



## EMS Wrapper Provider

### Provider Overview

Common Information Model (CIM) indication provider for wrapping events generated by EMS Hardware Monitors

### Description

EMS Wrapper Provider is a CIM indication provider. EMS Wrapper Provider enables CIM clients to subscribe for, and indication consumers to receive indications, which wrap events that are generated by EMS Hardware monitors.

When any EMS event is generated, the EMS Wrapper Provider constructs an indication class from the data received in the EMS event and delivers it as an indication through the Common Information Model Object Manager (CIMOM).

The EMS Wrapper Provider generates indications for events generated by the following monitors.

For PA-RISC servers

- LPMC (lpmc\_em)
- Memory (dm\_memory)
- Core HW (dm\_Core\_hw and ia64\_core\_hw)
- Chassis Code (dm\_chassis)
- disk\_em (disk\_em)
- fpl\_em (fpl\_em)
- ha\_disk\_array

### Requirements

This provider generates indications of type HP\_DeviceIndication.  
The Provider requires

1. HPUX WBEM Services version A.02.00.09 or later.
2. OnlineDiag containing EMS version A.04.20 and STM version A.49.10 or later.

### Supported managed resources

Managed systems running Event Monitoring Service.

### Setting up this provider

The installation scripts do all the necessary setup. No special setup is required.

### Installing this provider

The installation of the bundle SysFaultMgmt will set up this provider.

Ensure HPWBEM services V A.02.00.09, OnlineDiag containing EMS A.04.20 and STM version A.49.10 or later are already installed.

Use swinstall to install the product: "#swinstall -s Fully\_Qualified\_Depot\_Name SysFaultMgmt"

The EMS Wrapper Provider is contained within the bundle chosen above as a product which includes:

- Schema MOF files: MOF classes HP\_AlertIndication, HP\_HardWareIndication and HP\_DeviceIndication in /opt/sfm/schemas/mof/HP\_DeviceIndication.mof
- Provider registration MOF file: SFMProviderR.mof in /opt/sfm/schemas/mof/.
- Provider module shared library: libsfmproviders.1 in /opt/sfm/lib, and is the target of the symbolic link – also a delivered file; in /opt/wbem/providers/lib.
- Provider catalog: EMSWrapper.cat in /opt/sfm/msg/C/.
- Provider configuration file FMLoggerConfig.xml
- The SFM Provider is registered to support the "root/cimv2" namespace as an indication provider.
- Monitor Client Configuration File for EMS Wrapper Provider (.clcfg)  
/var/stm/config/tools/monitor/wbem\_disk\_em.clcfg

## Configuring this provider

```
/var/stm/config/tools/monitor/wbem_ha_disk_array.clcfg
/var/stm/config/tools/monitor/wbem_dm_chassis.clcfg
/var/stm/config/tools/monitor/wbem_dm_core_hw.clcfg
/var/stm/config/tools/monitor/wbem_dm_memory.clcfg
/var/stm/config/tools/monitor/wbem_lpmc_em.clcfg
/var/stm/config/tools/monitor/wbem_ia64_corehw.clcfg
/var/stm/config/tools/monitor/wbem_cpe_em.clcfg
/var/stm/config/tools/monitor/wbem_cmc_em.clcfg
/var/stm/config/tools/monitor/wbem_memory_ia64.clcfg
```

The thresholds for generating events are not configurable for each client. All clients use the event thresholds specified in these clcfg files.

For more information see the System Fault Management Administration guide at <http://docs.hp.com/en/diag>

NOTE: EMS Wrapper Provider is one of the providers under SFMProviderModule.

EMS Wrapper Provider uses a common configuration file for logging along with other SFM providers. So editing the configuration file will affect the other two providers as well. The configuration file FMLoggerConfig.xml can be found in /opt/sfm/conf/.

The file specifies the logging threshold severity, and the location of the log-file. The contents of the file are as follows:

```
<SFMConfig>
  <LoggerConfig>
    <Severity> WARNING </Severity>
    <Target> /opt/sfm/log/sfm.log </Target>
    <FileSize> 20480 </FileSize>
    <NBackupFiles>2</NBackupFiles>
  </LoggerConfig>
</SFMConfig>
```

In order to change the logging configuration, the following steps are to be followed:

1. Edit the configuration file /opt/sfm/conf/FMLoggerConfig.xml to change the threshold logging level and/or target.

a) **Threshold:** Possible values are (in increasing severity)

```
INFORMATIONAL
WARNING
ERROR
CRITICAL
```

Note: The INFORMATIONAL logging severity will generate a lot of information. It is advisable not to use it for a long time as it may use a lot of disk space. The best threshold in the running environment will be ERROR. The default logging level is WARNING.

b) **Target:** Possible values include:

- (i) STDOUT: All log messages are delivered to console.
- (ii) The complete path to the file where the log messages are to be written

c) **FileSize:** This field defines the maximum size of the logging file to the logging subsystem.

d) **NBackupFiles:** When the logging file reaches the maximum file size defined by "FileSize" tag, the logging subsystem takes the backup of the current log file and then truncates it. This variable defines how many backup files will be preserved by logging subsystem.

2. Run /opt/sfm/bin/fmControl program, to specify the changed configuration file. For example

```
$ /opt/sfm/bin/fmControl /opt/sfm/conf/FMLoggerConfig.xml
```

Note that the complete path of the configuration file must be provided to the fmControl program.

**NOTE:** The current implementation of the logging mechanism assumes that the path to the log file (target specified in the configuration file) already exists. i.e., if the target is specified as "/abc/def/ghi.log", the path "/abc/def/" should already exist, and should be writeable by root-user.

Using this provider	Any HP WBEM services A.02.00.09 compliant client will be able to use the MOF classes supported by the provider.
Schema supported by this provider	This Provider services HP_DeviceIndication and is compliant with CIM schema V2.7 Table 1 shows the properties of HP_DeviceIndication that are supported by the provider.  Clients are expected to subscribe to this provider using a CIM client and also write an appropriate WBEM consumer to consume the indications generated by EMS Wrapper.
Methods given by this provider	This Provider currently does not provide any method.
Indications generated by this provider.	HP_DeviceIndication.

Table 1: HP\_DeviceIndication and base classes' supported properties. (Properties that are not supported are not mentioned.)

Property name	Property inheritance	Property value (and data source <sup>1</sup> )
String IndicationIdentifier	Inherited from CIM_Indication	A unique identifier for the Indication similar to a key value in that it can be used for identification.
String[] CorrelatedIndications*	Inherited from CIM_Indication	A list of IndicationIdentifiers whose notifications are correlated with (related to) this one.
Datetime IndicationTime	Inherited from CIM_Indication	The time and date of creation of the Indication.
String Description	Inherited from CIM_AlertIndication	A short description of the Indication. This property corresponds to "Description of Error" field in the event notification.
String AlertingManagedElement*	Inherited from CIM_AlertIndication	The identifying information of the entity (ie, the instance) for which this Indication is generated. The property contains the path of an instance, encoded as a string parameter - if the instance is modeled in the CIM Schema. If not a CIM instance, the property contains some identifying string that names the entity for which the Alert is generated.
UInt16 AlertType	Inherited from CIM_AlertIndication	Primary classification of the Indication. 1 - Other 2 - Communications Alert 3 - Quality of Service Alert 4 - Processing Error 5 - Device Alert 6 - Environmental Alert 7 - Model Change 8 - Security Alert

<sup>1</sup> Unless otherwise mentioned the source of the value is in the EMS Wrapper Provider itself.

String OtherAlertType*	Inherited from CIM_AlertIndication	A string describing the Alert type - used when the AlertType property is set to 1(Other)
UInt16 PerceivedSeverity	Inherited from CIM_AlertIndication	An enumerated value that describes the severity of the AlertIndication from the notifier's point of view.  0 - Unknown 1 - Other 2 - Information 3 - Degraded/Warning 4 - Minor 5 - Major 6 - Critical 7 - Fatal/NonRecoverable
String OtherSeverity*	Inherited from CIM_AlertIndication	Holds the value of the user defined severity value when "PerceivedSeverity" is 1(Other).
UInt16 ProbableCause	Inherited from CIM_AlertIndication	An enumerated value that describes the probable cause of the situation which resulted in the AlertIndication.
String ProbableCauseDescription	Inherited from CIM_AlertIndication	Provides additional information related to the ProbableCause. This property corresponds to the first sub-section of the "Probable Cause/Recommended Action" field in the EMS event notification.
UInt16 Trending*	Inherited from CIM_AlertIndication	Provides information on trending.  0 - Unknown 1 - Trending Up 2 - Trending down 3 - No change
String[] RecommendedActions	Inherited from CIM_AlertIndication	Free form descriptions of the recommended actions to take to resolve the cause of the notification. This property corresponds to the sub-sections following the first sub-section in the "Probable Cause/Recommended Action" field in the EMS event notification.
String EventID	Inherited from CIM_AlertIndication	An instrumentation or provider specific value that describes the underlying "real-world" event represented by the Indication.
Datetime EventTime	Inherited from CIM_AlertIndication	The time and date the underlying event was first detected. This property corresponds to the field "Event time" in the EMS event notification.
String SystemCreationClassName	Inherited from CIM_AlertIndication	The scoping System's CreationClassName for the Provider generating this Indication.
String SystemName	Inherited from CIM_AlertIndication	The scoping System's Name for the Provider generating this Indication. This property corresponds to the "System" field of the EMS event notification.
String ProviderName	Inherited from CIM_AlertIndication	The name of the Provider generating this Indication.

String Summary	Inherited from HP_AlertIndication	Short description of the reason for the indication. This property corresponds to the "Summary" field in the EMS event notification.
String[] CorrelatedIndications*	Inherited from HP_AlertIndication	A list of Indication Identifiers whose notifications are correlated with (related to) this one. There is no implication of whether the related indications are the cause of this indication or whether this indication is the cause of the related indications.
String[] RelatedIndications*	Inherited from HP_AlertIndication	The list of IndicationIdentifiers whose notifications are caused by this one. This indication is the root-cause of the indications in this list.
String[] RootCauseIndications*	Inherited from HP_AlertIndication	The list of IndicationIdentifiers whose notifications are the root-cause of this indication.
UInt32 EventCategory	Inherited from HP_AlertIndication	Category for the event. This is a value map which is intended to be used by the consumer to group events.
String OtherEventCategory*	Inherited from HP_AlertIndication	A string defining other values for "EventCategory".
UInt32 EventSubCategory	Inherited from HP_AlertIndication	Sub-category for the event. This sub-category is intended to be used by the consumer in conjunction with "EventCategory" to provide additional granularity to group events.
String OtherEventSubCategory*	Inherited from HP_AlertIndication	A string defining other values for "EventSubCategory".
UInt32 EventThreshold*	Inherited from HP_AlertIndication	Identifies the number of indications that need to occur as part of the internal provider throttling configured for this event.
UInt32 EventTimeWindow*	Inherited from HP_AlertIndication	Identifies the time window during which "EventThreshold" events need to occur as part of the internal provider throttling configured for this event. Time is in minutes. 0 means any amount of time.
UInt32 ActualEventThreshold	Inherited from HP_AlertIndication	Identifies the number of indications that have occurred to meet the internal provider throttling configured for this event. This property corresponds to the "Number of Events" field, if present, in the EMS Event notification.
UInt32 ActualEventTimeWindow	Inherited from HP_AlertIndication	Identifies the time window during which the "ActualEventThreshold" events have occurred to meet the internal provider throttling configured for this event. Time is in minutes. 0 means any amount of time. This property corresponds to the field "Event Notification" in the EMS event notification.
String Query*	Inherited from HP_AlertIndication	The query expression that defines the condition(s) that was met by this Indication.
Boolean ClusterWideEvent*	Inherited from HP_AlertIndication	Indicates whether this event is of interest to all cluster members.
String ProviderVersion	Inherited from	The version of the provider generating this indication.

	HP_AlertIndication	
String InformationURL	Inherited from HP_AlertIndication	URL where the user should go for the latest information related to this indication. This property corresponds to the "Latest information on this event" field in the EMS event notification.
String[] ActionURLs*	Inherited from HP_AlertIndication	URLs where the user should go to launch tool that will provide information functionality that will allow the user to perform the recommended action for this indication. The tool most likely to help should be listed first in the array, then next most likely, and so on.
String[] ActionURLDescriptions*	Inherited from HP_AlertIndication	Description of the URLs listed in the ActionURL.
UInt16 OSType	Inherited from HP_AlertIndication	The type of OS on the system generating the indication as a value-map.
String OSVersion	Inherited from HP_AlertIndication	Version of the OS on the system generating the indication. This property corresponds to the "OS Version" field in the EMS event notification.
String[] NetworkAddresses	Inherited from HP_AlertIndication	Array of ALL the network addresses of the system generating the indication.
String SystemFirmwareVersion	Inherited from HP_AlertIndication	Array of versions of firmware on the system generating the indication. This property corresponds to the "System Firmware Version" field in the EMS event notification.
String SystemSerialNumber	Inherited from HP_AlertIndication	Serial number of the system generating the indication. This property corresponds to the "System Serial Number" field in the EMS event notification.
String SystemModel	Inherited from HP_AlertIndication	Model of the system generating the indication. This property corresponds to the "System Model Number" field in the EMS event notification.
String UserComment*	Inherited from HP_AlertIndication	User comment information associated with the indication
String[] VariableNames*	Inherited from HP_AlertIndication	Array of variable names for information that is associated with this indication, but cannot be described by the other properties of the indication. The names are correlated with the variable's types and values in the "VariableTypes" and "VariableValues" arrays. Each entry is related to the entries in the other arrays that are located at the same index.
UInt16[] VariableTypes*	Inherited from HP_AlertIndication	Array of variable types defined as an enumerated value. 1 - string 2 - datetime 3 - uint8 4 - uint16 5 - uint32 6 - uint64 7 - sint8

		8 - sint16
		9 - sint32
		10 - sint64
		11 - real32
		12 - real64
		13 - char16
		14 - Boolean
String[] VariableValues*	Inherited from HP_AlertIndication	Array of variable values to be used in conjunction with "VariableTypes" and "VariableNames" to reconstruct the information
UInt16 AlertingElementFormat	Inherited from HP_AlertIndication	The format of the AlertingManagedElement property is interpretable based upon the value of this property. 0 – Unknown  1 – Other  2 – CIMObjectPath
String OtherAlertingElementFormat*	Inherited from HP_AlertIndication	A string defining other values for "AlertingElementFormat".
String HWPartNumber*	Inherited from HP_HardwareIndication	Part number for the hardware generating the indication.
String[] HWFirmwareVersion	Inherited from HP_HardwareIndication	Array of versions of firmware for the hardware associated with the indication. This property corresponds to the "Firmware Version" field in the EMS event notification.
String HWManufacturer	Inherited from HP_HardwareIndication	Manufacturer of the hardware associated with the indication. This property corresponds to the "Inquiry Vendor ID" field in the EMS event notification.
String[] HWLogicalLocation	Inherited from HP_HardwareIndication	Array of ALL the logical locations of the hardware associated with the indication. This property corresponds to the "Physical Device Path" field in the EMS event notification.
String HWPhysicalLocation*	Inherited from HP_HardwareIndication	Physical location of the hardware associated with the indication.
String[] HWSerialNumber	Inherited from HP_HardwareIndication	Array of all the serial numbers of the hardware associated with the indication. This property corresponds to the "Serial Number" field in the EMS event notification.
String DeviceModel	HP_DeviceIndication	Model of the device generating the indication. This property corresponds to the "DeviceModel" field in the EMS event notification.
String[] DeviceControllerLogicalLocation	HP_DeviceIndication	Array of ALL the logical locations of the controller of the device associated with the indication.
String DevicePermanentName	HP_DeviceIndication	The permanent, system unique, name of the device, encoded as a string parameter. The name string is formatted per the DevicePermanentNameFormat property. This property corresponds to the "World Wide

uint16 DevicePermanentNameFormat	HP_DeviceIndication	Name" field in the EMS event notification.
		The format of the DevicePermanentName property is interpretable based upon the value of this property.
		0 - Unknown
		1 - Other
		2 - WorldWideName
		3 - MACAddress
String OtherPermanentNameFormat* <sup>2</sup>	HP_DeviceIndication	A string defining other values for "DevicePermanentFormat".

For more information refer to the following:

- WBEM information
  - For a CIM tutorial, go to <http://www.wbemsolutions.com/tutorials/CIM/>.
  - For information about HP WBEM Services for HP-UX, see <http://software.hp.com> and <http://www.hp.com> in Network and Systems Management.
  - For writing indication consumers go to <http://www.openpegasus.org/pp/doc.tpl?CALLER=index.tpl&qdid=3550>
  - For writing Java clients go to <http://www.openpegasus.org/pp/doc.tpl?CALLER=index.tpl&qdid=3314>
  - For information see System Fault Management Administrator's guide available at <http://docs.hp.com/en/diag>
  - System Fault Management release notes is available at <http://docs.hp.com/en/diag>
- Managed resource documentation
  - See EMS Hardware Monitors under the HP-Diagnostics page <http://docs.hp.com/hpux/diag/index.html>.
  - See event listings for supported monitors under
    - lpmc\_em: [http://docs.hp.com/hpux/onlinedocs/diag/ems/lpmc\\_em.htm](http://docs.hp.com/hpux/onlinedocs/diag/ems/lpmc_em.htm)
    - dm\_memory : [http://docs.hp.com/hpux/onlinedocs/diag/ems/dm\\_memory.htm](http://docs.hp.com/hpux/onlinedocs/diag/ems/dm_memory.htm)
    - dm\_core\_hw: : [http://docs.hp.com/hpux/onlinedocs/diag/ems/dm\\_core\\_hw.htm](http://docs.hp.com/hpux/onlinedocs/diag/ems/dm_core_hw.htm)
    - dm\_chassis : [http://docs.hp.com/hpux/onlinedocs/diag/ems/dm\\_chassis.htm](http://docs.hp.com/hpux/onlinedocs/diag/ems/dm_chassis.htm)
    - disk\_em : [http://docs.hp.com/hpux/onlinedocs/diag/ems/disk\\_em.htm](http://docs.hp.com/hpux/onlinedocs/diag/ems/disk_em.htm)
    - fpl\_em: [http://docs.hp.com/hpux/onlinedocs/diag/ems/fpl\\_em.htm](http://docs.hp.com/hpux/onlinedocs/diag/ems/fpl_em.htm)
    - cmc\_em: [http://docs.hp.com/hpux/onlinedocs/diag/ems/cmc\\_em.htm](http://docs.hp.com/hpux/onlinedocs/diag/ems/cmc_em.htm)
    - memory\_ia64 : [http://docs.hp.com/hpux/onlinedocs/diag/ems/memory\\_ia64.htm](http://docs.hp.com/hpux/onlinedocs/diag/ems/memory_ia64.htm)
    - ia64\_corehw: [http://docs.hp.com/hpux/onlinedocs/diag/ems/ia64\\_corehw.htm](http://docs.hp.com/hpux/onlinedocs/diag/ems/ia64_corehw.htm)
    - cpe\_em: [http://docs.hp.com/en/diag/ems/cpe\\_em.htm](http://docs.hp.com/en/diag/ems/cpe_em.htm)
  - See data sheets for supported monitors under
    - lpmc\_em: [http://docs.hp.com/hpux/onlinedocs/diag/ems/emd\\_lpmc.htm](http://docs.hp.com/hpux/onlinedocs/diag/ems/emd_lpmc.htm)
    - dm\_memory : [http://docs.hp.com/hpux/onlinedocs/diag/ems/emd\\_mem.htm](http://docs.hp.com/hpux/onlinedocs/diag/ems/emd_mem.htm)
    - dm\_core\_hw: : [http://docs.hp.com/hpux/onlinedocs/diag/ems/emd\\_core.htm](http://docs.hp.com/hpux/onlinedocs/diag/ems/emd_core.htm)
    - dm\_chassis : [http://docs.hp.com/hpux/onlinedocs/diag/ems/emd\\_dm\\_chassis.htm](http://docs.hp.com/hpux/onlinedocs/diag/ems/emd_dm_chassis.htm)
    - disk\_em : [http://docs.hp.com/hpux/onlinedocs/diag/ems/emd\\_disk.htm](http://docs.hp.com/hpux/onlinedocs/diag/ems/emd_disk.htm)
    - fpl\_em: [http://docs.hp.com/hpux/onlinedocs/diag/ems/emd\\_fpl.htm](http://docs.hp.com/hpux/onlinedocs/diag/ems/emd_fpl.htm)
    - cmc\_em : [http://docs.hp.com/hpux/onlinedocs/diag/ems/emd\\_cmc.htm](http://docs.hp.com/hpux/onlinedocs/diag/ems/emd_cmc.htm)
    - memory\_ia64 : [http://docs.hp.com/hpux/onlinedocs/diag/ems/emd\\_mem\\_ia64.htm](http://docs.hp.com/hpux/onlinedocs/diag/ems/emd_mem_ia64.htm)
    - ia64\_corehw : [http://docs.hp.com/hpux/onlinedocs/diag/ems/emd\\_ia64core.htm](http://docs.hp.com/hpux/onlinedocs/diag/ems/emd_ia64core.htm)
    - cpe\_em : [http://docs.hp.com/hpux/onlinedocs/diag/ems/emd\\_cpe\\_em.htm](http://docs.hp.com/hpux/onlinedocs/diag/ems/emd_cpe_em.htm)
- Client information
 

None.
- Support contacts
 

The EMS Wrapper Provider is supported as part of System Fault Management (SFM).

<sup>2</sup> The "\*" sign after property names indicates that the property is not supported. Such values will be returned as CIMValue NULLs.

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