

# WBEM event subscriptions for HP-UX systems managed by HP SIM 5.x



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## Introduction

Troubles that occur on hardware computing systems are called errors. These errors are cached in either nonvolatile memory, written to a file, or cached in memory. Various mechanisms have been created to notify network administrators of the existence of these errors. The most common mechanism is to have the error available to the SNMP application, which reads the cached data and forwards the error to a predefined list of IP or system addresses as an SNMP trap. System information that is not an error but an indication of system operation can be reported in the same manner.

WBEM is beginning to be the preferred method for reporting system errors and condition. This information is available for use through WBEM and is called error indications, or abbreviated as indications. Similar to SNMP, the WBEM application can forward these indications to a listing of addresses, also called subscribers. Common subscribers are system management applications such as HP Systems Insight Manager (HP SIM). A management application must make a proactive request to be a WBEM subscriber. All WBEM communications and subscription requests use the SSL protocol for security.

Event Monitoring Service (EMS) on HP-UX can be configured to forward SNMP traps to HP SIM. With the appropriate software on the HP-UX system, EMS can be channeled (wrapped) to WBEM and be announced as indications to the WBEM subscribers.

This paper describes the software requirements for the HP-UX system, how to configure EMS for wrapping the SNMP traps to WBEM, and how to configure HP SIM to subscribe to HP-UX systems to receive the WBEM indications.

## System requirements

WBEM indications can be configured on the following system types and operating system levels:

- System types
  - PA-RISC
  - Integrity Servers
- HP-UX Operating Systems
  - 11.0 – not available
  - 11i v1
  - 11i v2 update 2 (PA and Integrity)
  - 11 I v3

(See <http://docs.hp.com/en/B8465-90036.pdf> “Compatibility Information and Installing Requirements” section for a complete support matrix.)

## Required software on the managed systems

The following software is required on the managed HP-UX system:

- WBEM Services for HP-UX 2.05.x or above and appropriate patches
- System Fault Management (SysFaultMgmt)
- EMS
- Online Diagnostics

The following are the specific information for each of the above.

### WBEM services

The minimum requirement is WBEM Services 2.05.0. Various versions are available depending upon your version of the operating system.

For HP-UX 11.23, WBEM Services A.2.05.x or later is to be installed, along with the WBEM providers <http://h/71028.www7.hp.com/enterprise/cache/9931-0-0-225-121.aspx>.

## Event Monitoring Service, Online Diagnostics, and System Fault Management

In addition, you must install the OnlineDiag bundle with EMS A.04.00 or later and the System Fault Management provider package A.02.00.01.01 or later, available from <https://payment.ecommerce.hp.com/portal/swdepot/displayProductInfo.do?productNumber=SYSFAULTMGMT>

Install these packages on the systems you want to manage. Validate that the system you want to manage has the EMS wrapper provider. Log onto the target system after installation. The command `cimprovider -ls` is used to verify that the EMS wrapper is installed and running. The syntax is

```
usage: cimprovider -d -m module
          -e -m module
          -r -m module [ -p provider ]
          -l [ -s | -m module ]
```

The EMShapProviderModule and SFMProviderModule must be listed as below:

```
# cimprovider -ls
MODULE                                STATUS
OperatingSystemModule                 OK
ComputerSystemModule                  OK
ProcessModule                          OK
IPProviderModule                       OK
DNSProviderModule                     OK
NTPProviderModule                     OK
NISProviderModule                     OK
SDProviderModule                      OK
AmgrAgentProviderModule                OK
SGProvidersModule                      OK
EMSHAPProviderModule                 OK
HPUXLVMProviderModule                  OK
HP_NParProviderModule                  OK
HP_ResParProviderModule                 OK
HPUXRAIDSAProviderModule                OK
HPUXSCSICSProviderModule                OK
HPUXSCSIProviderModule                  OK
SFMProviderModule                   OK
HPUXFCCSProviderModule                  OK
HPUXFCIndicationProviderModule          OK
HPUXFCProviderModule                   OK
FSProviderModule                       OK
HPUXIOTreeIndicationProviderModule      OK
HPUXLANProviderModule                   OK
```

HPUXLANCSPProviderModule	OK
HPUXLANIndicationProviderModule	OK
HP_iCODProviderModule	OK
HP_iCAPProviderModule	OK
HP_GiCAPProviderModule	OK
HP_VParProviderModule	OK
HP_UtilizationProviderModule	OK
IOTreeModule	OK

If it is not listed, then it is not installed correctly or not running. Refer to the System Fault Management documentation for installation instructions.

<http://docs.hp.com/en/diag.html#5%20Other%20WBEM%20Providers>

## Adding systems with WBEM to HP SIM through the command line interface

Sign into the HP SIM system. Note that the HP SIM server can be running on HP-UX, Windows, or Linux. The examples below are from HP SIM running on an HP-UX system. However, the commands are the same. Run the commands from:

On HP-UX:

```
/opt/mx/bin
```

You might want to set the path to simplify your typing (`set path=$PATH:/opt/mx/bin`)

On Linux:

```
/opt/mx/bin
```

On Windows:

```
C:\Program Files\HP\System Insight Manager\bin
```

This path is set by the HP SIM installation on Windows. Enter the commands from a command window.

1. Add the necessary root/password pair the HP SIM through `mxnodesecurity` so that HP SIM can correctly identify the managed systems.

The syntax for `mxnodesecurity` is given below and this command must be run with the root privilege.

Usage:

```
mxnodesecurity -a -p protocol -c username:password [-t on|off] -n
nodename
```

```
(add/modify node credential)
```

```
mxnodesecurity -a -p snmp -c writestring:readstring [-t on|off] -n
nodename
```

```
(add/modify snmp node credential)
```

```
mxnodesecurity -a -p wbem -c username:password [-t on|off] -n
```

```

nodename[:port#]
(add/modify wbem node credential)
  mxnodesecurity -a -p sign-in -c username:password [-t on|off] -n
nodename
(add/modify sign-in type node credential)
  mxnodesecurity -a -p protocol -c username:password (add default
credential)
  mxnodesecurity -a -p protocol -c username:password -n @default# (modify
default credential)
  mxnodesecurity -a -f filespec (add/modify credentials as specified in
external xml file)
  mxnodesecurity -r -p protocol -n nodename (remove node credential)
  mxnodesecurity -r -p wbem -n nodename[:port#] (remove wbem node
credential)
  mxnodesecurity -r -p protocol -n @default# [-x {fd|fcd}] (remove
default credential)
  mxnodesecurity -r -p protocol [-x {fd|fcd}] (remove all default
credentials of specified protocol)
  mxnodesecurity -r -f filespec (remove credentials as specified in
external xml file)
  mxnodesecurity -l [[-p protocol] [-n nodename]] (list credentials)
option: -t = try other credentials (on | off) default = off
option: -x = extended (fd | fcd) default = any referenced credential
will not be deleted
fd (forceDelete) = delete credentials and any references - system comm
may be lost
fcd (forceCopyDelete) = delete credentials and copy any references -
system comm is retained
standard protocols: (snmp, wbem, ws-man, ssh, sign-in)
sign-in: a protocol independent type credential used to sign into the
managed node
default/global: a type of credential that applies to all nodes/systems

```

where *protocol* is one of *snmp*, *wbem*, or *dmi*.

For example:

```
$ mxnodesecurity -a -p wbem -c root:provider -n managedsystem
```

2. (Optional) Validate that the system protocol access setting has been accepted

For example:

```
$ mxnodesecurity -l -n cupux17
TARGET NODE PROTOCOL NAME PASSWORD
```

- Use `mxnode` to add the node(s) from which you wish to receive indications:

The syntax for `mxnode` is:

```
Usage:      mxnode -a nodes [-w]
           mxnode -a -f filename [-w]
           mxnode -a -m -f filename [-w]
           mxnode -m [-p] -f filename [-w]
           mxnode -r nodes
           mxnode -r -f filename
           mxnode -ln [nodes]
           mxnode -ld [nodes]
           mxnode -lt [nodes]
           mxnode -lf [nodes][-b encoding]
           mxnode -lmpo
nodes = [nodename|hostname|ipaddress]...
a      = add node
m      = modify node (only option that allows add/modify/remove
        of MPOs through XML)
r      = remove node
f      = file (followed by file pathname)
l      = list
ln     = list nodes by name
ld     = list details of a node
lt     = list all node data in tabular format
lmpo  = list all nodes with associated MPOs
p      = prune (forces removal of any omitted MPOs in XML)
b      = specify encoding of input XML
w      = wait for add/modify/remove operation to complete
v      = verbose (displays progress information)
```

**NOTE:** You must have full-configuration-rights on the CMS to add systems.

HP recommends using the `-w` option so you know when the operation has completed since it can take up to a minute depending on response time from the managed system.

```
$ mxnode -a managednode -w
Waiting for node(s) to be added...
$
```

- (Optional): Validate that the system has been added correctly.

Use `mxnode` to list the details of the managed system:

```
$ /opt/mx/bin/mxnode -ld managednode
```

Output should look similar to this one:

```
C:\>mxnode -ld pro1111
System name: pro1111
Host name: pro1111.cup.hp.com
IP addresses: 16.91.127.155
OS name: HPUX
OS revision: 11.11
OS revision text: HP-UX B.11.11 U
OS vendor: HP
Protocols: HTTP: WBEM:1.0 SMH:2.0 SNMP:1.0 SSH:SSH-2.0-OpenSSH_4.3p2-hpn
```

```
GUID: 00000011856554f50000000300000007
Device type: Server
Device subtype: HP9000
Model: 9000/800/A500-7X
Added by: Acer\mxadmin
Added on: Nov 3, 2008 3:45:14 PM
Modified by: Acer\mxadmin
Modified on: Nov 3, 2008 3:45:25 PM
Monitoring: Not suspended
OS description: HP-UX B.11.11
Preferred node name: pro1111
System description: HP-UX pro1111 B.11.11 U 9000/800 887990676
Location:
System name locked: No
System attributes locked: No
compaq.security.ssosupport: 1
hp.SIM: true
GiCAPGroupNames: []
compaq.commonHomePageSupported: true
compaq.cimom.supported: true
compaq.security.stesupport: 1
discovery.source: cli
IdentificationNumber: 887990676
compaq.hmmo.Proxy.cimom.supported: true
(Begin Contract and Warranty data)
(Entitlement Data)
Asset number:
Product ID:
Customer-Entered product number:
Serial number:
Customer-Entered serial number:
Country code:
Entitlement type:
Entitlement ID:
Obligation ID:
Custom Delivery ID:
(End Contract and Warranty data)
Contract Warranty data monitoring: Not set
```

## 5. Subscribe for indications

The syntax for mxwbemsub is

Usage:

```
mxwbemsub -a [destination] ( -n nodenames | -f filespec ) [-t
indication type]
```

```
mxwbemsub -r [destination] ( -n nodenames | -f filespec ) [-t
indication type]
```

```
mxwbemsub -l [destination] ( -n nodenames | -f filespec ) [-t
indication type]
```

```
mxwbemsub -m [current destination] new destination ( -n
nodenames | -f filespec )
[-t indication type]
```

where: indication type= health

For example:

```
$ mxwbemsub -a -n managednode
Create Subscriptions for:
managednode
Host URL to connect to is = https://managednode:5989/cimom
Indication subscription successfully created.
```

## Adding systems with WBEM to HP SIM through the GUI

The process is the same for any HP SIM installation, using either Internet Explorer or Mozilla to connect to HP SIM.

Sign into HP SIM through your browser. You must have rights to add systems.

1. Adding WBEM Credentials:
  - a. Global Credentials – Select **Options→Security→Credentials→Global Credentials**. Add Sign-in credentials (equivalent to WBEM credentials)
  - b. System Credentials – Select **Options→Security→Credentials→System Credentials→Edit system credentials**. Add Sign-in credentials (equivalent to WBEM credentials).
  - c. Discovery Task Credentials – Select **Options→Discovery→New**. Select **group** or **single system discovery**. Once managed node names have been entered, select '**Credentials**'. Add Sign-in credentials.

2. Discover the systems. Select **Options→Discovery**, and select an existing discovery task or create a new one.

Add the system name (fully qualified DNS name is best).

(Optional) Verify that HP SIM has correctly discovered the system.

The simple way to do this is to type the name of the system into the **Search** panel and click **Search**. When the search completes, select the system and then select **Properties** from the menu (select **Tools→System Information→Properties**), and then click **Run Now**.

The resulting page includes data that is only retrieved through WBEM.

3. Subscribe for WBEM events.

From the All Systems collection, select the systems that you want to retrieve indications from by selecting the checkbox to the left of the each system. Select **Options→Events→Subscribe to WBEM events**, and then click **Run Now**. The task starts and should complete with no errors.

## Sending a test indication

You can validate everything is set up correctly by generating a test event on the managed system.

A sample indication can be generated using the `/etc/opt/resmon/sbin/send_test_event` command provided by EMS. The syntax is:

```
/etc/opt/resmon/sbin/send_test_event MONITOR_NAME
```

Where `MONITOR_NAME` is one of the monitors supported by EMSWrapper. For example, to send a test event to the Core Hardware Monitor (`dm_core_hw`), enter the following command on the managed system:

Representation of Monitors:

cmc\_em CMC\_IndicationProviderIA

cpe\_em CPE\_IndicationProviderIA

dm\_chassis ChassisIndicationProviderPA

dm\_memory MemoryIndicationProviderPA

disk\_em DiskIndicationProvider

fpl\_em FPL\_IndicationProvider

ia64\_corehw CoreHardwareIndicationProviderIA

lpmc\_em LPMC\_IndicationProviderPA

memory\_ia64 MemoryIndicationProviderIA

To verify that HP SIM has received the event, you must now access the HP SIM GUI.

## Viewing the WBEM indications

Sign into HP SIM through a browser.

Select **All Events** in the **Systems and Events** panel.

There is an informational event under **Events**→**Event Type**, called **HP-UX EMS Core Hardware Monitor**. Click the event type to see the details.

## For more information

- **HP Systems Insight Manager**

[www.hp.com/go/hpsim](http://www.hp.com/go/hpsim)

- OpenSSH

[www.openssh.org](http://www.openssh.org)

- HP WBEM Solutions

[http://h71028.www7.hp.com/enterprise/cache/9920-0-0-225-121.html?jumpid=reg\\_R1002\\_USEN](http://h71028.www7.hp.com/enterprise/cache/9920-0-0-225-121.html?jumpid=reg_R1002_USEN)

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446752-002, 01/2009

