HP WBEM solutions

HP technical data sheet

HP OpenVMS Process and Process Statistics CIM Provider

provider overview

description

The HP OpenVMS Process and Process Statistics Providers make available basic OpenVMS process information such as name of the executable image, process ID, priority, execution state, and various process resource utilization statistics. In addition to implementing the properties of CIM_Process, these providers implement the properties CIM_UnixProcess and CIM_UnixProcessStatisticalInformation in CIM as PG_UnixProcess and PG_UnixProcessStatisticalInformation. Client applications can use this provider to give clients an understanding of the processes running on the Managed System within the context of its operating system.

requirements

The provider requires HP WBEM Services for OpenVMS.

release history

- o   HP I64VMS WBEMPROVIDERS V1.7-16 (May 2009)

- o   HP I64VMS WBEMPROVIDERS V2.0-4 (June 2010)

- o   HP I64VMS WBEMPROVIDERS V2.1-4 (August 2010)

- o   HP I64VMS WBEMPROVIDERS V2.2-3 (February 2011)

supported managed resources

Managed systems running HP WBEM Services for OpenVMS.

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 MOF classes, (namely PG_UnixProcess20.mof) will be available in SYS$COMMON:[WBEM_Services.opt.wbem.mof.Pegasus]. This directory will also include the provider registration file, namely PG_UnixProcess20R.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.

There are no special installation instructions; the provider will be installed by default with HP WBEM Services for OpenVMS.

configuring this provider

These providers do not accept specific configuration adjustments (beyond standard WBEM support).

using this provider

schema supported by this provider

This provider supports the CIM_Process, PG_UnixProcess, and PG_UnixProcessStatisticalInformation classes. Tables 1 through 5 describe the properties and methods supported by the provider.

Note: All non-key properties that are not supported are also listed below with comment "Not Supported".

table 1: CIM_Process properties

Table 1 describes the properties of the CIM_Process class. It has three columns. The first is the property name (including type and units), the second is the property inheritance (indicating which class or superclass defines the property), and the third is the property's value and data source. Each row describes a property.

Property name	Property inheritance	Property value (and data source)
string Caption	Inherited from CIM_ManagedElement	Returns the first argument of the command line for the process. This would be the image name as obtained by the "$show system/image" command.
string Description	Inherited from CIM_ManagedElement	Not Supported.
datetime InstallDate	Inherited from CIM_ManagedSystemElement	Not Supported.
string CSCreationClassName [Key]	Inherited from CIM_Process. Propagated from CIM_OperatingSystem.CSCreationClassName.	Returns the string "CIM_UnitaryComputerSystem."
string CSName [Key]	Inherited from CIM_Process. Propagated from CIM_OperatingSystem.CSName.	Returns the name (fully qualified host name if possible) of the system.
string OSCreationClassName [Key]	Inherited from CIM_Process. Propagated from CIM_OperatingSystem.CreationClassName.	Returns the string "CIM_OperatingSystem."
string OSName [Key]	Inherited from CIM_Process. Propagated from CIM_OperatingSystem.Name.	Returns the value of sysname in the utsname structure returned by the uname() system call.
string Name	Inherited from CIM_ManagedSystemElement, overridden in CIM_Process.	Returns the first argument of the command line for the process. This would be the image name as obtained by the "$show system/image" command.
string CreationClassName [Key]	Local to CIM_Process.	Returns the string "PG_UnixProcess".
string Handle [Key]	Local to CIM_Process.	Returns the process ID.
uint32 Priority	Local to CIM_Process.	Returns the process priority as observed in the "$show system" output.

unit16 ExecutionState	Local to CIM_Process.	Returns the "state" of the process.

The following are the mapping of execution states with the "state" in OpenVMS:

STATE	Execution State
Collided Page Wait	Other
Miscellaneous WAIT	Blocked
Common Event Flag WAIT	Blocked
Page Fault WAIT	Blocked
Local Event Flag WAIT (resident)	Blocked
Local Event Flag WAIT (outswapped)	Suspended Blocked
Hibernate WAIT (resident)	Blocked
Hibernate WAIT (outswapped)	Suspended Blocked
Suspend WAIT (resident)	Suspended_Ready
Suspend WAIT (outswapped)	Suspended_Blocked
Free Page WAIT	Blocked
12	Running
13	Suspended_Ready
14	Ready

By default value is "Unknown"

Attribute	Scope	Description
string OtherExecutionDescription	Local to CIM_Process.	Not Supported
CIMdatetime CreationDate	Local to CIM_Process	Returns the time the process started
datetime TerminationDate	Local to CIM_Process.	Not supported.
uint64 KernelModeTime	Local to CIM_Process.	Returns the time spent by the process in kernel mode.
uint64 UserModeTime	Local to CIM_Process.	Returns the time spent by the process in user mode.
uint64 WorkingSetSize	Local to CIM_Process.	Returns the working set size limit for the process ($write sys$output f$getjpi("<PID>","wssize"))

table 2: PG_UnixProcess properties

Table 2 describes the properties of the PG_UnixProcess class. It has three columns. The first is the property name (including type and units), the second is the property inheritance (indicating which class or superclass defines the property), and the third is the property's value and data source. Each row describes a property.

The PG_UnixProcess class inherits properties of superclass CIM_Process (as described in Table 1 and not repeated here).

Property name	Property inheritance	Property value (and data source)
string ParentProcessID	Local to PG_UnixProcess.	Returns the parent pid for the process ($write sys$output f$getjpi("<PID>","master_pid")).
uint64 RealUserID	Local to PG_UnixProcess.	Returns the UIC in decimal, under which the process is running.
uint64 ProcessGroupID	Local to PG_UnixProcess.	Returns the GID in decimal, under which the process is running.
uint64 ProcessSessionId	Local to PG_UnixProcess.	Not Supported.
string ProcessTTY	Local to PG_UnixProcess.	Returns the full path of the TTY device associated with the process.
string ModulePath	Local to PG_UnixProcess.	Not supported.
string Parameters	Local to PG_UnixProcess.	Not supported
uint32 ProcessNiceValue	Local to PG_UnixProcess.	Returns the base priority of the process
string ProcessWaitingForEvent	Local to PG_UnixProcess.	Returns the state of the process as a string, as seen in the "$show system" output.

table 3: intrinsic methods for CIM_Process and PG_UnixProcess

Table 3 describes the intrinsic methods for CIM_Process and PG_UnixProcess supported by this provider. It has three columns. The first is the method name, the second is a description of the provider's actions based on invoking that method, and the third is a list of any exceptions that could result from invoking the method. Each row describes a method. Note that this provider supports no extrinsic methods.

Method name	Description	Exceptions thrown
enumerateInstances	Returns all instances of class with all properties and respective values.	None
enumerateInstanceNames	Returns object path of all instances of class.	None
getInstance	Supported.	CIM_ERR_INVALID_PARAMETER if wrong class for a key. CIM_ERR_NOT_FOUND if wrong number of keys, or process is not found.
modifyInstance	Not supported.	CIM_ERR_NOT_SUPPORTED
deleteInstance	Not supported.	CIM_ERR_NOT_SUPPORTED

initialize	Not supported.	None.
terminate	Not supported.	None
createInstance	Not supported.	CIM_ERR_NOT_SUPPORTED

table 4: PG_UnixProcessStatisticalInformation Properties

Table 4 describes the properties of the PG_UnixProcessStatisticalInformation class. It has three columns. The first is the property name (including type and units), the second is the property inheritance (indicating which class or superclass defines the property), and the third is the property's value and data source. Each row describes a property.

Property name	Property inheritance	Property value (and data source)
string Caption	Inherited from CIM_ManagedElement	Returns the first argument of the command line for the process. This would be the image name as obtained by the "$show system/image" command.
string Description	Inherited from CIM_ManagedElement	Not Supported.
string CSCreationClassName [Key]	Local to PG_UnixProcessStatisicalInformation. Propagated from CIM_Process.CSCreationClassName.	Returns the string "CIM_UnitaryComputerSystem".
string CSName [Key]	Local to PG_UnixProcessStatisicalInformation. Propagated from CIM_Process.CSName.	Returns the name (fully qualified host name if possible) of the system.
string OSCreationClassName [Key]	Local to PG_UnixProcessStatisicalInformation. Propagated from CIM_Process.OSCreationClassName.	Returns the string "CIM_OperatingSystem".
string OSName [Key]	Local to PG_UnixProcessStatisicalInformation. Propagated from CIM_Process.OSName.	Returns the value of sysname in the utsname structure returned by the uname() system call.
string Handle [Key]	Inherited from CIM_Process.	Returns the process ID.
string ProcessCreationClassName [Key]	Local to PG_UnixProcessStatisicalInformation.	Returns "PG_UnixProcess"
string Name [Key]	Inherited from CIM_StatisticalInformation, overridden in PG_UnixProcessStatisticalInformation.	Returns a string representing the current date/time used to make this set of statistics gathered for the process unique. Note when invoking getInstance, the value of the Name property is ignored in matching the instance.
uint32 CPUTime (in Percent)	Local to PG_UnixProcessStatisicalInformation.	Returns the percentage of CPU time being consumed.
uint64 RealText (in KiloBytes)	Local to PG_UnixProcessStatisicalInformation.	Not Supported.
uint64 RealData (in KiloBytes)	Local to PG_UnixProcessStatisicalInformation.	Not Supported.

uint64 RealStack (in KiloBytes)	Local to PG_UnixProcessStatisicalInformation.	Not Supported.
uint64 VirtualText (in KiloBytes)	Local to PG_UnixProcessStatisicalInformation.	Not Supported.
uint64 VirtualData (in KiloBytes)	Local to PG_UnixProcessStatisicalInformation.	Not Supported.
uint64 VirtualStack (in KiloBytes)	Local to PG_UnixProcessStatisicalInformation.	Not Supported.
uint64 VirtualMemoryMappedFileSize (in KiloBytes)	Local to PG_UnixProcessStatisicalInformation.	Not Supported.
uint64 VirutalSharedMemory (in KiloBytes)	Local to PG_UnixProcessStatisicalInformation.	Not Supported.
uint64 CpuTimeDeadChildren	Local to PG_UnixProcessStatisicalInformation.	Not Supported.
uint64 SystemTimeDeadChildren	Local to PG_UnixProcessStatisicalInformation.	Not Supported.

table 5: intrinsic methods for PG_UnixProcessStatisticalInformation

Table 5 describes the intrinsic methods for PG_UnixProcessStatisticalInformation supported by this provider. It has three columns. The first is the method name, the second is a description of the provider's actions based on invoking that method, and the third is a list of any exceptions that could result from invoking the method. Each row describes a method. Note that this provider supports no extrinsic methods.

Method name	Description	Exceptions thrown
enumerateInstances	Returns all instances of class with all properties and respective values.	None
enumerateInstanceNames	Returns object path of all instances of class.	None
getInstance	Supported. Note when invoking getInstance, the value of Name, while required, is ignored. This is because statistical information is extremely dynamic, so the value of name (a time stamp) will have changed between in invocation of enumerateInstanceNames and a subsequent getInstance.	CIM_ERR_INVALID_PARAMETER if wrong class for a key. CIM_ERR_NOT_FOUND if wrong number of keys, or process is not found.
modifyInstance	Not supported.	CIM_ERR_NOT_SUPPORTED
deleteInstance	Not supported.	CIM_ERR_NOT_SUPPORTED
initialize	Not supported.	None.
terminate	Not supported.	None

createInstance	Not supported.	CIM_ERR_NOT_SUPPORTED

- **Indications generated by this provider**
  This provider does not currently generate any indications.
- **Associations provided by this provider**
  This provider does not currently support any associations.

Links to more information

- **Additional provider documentation**
  There is currently no additional documentation for this provider beyond this information.
- **WBEM information**
  For a CIM tutorial, go to http://www.dmtf.org/education/tutorials
  For information about HP WBEM Services for OpenVMS, see http://h71000.www7.hp.com/openvms/system_management.html
- **Client Information**
  None.
- **Support Contacts**
  The HP OpenVMS Process and Process Statistics Providers are supported as part of HP WBEM Services for OpenVMS.

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