hp WBEM solutions

hp technical data sheet

Memory Instance Provider

Provider overview

Memory Instance Provider provides information about system's physical memory.

Description

The Memory Instance Provider is a Web-Based Enterprise Management (WBEM) instance provider. It provides information about the physical memory on supported Itanium-based systems running HP OpenVMS. All the HP specific Managed Object Format (MOF) classes are registered in root/cimv2 name space.

This provider instruments the following MOF classes

- HP_PhysicalMemory

  This class describes DIMM/SIMM that is present in the system/partition.

- HP_MemoryLocation

  This class describes all volatile memory module slots that are present in the system/partition.

- HP_MemoryInLocation (Association)

  This association class associates a DIMM/SIMM described by an instance of "HP_PhysicalMemory" that is present in a memory slot described by an instance of "HP_MemoryLocation".

- HP_MemoryCollection

  This class defines the memory collection. The status field of this collection represents the overall status of memory subsystem.

- HP_HostedMemoyCollection (Assocation)

  This class defines the memory collection (HP_MemoryCollection) in the context of scoping computer system. It represents a collection that only has the meaning in the context of computer system, and/or whose elements are restricted by the definition of the system.

- HP_MemberOfMemoryCollection (Assocation)

  This is an aggregation class that establish the membership of a managed element with the corresponding collection class. HP_MemberOfMemoryCollection class establishes membership of HP_PhysicalMemory with HP_MemoryCollection.

Following intrinsic methods, of CIM instance provider, are supported by memory instance provider

- getInstance ()
- enumerateInstances ()
- enumerateInstanceNames ()

Following intrinsic methods, of CIM instance provider, are not supported by memory instance provider

- deleteInstance ()
- modifyInstance ()
- createInstance ()

Any extrinsic method of any of the supported MOF class is not supported.

Associations are instrumented using the instance provider framework.

Requirements

The Provider requires HP WBEM Services for OpenVMS.

Release history

This provider will be available via OpenVMS Version 8.3-1H1 release.

- HP I64VMS WBEMPROVIDERS V1.7-16 (May 2009)
- HP I64VMS WBEMPROVIDERS V2.0-4 (June 2010)
- HP I64VMS WBEMPROVIDERS V2.1-4 (August 2010)
- HP I64VMS WBEMPROVIDERS V2.2-3 (February 2011)

Supported managed resources

This provider provides information about Physical Memory Module (DIMM/SIMM) and Memory Module Slots.

Please note that the provider provides only the information about the above resources. They don't provide any managing or diagnostic or configuring capabilities for the above resources.

Setting up this provider

Installing this provider

The installation of HP WBEM Providers will set up this provider. Ensure HP WBEM Services is already installed.

On installation, executable binaries, configuration files and MOF definition and registration files will be available in their respective directory, as follows:

- The CIM MOF file, containing the definitions of the HP-specific MOF classes, (namely HP_MemoryPhysical27.mof) will be available in SYS$COMMON:[WBEMPROVIDERS.MOF]. This directory will also include the provider registration file, namely HP_MEMINSTPROVIDERSREG.MOF. Note: All the HP-specific MOF classes will be registered under the "root/cimv2" namespace.
- The SYS$SPECIFIC:[WBEMPROVIDERS] directory will contain the configuration files of the WBEM Providers Product.
- The WBEM Services SYS$SPECIFIC:[WBEM_Services]CIMSERVER_STARTUP.LOG log file will contain logs generated during the execution of this provider. By editing the "Severity" property in the SYS$SPECIFIC:[WBEMPROVIDERS]FMLOGGERCONFIG.TXT file different levels of messages in the SYS$SPECIFIC:[WBEM_SERVICES]CIMSERVER.LOG can be generated. The valid values are TRACE, DEBUG, INFORMATIONAL, WARNING, ERROR, CRITICAL, STOPLOGGING.

Configuring this provider

This provider does not accept specific configuration adjustments (beyond standard WBEM support).

Using this provider

Schema supported by this provider

Any HP WBEM Services compliant client will be able to use the MOF classes supported by the Memory Instance Provider.

The description section provides the brief description of the supported MOF classes. The following tables provide the information about the supported properties of these MOF classes or their base classes.

Note: All supported properties may not be available on all the supported platforms mentioned in the installation section. All non-key properties that are not supported are also listed below with comment "Not Supported".

Table 1: HP_PhysicalMemory supported properties

Property name	*Property inheritance*	*Property value (and data source)*
String Description	Inherited from CIM_ManagedElement	The description provides the following information about a DIMM • Memory Chip Type (Not Mandatory) • Memory Chip form factor description

		(Not Mandatory) • Location description
String ElementName	Inherited from CIM_ManagedElement	This string may be hardcoded as "Volatile Memory Chip Slot". Also as the Name property exists, and is not a Key property in this provider, the same information MAY be present in both the Name and ElementName properties.
uint16 OperationalStatus[]	Inherited from CIM_ManagedSystemElement	The Value-Map associated with this property (as per the CIM 2.9 Schema Specification) is as follows: ValueMap {"0", "1", "2", "3", "4", "5", "6", "7", "8", "9", "10", "11", "12", "13", "14", "15", "16", "17"}, Values {"Unknown", "Other", "OK", "Degraded", "Stressed", "Predictive Failure", "Error", "Non-Recoverable Error", "Starting", "Stopping", "Stopped", "In Service", "No Contact", "Lost Communication", "Aborted", "Dormant", "Supporting Entity in Error", "Completed"} The following status information and its conversion to CIM operational status is mentioned below 1. Configured : “Ok” status 2. HW De-Configured: “Stopped” status. 3. SW De-configured: “Stopped” status. 4. De-Configured (if on a server the firmware doesn’t precisely tells weather the DIMM is de-configured by HW or SW. : “Stopped” status. 5. SPD Error: “Error” status 6. Extended SPD error: “Error” status 7. DIMM type mismatch: “Error Status”. 8. Unsupported DIMM: “Error Status” 9. SBE (indicating excessive Single Bit Error has occurred on this memory module) : “Degraded”/”Other” Status depending upon the severity of the SBE event generated by memory monitor (dm_memory/ia64_memory monitor): It is possible that a DIMM/SIMM may have more than one status code for e.g. if the DIMM/SIMM is de-configured due to DIMM type mismatch than we will have “Error” and “Stopped” status. The OperationalStatus[0] will have the most important status of the DIMM. Other elements of the array will give more detailed information about the status.
String StatusDescriptions[]	Inherited from CIM_ManagedSystemElement	Derived from operation status.
string Name	Inherited from CIM_ManagedSystemElement	Obtained from the FRU name. The example name will be DIMM_512. If the FRU information is not present than memory instance provider tries to form the name in the format using the memory chip form factor and its size in MB. Thus a derived name will be <Chip Form factor>_<module size in MB>

String PartNumber	Inherited from CIM_PhysicalElement	DIMM/SIMM Part number.
String SerialNumber	Inherited from CIM_PhysicalElement	DIMM/SIMM Serial Number.
String CreationClassName [Key]	Inherited from CIM_PhysicalElement	Returns the string “HP_PhysicalMemory”
String Tag [Key]	Inherited from CIM_PhysicalElement	This field will be derived from memory slot location and form factor. The form will be as follows <location attrib 1> - <location attrib 2> - … ::<location attrib n> For e.g., the tag for a DIMM present in cellular system at cabinet 0, cell slot 01 and dimm slot 0b will be 00- ff - ff - 01 – ff - 0b – ff – 74
Uint64 Capacity	Inherited from CIM_PhysicalMemory	Capacity of DIMM/SIMM in number of Bytes.
Uint16 MemoryType	Inherited from CIM_PhysicalMemory	Defines the memory chip type as per the CIM specification defined enumeration.
Uint16 FormFactor	Inherited from CIM_PhysicalMemory	Defines the form factor of memory chip as per the CIM specification defined enumeration.
Uint16 MemoryChipStatus[]	Inherited from HP_PhysicalMemory	The Value-Map associated with this property (as is defined in HP_PhysicalMemory mof class) is as follows: ValueMap {"0", "1", "2", "3", "4", "5", "6", "7", "8", "9","10"} Values {"Other", "Unknown", "Configured", "Deconfigured By Hardware", "Deconfigured By Software", "DIMM Type Mismatch", "Unsupported DIMM", "SPD Error", "Extended SPD CheckSum Error", "Degraded","SBE"}] Returns the status of the memory module in this array. Following status types are provides (the enum values are mentioned along with the status type) 1. Configured : 2 2. De-Configured : 3 3. HW De-Configured : 3 4. SW De-Configured :4 5. Degraded: 9 (This status type is not used in this release.) 6. DIMM Type Mismatch : 5 7. Unsupported DIMM : 6 8. SPD Error : 7 9. XSPD Error : 8 10. SBE : 10
String MemoryChipStatusDescription[]	Inherited from HP_PhysicalMemory	Describes the memory chip status.
String Caption	Inherited from CIM_PhysicalMemory	The Caption property is a short textual description (oneline string) of the object.
Datetime InstallDate	Inherited from CIM_PhysicalMemory	Not Supported

String Manufacturer	Inherited from CIM_PhysicalMemory	Not Supported
String Model	Inherited from CIM_PhysicalMemory	Not Supported
String SKU	Inherited from CIM_PhysicalMemory	Not Supported
String Version	Inherited from CIM_PhysicalMemory	Not Supported
String OtherIdentifyingInfo	Inherited from CIM_PhysicalMemory	Not Supported
Boolean PoweredOn	Inherited from CIM_PhysicalMemory	Not Supported
Datetime ManufactureDate	Inherited from CIM_PhysicalMemory	Not Supported
Boolean Removable	Inherited from CIM_PhysicalMemory	Not Supported
Boolean Replaceable	Inherited from CIM_PhysicalMemory	Not Supported
Unit16 HotSwappable	Inherited from CIM_PhysicalMemory	Not Supported
Unit16 TotalWidth	Inherited from CIM_PhysicalMemory	Not Supported
Unit16 DataWidth	Inherited from CIM_PhysicalMemory	Not Supported
Unit32 Speed	Inherited from CIM_PhysicalMemory	Not Supported
String BankLabel	Inherited from CIM_PhysicalMemory	Not Supported
Unit32 PositionInRow	Inherited from CIM_PhysicalMemory	Not Supported
Unit32 InterleavePosition	Inherited from CIM_PhysicalMemory	Not Supported
String ArtworkRevision	Inherited from HP_PhysicalMemory	Not Supported
String ScanRevision	Inherited from HP_PhysicalMemory	Not Supported
String EngineeringDateCode	Inherited from HP_PhysicalMemory	Not Supported

Table 2: HP_MemoryLocation supported properties

Property name	***Property inheritance***	***Property value (and data source)***
String Description	Inherited from CIM_ManagedElement	Describes the slot according to type of slot.
String ElementName	Inherited from CIM_ManagedElement	This string may be "Volatile Memory Chip Slot". Also as Name is not a Key the same information MAY be present in both the Name and ElementName properties.
String Name [Key]	Inherited from CIM_Location	This parameter defines the location as "<memory chip type> slot <slot number>"
String PhysicalPosition [Key]	Inherited from CIM_Location	This field will be derived from “form factor” of one of the memory module controlled by associated memory controller (It is assumed that all the modules controlled by a memory controller are of same form factor.) and slot location attribute.

		The format will be <location attrib 1> - …..- <location attrib n> for e.g. 00- ff - ff - 01 – ff - 0b – ff – 74
Uint8 PhysicalLocationLevels[]	Inherited from HP_PhysicalLocationInComplex	The uint arrays PhyscialLocationLevles and PhysicalLocationValues keeps the location levels, as is defined by HP_PhysicalLocation class, and location value pair at corresponding indices. Each successive index in LocationIdentifiers and LocationNames array will narrow down the location of the memory slot in the system.
Uint8 PhysicalLocationValues[]	Inherited from HP_PhysicalLocationInComplex	Description is given in PhysicalLocationLevles.
Boolean isEmpty	Inherited from HP_PhysicalLocationInComplex	Tells whether the slot have some DIMM or not (it returns either false or true)
String CreationClassName	Inherited from HP_PhysicalLocationInComplex	Creation class name.
String Caption	Inherited from HP_PhysicalLocationInComplex	The Caption property is a short textual description (oneline string) of the object. Unit 32 MaxLen 64
String LocationIdentifiers	Inherited from HP_MemoryLocation	The location identifier array representing the slot.The array member contains the value of memory slot attributes value whose name is mentioned at the corresponding index in LocationNames.
String LocationNames	Inherited from HP_MemoryLocation	The location name array representing the slot. The member of this array names the identifying attributes of the memory slot.
String MemoryController	Inherited from HP_PhysicalLocationInComplex	Not Supported

Table 3: HP_MemoryInLocation supported properties. (Properties that are not supported are not mentioned.)

This class associates the DIMM/SIMM with corresponding slots. A memory module (DIMM/SIMM) will always be associated with a memory slot. But a memory slot may not be associated with a memory module as it may be empty. The getInstance() method is not supported for this association class.

Property name	***Property inheritance***	***Property value (and data source)***
HP_PhysicalMemory REF Element	Overridden by HP_MemoryInLocation	The reference to the memory module. See HP_PhysicalMemory keys for further information.
HP_MemoryLocation REF PhysicalLocation	Overridden by HP_MemoryInLocation	The reference to the memory slot. See HP_MemoryLocation keys for further information.

Table 4: HP_MemoryCollection supported properties. (Properties that are not supported are not mentioned.)

This class represents the memory subsystem, which is collection of memory modules, in the computer system. The getInstance() method is not supported for this association class.

Property name	*Property inheritance*	*Property value (and data source)*
String InstanceID (Key)	Inherited from CIM_SystemSpecificCollection	Hewlett-Packard:diags.sfm:<CreationClassName>:<LocalID> CreationClassName reflects the collection class name. LocalID is always 0, as we are creating only 1 instance of collection class.
String Caption	Inherited from HP_GroupSystemSpecificCollection	"HP_MemoryCollection"
Uint16[] GroupOperationalStatus	Inherited from HP_GroupSystemSpecificCollection	ValueMap {"0", "1", "2", "3", "4", "5", "6", "7", "8", "9", "10", "11", "12", "13", "14", "15", "16", "17"}, Values {"Unknown", "Other", "OK", "Degraded", "Stressed", "Predictive Failure", "Error", "Non-Recoverable Error", "Starting", "Stopping", "Stopped", "In Service", "No Contact", "Lost Communication", "Aborted", "Dormant", "Supporting Entity in Error", "Completed"},
String[] GroupStatusDescriptions	Inherited from HP_GroupSystemSpecificCollection	Strings describing the various GroupOperationalStatus array values.

Table 5: HP_HostedMemoryCollection supported properties. (Properties that are not supported are not mentioned.)

This class associates the Memory Collection with scoping computer system. The getInstance() method is not supported for this association class.

Property name	*Property inheritance*	*Property value (and data source)*
CIM_ComputerSystem ref Antecedent	Overridden by HP_GroupHostedCollection	The reference to the CIM_ComputerSystem.
HP_MemoryCollection ref Dependent	Overridden by HP_HostedMemoryCollection	The reference to memory collection that is managed by the system.

Table 6: HP_MemberOfMemoryCollection supported properties. (Properties that are not supported are not mentioned.)

This class associates the DIMM/SIMM(HP_PhysicalMemory) with corresponding memory collection(HP_MemoryCollection).

Property name	*Property inheritance*	*Property value (and data source)*
HP_MemoryCollection REF Collection	Overridden by HP_MemberOfMemoryCollection	Object path of HP_MemoryCollection.
HP_PhysicalMemory REF Member	Overridden by HP_MemberOfMemoryCollection	Object path of HP_PhysicalMemory.

indications generated by this provider This Provider does not currently generate any indications.

Related Documentation

- **WBEM information**
  - For a CIM tutorial, go to http://www.dmtf.org/education/tutorials
  - For information about HP WBEM Services go to http://h71000.www7.hp.com/openvms/products/wbem/wbem_index.html.
  - HP WBEM Providers Release Notes bundled with the WBEM Providers kit.
  - HP WBEM Providers Installation and Administrator's Guide bundled with the WBEM Providers kit.

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