WBEM Subscriptions in HP Systems Insight Manager

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. On HP-UX systems, the EMS application was created to receive a copy of the SNMP traps, massage them, create statistical information, and have them available for analysis. 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. 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.

EMS on HP-UX can be configured to forward SNMP traps to HP Systems Insight Manager. With the appropriate software on the HP-UX system, SNMP traps from 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 Systems Insight Manager 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
    - 11*i* v1 – not available
    - 11*i* v2 update 2 (PA and Integrity)
- Linux operating systems
  WBEM indications are not presently supported on Linux

Required Software on the Managed Systems

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

- OnlineDiag
- WBEM services for HP-UX 2.0.5 or above and appropriate patches
- System Fault Management (SysFaultMgmt)

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

WBEM Services
The minimum requirement is WBEM services 2.0. Various versions are available depending upon your version of the operating system.

For HP-UX 11.23, WBEM Services A.2.0.5 or later is to be installed, along with the WBEM providers (also available on the OE for 11i version 2 update 2).
http://h71028.www7.hp.com/enterprise/cache/9931-0-0-225-121.aspx

Event Monitoring Service, Online Diags and SysFaultMgmt

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 EMSWrapperProviderModule must be listed as below:

```
# cimprovider -l -s
MODULE                            STATUS
OperatingSystemModule             OK
ComputerSystemModule              OK
ProcessModule                     OK
IPProviderModule                  OK
DNSProviderModule                 OK
NTPProviderModule                 OK
NISProviderModule                 OK
SDProviderModule                  OK
IOTreeModule                      OK
HP_NParProviderModule             OK
HPUXLANProviderModule             OK
HP_iCODProviderModule             OK
cpuprovidermodule                 OK
HPUX_ControlProviderModule        OK
EMSWrapperProviderModule          OK
ErrorIndicationConsumerModule     OK
MemoryModule                      OK
HPUXLVMProviderModule             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/sfm/sfm_inst.htm

Adding Systems with WBEM to HP Systems Insight Manager through the Command Line Interface

Sign into the HP Systems Insight Manager system. Note that the HP Systems Insight Manager server can be running on HP-UX, Windows, or Linux. The examples below are from HP Systems Insight Manager 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\Systems Insight Manager\bin
```

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

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

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

   ```
   Usage:
           mxnodesecurity -a -p protocol -c username:password [-n
           systemname]
           mxnodesecurity -a -f filespec
           mxnodesecurity -r -p protocol [-n systemname]
           mxnodesecurity -r -f filespec
           mxnodesecurity -l [-p protocol] [-n systemename]
   ```

   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
   cupux17     wbem     root    ********
   ```

3. 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
```

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...
$
```

4. (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:

```
$ mxnode -ld 172.24.30.143
System name: 172.24.30.143
Host name:
IP addresses: 172.24.30.143
OS name: HPUX
OS revision: 11.11
OS revision text: HP-UX B.11.11 U
OS vendor: HP
Protocols: WBEM:1.0 SNMP:1.0 SSH:SSH-2.0-OpenSSH_3.5p1
GUID: 00000000864162de0000000300000035
Device type: Server
Device subtype: HP9000
Model: 9000/800/A500-7X
Added by: mxadmin
Added on: Jul 28, 2005 11:39:45 AM
Modified by: mxadmin
Modified on: Jul 29, 2005 12:01:40 PM
Monitoring: Not suspended
OS description: HP-UX
Preferred node name: 172.24.30.143
System description: HP-UX parisc3 B.11.11 U 9000/800 809980646
Location:
System name locked: No
System attributes locked: No
discovery.source: cli
```

5. Subscribe for indications

   The syntax for `mxwbemsub` is :

```
Usage:
  mxwbemsub -a [destination] ( (-n <nodenames>) | (-f <filespec>) )
  mxwbemsub -r [destination] ( (-n <nodenames>) | (-f <filespec>) )
  mxwbemsub -l [destination] ( (-n <nodenames>) | (-f <filespec>) )
  mxwbemsub -m [current destination] <new destination> ( (-n
    <nodenames>) |
  (-f <filespec>) )
```

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 Systems Insight Manager through the Graphical User Interface

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

Sign into HP Systems Insight Manager through your browser. You must have rights to add systems.

1. Add the WBEM credentials to the global protocol settings. Select
    Options•Security•Global Protocol Settings, and add the root/password credentials
    under the **WBEM settings** section.
2. Discover the systems. Select **Options•Discovery**, and select **Manual Discovery**.
    Add the system name (fully qualified DNS name is best).

    (Optional) Verify that HP Systems Insight Manager 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.

Execute the following command on the managed system:

```
# /opt/resmon/lbin/send_test_event disk_em
```

To verify that HP Systems Insight Manager has received the event, you must now access the HP
Systems Insight Manager GUI.

Viewing the WBEM Indications

Sign into HP Systems Insight Manager 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 Disk Event**. Click
the event type to see the details.

For more information

- **HP Systems Insight Manager**

www.hp.com/go/hpsim

- **IETF secsh working group home page**

www.ietf.org/html.charters/secsh-charter.html

- **OpenSSH**

www.openssh.org