents the corresponding string value of the PowerSupplyType enumeration and *statusdescription* represents the value of StatusDescriptions[0] and StatusDescriptions[1]
ElementName	Short description of this power supply from the name displayed by the MP or iLO and its location. For example, Power Supply 1 at PowerSupplySlot=2 Power supply 1a at PowerSupplySlot=2
CIM_ManagedSystemElement	
OperationalStatus[0]	2 (OK)—if the power supply is operating properly 3 (Degraded)—if the power supply is degraded 6 (Error)—if the power supply has failed
OperationalStatus[1]	Power supply extended status value. See Profile.
StatusDescriptions[0]	Description of the status of the power supply corresponding to the OperationalStatus. For example: Power Supply is operating properly– if OperationalStatus[0] is 2 (OK); Power Supply is degraded – if OperationalStatus[0] is 3 (Degraded) Power Supply has failed – if OperationalStatus is 6 (Error)
StatusDescriptions[1]	Power Supply Extended status description. See Profile.
HealthState	5 (OK)—if the power supply is operating properly 10 (Degraded) if power supply is degraded 20 (Major Failure)—if the power supply has failed

Table 10-2 Class: HP_PowerSupply

Property name	Property implementation
Name	Name of this power supply from the name displayed by the MP or iLO and its location. For example, Power Supply 1 at PowerSupplySlot=2 Power supply 1a at PowerSupplySlot=2
TimeOfLastStateChange	Time that state last changed for power supply. 0 if it has not changed since provider startup.
CIM_LogicalDevice	
CreationClassName	SMX_PowerSupply
DeviceID	Unique identifier for this power supply instance
SystemCreationClassName	SMX_ComputerSystem.CreationClassName
SystemName	SMX_ComputerSystem.Name
CIM_EnabledLogicalElement	
EnabledDefault	2 (Enabled)
EnabledState	5 (Not Applicable)
RequestedState	12 (Not Applicable)
CIM_PowerSupply	
TotalOutputPower	0 (denotes unknown)
HP_PowerSupply	
PowerSupplyType	Enumeration describing the type of power supply (see MOF)

10-3-2 SMX_PowerCollection

SMX_PowerCollection is used to model power supply collections on Servers. There will be one instance of this class on systems modeling power supplies.

Table 10-3 Class: SMX_PowerCollection

Property name	Property implementation
CIM_ManagedElement	
Caption	Power Collection
Description	This is a collection of all devices including power supplies that provide power. GroupStatusDescription. Where GroupStatusDescription represents the value of the GroupStatusDescriptions[0] property
ElementName	Power Collection
CIM_SystemSpecificCollection	

Table 10-3 Class: SMX_PowerCollection

Property name	Property implementation
InstanceID	Unique identifier for this power collection instance
HP_GroupSystemSpecificCollection	
GroupOperationalStatus[0]	Represents the most severe power redundancy status and non-fault tolerant power supply operational status: 0 (Unknown) —If power collection status is unknown 2 (OK) —If power supplies are operating properly 3 (Degraded) —If no SMX_PowerSupply.OperationalStatus[0] for all non-fault tolerant power supplies report 6 (Error) and SMX_PowerRedundancySet.RedundancyStatus for any power redundancy sets report 3 (Degraded Redundancy) or 4 (Redundancy Lost) and no power redundancy sets report 5 (Overall Failure). 6 (Error) —If SMX_PowerSupply.OperationalStatus[0] for any non-fault tolerant power supplies report 6 (Error) or if SMX_PowerRedundancySet.RedundancyStatus for any power redundancy sets report 5 (Overall Failure). Note: If the system starts up with a redundancy status set to 4 (Redundancy Lost) and no power supplies have been removed or failed, the GroupOperationalStatus will be set to 2 (OK) because this is a valid configuration.
GroupStatusDescriptions[0]	Unknown status for power supplies, if GroupOperationalStatus[0] is 0 (Unknown) Power supplies are operating properly, if GroupOperationalStatus[0] is 2 (OK) Power supplies are degraded, if GroupOperationalStatus[0] is 3 (Degraded) Power supplies have failed, if GroupOperationalStatus[0] is 6 (Error)

10-3-3 SMX_PowerRedundancySet

SMX_PowerRedundancySet is used to model power supply redundancy sets on Servers.

Table 10-4 Class: SMX_PowerRedundancySet

Property name	Property implementation
CIM_ManagedElement	
Caption	Power Redundancy Set n, where n represents the number of the redundancy set instance
Description	Power Redundancy Set n is collection of fault tolerant power supplies that provide redundant power. n represents the number of the redundancy set instance

Table 10-4 Class: SMX_PowerRedundancySet

Property name	Property implementation
ElementName	Power Redundancy Set n, where n represents the number of the redundancy set instance
CIM_SystemSpecificCollection	
InstanceID	Unique identifier for this power redundancy instance
CIM_RedundancySet	
MaxNumberSupported	The maximum number of power supplies supported for this redundancy set
MinNumberNeeded	The minimum number of power supplies needed to function
TypeOfSet	3 (Load Balanced)
LoadBalanceAlgorithm	0 (Unknown)
RedundancyStatus	0 (Unknown) – if the redundancy status is unknown 2 (Fully Redundant) – if the all power supplies in the set are operating properly and enough to achieve redundancy 3 (Degraded Redundancy) – if there are at least enough power supplies for the redundancy set to provide power, but power supplies have failed 4 (Redundancy Lost) – if there are not enough power supplies required to achieve redundancy, but there are enough for the redundancy set to provide power 5 (Overall Failure) – if there are not enough power supplies operating properly for the redundancy set to provide power.

10-3-4 SMX_MemberOfPowerRedundancy

SMX_MemberOfPowerRedundancy is used to represent an association between HP_PowerSupply and HP_PowerRedundancySet.

Table 10-5 Class: SMX_MemberOfPowerRedundancy

Property name	Property implementation
Collection	References HP_PowerRedundancySet
Included	Writeable boolean property indicating if the power supply instance referenced by Member will contribute status to the HP_PowerCollection. • TRUE: Include member status in collection status • FALSE: Do not include member status in collection status
Member	References HP_PowerSupply

10-3-5 SMX_HostedPowerRedundancySet

SMX_HostedPowerRedundancySet is used to represent an association between HP_PowerRedundancySet and the computer system that contains this redundancy set.

Table 10-6 Class: SMX_HostedPowerRedundancySet

Property name	Property implementation
OwningElement	References HP_ComputerSystem
OwnedElement	References HP_PowerRedundancySet

10-3-6 SMX_MemberOfPowerCollection

SMX_MemberOfPowerCollection is used to represent an association between HP_PowerSupply and HP_PowerCollection.

Table 10-7 Class: SMX_MemberOfPowerCollection

Property name	Property implementation
Collection	References HP_PowerCollection
Included	Writeable boolean property indicating if the power supply instance referenced by Member will contribute status to the HP_PowerCollection. • TRUE: Include member status in collection status • FALSE: Do not include member status in collection status
Member	References HP_PowerSupply

10-3-7 SMX_HostedPowerCollection

SMX_HostedPowerCollection is used to represent an association between HP_PowerCollection and the computer system that contains this collection

Table 10-8 Class: SMX_HostedPowerCollection

Property name	Property implementation
Antecedent	References HP_ComputerSystem
Dependent	References HP_PowerCollection

10-3-8 SMX_SystemPowerSupply

SMX_SystemPowerSupply is used to represent an association between HP_PowerSupply and the computer system that contains this power supply.

Table 10-9 Class: SMX_PowerSupplyLocation

Property name	Property implementation
GroupComponent	References HP_ComputerSystem
PartComponent	References HP_PowerSupply

10-3-9 SMX_PowerSupplyLocation

SMX_Location is used to model power supply locations on servers.

Table 10-10 Class: SMX_PowerSupplyLocation

Property name	Property implementation
CIM_ManagedElement	
Caption	Name of this power supply from the name displayed by the MP or iLO and its location. For example, Power Supply 1 at PowerSupplySlot=2 Power supply 1a at PowerSupplySlot=2
Description	Description of this power supply location, including the location. For example on Proliant:The location of the power supply *1a*. Please refer to power supply position *n* printed on the system." where *n* represents the power supply position printed on the system labeling.
ElementName	User displayable name of this power supply location, including the location. For example, Power Supply 1 at PowerSupplySlot=2 Power supply 1a at PowerSupplySlot=2
CIM_Location	
Name	Unique identifier for this power supply location instance
PhysicalPosition	Physical position of this Power Supply For example on Proliant, number represents the power supply position printed on the system.
HP_Location	
ElementLocationTag	Location string based on ElementLocationTagDescription for example, ProLiant Power Supply n, where n represents the power supply position printed on the system.
ElementLocationTagDesc	On ProLiant: 0 (HoodTag)

10-3-10 SMX_PowerSupplyElementLocation

SMX_ElementLocation is used to represent an association between CIM_Location and CIM_ManagedElement.

Table 10-11 Class: SMX_PowerSupplyElementLocation

Property name	Property implementation
Element	References CIM_ManagedElement
PhysicalLocation	References CIM_Location

10-3-11 SMX_PowerSupplyModule

SMX_PowerSupply is used to model physical power supplies on Servers. Please note: power supply numbers for existing instances do not change when other power supplies are added and removed.

Table 10-12 Class: SMX_PowerSupplyModule

Property name	Property implementation
CIM_ManagedElement	
Caption	Short description of this power supply from the name displayed by the MP or iLO and its location. For example, Power Supply 1 at PowerSupplySlot=2 Power supply 1a at PowerSupplySlot=2
Description	Descripton of ths power supply module including ElementName type and status. For example: *elementname* provides power for powersupply*type*. *statusdescription*. where *elementname* represents the value of ElementName, *powersupplytype* represents the corresponding string value of the PowerSupplyType enumeration and *statusdescription* represents the value of StatusDescriptions[0]
ElementName	Short description of this power supply from the name displayed by the MP or iLO and its location. For example, Power Supply 1 at PowerSupplySlot=2 Power supply 1a at PowerSupplySlot=2
CIM_ManagedSystemElement	
OperationalStatus[0]	2 (OK) – if power supply is operating properly 3 (Dedgraded) – if power supply is degraded 6 (Error) – if power supply has failed
StatusDescriptions[0]	Description of the status of the power supply corresponding to the Opertational Status. For example, Power Supply is operating properly – if OperationalStatus[0] is 2 (OK) Power Supply is degraded – if OperationalStatus is 3 (Degraded) Power Supply has failed – if OperationalStatus is 6 (Error)
HealthState	5 (OK) – if power supply is operating properly; 10 (Degraded) if power supply is degraded 20 (Major Failure) – if power supply has failed
Name	Name of this power supply from the name displayed by the MP or iLO and its location. For example, Power Supply 1 at PowerSupplySlot=2 Power supply 1a at PowerSupplySlot=2
CIM_PhysicalElement	
CreationClassName	SMX_PowerSupplyModule

Table 10-12 Class: SMX_PowerSupplyModule

Property name	Property implementation
Tag	Unique identifier for this power supply instance
PartNumber	Part number of the power supply
CIM_PhysicalPackage	
RemovalConditions	0(Unknown) 3 (Removable when off) 4 (Removable when on or off)
Package Type	6 (PowerSupply)

10-3-12 SMX_SystemPhysicalPowerSupply

SMX_SystemPhysicalPowerSupply class extends the CIM_Container class and association the HP_ComputerSystemChassis instance with HP_PowerSupplyModule.

Table 10-13 Class: SMX_SystemPhysicalPowerSupply

Property name	Property implementation
GroupComponent	References HP_ComputerSystemChassis
PartComponent	References HP_PowerSupplyModule

10-3-13 SMX_RealizesPowerSupply

The SMX_RealizesPowerSupply class extends the CIM_Realizes class and associates the HP_PowerSupply instance with HP_PowerSupplyModule instances

Table 10-14 Class: SMX_RealizesPowerSupply

Property name	Property implementation
Antecedent	References HP_PowerSupplyModule
Dependent	References HP_PowerSupply

10-3-14 SMX_PowerSupplySlot

SMX_PowerSupplySlot is used to model physical power supply slots on Servers.

Table 10-15 Class: SMX_PowerSupplySlot

Property name	Property implementation
CIM_ManagedElement	
Caption	Short description of the power supply slot, For example: PowerSupplySlot=2

Table 10-15 Class: SMX_PowerSupplySlot

Property name	Property implementation
Description	Description of the power supply slot, For example: PowerSupplySlot=2
ElementName	Name of the power supply slot, For example: PowerSupplySlot=2
CIM_Managed SystemElement	
OperationalStatus[0]	2 (OK) – if power supply slot is operating properly
StatusDescriptions[0]	Power Supply slot is operating properly – if OperationalStatus[0] is 2 (OK)
HealthState	5 (OK) – if power supply is operating properly;
Name	Name of the power supply slot, For example: PowerSupplySlot=2
CIM_PhysicalElement	
CreationClassName	SMX_PowerSupplySlot
Tag	Unique identifier for this power supply slot
CIM_PhysicalElement	
CreationClassName	SMX_PowerSupplySlot
Tag	Unique identifier for this power supply slot.
CIM_ PhysicalPackage	
ConnectorLayout	6 (Slot)
Number	*n* where n represents the number of the power supply slot

10-3-15 SMX_SystemPowerSupplySlot

SMX_SystemPowerSupplySlot class extends the CIM_Container class and association the HP_ComputerSystemChassis instance with HP_PowerSupplySlot.

Table 10-16 Class: SMX_SystemPowerSupplySlot

Property name	Property implementation
GroupComponent	References HP_ComputerSystemChassis
PartComponent	References HP_PowerSupplySlot

10-3-16 SMX_PowerSupplyInSlot

The SMX_PowerSupplyInSlot class extends the CIM_ElementInConnector class and associates the HP_PowerSupplySlot instance with HP_PowerSupplyModule instances.

Table 10-17 Class: SMX_PowerSupplyInSlot

Property name	Property implementation
Antecedent	References HP_PowerSupplySlot
Dependent	References HP_PowerSupplyModule

10-3-17 SMX_PowerControllerFirmware

SMX_PowerControllerFirmware is used to model power controller firmware on servers. Not all systems support reporting powre controller firmware.

Table 10-18 Class: SMX_PowerControllerFirmware

Property name	Property implementation
CIM_ManagedElement	
Caption	Power controller firmware
Description	Description of this power utilization sensor including the Caption and StatusDescriptions. For example: Power controller firmware. *StatusDescription* where *StatusDescription* respresents the value of StatusDescriptions[0]
ElementName	Power controller firmware
CIM_Managed SystemElement	
OperationalStatus[0]	2 (OK)
StatusDescriptions[0]	Description of the status of the power utilization sensor corresponding to the OperationalStatus. For example: OK;
HealthState	5 (OK)
Name	Power controller firmware
CIM_LogicalElement	
CIM_SoftwareIdentity	
InstanceID	Opaque key
Manufacturers	Hewlett-Packard Company
Classificiations	10 (Firmware)
ClassificationDescriptions	Power controller firmware
IsEntity	True

Table 10-18 Class: SMX_PowerControllerFirmware

Property name	Property implementation
VersionString	The firmware version string
MajorVersion	The firmware major version number, if any
MinorVersion	The firmware minor version number, if any
RevisionNumber	The firmware revision number, if any

10-3-18 SMX_PowerControllerElementFirmwareIdentity

The SMX_PowerControllerElementFirmwareIdentity class associates the SMX_ComputerSystem instance with the SMX_PowerControllerFirmware.

Table 10-19 Class: SMX_PowerControllerElementFirmwareIdentity

Property name	Property implementation
Antecedent	References HP_PowerControllerFirmware
Dependent	References HP_ComputerSystem
UpgradeCondition	Owner Upgradeable (3)
ElementSoftwareStatus	2 (Current), 6 (Installed)

10-3-19 SMX_PowerControllerInstalledFirmwareIdentity

The SMX_PowerControllerInstalledFirmwareIdentity class associates the SMX_ComputerSystem instance with the installed SMX_PowerControllerFirmware instance.

Table 10-20 Class: SMX_PowerControllerInstalledFirmwareIdentity

Property name	Property implementation
InstalledSoftware	References HP_PowerControllerFirmware
System	References HP_ComputerSystem

10-3-20 SMX_PowerMeter

SMX_PowerMeter is used to model power utilization on Servers. Not all systems support reporting power utilization information.

NOTE: Power supply numbers for existing instances do not change when other power supplies are added and removed.

Table 10-21 Class: SMX_PowerMeter

Property name	Property implementation
CIM_ManagedElement	
Caption	Short description of this power utilization sensor using the name of the power supply displayed by the MP or iLO and location. For example: Power utilization sensor for Power Supply 1 at PowerSupplySlot=1
Description	Description of this power utilization sensor including the Caption and StatusDescriptions. For example: Power utilization sensor for Power Supply 1 at PowerSupplySlot=1. *StatusDescription* where *StatusDescription* represents the value of StatusDescriptions[0]
ElementName	Short description of this power utilization sensor using the name of the power supply displayed by the MP or iLO. For example: Power utilization sensor for Power Supply 1
CIM_Managed SystemElement	
OperationalStatus[0]	2 (OK) – if power utilization sensor is operating properly
StatusDescriptions[0]	Description of the status of the power utilization sensor corresponding to the OperationalStatus. For example:Power Supply is operating properly – if OperationalStatus[0] is 2 (OK);
HealthState	5 (OK) – if power utilization sensor is operating properly
Name	Short description of this power utilization sensor using the name of the power supply displayed by the MP or iLO and location. For example: Power utilization sensor for Power Supply 1 at PowerSupplySlot=1
CIM_LogicalDevice	
CreationClassName	"SMX_PowerMeter"
DeviceID	Unique identifier for this power utilization sensor
SystemCreationClassName	SMX_ComputerSystem.CreationClassName
SystemName	SMX_ComputerSystem.Name
CIM_LogicalElement	
CIM_EnabledLogicalElement	
EnabledDefault	2 (Enabled)
EnabledState	5 (Not Applicable)

Table 10-21 Class: SMX_PowerMeter

Property name	Property implementation
RequestedState	12 (Not Applicable)
CIM_Sensor	
SensorType	13 (Power Consumption)
CurrentState	"Normal"
PossibleStates	Array may contain the following value: PossibleStates[0] = "Normal"
CIM_NumericSensor	
CurrentReading	Current reading of the power meter
BaseUnits	7 (Watts)
RateUnits	0 (None)
UnitModifier	0
HP_PowerMeter	

10-3-21 SMX_SystemPowerMeter

The SMX_SystemPowerMeter class associates the SMX_ComputerSystem instance with the SMX_PowerMeter instance.

Table 10-21 Class: SMX_SystemPowerMeter

Property name	Property implementation
GroupComponent	References SMX_ComputerSystem
PartComponent	References SMX_PowerMeter

10-3-22 SMX_AssociatedPowerMeter

The SMX_AssociatedPowerMeter class associates the SMX_PowerSupply instance with the SMX_PowerMeter instance.

Table 10-22 Class: SMX_AssociatedPowerMeter

Property name	Property implementation
Dependent	References SMX_PowerSupply
Antecedent	References SMX_PowerMeter

10-4 Supported indications

10-4-1 Provider Indication Common Properties

The following table describes the properties that are common to all of the SMX Power Supply Provider indications that are implemented for server platforms, where available.

Table 10-23 Provider Indication Common Properties

Property name	Property implementation
CIM_Indication	
IndicationIdentifier	GUID string generated at the time of the indication
IndicationTime	Time of indication
CIM_AlertIndication	
EventTime	Time of the event or time of the indication if event time unknown
SystemName	SMX_ComputerSystem.Name
SystemCreationClassName	SMX_ComputerSystem.CreationClassName
HP_AlertIndication	
ProviderVersion	Provider Version in the format VV.UU.FF. for example, 01.05.00
NetworkAddresses	Contains a list of all the IP addresses of the computer system generating the indication
OSType	On ESX, 39 (VM) On Linux, 36 (Linux)
OSVersion	The operating system version of the computer system generating the indication in the following format: *<major>.<minor>.<build>*
SystemFirmwareVersion	Array of firmware versions of the computer system generating the indication
SystemSerialNumber	Serial number of the computer system generating the indication
SystemProductID	Product ID of the computer system generating the indication
SystemModel	Model name of the computer system generating the indication
SystemGUID	Platform GUID of the computer system generating the indication

10-4-2 HP_DeviceIdentification: Power Supply Removed

The following indications are implemented for ProLiant server platforms where available. System Power Supply indications are described below.

Table 10-24 HP_DeviceIdentification: Power Supply Removed

Property name	Property implementation
CIM_Indication	
PerceivedSeverity	2 (Information)
CIM_AlertIndication	
Description	A power supply has been removed. (Power Supply), where Power Supply is the system power supply that was removed
AlertingManagedElement	WBEM path of the SMX_WinPowerSupply instance
AlertingElementFormat	2 (CIMObjectPath)
AlertType	5 (Device Alert)
EventID	1
ProviderName	HP Power
RecommendedActions	Check the system power supply configuration. Verify that this power supply was removed intentionally.
HP_AlertIndication	
Summary	Power Supply removed
EventCategory	16 (System Power)
ProbableCause	1 (Other)
ProbableCauseDescription	Power Supply Removed

10-4-3 HP_DeviceIndication: Power Supply Inserted

Table 10-25 HP_DeviceIndication: Power Supply Inserted

Property name	Property implementation
CIM_Indication	
PerceivedSeverity	2 (Information)
CIM_AlertIndication	
Description	A power supply has been inserted. PowerSupplyCaption), where PowerSupplyCaption is the SMX_PowerSupply.Caption for the power supply that has been inserted.
AlertingManagedElement	WBEM path of the SMX_PowerSupply instance representing the inserted power supply

10-4-3 HP_DeviceIndication: Power Supply Inserted

Table 10-25 HP_DeviceIndication: Power Supply Inserted

Property name	Property implementation
AlertingElementFormat	2 (CIMObjectPath)
AlertType	5 (Device Alert)
EventID	2
ProviderName	HP Power
RecommendedActions	No action is recommended.
HP_AlertIndication	
Summary	Power Supply inserted
EventCategory	16 (System Power)
ProbableCause	1 (Other)
ProbableCauseDescription	Power Supply has been Inserted

10-4-4 HP_DeviceIndication: Power Supply Failed

Table 10-26 HP_DeviceIndication: Power Supply Failed

Property name	Property implementation
CIM_Indication	
PerceivedSeverity	5 (Major)
CIM_AlertIndication	
Description	A power supply has failed. (PowerSupplyCaption), where PowerSupplyCaption is the SMX_PowerSupply.Caption for the power supply that has failed
AlertingManagedElement	WBEM path of the SMX_PowerSupply instance representing the failed power supply
AlertingElementFormat	2 (CIMObjectPath)
AlertType	5 (Device Alert)
EventID	3
ProviderName	HP Power
RecommendedActions	Check the failed power supply and replace if necessary.
HP_AlertIndication	
Summary	Power supply failed

10-4-4 HP_DeviceIndication: Power Supply Failed

Table 10-26 HP_DeviceIndication: Power Supply Failed

Property name	Property implementation
EventCategory	16 (System Power)
ProbableCause	89 (Power Supply Failure)
ProbableCauseDescription	Power Supply Failed

10-4-5 HP_DeviceIdentification: Power Supply AC Input Loss

Table 10-27 HP_DeviceIdentification: Power Supply AC Input Loss

Property name	Property implementation
CIM_Indication	
PerceivedSeverity	5 (Major)
CIM_AlertIndication	
Description	A power supply has failed – input power lost. *PowerSupplyCaption* Where: *PowerSupplyCaption* is the *SMX_PowerSupply.Caption* for the power supply that has failed
AlertingManagedElement	WBEM Path of *SMX_PowerSupply* instance representing the failed power supply instance
AlertingElementFormat	2 (CIMObjectPath)
AlertType	5 (Device Alert)
EventID	9
ProviderName	HP Power
RecommendedActions	Check the input power supplied to the failed power supply; reconnect power.
HP_AlertIndication	
Summary	Power Supply failed – input power lost
EventCategory	16 (System Power)
ProbableCause	89 (Power Supply Failure)
ProbableCauseDescription	Power Supply Failed due to input power loss

10-4-6 HP_DeviceIndication: Power Supply Degraded

Table 10-28 HP_DeviceIndication: Power Supply Degraded

Property name	Property implementation
This table is blank. Is it missing info, or does it need to be removed?	

10-4-7 HP_Device Indication: Power Supply Repaired

Table 10-29 HP_Device Indication: Power Supply Repaired

Property name	Property implementation
CIM_Indication	
PerceivedSeverity	2 (Information)
CIM_AlertIndication	
Description	A power supply has been repaired. No action is recommended. (PowerSupplyCaption), where PowerSupplyCaption is the SMX_PowerSupply. Caption for the power supply that has been repaired.
AlertingManagedElement	WBEM path of the SMX_PowerSupply instance representing the failed power supply
AlertingElementFormat	2 (CIMObjectPath)
AlertType	5 (Device Alert)
EventID	4
ProviderName	HP Power
RecommendedActions	No action is recommended.
HP_AlertIndication	
Summary	PowerSupplyCaption has been repaired, where PowerSupplyCaption is the HP_WinPowerSupply. Caption for the power supply that has been repaired.
EventCategory	16 (System Power)
ProbableCause	1 (Other)
ProbableCauseDescription	Power Supply Repaired

10-4-8 HP_Device Indication: Power Supply Redundancy Reduced

Table 10-30 HP_DeviceIndication: Power Supply Redundancy Reduced

Property name	Property implementation
CIM_Indication	
PerceivedSeverity	2 (Information)
CIM_AlertIndication	

10-4-8 HP_Device Indication: Power Supply Redundancy Reduced

Table 10-30 HP_DeviceIndication: Power Supply Redundancy Reduced

Property name	Property implementation
Description	A fault tolerant power supply is no longer providing power for a power redundancy set. (RedundancySetCaption), where RedundancySetCaption represents the SMX_PowerRedundancySet.Caption for the redundancy set with reduced redundancy.
AlertingManagedElement	WBEM path of the SMX_PowerRedundancySet instance representing the redundancy set with reduced redundancy.
AlertingElementFormat	2 (CIMObjectPath)
AlertType	5 (Device Alert)
EventID	5
ProviderName	HP Power
RecommendedActions	No action is recommended.
HP_AlertIndication	
Summary	Power redundancy reduced
EventCategory	16 (System Power)
ProbableCause	88 (Loss of Redundancy)
ProbableCauseDescription	Power Redundancy has been Reduced

10-4-9 HP_DeviceIndication: Power Supply Redundancy Lost

Table 10-31 HP_DeviceIndication: Power Supply Redundancy Lost

Property name	Property implementation
CIM_Indication	
PerceivedSeverity	4 (Minor)
CIM_AlertIndication	
Description	Power redundancy has been lost. (RedundancySetCaption), where RedundancySetCaption represents the SMX_PowerRedundancySet.Caption for the redundancy set that lost redundancy.
AlertingManagedElement	WBEM path of the SMX_WinPowerRedundancySet instance representing the redundancy set where redundancy was lost.

10-4-9 HP_DeviceIndication: Power Supply Redundancy Lost

Table 10-31 HP_DeviceIndication: Power Supply Redundancy Lost

Property name	Property implementation
AlertingElementFormat	2 (CIMObjectPath)
AlertType	5 (Device Alert)
EventID	6
ProviderName	HP Power
RecommendedActions	Check the power supply configuration and check the status of the power redundancy. Ensure the system is being powered adequately. Add or replace power supplies if necessary.
HP_AlertIndication	
Summary	Power redundancy lost.
EventCategory	16 (System Power)
ProbableCause	88 (Loss of Redundancy)
ProbableCauseDescription	Power Redundancy has been Lost

10-4-10 HP_DeviceIndication: Power Supply Redundancy Failed

This indication is not supported on ProLiant systems since redundancy set failure, which is failure beyond redundancy lost, will cause system shutdown.

Table 10-32 HP_DeviceIndication: Power SupplyRedundancy Failed

Property name	Property implementation
CIM_Indication	
PerceivedSeverity	5 (Major)
CIM_AlertIndication	
Description	Power redundancy has been lost. (RedundancySetCaption)where *RedundancySetCaption* represents the SMX_PowerRedundancySet.Caption for the redundancy set that failed redundancy.
AlertingManagedElement	WBEM path of the SMX_PowerRedundancySet instance representing the redundancy set where redundancy failed
AlertingElementFormat	2 (CIMObjectPath)
AlertType	5 (Device Alert)
EventID	10

Table 10-32 HP_DeviceIndication: Power SupplyRedundancy Failed

Property name	Property implementation
ProviderName	HP Power
RecommendedActions	Check the power supply configuration and check the status of the power redundancy. Ensure the system is being powered adequately. Add or replace power supplies if necessary.
HP_AlertIndication	
Summary	Power redundancy failed
EventCategory	16 (System Power)
ProbableCause	88 (Loss of Redundancy)
ProbableCauseDescription	Power Redundancy has failed

10-4-11 HP_DeviceIndication: Power Supply Redundancy Restored

Table 10-33 HP_DeviceIndication: Power Supply Redundancy Restored

Property name	Property implementation
CIM_Indication	
PerceivedSeverity	2 (Information)
CIM_AlertIndication	
Description	Power redundancy for the system has been restored. (RedundancySetCaption), where RedundancySetCaption is SMX_PowerRedundancySet.Caption of the redundancy set the power redundancy set with restored redundancy
AlertingManagedElement	WBEM Path of SMX_PowerRedundancySet instance representing the power redundancy set with restored redundancy
AlertingElementFormat	2 (CIMObjectPath)
AlertType	5 (Device Alert)
EventID	8
ProviderName	HP Power
RecommendedActions	No action is recommended.
HP_AlertIndication	
Summary	Power redundancy restored
EventCategory	16 (System Power)
ProbableCause	1 (Other)

Table 10-33 HP_DeviceIndication: Power Supply Redundancy Restored

Property name	Property implementation
ProbableCauseDescription	Power redundancy restored

10-4-12 HP_AlertIndication: Group System Specific Consolidated Status Policy Change

Table 9-28 HP_AlertIndication: Group System Specific Consolidated Status Policy Change

Property name	Property implementation
CIM_Indication	
PerceivedSeverity	2 (Informational)
CIM_AlertIndication	
Description	*HP_GroupSystemSpecificConsolidated* operational status policy has been modified to monitor operational status from different set of managed elements.
AlertingManagedElement	WBEM Path of the HP_GroupSystemSpecificCollection instance
AlertingElementFormat	2 (CIMObjectPath)
AlertType	7 (Model Alert)
EventID	1
ProviderName	HP Consolidated Status
RecommendedActions	Inspect the members of the collection to discovery whether each managed element status is included in collection operational status.”
HP_AlertIndication	
Summary	Consolidated Status Collection operational status policy has changed “
EventCategory	1 (Other)
OtherEventCategory	Consolidated Status Policy Change
ProbableCause	1 (Other)
ProbableCauseDescription	This group status policy change is caused by activation or deactivation of Status Propagation Filtering for existing managed elements in HP_GroupSystemSpecificCollection.

11 SMX Profile registration provider

11-1 Overview

The following table details the profiles implemented and files installed by this provider.

Table 10-1 Overview

Implemented Profiles	• HP Profile Registration Profile (POO100)

11-2 Namespaces

This provider returns instances in the `root/hpq` namespace.

11-3 Class implementations

The classes below describe registration of HP profiles.

- SMX_RegisteredProfile
- SMX_ExtendsProfile
- SMX_ReferencedProfile
- SMX_PRPBaseServerECT

11-3-1 SMX_RegisteredProfile

Instances of the SMX_RegisteredProfile class are populated for implemented Distributed Management Task Force (DMTF) and Storage Networking Industry Association (SNIA) SMI-S storage profiles.

The following tables list SMX_RegisteredProfile property values and the properties implemented for this class.

Table 11-2 Class: SMX_RegisteredProfile

Property name	Property implementation
CIM_ManagedElement	
Caption	Table 3 lists the property values for this class
Description	Table 3 lists the property values for this class
ElementName	Table 3 lists the property values for this class
CIM_RegisteredProfile	
AdvertiseTypeDescriptions	No value set
AdvertiseTypes	For VMware: 3 (SLP)

Table 11-2 Class: SMX_RegisteredProfile

Property name	Property implementation
InstanceID	HPQ:n where n is a unique number
OtherRegisteredOrganization	No value set
RegisteredName	Table 10-3 and 10-4 lists the property values for this class
RegisteredOrganization	2 (DMTF) for DMTF profiles 11 (SNIA) for SNIA SMI-S storage profiles
RegisteredVersion	Table 3 lists the property values for this class
ImplementationClassNames	Array of central class names implemented for this profile
ImplementationNameSpaces	Array of namespaces where central class name is implemented for this profile

This is the list of all possible DMTF profiles. Some implementations only support a subset of the profiles, only those subsets are reported.

Table 11-3 Property values of SMX_RegisteredProfile for DMTF Profiles

Registered Name	Registered version	Caption/Description/ElementName
Base Server	1.0.0a	DMTF Base Server Profile
CPU	1.0.0c	DMTF CPU Profile
Fan	1.0.0a	DMTF Fan Profile
Power Supply	1.1.0	DMTF Power Supply Profile
System Memory	1.0.0f	DMTF System Memory Profile
Physical Asset	1.0.0a	DMTF Physical Asset Profile
OS Status	1.0.0a	DMTF OS Status Profile
Record Log	1.0.0	DMTF Record Log Profile
Ethernet Port	1.0.0	DMTF Ethernet Port Profile
IP Interface	1.0.1	DMTF IP Interface Profile
Sensors	1.0.1	DMTF Sensors Profile
PCI Device	1.0.0a	DMTF PCI Device Profile
Software Inventory	1.0.0	DMTF Software Inventory Profile
Profile Registration	1.0.0	DMTF Profile Registration Profile

This is the list of all possible SNIA profiles. Some implementations only support a subset of these profiles, so only those subsets are reported.

Table 11-4 Property values of SMX_RegisteredProfile for SNIA Profiles

Registered Name	Registered version	Caption/Description/ElementName
Block Services	1.3.0	SNIA Block Services Profile
Disk Drive Lite	1.3.0	SNIA Disk Drive Lite Profile
Extent Composition	1.2.0	SNIA Extent Composition Profile
Disk Sparing	1.3.0	SNIA Disk Sparing Profile
Generic Initiator Ports	1.3.0	SNIA Generic Initiator Ports Profile
DA Target Ports	1.3.0	SNIA DA Target Ports Profile
Indication	1.3.0	SNIA Indication Profile
Host Hardware RAID Controller	1.1.0	SNIA Host Hardware RAID Controller Profile
FC Initiator Port	1.3.0	SNIA FC Initiator Port Profile
FC HBA	1.3.0	SNIA FC HBA Profile

The SMX_RegisteredProfile class extends the CIM_RegisteredProfile class and describes an implemented HP specific profile. SMX_RegisteredProfile is the main class clients use to determine if an HP specific profile has been implemented in the root/hpq namespace.

The following tables list `SMX_RegisteredProfile` property values and the properties implemented for this class.

Table 11-5 Class: SMX_RegisteredProfile

Property name	**Property implementation**
CIM_ManagedElement	
Caption	Table 3 lists the property values for this class
Description	Table 3 lists the property values for this class
ElementName	Table 3 lists the property values for this class
CIM_RegisteredProfile	
AdvertiseTypeDescriptions	No value set
AdvertiseTypes	For VMware: 3 (SLP)
InstanceID	HPQ:n where n is a unique number
OtherRegisteredOrganization	HP WBEM TC for HP WBEM TC profiles
RegisteredName	See Table 10-6
RegisteredOrganization	1 (Other) for HP WBEM TC profiles

Table 11-5 Class: SMX_RegisteredProfile

Property name	Property implementation
RegisteredVersion	Table 3 lists the property values for this class
SMX_RegisteredProfile	

The following table lists all possible HP WBEM TC Profiles. Some implementations only support a subset of these profiles so only the subset is reported.

Table 11-6 Class: SMX_RegisteredProfile

Registered Name	Registerred version	Caption/Description/ElementName
HP Base Server	1.0.0	HP Base Server Profile
HP CPU	1.0.0	HP CPU Profile
HP Fan	1.3.0	HP Fan Profile
HP Power Supply	1.3.0	HP Power Supply Profile
HP Memory	1.0.0	HP Memory Profile
HP Base Server Physical Asset	1.0.0	HP Base Server Physical Asset Profile
HP CPU Physical Asset	1.0.0	HP CPU Physical Asset Profile
HP Memory Physical Asset	1.0.0	HP Memory Physical Asset Profile
HP Fan Physical Asset	1.0.0	HP Fan Physical Asset Profile
HP Power Supply Physical Asset	1.0.0	HP Power Supply Physical Asset Profile
HP CPU Consolidated Status	1.0.0	HP CPU Consolidated Status Profile
HP Sensors	1.0.0	HP Sensors Profile
HP Record Log	1.0.0b	HP Record Log Profile
HP Software Inventory	1.0.0	HP SoftwareInventory Profile
HP Blade System Lite	2.0.3	HP Blade system Lite Profile
HP Management Processor Lite	2.0.1	HP Management Processor Lite Profile
HP FC HBA	1.0.0	HP FC HBA Profile
HP Storage Enclosure	1.0.0	HP Storage Enclosure Profile
HP Smart Array	1.3.0	HP Smart Array Profile

11-3-2 SMX_ExtendsProfile

SMX_ExtendsProfile extends the class CIM_Dependency and associates an extension profile registration and the parent profile it extends.

Table 11-7 Class: SMX_ExtendsProfile

Property name	Property implementation
CIM_Dependency	
HP_ExtendsProfile	
Antecedent	ref: CIM_RegisteredProfile (extended) *
Dependent	ref: HP_RegisteredProfile (extends) *

11-3-3 SMX_ReferencedProfile

SMX_ReferencedProfile extends the class CIM_ ReferencedProfile and associates an HP profile that references another profile when both are registered in the `root\Interop` namespace.

Table 11-8 Class: SMX_ReferencedProfile

Property name	Property implementation
CIM_Dependency	
SMX_ReferencedProfile	
Antecedent	ref: CIM_RegisteredProfile (references) *
Dependent	ref: CIM_RegisteredProfile (referenced) *

11-3-4 SMX_PRPBaseServerECTP

The SMX_PRPBaseServerECTP class extends the class CIM_ElementConformsToProfile and associates the Base Server registered profile with the HP specific central class that defined the implementation of the profile. The table below lists the properties implemented:

Table 11-9 Class: SMX_PRPBaseServerECTP

Property name	Property implementation
CIM_ElementConformsToProfile	
ConformantStandard	ref: CIM_RegisteredProfile *
ManagedElement	ref: CIM_ManagedElement (HP_ComputerSystem for server and network profiles, the storage computer system for storage profiles)
HP_ElementConformsToProfile	

* May also include derived classes HP_RegisteredProfile or SMX_RegisteredProfile

11-3-5 SMX_FCPBaseServerECTP

The SMX_FCPBaseServerECTP class extends the class CIM_ElementConformsToProfile and associates the FCHBA registered profile with the HP specific central class that defined the implementation of the profile. The table below lists the properties implemented:

Table 11-10 Class: SMX_FCPBaseServerECTP

Property name	Property implementation
CIM_ElementConformsToProfile	
ConformantStandard	ref: CIM_RegisteredProfile *
ManagedElement	ref: CIM_ManagedElement (FCHBA_ComputerSystem for server and network profiles, the storage computer system for storage profiles)
HP_ElementConformsToProfile	

11-4 Supported indications

There are no indications specific to the profile registration implementation.

12 System Temperature Sensor

12-1 Overview

This provider implements the HP Sensor Profile to model temperature sensors in ProLiant servers.

The following table details the profiles implemented and files installed by this provider.

Table 12-1 Overview

Implemented Profiles	HP Sensor Profile 1.0

12-2 Use cases

See HP Sensor Profile for Use Cases.

12-2-1 Class implementations

The following classes and properties are implemented as specified in the following tables for server platforms where available. The classes below describe temperature sensors.

- SMX_NumericSensor
- SMX_SensorCollection
- SMX_SystemSensor
- SMX_HostedSensorCollection
- SMX_MemberOfSensorCollection

12-2-2 SMX_NumericSensor

SMX_NumericSensor implements HP_NumericSensor and is used to model temperature sensors on Servers.

Table 12-2 Class: SMX_NumericSensor

Property name	Property implementation
CIM_ManagedElement	
Caption	Temperature Sensor <sensorID>, where <sensorID> is the name displayed by iLO. For example, Temperature Sensor Temp 1.
Description	Temperature Sensor *<sensorID>* detects for NumericSensorType. StatusDescription where *<sensorID>* is the name displayed by the MP or iLO., NumericSensorType represents the value of NumericSensorType and StatusDescription represents the value of StatusDescriptions[0]

Table 12-2 Class: SMX_NumericSensor

Property name	Property implementation
ElementName	Temperature Sensor <*sensorID*>" where <*sensorID*> is the name displayed by the MP or iLO. For example: Temperature Sensor Temp 1
CIM_ManagedSystemElement	
OperationalStatus[0]	2 (OK)—if temperature reported by the sensor is within normal operating range; 2 (OK)—if temperature reported by the sensor has exceeded its non-critical threshold and has set fans to full speed; 6 (Error)—if temperature reported by the sensor has exceeded its threshold and the system is gracefully shutting down if that action is enabled
StatusDescriptions[0]	Temperature reported by the sensor is within normal operating range—if temperature reported by the sensor is within normal operating range; Temperature reported by the sensor has exceeded its non-critical threshold and the fans have been set to full speed—if temperature reported by the sensor has exceeded its threshold and has set fans to full speed; Temperature reported by the sensor has exceeded its threshold and the system is gracefully shutting down—if that action is enabled-if OperationalStatus is 6 (Error)
HealthState	5 (OK)—if OperationalStatus[0] value is 2 (OK); 20 (Major Failure)—if OperationalStatus[0] value is 6 (Error)
Name	Temperature Sensor <*sensorID*>" where <*sensorID*> is the name displayed by the MP or iLO. For example: Temperature Sensor Temp 1.
CIM_LogicalDevice	
CreationClassName	SMX_NumericSensor
DeviceID	Unique identifier for this temperature sensor instance.
SystemCreationClassName	HP_ComputerSystem.CreationClassName
SystemName	HP_ComputerSystem.Name
CIM_EnabledLogicalElement	
EnabledDefault	2 (Enabled)
EnabledState	5 (Not Applicable)
RequestedState	12 (Not Applicable)
CIM_Sensor	
SensorType	2 (Temperature)

Table 12-2 Class: SMX_NumericSensor

Property name	Property implementation
CurrentState	Normal—if OperationalStatus[0] is 2 (OK) Critical—if OperationalStatus[0] is 6 (Error)
PossibleStates	Array can contain any of the following values: PossibleStates[0] = Normal PossibleStates[1] = Critical
CIM_NumericSensor	
CurrentReading	Current reading of temperature sensor
BaseUnits	2 (Degrees C)
RateUnits	0 (None)
UnitModifier	0
SupportedThresholds	SupportedThresholds[0] = 1 (UpperThresholdNotCritical) if the system will set fans to full speed if the threshold is crossed SupportedThresholds[0] = 3 (UpperThresholdCritical) set if the system will gracefully attempt to shutdown the system if the threshold is crossed SupportedThresholds[0] = 5 (UpperThresholdFatal) if the system will immediately power down the system if the threshold is crossed
SettableThresholds	*<empty>*
UpperThresholdNonCritical	Contains the threshold temperature that CurrentReading must exceed to be in a non-critical state. This is only set if the system will set fans to full speed if the threshold is crossed.
UpperThresholdCritical	Contains the threshold temperature that CurrentReading must exceed to be in a critical state. This is only set if the system will gracefully attempt to shutdown the system if the threshold is crossed.
UpperThresholdFatal	Contains the threshold temperature that CurrentReading must exceed to be fatal. This is only set if the system will immediately power down the system if the threshold is crossed.
HP_NumericSensor	
NumericSensorType	Enumeration describing the type of temperature sensor. See MOF.

12-2-3 SMX_SensorCollection

SMX_SensorCollection implements HP_SensorCollection and is used to model temperature sensor collections on Servers. There is one instance of this class on systems modeling sensors.

Table 12-3 Class: SMX_SensorCollection

Property name	Property implementation
CIM_ManagedElement	
Caption	Temperature Sensor Collection
Description	This is a collection of temperature sensors. GroupStatusDescription., where GroupStatusDescription represents the value of the GroupStatusDescriptions[0] property
ElementName	Temperature Sensor Collection
CIM_SystemSpecificCollection	
InstanceID	Unique identifier for this sensor collection instance
HP_GroupSystemSpecificCollection	
GroupOperationalStatus[0]	Represents the most severe sensor group operational status: 2 (OK)—if temperatures reported by the sensors are within normal operating range; 2 (OK)—if temperatures reported by the sensors have exceeded its non-critical threshold and has set fans to full speed; 6 (Error)—if temperatures reported by the sensors have exceeded its non-critical threshold and the system is gracefully shutting down if that action is enabled
GroupStatusDescriptions[0]	Temperatures reported by the sensors are operating within normal operating range—if temperatures reported by the sensors are within normal operating range; Temperatures reported by the sensors have exceeded its non-critical threshold and the fans have been set to full speed—if temperatures reported by the sensors have exceeded its threshold and has set fans to full speed; Temperatures reported by the sensors have exceeded its threshold and the system is gracefully shutting down—if temperatures reported by the sensors have exceeded its threshold and the system is gracefully shutting down is that action is enabled

12-2-4 SMX_MemberOfSensorCollection

SMX_MemberOfSensorCollection implements HP_MemberOfSensorCollection and is used to represent an association between SMX_NumericSensor and SMX_SensorCollection.

Table 12-4 Class: SMX_MemberOfSensorCollection

Property name	Property implementation
Collection	References SMX_SensorCollection

Table 12-4 Class: SMX_MemberOfSensorCollection

Property name	Property implementation
Member	References SMX_NumericSensor

12-2-5 SMX_HostedSensorCollection

SMX_HostedSensorCollection implements HP_HostedSensorCollection and is used to represent an association between SMX_SensorCollection and the computer system that contains the collection.

Table 12-5 Class: SMX_HostedSensorCollection

Property name	Property implementation
Antecedent	References SMX_ComputerSystem
Dependent	References SMX_SensorCollection

12-2-6 SMX_SystemSensor

SMX_SystemSensor implements HP_SystemSensor and is used to represent an association between SMX_NumericSensor and the computer system that contains the sensor.

Table 12-6 Class: SMX_SystemSensor

Property name	Property implementation
GroupComponent	References SMX_ComputerSystem
PartComponent	References SMX_NumericSensor

12-3 Supported indications

The following indications are implemented for ProLiant server platforms where available.

Table 12-7 HP_AlertIndication_: Temperature Sensor Threshold Exceeded

Property name	Property implementation
CIM_Indication	
IndicationIdentifier	GUID string generated at the time of indication
PerceivedSeverity	5 (Major)
IndicationTime	Time of indication
CIM_AlertIndication	
Description	A temperature sensor has detected that the temperature has exceeded the normal operating range. (*SensorCaption*)" where *SensorCaption* is the SMX_NumericSensor.Caption for the sensor that has failed

Table 12-7 HP_AlertIndication_: Temperature Sensor Threshold Exceeded

Property name	Property implementation
AlertingManagedElement	WBEM path of the SMX_NumericSensor instance representing the temperature sensor detecting the exceeded threshold
AlertingElementFormat	2 (CIMObjectPath)
AlertType	5 (Device Alert)
EventID	1
EventTime	Time of the event or time of the indication if event time unknown
ProviderName	System Temperature
RecommendedActions	Ensure that the system is adequately ventilated. Check for proper room temperature and internal/external airflow. Add or repair fans and air baffling if necessary.
SystemName	HP_ComputerSystem.Name
SystemCreationClassName	HP_ComputerSystem.CreationClassName
HP_AlertIndication	
Summary	Temperature threshold exceeded detected
EventCategory	23 (System Cooling)
ProbableCause	51 (Temperature Unacceptable)
ProbableCauseDescription	Temperature Threshold Exceeded Detected
ProviderVersion	2.2.0.0
NetworkAddresses	Contains a list of all the IP addresses (IPv4 and IPv6) of the computer system generating the indication
OSType	SMX_OperatingSystem.) OSType
OSVersion	Operating system version of the computer system generating the indication in the format, *<major>.<minor>.<build>*
SystemFirmwareVersion	Firmware version of the computer system generating the indication
SystemSerialNumber	Serial number of the computer system generating the indication
SystemProductID	Product ID of the computer system generating the indication
SystemModel	Model name of the computer system generating the indication
SystemGUID	Platform GUID of the computer system generating the indication

Table 12-7 HP_AlertIndication_: Temperature Sensor Threshold Exceeded

Property name	Property implementation
VariableNames	Contains the temperature sensor threshold property name that sets a value: UpperThresholdNonCritical UpperThresholdCritical UpperThresholdFatal
VariableTypes	9 (sint32)
VariableValues	SMX_NumericSensor UpperThresholdNonCritical, UpperThresholdCritical, or UpperThresholdFatal property value that is set for the temperature sensor detecting the exceeded threshold
ImpactedDomain	3 (Enclosure) for c-Class blade systems 4 (System) for all other systems When ImpactedDomain is 3 (Enclosure), the properties indicated with (*) are populated.
BladeBay *	HP_BladeCSLocation.LocationInformation[0]
BladeName *	HP_ComputerSystem.Name
EnclosureName *	HP_BladeEnclosureCS.Name
RackName *	Rack name if one exists
RackUID *	Rack Unique Identifier if one exists
SystemVirtualSerialNumber	Conditional property containing the virtual system serial number string when running in a Virtual Connect environment
SystemVirtualUUID	Conditional property containing the virtual system UUID when running in a Virtual Connect environment

Table 12-8 HP_AlertIndication: Temperature Sensor Recovery from Threshold Exceeded

Property name	Property implementation
CIM_Indication	
IndicationIdentifier	GUID string generated at the time of indication
PerceivedSeverity	2 (Information)
IndicationTime	Time of indication
CIM_AlertIndication	
Description	A temperature sensor has detected that the temperature has returned to a normal operating range. (SensorCaption) where SensorCaption is the SMX_NumericSensor.Caption for the temperature sensor detecting a recovered exceeded threshold.

Table 12-8 HP_AlertIndication: Temperature Sensor Recovery from Threshold Exceeded

Property name	Property implementation
AlertingManagedElement	WBEM path of the SMX_NumericSensor instance representing the temperature sensor detecting a recovered exceeded threshold
AlertingElementFormat	2 (CIMObjectPath)
AlertType	5 (Device Alert)
EventID	2
EventTime	Time of the event or time of the indication if event time unknown
ProviderName	HP Temperature
RecommendedActions	No action is recommended.
SystemName	HP_ComputerSystem.Name
SystemCreationClassName	HP_ComputerSystem.CreationClassName
HP_AlertIndication	
Summary	Threshold exceeded condition recovery
EventCategory	23 (System Cooling)
ProbableCause	52 (Threshold Crossed)
ProbableCauseDescription	Threshold Exceeded Condition has Recovered
ProviderVersion	2.2.0.0
NetworkAddresses	Contains a list of all the IP addresses of the computer system generating the indication
OSType	SMX_OperatingSystem.OSType
OSVersion	Operating system version of the computer system generating the indication in the format, *<major>.<minor>.<build>*
SystemFirmwareVersion	Firmware version of the computer system generating the indication
SystemSerialNumber	Serial number of the computer system generating the indication
SystemProductID	Product ID of the computer system generating the indication
SystemModel	Model name of the computer system generating the indication
SystemGUID	Platform GUID of the computer system generating the indication
ImpactedDomain	3 (Enclosure) for c-Class blade systems 4 (System) for all other systems When ImpactedDomain is 3 (Enclosure), the properties indicated with (*) are populated.

Table 12-8 HP_AlertIndication: Temperature Sensor Recovery from Threshold Exceeded

Property name	Property implementation
BladeBay *	HP_BladeCSLocation.LocationInformation[0]
BladeName *	HP_ComputerSystem.Name
EnclosureName *	HP_BladeEnclosureCS.Name
RackName *	Rack name if one exists
RackUID *	Rack Unique Identifier if one exists
SystemVirtualSerialNumber	Conditional property containing the virtual system serial number string when running in a Virtual Connect environment
SystemVirtualUUID	Conditional property containing the virtual system UUID when running in a Virtual Connect environment

13 System memory

13-1 Overview

This provider implements the HP Memory Profile and HP Memory Physical Asset Profile to represent system memory in ProLiant systems.

See HP Advanced Memory Protection Technologies (TC060104TB) and product documentation for your ProLiant Server (available at http://www.hp.com).

The following table details the profiles implemented and files installed by this provider.

Table 12-1 Overview

Implemented Profiles	• HP Memory Profile 1.0 • HP Memory Physical Asset Profile 1.0 • HP Location Profile 1.0

13-2 Namespaces

This provider returns instances in the root/hpq namespace.

1.1Class implementations

The following classes are implemented for ProLiant server platforms where available. The classes describe system memory resident on a ProLiant server platform.

- SMX_Memory
- SMX_SystemMemory
- SMX_MemoryModule
- SMX_MemoryBoard
- SMX_RealizesMemoryModule
- SMX_MemoryModuleSlot
- SMX_MemoryBoardSlot
- SMX_MemoryModuleInSlot
- SMX_MemoryBoardInSlot
- SMX_MemoryModuleSlotOnBoard
- SMX_MemoryModuleSlotLocation
- SMX_MemoryBoardSlotLocation
- SMX_MemoryModuleSlotElementLocation
- SMX_MemoryBoardSlotElementLocation
- SMX_SystemMemoryModule
- SMX_SystemMemoryBoard
- SMX_MemoryRedundancySet

- SMX_MemoryCollection
- SMX_HostedMemoryCollection
- SMX_MemberOfMemoryCollection
- SMX_MemberOfMemoryRedundancySet
- SMX_HostedMemoryRedundancySet
- SMX_SystemMemoryModuleSlot
- SMX_SystemMemoryBoardSlot

13-2-1 SMX_Memory

The class SMX_Memory represents logical memory on ProLiant Servers. There is one instance of this class.

Table 13-2 Class: SMX_Memory

Property name	Property implementation
CIM_ManagedElement	
Caption	System Memory
Description	Logical system memory
ElementName	System Memory
CIM_ManagedSystemElement	
OperationalStatus	Enumerator indicating the logical system memory operational status. The status represents the worst-of algorithm for all OperationalStatus[0] values reported by physical memory modules in SMX_MemoryModule instances. OperationalStatus[0] (shown in order of increasing severity; a higher severity overrides a lower severity): ○ 2 (OK), when all physical memory modules report 2 (OK) ○ 0 (Unknown), when any physical memory module reports 0 (Unknown) ○ 3 (Degraded), when any physical memory module reports 3 (Degraded) This status does not represent the overall status of the memory system; See the SMX_MemoryCollection class for overall memory system status.
StatusDescriptions	StatusDescriptions[0] contains descriptive text per OperationalStatus[0]: OK Unknown Degraded
HealthState	5 (OK), when OperationalStatus[0]=2 (OK) 0 (Unknown), when OperationalStatus[0]=0 (Unknown) 10 (Degraded/Warning), when OperationalStatus[0]=3 (Degraded)
Name	System Memory

Table 13-2 Class: SMX_Memory

Property name	Property implementation
CIM_LogicalElement	
CIM_EnabledLogicalElement	
EnabledDefault	2 (Enabled)
EnabledState	5 (Not Applicable)
RequestedState	12 (Not Applicable)
CIM_LogicalDevice	
CreationClassName	SMX_Memory
DeviceID	HPQ:SMX_Memory:000
SystemCreationClassName	same value as property SMX_ComputerSystem.CreationClassName
SystemName	same value as property SMX_ComputerSystem.Name
CIM_StorageExtent	
Access	3 (Read/Write Supported)
BlockSize	1 (byte)
ConsumableBlocks	Capacity in bytes
NumberOfBlocks	Capacity in bytes
Primordial	True
Purpose	System Memory
SequentialAccess	False
CIM_Memory	
StartingAddress	Beginning address of the memory in kilobytes
EndingAddress	Ending address of the memory in kilobytes
Volatile	True
HP_Memory	
SMX_Memory	

13-2-2 SMX_SystemMemory

The class SMX_SystemMemory represents an association between SMX_Memory and the computer system that contains the memory. There is one instance of this class.

Table 13-3 Class: SMX_SystemMemory

Property name	Property implementation
CIM_SystemDevice	
HP_SystemMemory	

Table 13-3 Class: SMX_SystemMemory

Property name	Property implementation
GroupComponent	ref: SMX_ComputerSystem
PartComponent	ref: SMX_Memory
SMX_SystemMemory	

13-2-3 SMX_MemoryModule

The class SMX_MemoryModule represents a physical memory module on ProLiant Servers. There is an instance of this class for each memory module present in the system. Empty memory module sockets will not be instantiated.

NOTE: In the property implementation descriptions below, memory modules located on the system board will be denoted as being located on Board/cartridge number 0 consistent with ProLiant tradition.

Table 13-4 Class: SMX_MemoryModule

Property name	Property implementation
CIM_ManagedElement	
Caption	Physical Memory Module Socket=y on MemoryBoard=x, where: x is the board/cartridge number where the memory module is located y is the memory socket number where the memory module is located Physical Memory Module Socket=y on ProcessorBoard=x, where: x the processor board number where the memory module is located y is the memory socket number where the memory module is located
CIM_ManagedSystemElement	
OperationalStatus	Enumerator indicating the memory module operational status. OperationalStatus[0]: contains overall memory module status OperationalStatus[1]: contains detailed memory module status (as needed) For details, see the Memory Module Status, Table 5.
StatusDescriptions	StatusDescriptions[0]: contains descriptive text per OperationalStatus[0]: StatusDescriptions[1]: contains descriptive text per OperationalStatus[1]: For details, see the Memory Module Status, Table 5.

Table 13-4 Class: SMX_MemoryModule

Property name	Property implementation
HealthState	Enumerator indicating the memory module health state: 0 (Unknown), when OperationalStatus[0] = 0 (Unknown) 5 (OK), when OperationalStatus[0] = 2 (OK) 10 (Degraded/Warning), when OperationalStatus[0] = 3 (Degraded)
Name	Physical Memory Module Socket=y on MemoryBoard=x, where: x is the board/cartridge number where the memory module is located y is the memory socket number where the memory module is located Physical Memory Module Socket=y on ProcessorBoard=x, where: x the processor board number where the memory module is located y is the memory socket number where the memory module is located
CIM_PhysicalElement	
CreationClassName	SMX_MemoryModule
Tag	HPQ:SMX_MemoryModule:x-y, where: x is the cpu/board/cartridge number where the memory module is located y is the memory socket number where the memory module is located
Description	Physical Memory Module Socket=y on MemoryBoard=x, where: x is the board/cartridge number where the memory module is located y is the memory socket number where the memory module is located Physical Memory Module Socket=y on ProcessorBoard=x, where: x the processor board number where the memory module is located y is the memory socket number where the memory module is located

Table 13-4 Class: SMX_MemoryModule

Property name	Property implementation
ElementName	Physical Memory Module Socket=y on MemoryBoard= x, where: x is the board/cartridge number where the memory module is located y is the memory socket number where the memory module is located Physical Memory Module Socket=y on ProcessorBoard =x, where: x the processor board number where the memory module is located y is the memory socket number where the memory module is located
Manufacturer	Name of the organization which produced the memory module This property is conditional. It is populated if the data is available.
PartNumber	Part number of the memory module This property is conditional. It is populated if the data is available.
SerialNumber	Manufacturer allocated serial number of the memory module. This property is conditional. It is populated if the data is available.
CIM_PhysicalComponent	
RemovalConditions	3 (Removable when off)
CIM_Chip	
CIM_PhysicalMemory	
DataWidth	Data width of memory module in bits
InterleavePosition	Position of memory module in an interleave. This property is conditional; it will be populated if the data is available
IsSpeedInMhz	The IsSpeedInMHz property is used to indicate if the Speed property or the MaxMemorySpeed contains the value of the memory speed. A value of TRUE shall indicate that the speed is represented by the MaxMemorySpeed property.A value of FALSE shall indicate that the speed is represented by the Speed property.
Capacity	Total capacity of memory module in bytes
TotalWidth	Total width of memory module in bits
Speed	Speed of memory module in nanoseconds. Speed is set to 0 if the propert is IsSpeedInMhz=TRUE
MaxMemorySpeed	The maximum speed in MHz of PhysicalMemory
MemoryType	Enumerator indicating the type of memory module. See the MOF file for details.

Table 13-4 Class: SMX_MemoryModule

Property name	Property implementation
PositionInRow	Position of memory module in a row. This property is conditional, it is populated if the data is available.
FormFactor	Enumerator indicating the form factor of the memory module. See the MOF file for details.
BankLabel	String identifying the physically labeled bank where the memory is located. This property is conditional. It is populated if the data is available.
SMX_MemoryModule	
Spd	An array that contains raw Serial Presence Detect information for the memory module. Each array element contains a byte of the Spd. This property is conditional; it is populated if the data is available.

Table 13-5 Memory Module Status

Condition	OperationalStatus[0] StatusDescriptions[0]	OperationalStatus[1] StatusDescriptions[1]
Memory module status is unknown	0 (Unknown) Unknown	<not populated> <not populated>
Memory module is operating properly	2 (OK) OK	<not populated> <not populated>
Memory module is present but is not currently used by the operating system	2 (OK) OK	15 (Dormant) Memory module status: Memory present but not in use
Memory module has correctable errors exceeding the condition for pre-failure warranty	3 (Degraded) Degraded	5 (Predictive Failure) Memory module status: Correctable error threshold for pre-failure warranty has been exceeded

13-2-4 SMX_MemoryBoard

The class SMX_MemoryBoard represents a physical memory board on ProLiant Servers. There will be an instance of this class for each memory board present in the system. Empty memory board slots will not be instantiated.

Table 13-6 Class: SMX_MemoryBoard

Property name	Property implementation
CIM_ManagedElement	

Table 13-6 Class: SMX_MemoryBoard

Property name	Property implementation
Caption	Physical Memory MemoryBoard=x, where x is the board/cartridge number where the memory board is located. Physical Memory ProcessorBoard=x , where x is the processor board/cartridge number where the memory board is located.
CIM_ManagedSystemElement	
OperationalStatus	Enumerator indicating the memory board operational status. OperationalStatus[0]: contains overall memory board status OperationalStatus[1]: contains detailed memory board status (as needed) For details, see the Memory Board Status, Table 7.
StatusDescriptions	StatusDescriptions[0]: contains descriptive text per OperationalStatus[0]: StatusDescriptions[1]: contains descriptive text per OperationalStatus[1]: For details, see the Memory Board Status, Table 7.
HealthState	Enumerator indicating the memory board health state: 0 (Unknown), when OperationalStatus[0] = 0 (Unknown) 5 (OK), when OperationalStatus[0] = 2 (OK) 10 (Degraded/Warning), when OperationalStatus[0] = 3 (Degraded)
Name	Physical Memory MemoryBoard=x, where x is the board/cartridge number where the memory board is located. Physical Memory ProcessorBoard=x, where x is the processor board/cartridge number where the memory board is located.
CIM_PhysicalElement	
CreationClassName	SMX_MemoryBoard
Tag	HPQ:SMX_MemoryBoard:x, where x is the cpu/board/cartridge number where the memory board is located.
Description	Physical Memory MemoryBoard=x, where x is the board/cartridge number where the memory board is located. Physical Memory ProcessorBoard=x, where x is the processor board/cartridge number where the memory board is located.

Table 13-6 Class: SMX_MemoryBoard

Property name	Property implementation
ElementName	Physical Memory MemoryBoard=x, where x is the board/cartridge number where the memory board is located. Physical Memory ProcessorBoard=x , where x is the processor board/cartridge number where the memory board is located.
CIM_PhysicalPackage	
RemovalConditions	Removal conditions of the memory board: When the memory board is the system board: ○ 2 (Not applicable) When the memory board is not the system board: ○ 3 (Removable when off) ○ 4 (Removable when on or off)
PackageType	9 (Module/Card)
CIM_Card	
HostingBoard	True—memory board is on the baseboard False—memory board not on the baseboard
SMX_MemoryBoard	
Locked	Indicates the locked state of the memory board: 1 (Not-Applicable), non-AMP systems only 2 (Unlocked) 3 (Locked)
NumberOfSockets	Number of memory module sockets on this board
AvailableMemory	Size of memory for this board seen by the operating system in MB
TotalMemory	Total size of memory for this board in MB

Table 13-7 Memory Board Status

Condition	OperationalStatus[0] StatusDescriptions[0]	OperationalStatus[1] StatusDescriptions[1]
Memory board status is unknown	0 (Unknown) Unknown	<not populated> <not populated>
Memory board is operating properly	2 (OK) OK	<not populated> <not populated>
Memory board contains a memory module that has correctable errors exceeding the condition for pre-failure warranty.	3 (Degraded) Degraded	5 (Predictive Failure) Memory board status: Correctable error threshold for pre-failure warranty has been exceeded

Table 13-7 Memory Board Status

Condition	OperationalStatus[0] StatusDescriptions[0]	OperationalStatus[1] StatusDescriptions[1]
Memory board has a configuration error, for example, there is a problem with the board release latch (unlock error) or there is an improper configuration of memory modules on the board.	3 (Degraded) Degraded	3 (Degraded) Memory board status: Configuration error

13-2-5 SMX_RealizesMemoryModule

The class SMX_RealizesMemoryModule represents an association between SMX_MemoryModule and SMX_Memory.

Table 13-8 Class: SMX_RealizesMemoryModule

Property name	Property implementation
CIM_Realizes	
HP_RealizesMemoryModule	
SMX_RealizesMemoryModule	
Antecedent	ref: SMX_MemoryModule
Dependent	ref: SMX_Memory

13-2-6 SMX_MemoryModuleSlot

The class SMX_MemoryModuleSlot represents memory module slots on ProLiant Servers. There will be an instance of this class for each memory module socket in the system (whether the slot is occupied or not).

(Note: In the property implementation descriptions below, memory module slots located on the system board will be denoted as being located on Board/cartridge number 0 consistent with ProLiant tradition.)

Table 13-9 Class: SMX_MemoryModuleSlot

Property name	Property implementation
CIM_ManagedElement	

Table 13-9 Class: SMX_MemoryModuleSlot

Property name	Property implementation
Caption	Memory Module Socket=y on MemoryBoard=x, where: x is the board/cartridge number where the memory slot is located y is the memory socket number where the memory slot is located Memory Module Socket=y on ProcessorBoard=x, where: x is the processor board/cartridge number where the memory slot is located y is the memory socket number where the memory slot is located
CIM_ManagedSystemElement	
OperationalStatus	OperationalStatus[0] = 2 (OK)
StatusDescriptions	StatusDescriptions[0] = OK
HealthState	5 (OK)
Name	Memory Module Socket=y on MemoryBoard=x, where: x is the board/cartridge number where the memory slot is located y is the memory socket number where the memory slot is located Memory Module Socket=y on ProcessorBoard=x, where: x is the processor board/cartridge number where the memory slot is located y is the memory socket number where the memory slot is located
CIM_PhysicalElement	
CreationClassName	SMX_MemoryModuleSlot
Tag	HPQ:SMX_MemoryModuleSlot:x-y, where: x is the cpu/board/cartridge number where the memory module slot is located y is the memory socket number where the memory module slot is located
Description	Memory Module Socket=y on MemoryBoard=x, where: x is the board/cartridge number where the memory slot is located y is the memory socket number where the memory slot is located Memory Module Socket=y on ProcessorBoard=x, where: x is the processor board/cartridge number where the memory slot is located y is the memory socket number where the memory slot is located

Table 13-9 Class: SMX_MemoryModuleSlot

Property name	Property implementation
ElementName	Memory Module Socket=y on MemoryBoard=x, where: x is the board/cartridge number where the memory slot is located y is the memory socket number where the memory slot is located Memory Module Socket=y on ProcessorBoard=x, where: x is the processor board/cartridge number where the memory slot is located y is the memory socket number where the memory slot is located
CIM_PhysicalConnector	
ConnectorLayout	1 (Other)
ConnectorGender	3 (Female)
ConnectorDescription	Memory Module Socket=*y* on MemoryBoard=*x* where: *x* is the board/cartridge number where the memory slot is located *y* is the memory socket number where the memory slot is located Memory Module Socket=*y* on ProcessorBoard=*x* where: x is the processor board/cartridge number where the memory slot is located y is the memory socket number where the memory slot is located
CIM_Slot	
Number	The memory socket number where the memory slot is located.
SMX_MemoryModuleSlot	

13-2-7 SMX_MemoryBoardSlot

The class SMX_MemoryBoardSlot represents memory board slots on ProLiant Servers. There will be an instance of this class for each memory board slot in the system (regardless of the slot occupation).

Table 13-10 Class: SMX_MemoryBoardSlot

Property name	Property implementation
CIM_ManagedElement	

Table 13-10 Class: SMX_MemoryBoardSlot

Property name	Property implementation
Caption	Memory Board Slot MemoryBooard=x, where x is the board/cartridge number where the memory board is located. Memory Board Slot ProcessorBoard=x, where x is the processor board/cartridge number where the memory board is located.
CIM_ManagedSystemElement	
OperationalStatus	OperationalStatus[0] = 2 (OK)
StatusDescriptions	StatusDescriptions[0] = OK
HealthState	5 (OK)
Name	Memory Board Slot MemoryBoard=x, where x is the board/cartridge number where the memory board is located. Memory Board Slot ProcessorBoard=x" where x is the processor board/cartridge number where the memory board is located.
CIM_PhysicalElement	
CreationClassName	SMX_MemoryBoardSlot
Tag	HPQ:SMX_MemoryBoardSlot:x, where x is the board/cartridge number.
Description	Memory Board Slot MemoryBoard=x, where x is the board/cartridge number where the memory board is located. Memory Board Slot ProcessorBoard=x, where x is the processor board/cartridge number where the memory board is located.
ElementName	Memory Board Slot MemboryBoard=x, where x is the board/cartridge number where the memory board is located. Memory Board Slot ProcessorBoard=x, where x is the processor board/cartridge number where the memory board is located.
CIM_PhysicalConnector	
ConnectorLayout	1 (Other)
ConnectorDescription	Memory Board Slot MemoryBoard=x, where x is the board/cartridge number where the memory board is located. Memory Board Slot ProcessorBoard=x, where x is the processor board/cartridge number where the memory board is located.
CIM_Slot	
Number	The board/cartridge number where the memory board is located.
SMX_MemoryBoardSlot	

13-2-8 SMX_MemoryModuleInSlot

The class SMX_MemoryModuleInSlot represents the association between an SMX_MemoryModule and the SMX_MemoryModuleSlot where it resides.

Table 13-11 Class: SMX_MemoryModuleInSlot

Property name	Property implementation
CIM_ElementInConnector	
HP_ MemoryModuleInSlot	
SMX_MemoryModuleInSlot	
Antecedent	ref: SMX_MemoryModuleSlot
Dependent	ref: SMX_MemoryModule

13-2-9 SMX_MemoryBoardInSlot

The class SMX_MemoryBoardInSlot represents the association between an SMX_MemoryBoard and the SMX_MemoryBoardSlot where it resides.

Table 13-12 Class: SMX_MemoryBoardInSlot

Property name	Property implementation
CIM_PackageInConnector	
HP_MemoryBoardInSlot	
SMX_MemoryBoardInSlot	
Antecedent	ref: SMX_MemoryBoardSlot
Dependent	ref: SMX_MemoryBoard

13-2-10 SMX_MemoryModuleSlotOnBoard

The class SMX MemoryModuleSlotOnBoard represents an association between an SMX MemoryModuleSlot and the SMX MemoryBoard that contains it.

Table 13-13 Class: SMX_MemoryModuleSlotOnBoard

Property name	Property implementation
CIM_Container	
HP_MemoryModuleSlotOnBoard	
SMX_MemoryModuleSlotOnBoard	
GroupComponent	ref: SMX_MemoryBoard
PartComponent	ref: SMX_MemoryModuleSlot

13-2-11 SMX_MemoryModuleSlotLocation

The class SMX_MemoryModuleSlotLocation extends the CIM_Location class and represents memory module slot locations on ProLiant Servers. There will be an instance of this class for each memory module slot in the system (whether the slot is occupied or not).

Table 13-14 Class: SMX_ MemoryModuleSlotLocation

Property name	Property implementation
CIM_ManagedElement	
Caption	Memory Module Socket Location Socket=y on MemoryBoard=x, where: x is the board/cartridge number where the memory module slot is located y is the memory socket number where the memory module slot is located Memory Module Socket Location Socket=y on ProcessorBoard=x, where: x is the processor board/cartridge number where the memory module slot is located y is the memory socket number where the memory module slot is located
Description	Memory Module Socket Location Socket=y on MemoryBoard=x, where: x is the board/cartridge number where the memory module slot is located y is the memory socket number where the memory module slot is located Memory Module Socket Location Socket=y on ProcessorBoard=x, where: x is the processor board/cartridge number where the memory module slot is located y is the memory socket number where the memory module slot is located
ElementName	Memory Module Socket Location Socket=y on MemoryBoard=x, where: x is the board/cartridge number where the memory module slot is located y is the memory socket number where the memory module slot is located Memory Module Socket Location Socket=y on ProcessorBoard=x, where: x is the processor board/cartridge number where the memory module slot is located y is the memory socket number where the memory module slot is located
CIM_Location	

Table 13-14 Class: SMX_ MemoryModuleSlotLocation

Property name	Property implementation
Name	HPQ:SMX_MemoryModuleSlotLocation:x-y, where: x is the board/cartridge number where the memory module slot is located y is the memory socket number where the memory module slot is located
PhysicalPosition	Opaque key. Example for memory socket number 2 on cpu/board/cartridge number 1: FF-FF-FF-FF-01-02-FF-79
HP_Location	
ElementLocationTag	Opaque key. Example for memory socket number 2 on cpu/board/cartridge number 1: FF-FF-FF-FF-01-02-FF-79
ElementLocationTagDesc	8 (Memory Module)
LocationInformation	LocationInformation[0] text: y, where y is the memory socket number LocationInformation[1] text: x, where x is the board/cartridge number
LocationInfoDesc	LocationInfoDesc[0] = 4 (Socket), indicates that the first element of the LocationInformation array contains the socket number LocationInfoDesc[1] = 5 (Memory Board) , LocationInfoDesc[1] (Processor Board) indicates that the second element of the LocationInformation array contains the board/cartridge number
SMX_MemoryModuleSlotLocation	

13-2-12 SMX_MemoryBoardSlotLocation

The class SMX_MemoryBoardSlotLocation extends the CIM_Location class and represents memory board slot locations on ProLiant Servers. There is an instance of this class for each memory board slot in the system (regardless of the slot occupation).

Table 13-15 Class: SMX_ MemoryModuleSlotLocation

Property name	Property implementation
CIM_ManagedElement	
Caption	Memory Board Slot Location MemoryBoard=x, where: x is the board/cartridge number where the memory board slot is located Memory Board Slot Location ProcessorBoard=x, where: x is the processor board/cartridge number where the memory board slot is located

Table 13-15 Class: SMX_ MemoryModuleSlotLocation

Property name	Property implementation
Description	Memory Board Slot Location MemoryBoard=*x*, where: *x* is the board/cartridge number where the memory board slot is located Memory Board Slot Location ProcessorBoard= *x*, where: *x* is the processor board/cartridge number where the memory board slot is located
ElementName	Memory Board Slot Location MemoryBoard=*x*, where: *x* is the board/cartridge number where the memory board slot is located Memory Board Slot Location ProcessorBoard=*x*, where: *x* is the processor board/cartridge number where the memory board slot is located
CIM_Location	
Name	HPQ:SMX_MemoryBoardSlotLocation:*x-y*, where: *x* is the board/cartridge/processor number where the memory board slot is located
PhysicalPosition	Opaque key. Example for memory board/cartridge/processor number 1: FF-FF-FF-FF-01-FF-FF-7A
HP_Location	
ElementLocationTag	Opaque key. Example for memory board/cartridge/processor number 1: FF-FF-FF-FF-01-FF-FF-7A
ElementLocationTagDesc	9 (Memory Board)/13(Processor Board)
LocationInformation	LocationInformation[0] text: *x*, where *x* is the board/cartridge/processor number
LocationInfoDesc	LocationInfoDesc[0] = 5 (Memory Board) / LocationInfoDesc[0] = 15 (Processor Board) , indicates that the first element of the LocationInformation array contains the board/cartridge number
SMX_MemoryBoardSlotLocation	

13-2-13 SMX_MemoryModuleSlotElementLocation

The class SMX_MemoryModuleSlotElementLocation extends the class CIM_ElementLocation and is used to associate a memory module slot (SMX_MemoryModuleSlot) with its corresponding location (SMX_MemoryModuleSlotLocation). There is an instance of this class for each memory module slot in the system (regardless of the slot occupation).

Table 13-16 Class: SMX_MemoryModuleSlotElementLocation

Properties	Property implementation
CIM_ElementLocation	
HP_ElementLocation	
SMX_MemoryModuleSlotElementLocation	
Element	ref: SMX_MemoryModuleSlot
PhysicalLocation	ref: SMX_MemoryModuleSlotLocation

13-2-14 SMX_MemoryBoardSlotElementLocation

The class SMX_MemoryBoardSlotElementLocation extends the class CIM_ElementLocation and is used to associate a memory board slot (SMX_MemoryBoardSlot) with its corresponding location (SMX_MemoryBoardSlotLocation). There will be an instance of this class for each memory board slot in the system (whether the slot is occupied or not).

Table 13-17 Class: SMX_MemoryBoardSlotElementLocation

Properties	Property implementation
CIM_ElementLocation	
HP_ElementLocation	
SMX_MemoryBoardSlotElementLocation	
Element	ref: SMX_MemoryBoardSlot
PhysicalLocation	ref: SMX_MemoryBoardSlotLocation

13-2-15 SMX_SystemMemoryModule

The class SMX_SystemMemoryModule represents an association between SMX_MemoryModule and SMX_ComputerSystemChassis. There will be an instance of this class for each memory module slot on the chassis system board (whether the slot is occupied or not). Only system board resident memory module slots are instantiated.

Table 13-18 Class: SMX_SystemMemoryModule

Properites	Property implementation
CIM_Container	
HP_SystemMemoryModule	
SMX_SystemMemoryModule	
GroupComponent	ref: SMX_ComputerSystemChassis
PartComponent	ref: SMX_MemoryModule

13-2-16 SMX_SystemMemoryBoard

The class SMX_SystemMemoryBoard represents an association between SMX_MemoryBoard and SMX_ComputerSystemChassis. There will be an instance of this class for each memory board slot in the chassis (whether the slot is occupied or not).

Table 13-19 Class: SMX_SystemMemoryBoard

Properties	Property implementation
CIM_Container	
HP_SystemMemoryBoard	
SMX_SystemMemoryBoard	
GroupComponent	ref: SMX_ComputerSystemChassis
PartComponent	ref: SMX_MemoryBoard

13-2-17 SMX_MemoryRedundancySet

The class SMX_MemoryRedundancySet represents memory board redundancy on ProLiant servers supporting Advanced Memory Protection (AMP). One instance of this class exists on systems supporting Advanced Memory Protection. This class will not be instantiated on non-AMP systems.

Table 13-20 Class: SMX_MemoryRedundancySet

Property name	Property implementation
CIM_ManagedElement	
Caption	Memory Redundancy Set
Description	Memory Redundancy Set for Advanced Memory Protection
ElementName	Memory Redundancy Set
CIM_SystemSpecificCollection	
InstanceID	HPQ:SMX_MemoryRedundancySet:001
CIM_RedundancySet	
TypeOfSet	The type of redundancy currently in operation for the Advanced Memory Protection system. This property corresponds functionally to the property CurrentConfiguration. TypeOfSet[0] contains the current type of redundancy: • 1 (Other), when the system is operating in Advanced ECC or Lockstep mode • 2 (N+1), when the system is operating in RAID (XOR) mode • 3 (Load Balanced), when the system is operating in Mirrored mode • 4 (Sparing), when the system is operating in Online Spare mode

Table 13-20 Class: SMX_MemoryRedundancySet

Property name	Property implementation
OtherTypeOfSet	OtherTypeOfSet[0] contains the type of redundancy when the property TypeOfSet[0] = 1 (Other). In this case, the property will contain the value **Advanced ECC** or **Lockstep**, otherwise the property is not populated.
LoadBalanceAlgorithm	2 (No Load Balancing)

RedundancyStatus	The current memory redundancy status as follows:
	• 2 (Fully Redundant)—System is operating properly in the Advanced Memory Protection mode given in the TargetConfiguration property.
	• 3 (Degraded Redundancy)—Degraded Redundancy can occur in either of two conditions:
	  ○ System is not operating in the TargetConfiguration mode (the CurrentConfiguration mode does not match the TargetConfiguration mode).
	  ○ System is operating in the TargetConfiguration mode but memory module(s) have correctable errors exceeding the condition for pre-failure warranty.

HP_MemoryRedundancySet	
OperatingSpeed	The current operating speed of the Advanced Memory Protection subsystem in MHz
AvailableMemory	The size of the memory as seen by the operating system in MB
TotalMemory	Total size of memory as seen by the operating system and memory used for Advanced Memory Protection configurations in MB
CurrentConfiguration	The current operating mode of the Advanced Memory Protection system. The value in this property corresponds to the value populated in the property TypeOfSet[0]. CurrentConfiguration is one of the following: • Advanced ECC, when the system is operating in Advanced ECC mode • RAID, when the system is operating in RAID (XOR) mode • Mirrored, when the system is operating in Mirrored mode • Online Spare, when the system is operating in Online Spare mode • Lockstep, when the system is operating in Lockstep mode

Table 13-20 Class: SMX_MemoryRedundancySet

Property name	Property implementation
TargetConfiguration	The desired or targeted mode of the Advanced Memory Protection system. TargetConfiguration is one of the following: • Advanced ECC, when the system is configured for Advanced ECC mode • RAID, when the system is configured for RAID (XOR) mode • Mirrored, when the system is configured for Mirrored mode • Online Spare, when the system is configured for Online Spare mode • Lockstep, when the system is configured for Lockstep mode
ConfigurationsAvailable	An array containing Advanced Memory Protection configurations supported on this system (the CurrentConfiguration and TargetConfiguration properties will contain one of these values). Each indexed position in the array contains one supported configuration. • Possible values are: • Advanced ECC • Online Spare • Mirrored • RAID • Lockstep

13-2-18 SMX_MemoryCollection

The class SMX_MemoryCollection represents physical memory collections on ProLiant Servers. The collection comprehends physical memory modules and boards as components of the collection. There is one instance of this class.

Table 13-21 Class: SMX_MemoryCollection

Property name	Property implementation
CIM_ManagedElement	
Caption	Memory Collection
Description	Physical memory collection
ElementName	Memory Collection
CIM_SystemSpecificCollection	
InstanceID	HPQ:SMX_MemoryCollection:001
HP_GroupSystemSpecificCollection	

Table 13-21 Class: SMX_MemoryCollection

Property name	Property implementation
GroupOperationalStatus	Enumerator indicating the group operational status of the memory collection. The status is determined as follows: • If an instance of SMX_MemoryRedundancySet exists, GroupOperationalStatus[0] is determined from the property SMX_MemoryRedundancySet.RedundancyStatus. • If no instance of SMX_MemoryRedundancySet exists, GroupOperationalStatus[0] is determined by the worst-of algorithm for physical memory boards and memory modules. For details, see the Memory Collection Status.
GroupStatusDescriptions	GroupStatusDescriptions[0] contains descriptive text per GroupOperationalStatus[0]: • Memory collection status: OK • Memory collection status: Degraded • Memory collection status: Unknown
HP_MemoryCollection	

Table 13-22 Memory Collection Status

RedundancyStatus from SMX_MemoryRedundancySet	worst OperationalStatus[0], SMX_MemoryBoard	worst OperationalStatus[0], SMX_MemoryModule	GroupOperationalStatus [0]
2 (Fully Redundant)	—	—	2 (OK)
3 (Degraded Redundancy)	—	—	3 (Degraded)
—	2 (OK)	2 (OK)	2 (OK)
—	2 (OK)	3 (Degraded)	3 (Degraded)
—	2 (OK)	0 (Unknown)	0 (Unknown)
—	3 (Degraded)	2 (OK)	3 (Degraded)
—	3 (Degraded)	3 (Degraded)	3 (Degraded)
—	3 (Degraded)	0 (Unknown)	3 (Degraded)
—	0 (Unknown)	2 (OK)	0 (Unknown)
—	0 (Unknown)	3 (Degraded)	3 (Degraded)
—	0 (Unknown)	0 (Unknown)	0 (Unknown)

13-2-19 SMX_HostedMemoryCollection

The class SMX_HostedMemoryCollection represents an association between SMX_MemoryCollection and the computer system that contains this collection.

Table 13-23 Class: SMX_HostedMemoryCollection

Property name	Property implementation
CIM_Dependency	
CIM_HostedDependency	
CIM_HostedCollection	
HP_GroupHostedCollection	
HP_HostedMemoryCollection	
SMX_HostedMemoryCollection	
Antecedent	ref: SMX_ComputerSystem
Dependent	ref: SMX_MemoryCollection

13-2-20 SMX_MemberOfMemoryCollection

The class SMX_ MemberOfMemoryCollection represents an association between SMX_MemoryCollection and SMX_MemoryModule or SMX_MemoryBoard.

Table 13-24 Class: SMX_MemberOfMemoryCollection

Property name	Property implementation
CIM_MemberOfCollection	
HP_MemberOfMemoryCollection	
SMX_MemberOfMemoryCollection	
Collection	ref: SMX_MemoryCollection
Member	ref: CIM_PhysicalElement (either SMX_MemoryModule or SMX_MemoryBoard)

13-2-21 SMX_MemberOfMemoryRedundancySet

The class SMX_MemberOfMemoryRedundancySet represents an association between SMX_MemoryBoard and SMX_MemoryRedundancySet.

Table 13-25 Class: SMX_MemberOfMemoryRedundancySet

Property name	Property implementation
CIM_MemberOfCollection	
HP_MemberOfMemoryRedundancySet	
SMX_MemberOfMemoryRedundancySet	
Collection	ref: SMX_MemoryRedundancySet
Member	ref: SMX_MemoryBoard

13-2-22 SMX_HostedMemoryRedundancySet

The class SMX_HostedMemoryRedundancySet represents an association between SMX_MemoryRedundancySet and the computer system that contains this redundancy set.

Table 13-26 Class: SMX_HostedMemoryRedundancySet

Property name	Property implementation
CIM_OwningCollectionElement	
HP_HostedMemoryRedundancySet	
SMX_HostedMemoryRedundancySet	
OwningElement	ref: SMX_ComputerSystem
OwnedElement	ref: SMX_MemoryRedundancySet

13-2-23 SMX_SystemMemoryModuleSlot

Note: This class is currently NOT implemented.

The class SMX_SystemMemoryModuleSlot represents an association between SMX_MemoryModuleSlot and SMX_ComputerSystemChassis. There is an instance of this class for each memory module slot on the chassis system board (regardless of the occupation of the slot). Only system board resident memory module slots are instantiated.

Table 13-27 Class: SMX_SystemMemoryModuleSlot

Properites	Property implementation
CIM_Component	
CIM_Container	
HP_SystemMemoryModuleSlot	
SMX_SystemMemoryModuleSlot	
GroupComponent	ref: SMX_ComputerSystemChassis
PartComponent	ref: SMX_MemoryModuleSlot

13-2-24 SMX_SystemMemoryBoardSlot

The class SMX_SystemMemoryBoardSlot represents an association between SMX_MemoryBoardSlot and SMX_ComputerSystemChassis. There is an instance of this class for each memory board slot in the chassis (regardless of the occupation of the slot).

Table 13-28 Class: SMX_SystemMemoryBoardSlot

Properties	Property implementation
CIM_Component	
CIM_Container	
HP_SystemMemoryBoardSlot	

Table 13-28 Class: SMX_SystemMemoryBoardSlot

Properties	Property implementation
SMX_SystemMemoryBoardSlot	
GroupComponent	ref: SMX_ComputerSystemChassis
PartComponent	ref: SMX_MemoryBoardSlot

13-3 Supported indications

The following table describes the properties that are common to all of the SMX Memory Provider indications that are implemented for server platforms, where available:

Table 13-29 Provider Indication Common Properties

Property name	Property implementation
CIM_Indication	
IndicationIdentifier	GUID string generated at the time of indication
IndicationTime	Time of indication
CIM_AlertIndication	
EventTime	Time of the event or time of the indication if event time unknown
SystemName	SMX_ComputerSystem.Name
SystemCreationClassName	SMX_ComputerSystem.CreationClassName
HP_AlertIndication	
ProviderVersion	Provider Version in the format VV.UU.FF. for example, 01.11.00
NetworkAddress	Contains a list of all the IP addresses of the computer system generating the indication
OSType	On ESX, 39 (VM) On Linux, 36 (Linux)
OSVersion	The operating system version of the computer system generating the indication in the following format: *<major>.<minor>.<build>*
SystemFirmwareVersion	Array of firmware version of the computer system generating the indication
SystemSerialNumber	Serial number of the computer system generating the indication
SystemProductID	Product ID of the computer system generating the indication
SystemModel	Model name of the computer system generating the indication

Table 13-29 Provider Indication Common Properties

Property name	Property implementation
SystemGUID	Platform GUID of the computer system generating the indication

The following tables describe the SMX Memory Provider indications that are implemented for server platforms where available:

Table 13-30 SMX_MemoryIndication: Memory Module Predictive Failure

Property name	Property implementation
CIM_Indication	
PerceivedSeverity	5 (Major)
CIM_AlertIndication	
Description	A memory module has failed or is predicted to fail. (*MemoryModuleCaption*) where *MemoryModuleCaption* is the SMX_MemoryModule.Caption for the failing memory module
AlertingManagedElement	WBEM Path of SMX_MemoryModule instance representing the memory module
AlertingElementFormat	2 (CIMObjectPath)
AlertType	5 (Device Alert)
EventID	1
ProviderName	HP Memory
RecommendedActions	Check the memory configuration and replace memory as necessary.
HP_AlertIndication	
Summary	Memory module has failed or is predicted to fail
EventCategory	3 (Memory)
ProbableCause	1 (Other)
ProbableCauseDescription	Memory Module Failed or Predicted to Fail

Table 13-31 SMX_MemoryIndication: Memory Board Error

Property name	Property implementation
CIM_Indication	
PerceivedSeverity	5 (Major)
CIM_AlertIndication	

Table 13-31 SMX_MemoryIndication: Memory Board Error

Property name	Property implementation
Description	A memory board has an error. (MemoryBoardCaption) where MemoryBoardCaption is the SMX_MemoryBoard.Caption for the failing memory board.
AlertingManagedElement	WBEM Path of SMX_MemoryBoard instance representing the memory board
AlertingElementFormat	2 (CIMObjectPath)
AlertType	5 (Device Alert)
EventID	2
ProviderName	HP Memory
RecommendedActions	Check the memory configuration and replace the memory board and memory modules as necessary.
HP_AlertIndication	
Summary	Memory board error
EventCategory	3 (Memory)
ProbableCause	1 (Other)
ProbableCauseDescription	Memory Board Error

Table 13-32 SMX_MemoryIndication: Memory Redundancy Degraded

Property name	Property implementation
CIM_Indication	
PerceivedSeverity	5 (Major)
CIM_AlertIndication	
Description	The Advanced Memory Protection (AMP) system is operating with degraded redundancy. The targeted configuration has degraded or is operating with memory modules that have failed or predicted to fail. (*TargetConfiguration*/*CurrentConfiguration*) where *TargetConfiguration* is SMX_MemoryRedundancySet.TargetConfiguration.
AlertingManagedElement	WBEM Path of SMX_MemoryRedundancySet instance representing the Memory Redundancy.
AlertingElementFormat	2 (CIMObjectPath)
AlertType	5 (Device Alert)
EventID	3
ProviderName	HP Memory

RecommendedActions	Check the Advanced Memory Protection configuration and replace the memor board and memory modules as necessary.”
HP_AlertIndication	
Summary	Advanced Memory Protection degraded
EventCategory	3 (Memory)
ProbableCause	88 (Loss of Redundancy)
ProbableCauseDescription	Advanced Memory Protection Degraded

Table 13-33 SMX_MemoryIndication: Memory Recovered from Degraded Redundancy

Property name	Property implementation
CIM_Indication	
PerceivedSeverity	2 (Information)
CIM_AlertIndication	
Description	The Advanced Memory Protection (AMP) system is operating normally in the targeted configuration. If redundancy was previously degraded, redundancy has been restored. (*TargetConfiguration*)” where *TargetConfiguration* is SMX_MemoryRedundancySet.TargetConfiguration
AlertingManagedElement	WBEM Path of SMX_MemoryRedundancySet instance representing the Memory Redundancy.
AlertingElementFormat	2 (CIMObjectPath)
AlertType	5 (Device Alert)
EventID	4
ProviderName	HP Memory
RecommendedActions	No action is recommended.
HP_AlertIndication	
Summary	Advanced Memory Protection redundancy is now fully operational”
EventCategory	3 (Memory)
ProbableCause	1 (Other)
ProbableCauseDescription	Advanced Memory Protection now Fully Operational

14 Blade System Lite

14-1 Overview

The following profiles are implemented, and the following files are installed by this provider.

Table 14-1 Overview

Implemented Profiles	• HP Blade System Lite Profile 2.0.3

14-2 Namespaces

This provider returns instances in the `root/hpq` namespace.

14-3 Class implementations

The following classes reside in the local host OS CIMOM on each individual blade system and describe the blade system enclosure (Onboard Administrator) and association to the individual blade system.

14-3-1 SMX_BladeEnclosureCS

SMX_BladeEnclosureCS extends the class CIM_ComputerSystem and describes a blade computer system enclosure. The following properties are implemented.

Table 14-2 Class: SMX_BladeEnclosureCS

Property name	Property implementation
CIM_ManagedElement	
Caption	If enclosure name exists: HP BladeSystem enclosure <enclosure name> otherwise: HP BladeSystem enclosure
Description	If enclosure name exists: HP BladeSystem enclosure <enclosure name> otherwise: HP BladeSystem enclosure
ElementName	If enclosure name exists: HP BladeSystem enclosure <enclosure name> otherwise: HP BladeSystem enclosure
CIM_ManagedSystemElement	

Table 14-2 Class: SMX_BladeEnclosureCS

Property name	Property implementation
OperationalStatus	• 0 (Unknown), enclosure status: Unknown • 2 (OK), enclosure status: OK • 3 (Degraded), enclosure status: Degraded • 6 (Error), enclosure status: Error
StatusDescriptions	StatusDescriptions[0] per OperationalStatus[0]: • Server Blade Enclosure and Onboard Administrator status: Unknown • Server Blade Enclosure and Onboard Administrator status: OK • Server Blade Enclosure and Onboard Administrator status: Degraded • Server Blade Enclosure and Onboard Administrator status: Error
HealthState	• 0 (Unknown), enclosure status: Unknown • 5 (OK), enclosure status: OK • 10 (Degraded/Warning), enclosure status: Degraded • 20 (Major Failure), enclosure status: Error
CIM_LogicalElement	
CIM_EnabledLogicalElement	
EnabledState	5 (Not Applicable)
RequestedState	12 (Not Applicable)
EnabledDefault	2 (Enabled)
CIM_System	
CreationClassName	HP_BladeEnclosureCS
CIM_ComputerSystem	
Dedicated	2 (Other)
OtherDedicatedDescriptions	Modular
IdentifyingDescriptions	• IdentifyingDescriptions[0]: HPQ:ProductID • IdentifyingDescriptions[1]: CIM:Model:SerialNumber
OtherIdentifyingInfo	• OtherIdentifyingInfo[0]: Blade enclosure product name (model) string • OtherIdentifyingInfo[1]: Blade enclosure model string : blade enclosure serial number string
Name	Text description of the modular system enclosure. The DNS name is populated if available.
NameFormat	DNSName
HP_BladeEnclosureCS	

Table 14-2 Class: SMX_BladeEnclosureCS

Property name	Property implementation
ManagementIPAddress	The enclosure's management IP address
ManagementURL	The URL of the enclosure's management web-based user interface
ProductID	The blade enclosure product name (model) string
SerialNumber	The blade enclusure serial number string
RackName	The name of the rack string
RackUID	The UUID of the rack string
EnclosureName	The name of the enclosure string

14-3-2 SMX_BladeEnclosureCollection

SMX_BladeEnclosureCollection extends the class HP_GroupSystemSpecificCollection to aggregate the enclosure's group operational status. The following properties are implemented.

Table 14-3 Class: SMX_BladeEnclosureCollection

Property name	Property implementation
CIM_ManagedElement	
Description	A collection of server blade enclosures with group aggregate status
ElementName	Server Blade Enclosure Collection
CIM_Collection	
CIM_SystemSpecificCollection	
InstanceID	HPQ:SMX_BladeEnclosureCollection:001
HP_GroupSystemSpecificCollection	
Caption	Server Blade Enclosure Collection
GroupOperationalStatus	Describes the group operational status of the blade enclosure collection. The group operational status represents the 'worst-of' algorithm for all individual enclosure statuses in HP_BladeEnclosureCS.OperationalStatus[0]. GroupOperationalStatus[0] contains group operational status: • 0 (Unknown) • 2 (OK) • 3 (Degraded) • 6 (Error)

Table 14-3 Class: SMX_BladeEnclosureCollection

Property name	Property implementation
GroupStatusDescriptions	GroupStatusDescriptions[0] per GroupOperationalStatus[0]: • Server Blade Enclosure and Onboard Administrator status: Unknown • Server Blade Enclosure and Onboard Administrator status: OK • Server Blade Enclosure and Onboard Administrator status: Degraded • Server Blade Enclosure and Onboard Administrator status: Error
HP_BladeEnclosureCollection	

14-3-3 SMX_BladeSystemComponent

SMX_BladeSystemComponent extends the class HP_BladeSystemComponent and associates the enclosure's computer system instance to the blade's computer system instance. The following properties are implemented.

Table 14-4 Class: SMX_BladeSystemComponent

Property name	Property implementation
CIM_Component	
CIM_SystemComponent	
HP_BladeSystemComponent	
GroupComponent	ref: SMX_BladeEnclosureCS (the blade enclosure computer system)
PartComponent	ref: SMX_ComputerSystem (the blade servers computer system)

14-3-4 SMX_MemberOfBladeEnclosureCollection

SMX_MemberOfBladeEnclosureCollection extends the class CIM_MemberOfCollection and associates the enclosure's computer system instance to the blade enclosure collection instance. The following properties are implemented.

Table 14-5 Class: SMX_MemberOfBladeEnclosureCollection

Property name	Property implementation
CIM_MemberOfCollection	
HP_MemberOfBladeEnclosureCollection	
Collection	ref: SMX_BladeEnclosureCollection
Member	ref: SMX_BladeEnclosureCS

14-3-5 SMX_BladeEnclosureGroupHostedCollection

SMX_BladeEnclosureGroupHostedCollection extends the class HP_GroupHostedCollection and associates the enclosure's computer system instance to the blade enclosure collection instance. The following properties are implemented.

Table 14-6 Class: SMX_BladeEnclosureGroupHostedCollection

Property name	Property implementation
CIM_Dependency	
CIM_HostedDependency	
CIM_HostedCollection	
HP_GroupHostedCollection	
HP_BladeEnclosureGroupHostedCollection	
Antecedent	ref: SMX_ComputerSystem
Dependent	ref: SMX_BladeEnclosureCollection

14-3-6 CIM_SoftwareIdentity

CIM_SoftwareIdentity describes blade enclosure firmware. The Windows-specific implementation class is HP_BladeEnclosureFW. The following table lists the properties implemented.

Table 14-7 Class: CIM_SoftwareIdentity

Property name	Property implementation
CIM_ManagedElement	
Caption	Server Blade Enclosure Firmware
Description	HP Server Blade Enclosure Firmware
ElementName	OA
CIM_ManagedSystemElement	
Name	If enclosure name exists: HP BladeSystem enclosure *<enclosure name>* otherwise: HP BladeSystem enclosure
OperationalStatus	2 (OK), normal operation
StatusDescriptions	Server Blade Enclosure Firmware status: OK
HealthState	5 (OK), normal operation
CIM_LogicalElement	
CIM_SoftwareIdentity	
InstanceID	HPQ:SMX_BladeEnclosureFirmware:001

Table 14-7 Class: CIM_SoftwareIdentity

Property name	Property implementation
MajorVersion	The major version of the blade enclosure firmware
MinorVersion	The minor version number of the blade enclosure firmware
VersionString	String indicating the blade enclosure firmware version information. This property is the string translation of the content provided in the MajorVersion and MinorVersion properties.
Manufacturer	Hewlett-Packard
Classifications	10 (Firmware)
ClassificationDescriptions	HP Server Blade Enclosure Firmware
IdentityInfoValue	An array in which first element contains the path of the target type/firmware family and the second element is HPQ:OA
IdentityInfoType	CIM:SoftwareFamily
HP_BladeEnclosureFW	

14-3-7 CIM_ElementSoftwareIdentity

CIM_ElementSoftwareIdentity associates a blade enclosure to its corresponding firmware. The Windows-specific implementation class is HP_BladeEnclosureElementFWIdentity. The following table lists the properties implemented.

Table 14-8 Class: CIM_ElementSoftwareIdentity

Property name	Property implementation
CIM_Dependency	
CIM_ElementSoftwareIdentity	
UpgradeCondition	3 (Owner Upgradeable)
ElementSoftwareStatus	• ElementSoftwareStatus[0]: 6 (Installed) • ElementSoftwareStatus[1]: 2 (Current)
HP_BladeEnclosureElementFWIdentity	
Antecedent	ref: SMX_BladeEnclosureFW
Dependent	ref: SMX_BladeEnclosureCS

14-3-8 SMX_BladeEnclosureInstalledFWIdentity

SMX_BladeEnclosureInstalledFWIdentity associates a blade enclosure to its corresponding installed firmware. The following table lists the properties implemented.

Table 14-9 Class: SMX_BladeEnclosureInstalledFWIdentity

Property name	Property implementation
CIM_InstalledSoftwareIdentity	
HP_BladeEnclosureInstalledFWIdentity	
System	ref: SMX_BladeEnclosureCS
InstalledSoftware	ref: SMX_BladeEnclosureFW

14-3-9 SMX_BladeCSLocation

SMX_BladeCSLocation is used to model the server blade location within an enclosure.

Table 14-10 Class: SMX_BladeCSLocation

Property name	Property implementation
CIM_ManagedElement	
Caption	Blade Computer System Bay Location n, where n represents the blade bay slot position printed on the enclosure labeling
Description	Blade Computer System Bay Location n, where n represents the blade bay slot position printed on the enclosure labeling
ElementName	Blade Computer System Bay Location n, where n represents the blade bay slot position printed on the enclosure labeling
CIM_Location	
Name	Unique identifier for this blade bay location instance
PhysicalPosition	"n", where n represents the blade bay slot position printed on the enclosure labeling
HP_Location	
ElementLocationTag	The computer system name
ElementLocationTagDesc	24 (Blade)
LocationInformation	LocationInformation[0]: The blade bay number within the enclosure
LocationInfoDesc	LocationInfoDesc[0]: 14 (Blade Bay)

14-3-10 SMX_BladeCSElementLocation

SMX_BladeCSElementLocation is used to represent an association between CIM_Location and CIM_ManagedElement.

Table 14-11 Class: HP_ElementLocation

Property name	Property implementation
Element	References SMX_ComputerSystem
PhysicalLocation	References SMX_BladeCSLocation

14-4 Supported indications

There are no indications specific to the blade system implementation.

15 FC HBA

15-1 Overview

This provider implements the HP FC HBA Profile which describes the behavior of Fibre Channel host adapters supporting the SCSI (FCP) command set. A Fibre Channel adapter used in a host system is called a Host Bus Adapter (HBA). An HBA is a physical device that contains one or more Fibre Channel ports. A single system can contain one or more HBAs.

The following table details the profiles implemented and files installed by this provider.

Table 15-1 Overview

Implemented Profiles	• SNIA SMI-S FC HBA Profile, Host book 1.4.0 r1 • HP FC HBA Profile 1.0

15-2 Namespaces

This provider returns instances in the `root/hpq` namespace.

15-3 Class implementations

15-3-1 SMX_FCHBAComputerSystem

SMX_FCHBAComputerSystem is used to idenitfy classes that represent all Fibre Channel ports.

Table 15-2 Class: SMX_FCHBAComputerSystem

Property name	Property implementation
CIM_ManagedElement	
Caption	Fibre Channel System
ElementName	Fibre Channel System
CIM_ManagedSystemElement	
Name	GUID
OperationalStatus[0]	• 0 (Unknown) • 2 (OK) • 6 (Error) • 10 (Stopped)

Table 15-2 Class: SMX_FCHBAComputerSystem

Property name	Property implementation
StatusDescriptions[0]	• Unknown • OK • Stopped • Error
CIM_LogicalElement	
CIM_EnabledLogicalElement	
EnabledDefault	2 (Enabled)
EnabledState	5 (Not Applicable)
RequestedState	12 (Not Applicable)
CIM_System	
CreationClassName	SMX_FCHBAComputerSystem
NameFormat	Other
CIM_ComputerSystem	
Dedicated	0
IdentifyingDescriptions[0]	HPQ:GUID
OtherIdentifyingInfo[0]	GUID

15-3-2 SMX_FCHBAFCPort

SMX_FCHBAFCPort is used to represent a Fibre Channel port device.

Table 15-3 Class: SMX_FCHBAFCPort

Property name	Property implementation
CIM_ManagedElement	
ElementName	Fibre Channel Port *<port controller number><-port number>* Where *<FC port controller number>* is the associated FC port controller instance number; *<-port number>* is the FC port number and is only added when the associated FC port controller has multiple FC ports.
CIM_ManagedSystemElement	
OperationalStatus[0]	• 0 (Unknown) • 2 (OK-Online) • 6 (Error) • 10 (Stopped) • 11 (In Service)

Table 15-3 Class: SMX_FCHBAFCPort

Property name	Property implementation
StatusDescriptions[0]	• Unknown • OK-Online • Stopped Offline • Stopped Bypassed • Stopped Diagnostics • Stopped Link down • Error
CIM_LogicalElement	
CIM_EnabledLogicalElement	
EnabledDefault	2 (Enabled)
EnabledState	5 (Not Applicable)
RequestedState	12 (Not Applicable)
CIM_LogicalDevice	
CreationClassName	SMX_FCHBAFCPort
DeviceID	Opaque value
SystemName	Opaque value
SystemCreationClassName	SMX_FCHBAComputerSystem
CIM_LogicalPort	
MaxSpeed	One of (in Bits per Second): • 0 • 1000000000 • 2000000000 • 10000000000
OtherPortType	• other • Not present • Fabric • Public Loop • FL Port • Fabric Port • Fabric expansion port • Generic Fabric Port • Private Loop • Point to Point
PortType	1 (Other)
Speed	One of (in Bits per Second): • 0 • 1000000000 • 2000000000 • 10000000000

Table 15-3 Class: SMX_FCHBAFCPort

Property name	Property implementation
UsageRestriction	4 (not restricted)
CIM_NetworkPort	
LinkTechnology	4 (FC)
PermanentAddress	PortWWN
PortNumber	Port number
SupportedMaximumTransmissionUnit	Port maximum frame size

15-3-3 SMX_FCHBAPortController

SMX_FCHBAPortController is a logical device corresponding to a hardware network port controller.

Table 15-4 Class: SMX_FCHBAPortController

Property name	Property implementation
CIM_ManagedElement	
ElementName	Product Name
CIM_ManagedSystemElement	
Name	NodeWWN
CIM_LogicalElement	
CIM_EnabledLogicalElement	
EnabledDefault	2 (Enabled)
EnabledState	5 (Not Applicable)
RequestedState	12 (Not Applicable)
CIM_LogicalDevice	
CreationClassName	SMX_FCHBAPortController
DeviceID	NodeWWN:SerialNumber :<*instanceNum*> where <*instanceNum*> is the port controller instance number for the same adapter.
SystemCreationClassName	SMX_FCHBAComputerSystem
SystemName	Opaque
CIM_Controller	
CIM_PortController	
ControllerType	4 (FC)

15-3-4 SMX_FCHBAFCPortStatistics

SMX_FCHBAFCPortStatsitics represents statistics for a Fibre Channel port. In the following table HBAAPI_PORTSTATISTICS prefix refers to the HBA API HBA_PORTSTATISTICS structure. This information comes directly for the HBA and is not altered.

Table 15-5 Class: SMX_FCHBAFCPortStatistics

Property name	Property implementation
CIM_ManagedElement	
ElementName	Product name
CIM_StatisticalData	
InstanceID	Opaque
SampleInterval	00000000000000.000000:000
CIM_NetworkPortStatistics	
BytesTransmitted	HBAAPI_PORTSTATISTICS.TxWords
BytesReceived	HBAAPI_PORTSTATISTICS.RxWords
PacketsTransmitted	HBAAPI_PORTSTATISTICS.TxFrames
PacketsReceived	HBAAPI_PORTSTATISTICS.RxFrames
CIM_FCPortStatistics	
CRCErrors	HBAAPI_PORTSTATISTICS.InvalidCRCCount
DumpedFrames	HBAAPI_PORTSTATISTICS.DumpedFrames
ErrorFrames	HBAAPI_PORTSTATISTICS.ErrorFrames
InvalidTransmissionWords	HBAAPI_PORTSTATISTICS.InvalidTxWordCount
LinkFailures	HBAAPI_PORTSTATISTICS.LinkFailureCount
LIPCount	HBAAPI_PORTSTATISTICS.LIPCount
LossOfSignalCounter	HBAAPI_PORTSTATISTICS.LossOfSignalCount
LossOfSyncCounter	HBAAPI_PORTSTATISTICS.LossOfSyncCount
NOSCount	HBAAPI_PORTSTATISTICS.NOSCount
PrimitiveSeqProtocolErrCount	HBAAPI_PORTSTATISTICS.PrimitiveSeqProtocolErrCount

15-3-5 SMX_FCHBALogicalPortGroup

A collection of one or more ports logically grouped for administrative, discovery and topology purposes.

Table 15-6 Class: SMX_FCHBALogicalPortGroup

Property name	Property implementation
CIM_ManagedElement	

Table 15-6 Class: SMX_FCHBALogicalPortGroup

Property name	Property implementation
Description	Grouping of all FC Ports for this HBA
Caption	Logical Port Group
ElementName	Logical Port Group
CIM_Collection	
CIM_SystemSpecificCollection	
InstanceID	Opaque
CIM_LogicalPortGroup	
Name	NodeWWN
NameFormat	WWN

15-3-6 SMX_FCHBAPhysicalPackage

SMX_FCHBAPhysicalPackage class represents the physical elements of the associated Fibre Channel port controller.

Table 15-7 Class: SMX_FCHBAPhysicalPackage

Property name	Property implementation
CIM_ManagedElement	
ElementName	Product Name
Caption	Adapter Name
CIM_ManagedSystemElement	
Name	NodeWWN
OperationalStatus[]	1 (Other) 2 (OK) 3 (Degraded) 6 (Error)
CIM_PhysicalElement	
CreationClassName	SMX_FCHBAPhysicalPackage
Manufacturer	Manufacturer
Model	Model
OtherIdentifyingInfo	Location; PCI Slot *x* where *x* is the PCI slot number or PCI Mezzanine=x where x is the Mexannine slot number
SerialNumber	Serial Number

Table 15-7 Class: SMX_FCHBAPhysicalPackage

Property name	Property implementation
Tag	NodeWWN:<*instanceNum*> where <*instanceNum*> is the port controller instance number for the same adapter
Version	Board Version or N/A when not available
CIM_PhysicalPackage	
RemovalConditions	2 (Not Applicable)

15-3-7 SMX_FCHBAProduct

SMX_FCHBAProduct is used to aggregate physical element of the FC HBA. In the following table HBAAPI_ADAPTERATTRIBUTES prefix refers to the HBA API HBA_ADAPTERATTRIBUTES structure. This information comes directly for the HBA and is not altered.

Table 15-8 Class: SMX_FCHBAProduct

Property name	Property implementation
CIM_ManagedElement	
ElementName	Product Name
CIM_Product	
IdentifyingNumber	HBAAPI_ADAPTERATTRIBUTES.VendorSpecificID
Name	NodeWWN:<*instanceNum*> where <*instanceNum*> is the port controller instance number for the same adaper
Vendor	Manufacturer
Version	F/W Version of HBA or "N/A" when not available

15-3-8 SMX_FCHBASoftwareIdentityDrv

Table 15-9 Class: SMX_FCHBASoftwareIdentityDrv

Property name	Property implementation
CIM_ManagedElement	
Caption	FC HBA Driver
Description	Product Name Device Driver where product name is the product name of the HBA.
ElementName	FC HBA Driver
CIM_ManagedSystemElement	

Table 15-9 Class: SMX_FCHBASoftwareIdentityDrv

Property name	Property implementation
Name	NodeWWN
CIM_LogicalElement	
CIM_SoftwareIdentity	
ClassificationDescriptions	FC HBA Driver
Classifications	2 (Driver)
InstanceID	HPQ:NodeWWN:*<instanceNum>* where *<instanceNum>* is the port controller instance number for the same adapter
Manufacturer	Manufacturer
VersionString	File version of the Driver

15-3-9 SMX_FCHBAFirmwareIdentityFW

SMX_FCHBA_FirmwareIdentityFW represents adapter firmware associated with the Fibre Channel port controller.

Table 15-10 Class: SMX_FCHBAFirmwareIdentityFW

Property name	Property implementation
CIM_ManagedElement	
Caption	FC HBA Firmware
Description	FC HBA Firmware details for *Model Name,* where *model name* is the model name of the HBA.
ElementName	FC HBA Firmware
CIM_ManagedSystemElement	
Name	NodeWWN
CIM_LogicalElement	
CIM_SoftwareIdentity	
ClassificationDescriptions	FC HBA Firmware
Classifications	10 (firmware)
InstanceID	HPQ:WWN: *<instanceNum>* where *<instanceNum>* is the port controller instance number for the same adapter
Manufacturer	Manufacturer
SerialNumber	Serial number
VersionString	Firmware version

15-3-10 SMX_FCHBAFirmwareIdentityBIOS

SMX_FCHBAFirmwareIdentityBIOS represents adapter BIOS associated with the Fibre Channel port controller.

Table 15-11 Class: SMX_FCHBA_FirmwareIdentityBIOS

Property name	Property implementation
CIM_ManagedElement	
Caption	FC HBA Option ROM
Description	FC HBA Option ROM detail for *Model Name*, where *product name* is the model name of the HBA.
ElementName	FC HBA Option ROM
CIM_ManagedSystemElement	
Name	NodeWWN
CIM_LogicalElement	
CIM_SoftwareIdentity	
ClassificationDescriptions	FC HBA Option ROM
Classifications	11 (BIOS/FC)
InstanceID	HPQ:NodeWWN: *<instanceNum>* where *<instanceNum>* is the port controller instance number for the same adapter
Manufacturer	Manufacturer
VersionString	BIOS Version as reported by HBA
TargetTypes	HBA BIOS UNKNOWN
SerialNumber	Serial Number
MajorVersion	0
MinorVersion	0
RevisionNumber	0
HP_SoftwareIdentity	

15-3-11 SMX_FCHBAGroupSystemSpecificCollection

SMX_FCHBAGroupSystemSpecificCollection is used to represent the group status of all Fibre Channel ports.

Table 15-12 Class: SMX_FCHBAGroupSystemSpecificCollection

Property name	Property implementation
CIM_ManagedElement	

Table 15-12 Class: SMX_FCHBAGroupSystemSpecificCollection

Property name	Property implementation
Caption	FC HBA Consolidated Status
Description	Consolidated status for HP FC HBAs
ElementName	FC HBA Consolidated Status
CIM_Collection	
CIM_SystemSpecificCollection	
InstanceID	Opaque
HP_GroupSystemSpecificCollection	
GroupOperationalStatus[0]	• 0 (Unknown) • 1 (Other) • 2 (OK) • 3 (Degraded) • 6 (Error) • 10 (Stopped)
GroupStatusDescriptions[0]	• Unknown • Other • OK • Degraded • Error • Stopped

15-3-12 SMX_FCHBAComputerSystemFCPort

SMX_FCHBA_ComputerSystemFCPort is used to represent an association between SMX_FCHBA_ComputerSystem and HPFCHBA_FCPort.

Table 15-13 Class: SMX_FCHBA_ComputerSystemFCPort

Property name	Property implementation
CIM_Component	
CIM_SystemDevice	
SMX_FCHBAComputerSystemFCPort	
GroupComponent	ref:SMX_FCHBAComputerSystem
PartComponent	ref:SMX_FCHBAFCPort

15-3-13 SMX_FCHBAComputerSystemPortController

SMX_FCHBA_ComputerSystemPortController is used to represent an association between SMX_FCHBA_ComputerSystem and SMX_FCHBAPortController.

Table 15-14 Class: SMX_FCHBAComputerSystemPortController

Property name	Property implementation
CIM_Component	
CIM_SystemDevice	
SMX_FCHBAComputerSystemPortController	
GroupComponent	ref:SMX_FCHBAComputerSystem
PartComponent	ref:SMX_FCHBAPortController

15-3-14 SMX_FCHBAComputerSystemLogicalPortGroup

SMX_FCHBAComputerSystemLogicalPortGroup is used to represent an association between SMX_FCHBAComputerSystem and SMX_FCHBALogicalPortGroup.

Table 15-15 Class: SMX_FCHBAComputerSystemLogicalPortGroup

Property name	Property implementation
CIM_Dependency	
CIM_HostedDependency	
CIM_HostedCollection	
SMX_FCHBAComputerSystemLogicalPortGroup	
Antecedent	ref:SMX_FCHBAComputerSystem
Dependent	ref:SMX_FCHBALogicalPortGroup

15-3-15 SMX_FCHBAComputerSystemSoftwareIdentityDrv

SMX_FCHBA_ComputerSystemSoftwareIdentityDrv is used to represent an association between SMX_FCHBAComputerSystem and SMX_FCHBASoftwareIdentityDrv.

Table 15-16 Class: SMX_FCHBA_ComputerSystemSoftwareIdentityDrv

Property name	Property implementation
CIM_Component	
CIM_SystemDevice	
SMX_FCHBAComputerSystemSoftwareIdentityDrv	
InstalledSoftware	ref:SMX_FCHBASoftwareIdentityDrv
System	ref:SMX_FCHBAComputerSystem

15-3-16 SMX_FCHBAFCPortFCPortStatistics

SMX_FCHBAFCPortFCPortStatistics is used to represent an association between SMX_FCHBAFCPort and SMX_FCHBAFCPortStatistics.

Table 15-17 Class: SMX_FCHBAFCPortFCPortStatistics

Property name	Property implementation
CIM_ElementStatisticalData	
SMX_FCHBAFCPortFCPortStatistics	
ManagedElement	ref:SMX_FCHBAFCPort
Stats	ref:SMX_FCHBAFCPortStatistics

15-3-17 SMX_FCHBAFCPortLogicalPortGroup

SMX_FCHBAFCPortLogicalPortGroup is used to represent an association between SMX_FCHBAFCPort and SMX_FCHBALogicalPortGroup.

Table 15-18 Class: SMX_FCHBA_FCPortLogicalPortGroup

Property name	Property implementation
CIM_MemberOfCollection	
SMX_FCHBAFCPortLogicalPortGroup	
Collection	ref:SMX_FCHBALogicalPortGroup
Member	ref:SMX_FCHBAFCPort

15-3-18 SMX_FCHBAPortControllerFCPort

SMX_FCHBAPortControllerFCPort is used to represent an association between SMX_FCHBAPortController and SMX_FCHBAFCPort.

Table 15-19 Class: SMX_FCHBAPortControllerFCPort

Property name	Property implementation
CIM_Dependency	
CIM_ControlledBy	
SMX_FCHBAPortControllerFCPort	
Antecedent	ref:SMX_FCHBAPortController
Dependent	ref:SMX_FCHBAFCPort

15-3-19 SMX_FCHBAPhysicalPackagePortController

SMX_FCHBAPhysicalPackagePortController is used to represent an association between SMX_FCHBAPortController and SMX_FCHBA_PhysicalPackage.

Table 15-20 Class: SMX_FCHBA_PhysicalPackagePortController

Property name	Property implementation
CIM_Dependency	
CIM_Realizes	
SMX_FCHBA_PhysicalPackagePortController	
Antecedent	ref:SMX_FCHBAPhysicalPackage
Dependent	ref:SMX_FCHBAPortController

15-3-20 SMX_FCHBASoftwareIdentityDrvPortController

SMX_FCHBASoftwareIdentityDrvPortController is used to represent an association between SMX_FCHBAPortController and SMX_FCHBASoftwareIdentityDrv.

Table 15-21 Class: SMX_FCHBASoftwareIdentityDrvPortController

Property name	Property implementation
CIM_Dependency	
CIM_ElementSoftwareIdentity	
SMX_FCHBASoftwareIdentityDrvPortController	
Antecedent	ref:SMX_FCHBASoftwareIdentityDrv
Dependent	ref:SMX_FCHBAPortController

15-3-21 SMX_FCHBAPortControllerFirmwareIdentityFW

SMX_FCHBAPortControllerFirmwareIdentityFW is used to represent an association between SMX_FCHBAPortController and SMX_FCHBAFirmwareIdentityFW.

Table 15-22 Class: SMX_FCHBAPortControllerFirmwareIdentityFW

Property name	Property implementation
CIM_Dependency	
CIM_ElementSoftwareIdentity	
SMX_FCHBAPortControllerFirmwareIdentityFW	
Antecedent	ref:SMX_FCHBAFirmwareIdentityFW

Table 15-22 Class: SMX_FCHBAPortControllerFirmwareIdentityFW

Property name	Property implementation
Dependent	ref:SMX_FCHBAPortController

15-3-22 SMX_FCHBAPortControllerFirmwareIdentityBIOS

SMX_FCHBAPortControllerFirmwareIdentityBIOS is used to represent an association between SMX_FCHBAPortController and SMX_FCHBA_FirmwareIdentityBIOS.

Table 15-23 Class: SMX_FCHBAPortControllerFirmwareIdentityBIOS

Property name	Property implementation
CIM_Dependency	
CIM_ElementSoftwareIdentity	
SMX_FCHBAPortControllerFirmwareIdentityBIOS	
Antecedent	ref:SMX_FCHBAFirmwareIdentityBIOS
Dependent	ref:SMX_FCHBAPortController

15-3-23 SMX_FCHBAProductPhysicalComponent

SMX_FCHBAProductPhysicalComponent is used to represent an association between SMX_FCHBA_Product and SMX_FCHBAPhysicalPackage.

Table 15-24 Class:SMX_FCHBAProductPhysicalComponent

Property name	Property implementation
CIM_Component	
CIM_ProductPhysicalComponent	
SMX_FCHBAProductPhysicalComponent	
GroupComponent	ref:SMX_FCHBAProduct
PartComponent	ref:SMX_FCHBAPhysicalPackage

15-3-24 SMX_FCHBASystemPackaging

SMX_FCHBASystemPackaging is used to represent an association between SMX_FCHBAPhysicalPackage and SMX_FCHBAComputerSystem.

Table 15-25 Class:SMX_FCHBASystemPackaging

Property name	Property implementation

Table 15-25 Class:SMX_FCHBASystemPackaging

Property name	Property implementation
CIM_Dependency	
CIM_SystemPackaging	
SMX_FCHBASystemPackaging	
Antecedent	ref:SMX_FCHBAPhysicalPackage
Dependent	ref:SMX_ FCHBAComputerSystem

15-3-25 SMX_FCHBAGroupHostedCollection

SMX_FCHBAGroupHostedCollection is used to represent an association between SMX_ComputerSystem and SMX_FCHBAGroupSystemSpecificCollection.

Table 15-26 Class: SMX_FCHBAGroupHostedCollection

Property name	Property implementation
CIM_Dependency	
CIM_HostedDependency	
CIM_HostedCollection	
HP_GroupHostedCollection	
SMX_FCHBA_GroupHostedCollection	
Antecedent	ref:SMX_ComputerSystem
Dependent	ref:SMX_FCHBAGroupSystemSpecificCollection

15-3-26 SMX_FCHBAFCPortGroupSystemSpecific

SMX_FCHBAFCPortGroupSystemSpecific is used to represent an association between SMX_FCHBAFCPort and SMX_FCHBAGroupSystemSpecificCollection.

Table 15-27 Class: SMX_FCHBA_FCPortGroupSystemSpecific

Property name	Property implementation
CIM_MemberOfCollection	
SMX_FCHBAFCPortGroupSystemSpecific	
Collection	ref:SMX_FCHBAGroupSystemSpecificCollection
Member	ref:SMX_FCHBAFCPort

15-3-27 SMX_FCHBALocation

SMX_FCHBALocation is used to specify the location of the HBA, PCI Slot number.

Table 15-28 Class: SMX_FCHBALocation

Property name	Property implementation
CIM_ManagedElement	
CIM_Location	
Name	NodeWWN: SerialNumber:<*instanceNum*> Where <*instanceNum*> is the port controller instance number for the same adapter.
HP_Location	
ElementLocationTag	slot number
ElementLocationTagDesc	1 (slot)
PhysicalPosition	Location—PCI Slot *x* where *x* is the PCI slot number or PCI Mezzanine=*x* where *x* is the Mezzanine slot number

15-3-28 SMX_FCHBAPhysicalElementLocation

SMX_FCHBAPhysicalElementLocation is used to represent an association between the SMX_FCHBAPhysicalPackage and SMX_FCHBALocation.

Table 15-29 Class: SMX_FCHBAPhysicalElementLocation

Property name	Property implementation
CIM_ElementLocation	
SMX_FCHBAPhysicalElementLocation	
Element	ref:SMX_FCHBAPhysicalPackage
PhysicalLocation	ref:SMX_FCHBALocation

15-3-29 SMX_FCHBASCSIProtocolController

SMX_FCHBASCSIProtocolController represents a protocol controller that manages a SCSI interface. This class is used for backward compatibility with SMI-S 1.0.

Table 15-30 Class: SMX_FCHBASCSIProtocolController

Property name	Property implementation
CIM_ManagedElement	
ElementName	**ProductName**
CIM_ManagedSystemElement	

Table 15-30 Class: SMX_FCHBASCSIProtocolController

Property name	Property implementation
OperationalStatus[0]	0 (Unknown) 2 (OK-Online) 6 (Error) 10 (Stopped) 11 (In Service)
CIM_LogicalElement	
CIM_EnabledLogicalElement	
EnabledDefault	2 (Enabled)
EnabledState	5 (Not Applicable)
RequestedState	12 (Not Applicable)
CIM_LogicalDevice	
CreationClassName	SMX_FCHBASCSIProtocolController
DeviceID	PortWWN
SystemName	Opaque value
SystemCreationClassName	SMX_FCHBAComputerSystem
CIM_ProtocolController	
MaxUnitsControlled	255
CIM_SCSIProtocolController	

15-3-30 SMX_FCHBASCSIProtocolEndpoint

SMX_FCHBASCSIProtocolEndpoint represents SCSI protocol running through a port.

Table 15-31 Class: SMX_FCHBASCSIProtocolEndpoint

Property name	Property implementation
CIM_ManagedElement	
ElementName	SCSI Protocol Endpoint
CIM_MnagedSystemElement	
Name	PortWWN
CIM_LogicalElement	
CIM_EnabledLogicalElement	
EnabledDefault	2 (Enabled)
RequestedState	12 (Not Applicable)
CIM_ServiceAccessPoint	
CreationClassName	SMX_FCHBASCSIProtocolEndpoint

Table 15-31 Class: SMX_FCHBASCSIProtocolEndpoint

Property name	Property implementation
SystemName	Opaque value
SystemCreationClassName	SMX_FCHBAComputerSystem
CIM_ProtocolEndpoint	
ProtocolIFType	57 (HIPPI Interface)
CIM_SCSIProtocolEndpoint	
ConnectionType	2 (fibre channel)
Role	2 (initiator)

15-3-31 SMX_FCHBAComputerSystemSCSIProtocolController

SMX_FCHBAComputerSystemSCSIProtocolController is used to represent an association between SMX_FCHBAComputerSystem and SMX_FCHBASCSIProtocolController.

Table 15-32 Class: SMX_FCHBAComputerSystemSCSIProtocolController

Property name	Property implementation
CIM_Component	
CIM_SystemDevice	
SMX_FCHBAComputerSystemSCSIProtocolController	
GroupComponent	ref:SMX_FCHBAComputerSystem
PartComponent	ref:SMX_FCHBASCSIProtocolController

15-3-32 SMX_FCHBAFCPortSCSIProtocolEndpoint

SMX_FCHBAFCPortSCSIProtocolEndpoint is used to represent an association between SMX_FCHBAFCPort and SMX_FCHBASCSIProtocolEndpoint.

Table 15-33 Class: SMX_FCHBAFCPortSCSIProtocolEndpoint

Property name	Property implementation
CIM_Dependency	
CIM_DeviceSAPImplementation	
SMX_FCHBAFCPortSCSIProtocolEndpoint	
Antecedent	ref:SMX_FCHBAFCPort
Dependent	ref:SMX_FCHBASCSIProtocolEndpoint

15-3-33 SMX_FCHBASCSIProtocolControllerFCPort

SMX_FCHBASCSIProtocolControllerFCPort is used to represent an association between SMX_FCHBASCSIProtocolController and SMX_FCHBAFCPort

Table 15-34 Class: SMX_FCHBAFCPortSCSIProtocolControllerFCPort

Property name	Property implementation
CIM_Dependency	
CIM_ProtocolControllerForDevice	
CIM_ProtocolControllerFCPort	
SMX_FCHBASCSIProtocolControllerFCPort	
Antecedent	ref:SMX_FCHBASCSIProtocolController
Dependent	ref:SMX_FCHBAFCPort

15-3-34 SMX_FCHBASystemServiceAccessPoint

SMX_FCHBASystremServiceAccessPoint is used to represent an association between SMX_FCHBAComputerSystem and SMX_FCHBASCSIProtocolEndpoint.

Table 15-35 Class: SMX_ FCHBASystremServiceAccessPoint

Property name	Property implementation
CIM_Dependency	
CIM_HostedDependency	
CIM_HostedAccessPoint	
SMX_FCHBASysteServiceAccessPoint	
Antecedent	ref:SMX_FCHBAComputerSystem
Dependent	ref:SMX_ FCHBASCSIProtocolEndpoint

15-3-35 SMX_FCHBAConcreteIdentity

SMX_FCHBAConcreteIdentity is used to represent an association between SMX_ComputerSystem and SMX_FCHBAComputerSystem.

Table 15-36 Class: SMX_ FCHBAConcreteIdentity

Property name	Property implementation
CIM_LogicalIdentity	
CIM_ConcreteIdentity	
SMX_FCHBAConcreteIdentity	
SystemElement	ref:SMX_ComputerSystem
SameElement	ref:SMX_ FCHBAComputerSystem

16 Management Processor Lite

16-1 Overview

The profiles are implemented, and the following files are installed by this provider.

Table 16-1 Overview

Implemented Profiles	• HP Management Processor (MP) Lite Profile 2.0.1

16-2 Namespaces

This provider returns instances in the `root/hpq` namespace.

16-3 Class implementations

The following classes are implemented for HP server platforms where available. The following classes describe management processor systems and their relationship to the computer system on which they reside.

16-3-1 SMX_ManagementProcessor

SMX_ManagementProcessor extends the class HP_ManagementProcessor and describes a management processor controller system. The following properties are implemented.

Table 16-2 Class: SMX_ManagementProcessor

Property name	Property implementation
	CIM_ManagedElement
Caption	Product name of the management processor. "*<product name> (X)*" Where: <product name> is the name of the MP product (X) indicates whether the MP is "Active" or "Inactive/Disabled" Examples: • Remote Insight Board Lights Out Edition II (RILOE-II) • Integrated Lights Out (iLO) (Active) • Integrated Lights Out 2 (ILO2) (Inactive) • Integrated Lights Out 3 (iLO3) (Active) • Lights Out 100 (LO100) (Active)

Table 16-2 Class: SMX_ManagementProcessor

Property name	Property implementation
Description	Description of the Management Processor, including the product name. For example: HP Management Processor - <product name> where <product name> is the name of the MP product (same as the product name in property ElementName) Examples: "HP Management Processor – Integrated Lights Out (iLO)"
ElementName	Product name of the management processor. For example: Product name of the management processor in format: *"<product name> (X)"* Where: <*product name*> is the name of the MP product (X) indicates whether the MP is "Active" or "Inactive/Disabled" Examples: • Remote Insight Board Lights Out Edition II (RILOE-II) • Integrated Lights Out (iLO) (Active) • Integrated Lights Out 2 (ILO2) (Inactive) • Integrated Lights Out 3 (ILO3) (Active) • Lights Out 100 (LO100) (Active)
CIM_ManagedSystemElement	

Table 16-2 Class: SMX_ManagementProcessor

Property name	Property implementation

OperationalStatus	Enumerators indicating the Management Processor operational status (refer to OperationalStatus mapping table in HP Management Processor (MP) Lite Profile for specific descriptions of when each value is populated).
	• OperationalStatus[0] contains MP operational status:
	  ○ 0 (Unknown), when NICCondition=0
	  ○ 2 (OK), normal operation
	  ○ 3 (Degraded), when NICCondition=5
	  ○ 6 (Error), when NICCondition=6 or MP software interface fails
	• OperationalStatus[1] contains NIC status (when MP is enabled):
	  ○ 0 (Unknown), when NICCondition=0 or MP software interface fails
	  ○ 2 (OK), normal operation
	  ○ 3 (Degraded), when NICCondition=5
	  ○ 6 (Error), when NICCondition=6
	  ○ 10 (Stopped), when NICCondition=3
	  ○ 15 (Dormant), when NICCondition=4
	Note: When a Management Processor is disabled (refer to property EnabledState) OperationalStatus[0] will always report a status of 2 (OK) so as not to contribute negatively to overall system status. An MP is disabled only if the user has manually disabled it through the MP's RBSU settings; this is seen as a "normal" condition. In this scenario OperationalStaus[1] is not populated.

StatusDescriptions	Descriptive text per OperationalStatus.
	• StatusDescriptions[0] text per OperationalStatus[0]:
	  ○ Management Processor Status: Unknown
	  ○ Management Processor Status: OK
	  ○ Management Processor Status: Degraded
	  ○ Management Processor Status: Error
	• StatusDescriptions[1] text per OperationalStatus[1]:
	  ○ Management Processor NIC Status: Unknown
	  ○ Management Processor NIC Status: OK
	  ○ Management Processor NIC Status: NIC is disabled
	  ○ Management Processor NIC Status: Not in use, MP is utilizing host NIC
	  ○ Management Processor NIC Status: NIC disconnected
	  ○ Management Processor NIC Status: NIC failed

Table 16-2 Class: SMX_ManagementProcessor

Property name	Property implementation
HealthState	• 0 (Unknown), when OperationalStatus[0]=0 (Unknown), or when software interface fails • 5 (OK), normal operation • 10 (Degraded/Warning), when OperationalStatus[0]=3 (Degraded) • 20 (Major failure), when OperationalStatus[0]=6 (Error) Note: When a Management processor is disabled (refer to property EnabledState) HealthState will always report a state of 5 (OK) so as not to contribute negatively to overall system status. An MP is disabled only if the user has manually disabled it via the MP's RBSU settings; this is seen as a "normal" condition.
CIM_LogicalElement	
CIM_EnabledLogicalElement	
EnabledState	• 2 (Enabled) for active MP • 3 (Disabled) for inactive/disabled MP
RequestedState	12 (Not Applicable)
EnabledDefault	2 (Enabled)
CIM_System	
CreationClassName	SMX_ManagementProcessor
Name	Opaque instance identifier using "HPQ" as the OrgID. For example: "HPQ:SMX_ManagementProcessor:1
CIM_ComputerSystem	
Dedicated	14 (Management)
ResetCapability	4 (Enabled)
HP_ManagementProcessor	

Table 16-2 Class: SMX_ManagementProcessor

Property name	Property implementation
ControllerType	Enumerator indicating the model or type of management processor (see the HPWmiMgmtProcLite.mof file). • 0 (Unknown) • 1 (Other) • 2 (PCI Board-Remote Insight Lights Out Edition II (RILOE II)) • 3 (Embedded Integrated Lights Out Controller (iLO)) • 4 (Embedded Integrated Lights Out Controller 2 (iLO 2)) • 5 (Embedded Integrity Management Processor) • 6 (Embedded Integrity Integrated Lights Out Controller (iLO)) • 7 (Embedded Integrity Integrated Lights Out Controller 2 (iLO 2)) • 8 (Embedded Lights Out 100 Series (LO 100)) • 9 (Embedded Integrated Lights Out Controller 3 (iLO 3)) • 10 (Embedded Integrity Integrated Lights Out Controller 3 (iLO 3))
OtherControllerType	Descriptive text describing the controller type when ControllerType=1 (Other)
HardwareVersion	The hardware version of the management processor
UniqueIdentifier	String which uniquely distinguishes the management processor controller from any other MP hardware
IPAddress	The IP address of the MP-resident network interface
URL	The Uniform Resource Locator of the management processor controller's web-based user interface. Note: When a Management Processor is disabled (refer to property EnabledState) URL will always be reported as "https://0.0.0.0". Network communication with the MP is not possible when the MP is disabled.
SupportedProtocols	An array of values indicating the protocols supported by the management processor controller. It is assumed that any protocol listed is active and can be utilized.

Table 16-2 Class: SMX_ManagementProcessor

Property name	Property implementation
NICCondition	Enumerator indicating the condition of the MP-resident network interface connection (see the HPWmiMgmtProcLite.mof file). • 0 (Unknown) • 2 (OK) • 3 (NIC disabled) • 4 (NIC not in operation-alternate host NIC in use) • 5 (NIC in operation but disconnected) • 6 (Failed)
ActiveLicense	The currently active iLO license type: • 0 (Unknown) • 1 (None) • 2 (iLO Advanced) • 3 (iLO Light) • 4 (iLO Advanced for BladeSystem) • 5 (iLO Standard for BladeSystem)
LicenseKey	Management Processor License Key
HostName	The network hostname in use by this management processorif one is defined.
IPv6Address	The IPv6 address of the management processor controller's NIC if one is defined.
IPv6SubnetPrefixLength	Describes the prefix length of the IPv6Address property in order to specify a valid IPv6 subnet.
IPv4Address	The IPv4 address of the management processor controller's NIC if one is defined.
IPv4SubnetMask	The mask for the IPv4 address of the management processorcontroller's NIC if an IPv4 address is defined.
PermanentAddress	The permanent network address or MAC that is hard-coded for the management processor controller's NIC.
GatewayIPAddresses[]	The IPv4 and IPv6 addresses which define the default IPv4 and/or IPv6 gateways for the management processor.

16-3-2 SMX_MPFirmware

SMX_MPFirmware implements the class HP_MPFirmware, and describes management processor firmware. The table below lists the properties implemented. The following properties are implemented.

Table 16-3 Class: SMX_MPFirmware

Property name	Property implementation

Table 16-3 Class: SMX_MPFirmware

Property name	Property implementation
CIM_ManagedElement	
Caption	Short description of the MP firmware for example: Management Processor Firmware
Description	HP Management Processor Firmware
ElementName	The target type/firmware family For example: • RI7 for iLO2 • RI9 for iLO3 • Lights Out 100 (LO100)
CIM_ManagedSystemElement	
Name	Product name of the management processor. Examples: • Integrated Lights Out 2 (iLO2) • Lights Out 100 (LO100)
OperationalStatus	• 2 (OK) • 6 (Error) when MP software interface fails
StatusDescriptions	Management Processor Firmware Status: OK
HealthState	• 5 (OK) normal operation • 20 (Major failure) when MP software interface fails
CIM_LogicalElement	
CIM_SoftwareIdentity	
InstanceID	Opaque instance identifier using "HPQ" as the OrgID. For example: "HPQ:SMX_MPFirmware:1
MajorVersion	The major version of the MP firmware
MinorVersion	The minor version number of the MP firmware
VersionString	String indicating the MP firmware version information. This property is the string translation of the content provided in the MajorVersion and MinorVersion properties.
Manufacturer	Hewlett-Packard
Classifications	10 (Firmware)
ClassificationDescriptions	HP Management Processor Firmware

Table 16-3 Class: SMX_MPFirmware

Property name	Property implementation
IdentityInfoValue	An array in which first element contains the path of the target type/firmware family and the second element is of format HPQ:xxx, where xxx represents the target type/firmware family For IdentityInfoType CIM:SoftwareFamily, the value will represent the target type/firmware family: Examples: • "HPQ:RI7" for ProLiant iLO 2 • "HPQ:RI9" for ProLiant iLO 3 • "HPQ:iLO2" for Integrity iLO 2 • "HPQ:MP" for Integrity MP • "HPQ: Lights Out 100 (LO100)"
IdentityInfoType	CIM:SoftwareFamily
ReleaseDate	The MP firmware date (in DMTF datetime format) Example: 20100324000000.000000+000
HP_MPFirmware	

16-3-3 SMX_MPCollection

SMX_MPCollection implements the class HP_MPCollection, and represents the collection of all management processor controller systems in a computer system, and forwards group operational status. The following properties are implemented.

Table 16-4 Class: SMX_MPCollection

Property name	Property implementation
CIM_ManagedElement	
Description	HP Management Processor Collection
ElementName	Management Processor Collection
CIM_Collection	
CIM_SystemSpecificCollection	
InstanceID	HPQ:SMX_MPCollection:001
HP_GroupSystemSpecificCollection	
Caption	Management Processor Collection

Table 16-4 Class: SMX_MPCollection

Property name	Property implementation
GroupOperationalStatus	Describes the group operational status of the management processor collection (refer to HP Management Processor (MP) Lite Profile). The group operational status represents the 'worst-of' algorithm for all individual MP statuses in HP_ManagementProcessor.OperationalStatus[0]. GroupOperationalStatus[0] contains group operational status: • 0 (Unknown) • 2 (OK) • 3 (Degraded) • 6 (Error)
GroupStatusDescriptions	GroupStatusDescriptions[0] text per GroupOperationalStatus[0]: • Aggregate Management Processor Collection Status: Unknown • Aggregate Management Processor Collection Status: OK • Aggregate Management Processor Collection Status: Degraded • Aggregate Management Processor Collection Status: Error
SMX_MPCollection	

16-3-4 SMX_MPHostedCollection

SMX_MPHostedCollection extends the class HP_GroupHostedCollection and associates a management processor collection to the scoping computer system. The following properties are implemented.

Table 16-5 Class: SMX_MPHHostedCollection

Property name	Property implementation
CIM_Dependency	
CIM_HostedDependency	
CIM_HostedCollection	
HP_GroupHostedCollection	
HP_MPHostedCollection	
Antecedent	ref: SMX_ComputerSystem
Dependent	ref: SMX_MPCollection

16-3-5 SMX_MPComponentCS

SMX_MPComponentCS implements the class HP_MPComponentCS, and associates a management processor subsystem to the scoping computer system that contains it. The following properties are implemented.

Table 16-6 Class: SMX_MPComponentCS

Property name	Property implementation
CIM_Component	
CIM_SystemComponent	
CIM_ComponentCS	
HP_MPComponentCS	
GroupComponent	ref: SMX_ComputerSystem
PartComponent	ref: SMX_ManagementProcessor

16-3-6 SMX_MPMemberOfCollection

SMX_MPMemberOfCollection implements the class HP_MPMemberOfCollection, and associates a management processor to the collection to which it belongs. The following properties are implemented.

Table 16-7 Class: SMX_MPMemberOfCollection

Property name	Property implementation
CIM_MemberOfCollection	
CIM_MemberOfPolicyCollection	
Included	Writeable boolean property indicating if the management processor instance referenced by Member will contribute status to the HP_MPCollection. • TRUE—Include member status in collection status • FALSE—Do not include member status in collection status
Collection	ref: SMX_MPCollection
Member	ref: SMX_ManagementProcessor

16-3-7 SMX_MPElementFirmwareIdentity

SMX_MPElementFirmwareIdentity implements the class HP_MPElementFirmwareIdentity, and associates a management processor to its corresponding firmware. The following properties are implemented.

Table 16-8 Class: SMX_MPElementFirmwareIdentity

Property name	Property implementation
CIM_Dependency	
CIM_ElementSoftwareIdentity	
UpgradeCondition	3 (Owner Upgradeable)
ElementSoftwareStatus	• ElementSoftwareStatus[0]: 6 (Installed) • ElementSoftwareStatus[1]: 2 (Current)
HP_MPElementFirmwareIdentity	
Antecedent	ref: SMX_MPFirmware
Dependent	ref: SMX_ManagementProcessor

16-3-8 SMX_MPInstalledFirmwareIdentity

SMX_MPInstalledFirmwareIdentity implements the CIM_InstalledSoftwareIdentity class, and associates a management processor to its corresponding installed firmware. The following properties are implemented.

Table 16-9 Class: SMX_MPInstalledFirmwareIdentity

Property name	Property implementation
CIM_InstalledSoftwareIdentity	
HP_MPInstalledFirmwareIdentity	
System	ref: SMX_ManagementProcessor
InstalledSoftware	ref: SMX_MPFirmware

16-4 Supported indications

Table 16-10 Supported indications

Property name	Property implementation
CIM_Indication	
IndicationIdentifier	GUID string generated at the time of indication
IndicationTime	Time of indication
CIM_AlertIndication	
EventTime	Time of the event or time of the indication if event time unknown.
SystemName	`SMX_ComputerSystem.Name`
SystemCreationClassName	`SMX_ComputerSystem.CreationClassName`

Table 16-10 Supported indications

Property name	Property implementation
HP_AlertIndication	
ProviderVersion	Provider Version in the format VV.UU.FF. For example: `01.05.00`
NetworkAddress	Contains a list of all the IP addresses of the computer system generating the indication.
OSType	On ESX, `39` (VM) On Linux, `36` (Linux)
OSVersion	The operating system version of the computer system generating the indication in the following format: `major.minor.build`
SystemFirmwareVersion	Array of firmware versions of the computer system generating the indication.
SystemSerialNumber	Serial number of the computer system generating the indication.
SystemProductID	Product ID of the computer system generating the indication.
SystemModel	Model name of the computer system generating the indication.
System GUID	Platform GUID of the computer system generating the indication.
SystemVirtualUUID	If Synergy is enabled, this will contain the logical UUID for the system.
SystemVirtualSerialNumber	If Synergy is enabled, this will contain the logical Serial Number for the system.
EnclosureName	`HP_BladeEnclosureCS.Name`
RackName	Rack name if one exists
RackUUID	Rack Unique Identifier if one exists
BladeName	`HP_ComputerSystem.Name`
BladeBay	`HP_BladeCSLocation.LocationInformation[0]`

16-4-1 HP_AlertIndication: Consolidated Status Policy Change

Table 2-31 HP_AlertIndication: Group System Specific Consolidated Status Policy Change

Property name	Property implementation

Table 2-31 HP_AlertIndication: Group System Specific Consolidated Status Policy Change

Property name	Property implementation
CIM_Indication	
PerceivedSeverity	2 (Informational)
CIM_AlertIndication	
Description	*HP_GroupSystemSpecificConsolidated* operational status policy has been modified to monitor operational status from different set of managed elements.
AlertingManagedElement	WBEM Path of the HP_GroupSystemSpecificCollection instance
AlertingElementFormat	2 (CIMObjectPath)
AlertType	7 (Model Alert)
EventID	1
ProviderName	HP Consolidated Status
RecommendedActions	Inspect the members of the collection to discovery whether each managed element status is included in collection operational status."
HP_AlertIndication	
Summary	Consolidated Status Collection operational status policy has changed "
EventCategory	1 (Other)
OtherEventCategory	Consolidated Status Policy Change
ProbableCause	1 (Other)
ProbableCauseDescription	This group status policy change is caused by activation or deactivation of Status Propagation Filtering for existing managed elements in HP_GroupSystemSpecificCollection.

17 IML Record Log

17-1 Overview

This provider supports the Integrated management Log (IML) on ProLiant systems.

The following table details the profiles implemented and files installed by this provider.

Table 17-1 Overview

Implemented Profiles	HP Record Log Profile 1.0

17-2 Namespaces

The provider returns instances in the root/hpq namespace.

17-2-1 Class implementations

The following classes and properties are implemented as specified in the following tables.

- SMX_IMLRecordLog
- SMX_IMLLogEntry
- SMX_IMLLogManagesRecord
- SMX_IMLUseOfLog

17-2-2 SMX_IMLRecordLog

SMX_IMLRecordLog implements HP_CommonRecordLog to model the server management record log. The table below lists the properties implemented.

Table 17-2 Class: SMX_IMLRecordLog

Property name	Property implementation
CIM_ManagedElement	
Caption	"IML record log"
Description	"Integrated Management Log"
ElementName	"IML record log"
CIM_ManagedSystemElement	

Table 17-2 Class: SMX_IMLRecordLog

Property name	Property implementation
OperationalStatus	OperationStatus[0] indicates the highest severity of IML log entries and will contain one of the following: 2 (OK)— only informational or repaired events exist in the IML log; 3 (Degraded)— at least one degraded event exists in the IML log; 6 (Error)— at least one critical event exists in the IML log.
StatusDescriptions	StatusDescriptions[0] will contain one of the following corresponding to OperationalStatus[0]: • IML log has no critical or degraded events • IML log has at least one degraded event • IML log has at least one critical event
HealthState	• 5 (OK), when OperationalStatus[0]=2 (OK) • 10 (Degraded), when OperationalStatus[0]=3 (Degraded) • 20 (Major Failure), when OperationalStatus[0]=6 (Error)
Name	"IML record log"
CIM_LogicalElement	
CIM_EnabledLogicalElement	
EnabledState	2 (Enabled)
RequestedState	5 (No Change)
EnabledDefault	2 (Enabled)
CIM_Log	
MaxNumberOfRecords	0 (Indicates variable length records. There is no maximum number of records in the IML – there are as many variable length records as will fit in the IML non-volatile memory.)
CurrentNumberOfRecords	Number of records in the IML log (SMX_IMLLogEntry instances)
LogState	2 (Normal)
OverwritePolicy	2 (Wraps When Full) The IML entries will fill up available IML non-volatile memory space until no room is left. The oldest log entries will then be deleted as needed to create room for new log entries.
CIM_RecordLog	
InstanceID	"HPQ:SMX_IMLRecordLog:1"
HP_CommonRecordLog	
TimeOfLastChange	Time of last log change

Table 17-3 Implemented Methods for SMX_IMLRecordLog Class

Method Name	Method Implementation
ClearLog	Refer to HP Record Log profile (P00109)
RepairAll	Refer to HP Record Log profile (P00109)

17-2-3 SMX_IMLLogEntry

SMX_IMLLogEntry implements the class HP_CommonLogEntry to model logs records within the IML log. The table below lists the properties implemented.

Table 17-4 Class: SMX_IMLLogEntry

Property name	Property implementation
CIM_ManagedElement	
Caption	IML record log entry <RecordID>, where <RecordID> is the SMX_IMLLogEntry.RecordID for the event.
Description	Description based on specific IML log event
ElementName	IML record log entry <RecordID>, where <RecordID> is the SMX_IMLLogEntry.RecordID for the event.
CIM_RecordForLog	
CIM_LogEntry	
InstanceID	"HPQ:SMX_IMLLogEntry:n", where n is the IML event number
LogInstanceID	SMX_IMLRecordLog.InstanceID
LogName	SMX_IMLRecord Log.Name
RecordID	IML event number
CreationTimeStamp	IML log event creation time stamp
HP_CommonLogEntry	
RecordDataType	3 (Delimited)
RawData	IML log event raw data
MajorClass	18 (IML)
MinorClass	2 (None)
UpdateTimestamp	IML log event update time stamp
OccurrenceCount	Number of occurrences of this same IML event type

Table 17-4 Class: SMX_IMLLogEntry

Property name	Property implementation
Severity	• 0 (Unknown) • 2 (Information) • 3 (Repaired) • 4 (Degraded/Warning) • 7 (Critical)
OSType	• 0 (Unknown) • 36 (Linux) • 39 (VMware)
SystemSerialNumber	System serial number string from SMBIOS
SystemProductID	System product ID string from SMBIOS
SystemModel	System model number string from SMBIOS
SystemName	Computer system name
VendorID	• 0 (Unknown) • 3 (HP) • 5 (Compaq)
ServerHardwareArchitecture	• 0 (Unknown) • 7 (x86-32) • 10 (x86-64)
LoggerType	2 (Server)

Table 17-5 Implemented Methods for SMX_IMLLogEntry Class

Method Name	Method Implementation
Repair	Refer to HP Record Log profile (P00109)

17-2-4 SMX_IMLLogManagesRecord

SMX_IMLLogManagesRecord implements the class HP_LogManagesRecord and associates instances of SMX_IMLRecordLog and SMX_IMLLogEntry. The table below lists the properties implemented.

Table 17-6 Class: SMX_IMLLogManagesRecord

Property name	Property implementation
CIM_LogManagesRecord	
HP_LogManagesRecord	
Log	ref: SMX_IMLRecordLog
Record	ref: SMX_IMLLogEntry

17-2-5 SMX_IMLUseOfLog

SMX_IMLUseOfLog implements theclass HP_UseOfLog and associates the instance of SMX_ComputerSystem with the instance of SMX_IMLRecordLog. The table below lists the properties implemented.

Table 17-4 Class: SMX_IMLUseOfLog

Property name	Property implementation
	CIM_Dependency
	CIM_UseOfLog
	HP_UseOfLog
Antecedent	ref: SMX_IMLRecordLog
Dependent	ref: SMX_ComputerSystem

17-3 Supported indications

There are no indications specific to the profile registration implementation.