HP System Management Homepage for OpenVMS V2.0
Installation Guide

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About This Document

HP System Management Homepage (HP SMH) for OpenVMS V2.0, is a web-based interface that consolidates and simplifies single system management for OpenVMS operating systems. This document describes how to install and configure HP SMH V2.0 on an OpenVMS operating system. It also discusses the prerequisites for installing HP SMH.

Intended Audience

This document is intended for system administrators who install and use HP SMH.

Document Organization

This document is organized as follows:

Chapter 1	Introduction Introduces the HP SMH for OpenVMS product.
Chapter 2	Prerequisites Discusses the required software and hardware to install and run HP SMH on OpenVMS operating systems.
Chapter 3	Installing HP SMH Describes how to install and uninstall HP SMH. It also describes how to set up an OpenVMS system for installing HP SMH.
Chapter 4	Configuring HP SMH Describes how to configure SNMP for OpenVMS.
Chapter 5	Starting and Stopping HP SMH Discusses how to start and stop the HP SMH product.
Chapter 6	Logging In and Logging Out of HP SMH Describes how to log in to and log out of HP SMH.
Chapter 7	Key and Certificate Information Describes the private key and certificate used by HP SMH.
Chapter 8	Default File Locations Provides the list of default file locations for the HP SMH files.
Appendix A	Sample Installation Provides a sample installation procedure for installing HP SMH on an OpenVMS Alpha 7.3-2 system.
Appendix B	Configuring SNMP Discusses the configuration of SNMP on HP TCP/IP, MultiNet TCP/IP and TCPware TCP/IP stacks.
Appendix C	SNMP MIB Variables (Attributes) and Traps Provides a list of all the SNMP MIB Variables (Attributes) and Traps supported by the HP SMH for OpenVMS.

Typographic Conventions

Table 1 lists the typographic conventions used in the document.

Table 1 Typographic Conventions

Convention	Description
…	A horizontal ellipsis in examples indicates one of the following possibilities: • Additional optional arguments in a statement have been omitted • The preceding item or items can be repeated one or more times • Additional parameters, values, or other information can be entered
. . .	A vertical ellipsis indicates the omission of items from a code example or command format; the items are omitted because they are not important to the topic being discussed.

Table 1 Typographic Conventions *(continued)*

Convention	Description
( )	In command format descriptions, parentheses indicate that you must enclose choices in parentheses if you specify more than one. In installation or upgrade examples, parentheses indicate the possible answers to a prompt, such as: Is this correct? (Y/N) [Y]
[ ]	In command format descriptions, brackets indicate optional choices. You can choose one or more items or no items. Do not type the brackets on the command line. However, you must include the brackets in the syntax for OpenVMS directory specifications and for a substring specification in an assignment statement. In installation or upgrade examples, brackets indicate the default answer to a prompt if you press **Enter** without entering a value, as in: Is this correct? (Y/N) [Y]
bold type	Bold type represents the name of an argument, an attribute, or a reason. In command and script examples, bold indicates user input. Bold type also represents the introduction of a new term.
italic type	Italic type indicates important information, complete titles of manuals, or variables. Variables include information that varies in system output (Internal error *number*), in command lines (/PRODUCER=*name*), and in command parameters in text (where *dd* represents the predefined code for the device type).
UPPERCASE TYPE	Uppercase type indicates a command, the name of a routine, the name of a file, or the abbreviation for a system privilege.
Example	This typeface indicates code examples, command examples, and interactive screen displays. In text, this type also identifies website addresses, OpenVMS command and pathnames, PC-based commands and folders, and certain elements of the C programming language.
–	A hyphen at the end of a command format description, command line, or code line indicates that the command or statement continues on the following line.
numbers	All numbers in text are assumed to be decimal unless otherwise noted. Nondecimal radixes—binary, octal, or hexadecimal—are explicitly indicated.
WARNING	A warning calls attention to important information that if not understood or followed will result in personal injury or nonrecoverable system problems.
CAUTION	A caution calls attention to important information that if not understood or followed will result in data loss, data corruption, or damage to hardware or software.
IMPORTANT	This alert provides essential information to explain a concept or to complete a task.
NOTE	A note contains additional information to emphasize or supplement important points of the main text.

Related Information

For more information on HP SMH, see the following documents:

- *HP System Management Homepage Release Notes* — The release notes provide documentation for what's new with the release, features and change notifications, system requirements, and known issues.

- *HP System Management Homepage Help System* — The help system provides a complete set of documentation for using, maintaining, and troubleshooting HP SMH. To access the help system, go to the **Help** menu in the HP SMH application.

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Include the document title, manufacturing part number, and any comment, error found, or suggestion for improvement you have concerning this document.

1 Introduction

This chapter introduces the HP System Management Homepage (HP SMH) product.

Overview

HP System Management Homepage (HP SMH) for OpenVMS is a web-based interface that consolidates and simplifies single system management of HP servers running OpenVMS, HP-UX, Linux, and Microsoft® Windows® operating systems. It aggregates and displays data collected from web agents.

HP SMH enables system administrators to view in-depth hardware configuration and status data, performance metrics, and system thresholds using a single, easy to use interface.

2 Prerequisites

This chapter discusses system requirements and other prerequisites for installing HP SMH on OpenVMS systems.

This chapter addresses the following topics:

- "Supported Operating System Versions"
- "Disk Requirement"
- "Software Requirement"
- "Supported TCP/IP Stacks"
- "Supported Browsers"

Supported Operating System Versions

HP SMH for OpenVMS is supported on the following operating systems:

- OpenVMS Integrity servers V8.2-1, V8.3, and V8.3-1H1
- OpenVMS Alpha V7.3-2, V8.2, and V8.3

Disk Requirement

HP SMH must be installed only on ODS-5 disks. To check if the disk is an ODS-5 disk, enter the following DCL command:

```
$Show Device <devicename> /FULL
```

You can run the installation from a non ODS-5 disk to a system that has ODS-5 disk by using the /Destination qualifier.

Software Requirement

The following software is required for HP SMH for OpenVMS:

- HP SSL V1.3
- HP Secure Web Server V2.1-1
- CSWS_PHP V1.3

Supported TCP/IP Stacks

The following TCP/IP stacks are supported by HP SMH for OpenVMS:

- TCP/IP V5.4-15 or later
- MultiNet V5.2 or later
- TCPware V5.7 with DRIVERS_V572P100 patch

IMPORTANT: For users of HP SMH on MultiNet and TCPware stack.

The dependency product for HP SMH, HP Secure WEB Server (CSWS/Apache) is supported only on HP TCP/IP stack. Hence support for HP SMH on MultiNet and TCPware stack is limited to HP SMH application problems which are not CSWS/Apache related.

Supported Browsers

This section lists the supported browsers for HP SMH for OpenVMS.

For OpenVMS Alpha or Integrity servers that are connecting to any server type, you can use anyone of the following web browsers:

- Internet Explorer 6.x and 7.x
- HP Secure Web Browser V1.7-13 with the required Java plug-in

3 Installing HP SMH

This chapter describes how to install and uninstall the HP SMH V2.0 product. It also describes how to set up the OpenVMS operating system before installation and stop HP SMH processes, if any.

This chapter addresses the following topics:
- "Prior to Installing HP SMH for OpenVMS"
- "Installing HP SMH"

Prior to Installing HP SMH for OpenVMS

Before you install the HP SMH kit for OpenVMS, consider the following points:

- Ensure that all HP SMH processes, HP Insight Management Agents processes and also processes that are dependent on HP SMH, such as Smart Array Configuration Utility (ACU-XE) have stopped.

    — To shutdown HP SMH processes, enter the following commands:

    ```
    $@SYS$STARTUP:SMH$SHUTDOWN.COM ! Stop HP SMH process

    $@SYS$SPECIFIC:[WBEM]WBEM$SHUTDOWN ! Stop HP Insight management
    agents process

    $@SYS$SPECIFIC:[SMH.ACUXE]CPQ$ACUXE - stop ! Stop ACU-XE
    ```
    OR

    — To shutdown HP SMH processes on a satellite node cluster sharing common system disk, enter the following commands:

    ```
    $ MC SYSMAN SET ENVIRONMENT/CLUSTER

    SYSMAN > DO @SYS$STARTUP:SMH$SHUTDOWN.COM

    SYSMAN > DO @SYS$SPECIFIC:[WBEM]WBEM$SHUTDOWN

    SYSMAN > DO @SYS$SPECIFIC:[SMH.ACUXE]CPQ$ACUXE - stop

    SYSMAN > EXIT
    ```

    > **NOTE:** You can ignore any 'file not found' or non-existent process messages that are displayed on executing these commands.

- To view the processes, enter the DCL command:
    ```
    $ SHOW SYSTEM
    ```
    Table 3-1 lists processes that you must stop before installing the HP SMH kit.

Table 3-1 HP SMH Dependent Processes

Insight Management Agents	HP SMH for OpenVMS	HP Array Configuration Utility for Smart Array Controllers
WBEM$CPQHOST	SMH$CPQHOST	CPQ$ACUXE
WBEM$CPQSTORE	SMH$CPQSTORE	
WBEM$CPQSYSINFO	SMH$CPQSYSINFO	
WBEM$CPQSTDEQUIP	SMH$CPQSTDEQUIP	
WBEM$CPQHEALTH	SMH$CPQHEALTH	
WBEM$CPQTHRESH	SMH$CPQTHRESH	
WBEM$CPQNIC	SMH$CPQNIC	
WBEM$SVRCLU	SMH$SVRCLU	
WBEM$CPQIDA	SMH$CPQIDA	
WBEM$DCLSHOW	—	
WBEM$GSVIEW	—	
WBEM$SERVER	—	
—	SMH$HMMODISCOV	
—	APACHE$SMH	
—	APACHE$SMH0000	

- Download and install the HP Secure Sockets Layer (SSL) for the OpenVMS kit from the following web address:

  http://h71000.www7.hp.com/openvms/products/ssl/ssl.html

📝 **NOTE:** Starting with OpenVMS Alpha and Integrity server V8.3, SSL is integrated with the operating system and need not be downloaded and installed separately.

- Download and install the HP Secure Web Server for OpenVMS kit from the following web address:

  http://h71000.www7.hp.com/openvms/products/ips/apache/csws.html

- Download and install the HP CSWS_PHP for OpenVMS kit from the following web address:

  http://h71000.www7.hp.com/openvms/products/ips/apache/csws_php.html

- If the Smart Array Controller hardware is present in your system environment, you may need to update the HP Array Configuration Utility for Smart Array controllers (ACU-XE) to a version compatible with the HP SMH V2.0 kit. The updated ACU-XE utility and supporting documentation can be downloaded from the HP Array Configuration Utility home page from the following web address:

  http://h71000.www7.hp.com/openvms/products/acuxe

- If you are upgrading from an earlier version of HP SMH kit, prior to installing HP SMH V2.0 for OpenVMS, administrators are advised to record all SMH$ADMIN rights identifier assignments in the system UAF. As part of the upgrading, HP SMH revokes these rights identifiers unconditionally. The recorded assignments can be used to re-enable access privileges to the state prior to the HP SMH kit.
- Remove any existing version of HP Insight Management Agents from your system by entering the DCL commands for the appropriate Operating Systems, as follows:

  ```
  $ PRODUCT REMOVE MGMTAGENTS
  ```

or

```
$ PRODUCT REMOVE V83_MGMTAGENTS
```

or

```
$ PRODUCT REMOVE V82_MGMTAGENTS
```

or

```
$ PRODUCT REMOVE V73_MGMTAGENTS
```

NOTE: HP SMH cannot be installed on a system that has HP Insight Management Agents product installed.

Installing and Uninstalling HP SMH

This section describes how to install and uninstall HP SMH on OpenVMS operating systems.

Installing HP SMH

This section describes how to install HP SMH on OpenVMS.

To install HP SMH kit on OpenVMS, follow these steps:

1. Log in to the OpenVMS system using the SYSTEM account.
2. Copy the HP SMH kit and the manifest file to a local directory and set default to this directory.
3. To install the appropriate PCSI kit, enter the DCL command, as follows:

   ```
   $ PRODUCT INSTALL SMH/Destination=device-name:[directory-name]
   ```

NOTE:
- The disk on which you install HP SMH must be an ODS-5 disk.
- The /Destination qualifier is not required if HP SMH is installed on ODS-5 system disk.

IMPORTANT: All HP SMH processes and other processes that are dependent on HP SMH have stopped. For more information, see *"Prior to Installing HP SMH for OpenVMS" (page 13)* section.

Installation of a New Cluster Node

HP SMH can be installed on a shared storage resident cluster member node that was not present when HP SMH was installed on other nodes in the cluster. In this case, configure HP SMH using the command:

```
$ RUN SMH$COMMON:[000000.BIN]SMH_CONFIG.EXE
```

NOTE: However, you must ensure that HP SMH is installed from a node on which HP SMH is already installed.

Installation of HP SMH Patch V2.0-20

This section applies only to HP Integrity servers and describes how to install HP SMH Patch V2.0-20 on OpenVMS.

IMPORTANT: For OpenVMS V8.3 and V8.3-1H1, the patch kit VMS83I_IPMIAPI-V0100 and VMS831H1I_IPMIAPI-V0100 needs to be installed respectively, prior to installing the HP SMH patch. This patch kit can be obtained as follows:

1. Go to the HP ITRC patch database - http://www11.itrc.hp.com/service/patch/mainPage.do
2. Login with your ITRC credentials.
3. Search for the patch named VMS83I_IPMIAPI-V0100 or VMS831H1I_IPMIAPI-V0100.
4. Verify that the patch dependencies (mentioned in the patch cover letter) have been installed.
5. Follow the on-screen instructions to download the patch.

To install the HP SMH Patch V2.0-20 kit on OpenVMS, follow these steps:

1. Log in to the OpenVMS system using the SYSTEM account.
2. Ensure that you have HP SMH V2.0-17 already installed, by entering the following DCL command:

   ```
   $ PRODUCT SHOW PRODUCT
   ```

3. Copy the HP SMH patch kit and the manifest file to a local directory and set default to this directory.
4. Shutdown HP SMH by executing the following DCL command:

   ```
   @SYS$STARTUP:SMH$SHUTDOWN.COM
   ```

5. Install the patch kit by entering the following DCL command:

   ```
   $ PRODUCT INSTALL SMHPAT
   ```

6. Restart HP SMH:

   ```
   $ @SYS$STARTUP:SMH$STARTUP.COM
   ```

Uninstalling HP SMH

To uninstall HP SMH, enter the following DCL command:

```
$ PRODUCT REMOVE SMH
```

IMPORTANT: All HP SMH processes and other processes that are dependent on HP SMH have stopped. For more information, see *"Prior to Installing HP SMH for OpenVMS" (page 13)* section.

Uninstalling HP SMH Patch V2.0-20

This section applies only to HP Integrity servers. It describes how to uninstall HP SMH Patch V2.0-20 on OpenVMS. To uninstall the HP SMH patch, follow these steps:

1. Log in to the OpenVMS system using the SYSTEM account.
2. Shutdown HP SMH by entering the following DCL command:

   ```
   $ @SYS$STARTUP:SMH$SHUTDOWN.COM
   ```

3. To uninstall the patch kit, enter the following DCL command:

   ```
   $ PRODUCT UNDO PATCH
   ```

4. Restart HP SMH:

   ```
   $ @SYS$STARTUP:SMH$STARTUP.COM
   ```

Troubleshooting Product Installation

This section provides details on restoring and recovering HP SMH in the event of failure of the installation disk, without having to re-install the HP SMH.

When the product installation disk encounters a failure, you can restore its contents to another disk from the original installation disk backup. The name of the restored product installation disk may be different from that of the original product installation disk. In this case, follow the steps below to recover and restart HP SMH.

Recovering HP SMH Installation

NOTE: Skip this section if the restored product installation disk on an HP Integrity server already has an HP SMH Patch V2.0-20 installed.

1. Login into the OpenVMS system with the SYSTEM account.
2. Set default to SYS$STARTUP directory, as it contains the HP SMH startup COM procedure.

    ```
    $ SET DEFAULT SYS$STARTUP
    ```

3. Edit the SMH$DEFINE_LOGICALS.COM file by using the text editor.

    ```
    $ EDIT SMH$DEFINE_LOGICALS.COM
    ```

4. Find the line containing the definition of the SMH$COMMON logical name. For example:

    ```
    $DEFINE /SYSTEM/EXEC/trans=concealed SMH$COMMON
    DKA200:[SYS0.SYSCOMMON.HP.HPSMH.]
    ```

    where, DKA200 is the name of the original disk that contains HP SMH.

5. Replace the original product installation disk name with the restored product installation disk name. In the below example, we have assumed that DKA300 is the name of the restored disk.

    ```
    $DEFINE /SYSTEM/EXEC/trans=concealed SMH$COMMON
    DKA300:[SYS0.SYSCOMMON.HP.HPSMH.]
    ```

6. Save the changes.

Recovering Apache Web server Installation

This section describes the procedure to recover the Apache web server (CSWS) installation that is used by HP SMH.

1. Login into the OpenVMS system with the SYSTEM account.
2. Set the default directory to the SYS$STARTUP directory, as it contains the Apache webserver startup COM procedure.

    ```
    $ SET DEFAULT SYS$STARTUP
    ```

3. Edit the APACHE$LOGICALS.COM file by using the text editor.

    ```
    $ EDIT APACHE$LOGICALS.COM
    ```

4. Find the line containing the definition of the INSTALL_DEV parameter. For example:

    ```
    $ INSTALL_DEV = "COKE$DKA0:"
    ```

    where, COKE$DKA0: is the name of the original disk that had the Apache web server installed.

5. Replace the original product installation disk name with the restored product installation disk name. In the below example, we have assumed that COKE$DKA100 is the restored disk name.

    ```
    $ INSTALL_DEV = "COKE$DKA100:"
    ```

6. Save the changes.

NOTE: In `APACHE$LOGICALS.COM`, the parameter `INSTALL_DIR` specifies the installation directory for Apache web server. If the Apache web server installation directory is changed during the restore operation, the `INSTALL_DIR` parameter has to be updated accordingly.

Restarting HP SMH

After the HP SMH and Apache web server installations are recovered, you can restart HP SMH by using the following DCL command:

```
$ @SYS$STARTUP:SMH$STARTUP.COM
```

4 Configuring HP SMH

This chapter describes how to configure HP SMH on OpenVMS.

The chapter addresses the following topics:
- "Changing SNMP Community Strings to be Used by HP SMH"
- "Configuring HP SMH Logicals"
- "Providing Administrator Privilege to the User"
- "Viewing Cluster Agents "

IMPORTANT:
Before configuring HP SMH ensure that:
- The TCPIP SNMP service is enabled on the OpenVMS system by following the steps given in Appendix B (page 33).
- HP SMH logicals are defined by executing the DCL command:

  `$ @SYS$STARTUP:SMH$DEFINE_LOGICALS.COM.`

Changing SNMP Community Strings to be Used by HP SMH

HP SMH uses a default READ community "public" and WRITE community "elmginkgo".

In order to change the default community, edit the `SMH$SPECIFIC:[CONF]SNMPCOMMUNITY_CONFIG.DAT` file to reflect the SNMP READ and WRITE communities as configured in Appendix B (page 33).

`SMH$SNMP_READCOMMUNITY = public`

`SMH$SNMP_WRITECOMMUNITY = elmginkgo`

Configuring HP SMH Logicals

This section describes how to configure HP SMH itself.

The `SMH$SPECIFIC:[CONF]SMH$LOGICALS.COM` lists and defines the logical names used and supported by HP SMH for OpenVMS. However, the supported logical names are commented out. You can use a text editor to open this file and uncomment the lines containing the logical names you require, also you can edit the parameters, if required. The file includes the following comments that explain the significance of each logical name:
- To make your cluster name known to the cluster subagent, define the logical name at the DCL prompt:

  `$ DEFINE/SYSTEM/EXEC SMH$CLUSTER_NODE clustername`

  The cluster name must correspond to a valid TCP/IP cluster alias.

- To specify a warning temperature for your system, define the following logical name at the DCL prompt:

  `$ DEFINE/SYSTEM/EXEC SMH$WARNING_TEMP warningtemperature`

  The warning temperature corresponds to an integer value.

  A default value, which is about 5° C below the shutdown temperature, defined for the system is specified for DS15, DS20, DS25, ES40, ES45, or GS Alpha systems.

  Similarly, for an Integrity server (V8.2-1 or above), the maximum operational temperature on the system is used as the default value.

  For all other hardware, you must specify a value relevant to your system by defining this logical name. If you do not specify this value, the temperature threshold is displayed as 0°

C, and SNMP traps are not generated. For information on the appropriate temperature threshold values, see the documentation that came with your system.

NOTE: Since HP SMH reads the settable threshold temperatures through Intelligent Platform Management Interface (IPMI), the SMH$WARNING_TEMP logical on HP Integrity server having HP SMH Patch V2.0-20 installed need not be set.

NOTE: For HP Integrity server rx7620 and rx8620, HP SMH does not display the temperature-related information due to hardware restrictions.

- To view environmental details (such as temperature, fan, power sensor information) on DS15, DS20, DS25, ES45, GS or later Alpha systems, define the following logical name at the DCL prompt:

  `$ DEFINE/SYSTEM/EXEC SMH$PRIVATEER TRUE`

  On an Alpha system, to view environmental details (such as temperature, fan, power sensor information) on DS15, DS20, DS25, ES45, or later systems, you must have the following:

  — OpenVMS Alpha V7.3-2 or later
  — Firmware revision V6.2 or later

- To view environmental details on GS80 or later systems, the following must be available on your system:
  — OpenVMS Alpha V7.3-2 or later
  — Firmware revision V6.2 or later

- To view environmental details on Alpha servers, such as GS1280, ES47 or ES80, your system must be running OpenVMS Alpha V7.3-2 or later.

  If your system meets or exceeds these requirements, you can enable the display of the environmental details by defining the above logical names.

NOTE:
- You need not make these entries for earlier versions of Alpha hardware.
- Environmental details may not be displayed on earlier versions of Alpha hardware.
- If you define this logical name on OpenVMS Alpha V7.3 systems with earlier versions of firmware, the system may crash.

For OpenVMS Integrity servers, this logical name is not defined. The environmental details (such as temperature, fan, and power sensor information) are supported from OpenVMS Integrity servers V8.2-1 onwards.

NOTE: There is delay of 4-5 minutes in the display of environmental details after you start HP SMH on an Integrity server.

Providing Administrator Privilege to the User

You can configure access to the HP SMH for OpenVMS by using the SYSUAF utility to grant identifiers to HP SMH users.

You must grant the identifiers SMH$ADMIN, which map directly to the HTTP server's Administrator accounts. Every user who has access to the system, including the SYSTEM account, automatically has user access to the HP SMH running on that system. Anonymous access is disabled by default.

NOTE: Do not use a semicolon (;) in the username field.

To configure access for specific users, follow these steps:

1. Log in as SYSTEM on the OpenVMS system.
2. Grant the `SMH$ADMIN` identifier to users who will have administrator privileges.

   In this example, the SYSTEM account is granted administrator privileges, using the following steps:

   ```
   $ SET DEFAULT SYS$SYSTEM
   $ MC AUTHORIZE
   UAF> GRANT/IDENTIFIER SMH$ADMIN SYSTEM
   UAF> EXIT
   ```

> **NOTE:** By default, all other users have the user privilege even if it has not been explicitly granted.

Viewing Cluster Agents

To view OpenVMS clusters from Systems Insight Manager, follow these steps:

1. Verify that the `SMH$CLUSTER_NODE` logical is defined to a valid TCP/IP cluster alias. For more details, see "Configuring HP SMH Logicals" (page 19) section.
2. Verify if `SMH$SVRCLU` process is running on the OpenVMS cluster, by entering the DCL command:

   ```
   $ SHOW SYS/PROC=SMH*
   ```

3. On Systems Insight Manager:
   - Add the IP address of the OpenVMS cluster to the address range for auto detection
   - Ensure that the user is authorized to monitor the cluster from HP Systems Insight Manager (select **Menu** => **Options** => **Security** => **Users and Authorizations** tab, and add a New Authorization Entry to the users for the cluster).
   - Each user will obtain access to the cluster, which can be monitored using the **Cluster Monitor** (**Menu** => **Options** => **Cluster Monitor**). For more details, see the Systems Insight Manager online help.

5 Starting and Stopping HP SMH

After you configure HP SMH on an OpenVMS system you can start to use the product. This chapter discusses how to start and stop HP SMH.

To run HP SMH, enter the following command:

`$ @SYS$STARTUP:SMH$STARTUP`

Ensure that HP SMH is started using the SYSTEM account

To verify that HP SMH is running, enter the DCL command, as follows:

`$ SHOW SYSTEM/PROCESS=*SMH*`

Table 4-1 lists the processes that are displayed if HP SMH is running:

Table 5-1 HP SMH Processes

Process	Definition
SMH$CPQNIC	This process implements Compaq NIC MIB and provides Network Interface Card information.
SMH$CPQTHRESH	This process implements Compaq Threshold MIB. It is used to set thresholds (such as Disk, CPU, Memory) and it generates SNMP traps when the threshold is exceeded.
SMH$CPQHEALTH	This process implements Compaq Health MIB and provides the environmental details (for more information on defining SMH$PRIVATEER logical, see "Configuring HP SMH Logicals" (page 19)) and power on messages.
SMH$CPQSTORE	This process implements COMPAQ SCSI SUPPORT SNMP MIB, COMPAQ FIBRE CHANNEL ARRAY SNMP MIB, and Compaq Manageable IDE Drive MIB. It provides information on SCSI Controllers/Fiber Channel (FC) Controllers/IDE devices that are installed on your system (the adapter is connected to the system).
	This process does not provide information about Smart Array Controllers SA5300A, SA6400A, SA6402, SA6404, and P400, because the SMH$CPQIDA process is used to provide the details of these controllers.
SMH$CPQSYSINFO	This process implements COMPAQ SYSTEM INFORMATION SNMP MIB. This process provides details such as the architecture and system serial number.
SMH$CPQSTDEQUIP	This process implements Standard PC equipment configuration MIB. It provides details on standard equipment such as CPU, PCI, serial/parallel ports, and so on.
SMH$CPQHOST	This process implements COMPAQ HOST OS RELATED INFORMATION SNMP MIB. It provides Host specific details such as host name, type, disks and CPU utilization, and so on.
SMH$CPQIDA	This process implements DRIVE ARRAY SNMP MIB1 and STORAGE SYSTEMS SNMP MIB. It provides details on Smart Array SA5300A, SA6400A, SA6402 (Integrity server), SA6404 (Integrity server), P400 (Integrity server) Controllers, and the attached storage. This process terminates if no relevant Smart Array Controllers are detected.
SMH$SVRCLU	This process implements COMPAQ Common Cluster Management MIB. It provides the details of the nodes in the cluster. This process runs only on a clustered system. You must define the SMH$CLUSTER_NODE logical for this process to work.
SMH$HMMODISCOV	This process is used for backward compatibility with HP ACU-XE product.
APACHE$SMH and APACHE$SMH0000	These two are Apache HTTP process listening on port 2301 and 2381.

NOTE: For information on obtaining more details on the MIB variables supported by HP SMH on OpenVMS, see the Appendix C chapter. The MIB files are located in the `SMH$COMMON:[000000.BIN.SNMPAGENTS]` directory.

To ensure that HP SMH survives a reboot, add the following line in `SYS$STARTUP:SYSTARTUP_VMS.COM` file following the entries required to start the TCP/IP and SSL processes:

`$ @SYS$STARTUP:SMH$STARTUP`

6 Logging In and Logging Out of HP SMH

This chapter describes how to log in and log out of HP SMH.

This chapter addresses the following topics:
- "Logging In to HP SMH Using a Web Browser"
- "Logging Out"

Logging In to HP SMH Using a Web Browser

To log in to HP SMH using Internet Explorer or HP Secure Web Browser, follow these steps:

1. Navigate to **https://*hostname*:2381/**.

    The first time you browse to this URL, the *Security Alert* dialog box prompts you to trust the server. If you do not import the certificate, this *Security Alert* appears every time you browse to HP SMH.

    To avoid an active scripting error, HP recommends that you add the HP SMH web address to Internet Explorer's Trusted sites.

    To add the HP SMH web address to Internet Explorer's Trusted sites, follow these steps:

    a. From the Internet Explorer main menu, select **Tools→ Internet Options**.
    b. Click **Security**. The Security tab appears.
    c. Select **Trusted sites**.
    d. Click **Sites...**. The Trusted sites dialog box appears.
    e. In the **Add this website to the zone** field, enter **https://*hostname*:2381/** and click **Add**.
    f. Click **OK** to save your changes, and close the Trusted sites dialog box.
    g. Click **OK** to close the Internet Options dialog box.

2. The first time you browse to this link, the **Security Alert** dialog box appears and prompts you to indicate whether the server can be trusted. If you do not import the certificate, the **Security Alert** dialog box appears each time you navigate to this link.

    If you want to implement your own Public Key Infrastructure (PKI) or install your self-generated certificates on each system that you want to manage, you must install a certificate authority root certificate on each browser. For more information on installing the certificate authority root certificate, see your browser's online help.

    If you are accessing this page through a link from HP Systems Insight Manager and the **Trust By Certificate** option is enabled in HP SMH, the **Automatically Import Management Server Certificate** option appears only if the HP SMH web address is not added to **Trusted sites**. For more information on importing the HP Systems Insight Manager certificate automatically, see the *HP System Management Homepage Online Help*.

3. Click **Yes**.

    The **Login** page appears unless you have enabled **Anonymous** access, and then the **HP System Management Homepage** home page appears.

4. Enter the user name that is recognized by the operating system.
5. Enter the password that is recognized by the operating system.
6. Click **Login**. The HP SMH home page appears.

Logging Out

To log out of HP SMH, you have several options:

- In the HP SMH home page, click **Logout**. The HP System Management Homepage Login page appears.
- Close every instance of the Web browser that was used to log in to HP SMH.

7 Key and Certificate Information

After HP SMH is installed and configured for the first time, a private key and the corresponding self-signed Base64-encoded certificate is created. This Base64-encoded certificate is created in the PEM format.

In OpenVMS, both public and private keys for HP SMH are stored in the SMH$SPECIFIC:[SSLSHARE] directory. The file.pem file is the private key and cert.pem file is the self-signed Base64-encoded certificate.

NOTE: The private key and the certificate are generated when HP SMH is started for the first time, or if the key and the certificate do not exist.

A certificate from a Certificate Authority (CA), such as Verisign or Entrust, can be used to replace the self-signed certificate. The key and certificate files are shared with other HP management software, such as HP Systems Insight Manager.

To generate a new private key, delete the SYS$SPECIFIC:[SSLSHARE]CERT.PEM file and restart HP SMH. This causes the HTTP server to generate a new certificate and private key.

8 Default File Locations

HP SMH files are located in `SYS$COMMON:[HP.HPSMH]` directory if HP SMH is installed without `/DESTINATION` qualifier. In case the `/DESTINATION` qualifier is used, HP SMH files will be copied to the destination directory specified.

Some important sub directories are as follows:

- `BIN` - HP SMH executables files
- `BIN/SNMPAgents` - SNMP agent executables and MIB (Management Information Base) files
- `Modules` - Apache dynamic loadable modules of HP SMH
- `<Node-name>` - Node specific files of HP SMH

The below files are copied from HP SMH.

`SYS$STARTUP:SMH$STARTUP.COM` - HP SMH startup procedure

`SYS$STARTUP:SMH$SHUTDOWN.COM` - HP SMH shutdown procedure

`SYS$COMMON:[SYSLIB]WBEM$HMMO_SHR.EXE` - Older ELM WEB Server for backward compatibility

`SYS$COMMON:[SYSLIB]HPIPMI_API.EXE, HPIPMI_API.H, HPIPMI_TYPES.H` - (on OpenVMS V8.2-1) For getting Environmental information on Integrity servers

A Sample Installation

This chapter provides a sample procedure for installing HP SMH on an OpenVMS Alpha 7.3-2 system.

1. To install HP SMH on an OpenVMS Alpha 7.3-2 system, enter the DCL command:

   ```
   $ PRODUCT INSTALL SMH /Destination=OCEAN$DKA0:
   ```

   The following output is displayed:

   ```
   The following product has been selected:
   HP AXPVMS SMH V2.0-12 Layered Product
   Do you want to continue? [YES]
   Configuration phase starting ...
   You will be asked to choose options, if any, for each selected
   product and for any products that may be installed to satisfy
   software dependency requirements.
   HP AXPVMS SMH V2.0-12: HP System Management Homepage(SMH)
   © 2008 Hewlett-Packard Development Company, L.P. All rights reserved.
   Installation of HP SMH will take around six minutes,
   after 90% status message is displayed.
   This time will increase if SMH is installing on a Cluster Satellite.
   * This product does not have any configuration options.
   Execution phase starting ...
   The following product will be installed to destination:
   HP AXPVMS SMH V2.0-12 DISK$ALP732OS:[VMS$COMMON.]
   Portion done: 0%...10%...20%...40%...90%...100%
   The following product has been installed:
   HP AXPVMS SMH V2.0-12 Layered Product
   ```

2. To remove HP SMH on an OpenVMS Alpha 7.3-2 system, enter the DCL command:

   ```
   PRODUCT REMOVE SMH
   ```

   The following output is displayed:

   ```
   The following product has been selected:
   HP AXPVMS SMH V2.0-12 Layered Product
   Do you want to continue? [YES]
   The following product will be removed from destination:
   HP AXPVMS SMH V2.0-12 DISK$ALP732OS:[VMS$COMMON.]
   Portion done: 0%
   Uninstallation of HP SMH will take around three minutes,
   after PCSI completes 0% uninstallation.
   This time will increase if SMH is uninstalling on a Cluster
   Satellite.
   ...20%...30%...40%...50%...60%...70%...80%...90%...100%
   The following product has been removed:
   HP AXPVMS SMH V2.0-12 Layered Product
   ```

B Configuring SNMP

This chapter discusses on the steps to configure SNMP on HP TCP/IP, MultiNet TCP/IP and TCPware TCP/IP stacks.

The chapter addresses the following topics:
- "Configuring SNMP on HP TCP/IP"
- "Configuring SNMP on MultiNet TCP/IP"
- "Configuring SNMP on TCPware TCP/IP"

Read the section that pertains to your system's TCP/IP stack. For example, if you are using HP TCP/IP stack, proceed with section "Configuring SNMP on HP TCP/IP".

Configuring SNMP on HP TCP/IP

After you install HP SMH on your Alpha or Integrity servers, you must install and configure SNMP on HP TCP/IP for OpenVMS. To enable SNMP on HP TCP/IP, follow these steps:

1. Install TCP/IP.

   For information on installing HP TCP/IP, see *TCP/IP Services for OpenVMS - Management*.

2. Enable SNMP.

   If SNMP is not already enabled on your system, follow these steps:

   a. Enter the DCL command:

      ```
      $ @SYS$MANAGER:TCPIP$CONFIG
      ```

   b. From the list of displayed options, select `Option 3 - Server components`.

   c. From the next list of displayed options, select `Option 17 - SNMP (for TCPIP Version 5.1 ECO-4)` or `Option 18 - SNMP (for TCPIP Version 5.3 or later)`.

   d. From the next list of displayed options, select `Option 3 - Enable & Start service on this node`.

3. Enter the DCL command:

   ```
   $ TCPIP SHOW CONFIGURATION SNMP/FULL
   ```

   The following is a sample output displayed:

   ```
   SNMP Configuration

   Flags: Sets

   Contact: test

   Location

   First: HP

   Location

   Community Type Address_list

   public Read 0.0.0.0

   elmginkgo Read Write Trap 16.32.80.97, 127.0.0.1
   ```

   - The read community "public" and the write community "elmginkgo" can be changed to other community names of preference.
   - The Sets flag and write community name is required only if HP SMH is used to set some information (such as disk/memory/CPU thresholds).
   - The Trap community name allows SNMP to signal events to HP Systems Insight Manager or other system management tool.
   - The community names provided in the SNMP configuration are case sensitive.

4. Enable the SNMP read community, if it is not displayed in the `$ TCPIP SHOW CONFIGURATION SNMP/FULL` output, by entering the DCL command:

   `$ TCPIP SET CONFIG SNMP/COMMUNITY=<read community name>/type=read`

   For example,

   `$ TCPIP SET CONFIG SNMP/COMMUNITY="public"/type=read`

5. Enable SNMP sets by entering the DCL command:

   `$ TCPIP SET CONFIGURATION SNMP/FLAG=SETS`

6. Enable the SNMP write and Trap community by entering the DCL command:

   `TCPIP SET CONFIGURATION SNMP/COMMUNITY=<write community name> /TYPE=(WRITE,TRAP)/ADDRESS=<IP Address>`

   For example,

   `TCPIP SET CONFIGURATION SNMP/COMMUNITY="elmginkgo" /TYPE=(WRITE,TRAP)/ADDRESS=127.0.0.1`

7. If required, you can send SNMP Version 2 Traps by adding a line to the `SYS$SYSDEVICE:[TCPIP$SNMP]TCPIP$VMS_SNMP_CONF.DAT` file for each Version 2 Trap destination using the following format for the Trap option:

   `trap v2c community <IP Address[:port]>`

   Where, community specifies the community name, IP Address specifies the IP address of the host (HP SIM system) that is listening for Traps and port specifies the port number. The default port number is 162.

8. If your system management tool does not understand SNMP V2.0 traps, you need to explicitly enable V1.0 format SNMP trap packets. To do this, follow these steps:
   - Set default to the directory where you want to create the file, for example,

     `$ SET DEFAULT SYS$SYSDEVICE:[TCPIP$SNMP]`

   - Create the `TCPIP$VMS_SNMP_CONF.DAT` file, and add the following line:

     `trap v1 elmginkgo <IP Address[:port]>`

     Where, IP Address specifies the IP address of the host where you want the trap notification to be sent and port specifies the port number.

   - Set the owner and protection on this file as follows:

     ```
     $ SET FILE/OWNER_UIC=[TCPIP$AUX,TCPIP$SNMP]-
     /PROT=(W:RE,G:RE,O:RWED,S:RWED)-
     TCPIP$VMS_SNMP_CONF.DAT
     ```

   NOTE: If you use HP Systems Insight Manager to manage SNMP events on your network, you do not need to enable SNMP V1.0 traps.

9. To verify that your configuration is correct, review the output from the following command:

   `$ TCPIP SHOW CONFIGURATION SNMP/FULL`

   The display should be similar to the sample output mentioned in Step 3.

10. Enter the following commands to stop and start SNMP:

Table B-1 Commands to Stop and Start SNMP

On Systems Using TCP/IP
`$ @SYS$MANAGER:TCPIP$SNMP_SHUTDOWN`
`$ @SYS$MANAGER:TCPIP$SNMP_STARTUP`

11. To verify if the SNMP is enabled on the system, enter the DCL command:

    ```
    $ SHOW SYSTEM
    ```

    The system displays the following TCP/IP processes:

    ```
    TCPIP$SNMP_1
    TCPIP$OS_MIBS
    TCPIP$HR_MIB
    ```

    If you cannot view all of these processes, review the TCP/IP setup and repeat Step 1.

Configuring SNMP on MultiNet TCP/IP

This section describes how to configure SNMP on MultiNet TCP/IP for HP SMH.

For more information about MultiNet, see the MultiNet user documentation.

To configure SNMP on MultiNet follow these steps:

1. Install MultiNet TCP/IP for OpenVMS, with the required patches.
2. Add the following lines to the `MULTINET:SNMPD.CONF` file:

    ```
    AGENTX_PEER 127.0.0.1
    AGENTX_PEER <IP address 1>
    AGENTX_PEER <IP address 2>
    ...
    AGENTX_PEER <IP address n>
    ```

    where: "IP address 1", "IP address 2", . . ., "IP address n" are the IP addresses configured on each NIC interface of the OpenVMS system.

3. Comment out any SMUX_PEER from the `MULTINET:SNMPD.CONF` file, as follows:

    ```
    ! SMUX_PEER <IP Address>
    ```

4. Add the READ community strings to `MULTINET:SNMPD.CONF`, as follows:

    ```
    community public 127.0.0.1 READ
    community public <IP address 1> READ
    community public <IP address 2> READ
    ...
    community public <IP address n> READ
    ```

    where: "IP address 1", "IP address 2", . . ., "IP address n" are the IP addresses configured on each NIC interface of the OpenVMS system.

    📝 **NOTE:** The community name "public" used above can be replaced with any other community name of preference.

5. Add the WRITE community strings to `MULTINET:SNMPD.CONF`, as follows:

    ```
    community elmginkgo 127.0.0.1 WRITE
    community elmginkgo <IP address 1> WRITE
    community elmginkgo <IP address 2> WRITE
    ...
    community elmginkgo <IP address n> WRITE
    ```

    where: "IP address 1", "IP address 2", . . ., "IP address n" are the IP addresses configured on each NIC interface of the OpenVMS system.

6. If you want to send a Trap to a system, do the following steps:

    a. Add the following line to `Multinet:SNMPD.CONF` file:

       `community elmginkgo <IP address of target system> TRAPS`

       where "IP address of target system" , is the system which receives the Traps. If the Trap needs to be received on the local system, then add the following line:

       `community elmginkgo 127.0.0.1 TRAPS`

    b. Add the following line to `SYS$SYSDEVICE:[TCPIP$SNMP]TCPIP$VMS_SNMP_CONF.DAT` file:

       `config trap v1 elmginkgo <IP address of target system>`

       where "IP address of target system", is the system which receives the Traps. If the traps needs to be received on the local system, then add the following line:

       `config elmginkgo traps 127.0.0.1`

7. Extract TCPIP$ACCESS_SHR.EXE and TCPIP$ESNMP_SHR.EXE from the HP TCP/IP Services V5.4-15 or later kit and place them in SYS$COMMON:[SYSLIB] `$ PRODUCT EXTRACT FILE/SELECT=<filename>`.

8. Copy the file TCPIP$ESNMP_SHR.EXE to SYS$COMMON:[SYSLIB]UCX$ESNMP_SHR.EXE.

9. Extract TCPIP$HR_MIB.EXE file from the TCP/IP Services kit and place it in the SYS$SYSTEM directory. You must also define the following logical names:

   `$ DEFINE/SYSTEM/EXECUTIVE MULTINET_SNMP_AGENTX 1`

   `$ DEFINE/SYSTEM TCPIP$AGENTX_INET_PORT 705`

   `$ DEFINE/SYSTEM TCPIP$AGENTX_LOCAL_PORT 705`

10. Create the `SYS$SYSDEVICE:[TCPIP$SNMP]TCPIP$VMS_SNMP_CONF.DAT` file on the target system. The contents of the `TCPIP$VMS_SNMP_CONF.DAT` file must look similar to the following:

```
#
# TCPIP$VMS_SNMP_CONF.dat - Sample config file for SNMP
#
# configuration extensions.
#
# Note about general format, tab vs. spaces.
# Note about # as comment.
#
# Keyword "config" precedes any options which will be assigned to
process
```

```
# usermode logical. "TCPIP$" is prepended to each logical, so for
example
# SNMP_TRACE becomes logical name TCPIP$SNMP_TRACE.
# Some default, some no need value.
# Examples:
# config SNMP_TRACE
#
# if want process visible, first #config is:
# config SNMP_SYSTEM_LOGICALS
# Keyword "accept" controls for remote subagents.
#
# Other keywords as in UNIX snmpd.conf. Note about sysname
# sysname Moxie909
config snmp_allow_inet_transport config trap v1 elmginkgo 127.0.0.1
```

> **NOTE:** The community name "elmginkgo" used above can be replaced with any other community name of preference.

11. Enable the SNMP with the AGENTX service and start the MultiNet SNMP services. For more information see the Configuring MultiNet SNMP Services section of the *MultiNet Install and Administration Guide*.
12. Start the HR_MIB if it is not already running by entering the DCL command:

    `$ RUN/PROCESS=HR_MIB SYS$SYSTEM:TCPIP$HR_MIB`

    The Host Resources MIB (RFC 1514) supplied with TCP/IP Services now works with MultiNet.

Configuring SNMP on TCPware TCP/IP

This section describes how to use HP SMH for OpenVMS with TCPware TCP/IP for OpenVMS.

For more information about TCPware, see the TCPware user documentation.

To set up TCPware, follow these steps:

1. Install TCPware TCP/IP for OpenVMS with the required patches. You must also ensure that the Loopback address (127.0.0.1) is configured properly on TCPware.
2. Add the following lines to the `TCPWARE:SNMPD.CONF` file:

   `AGENTX_PEER 127.0.0.1`

   `AGENTX_PEER <IP address 1>`

   `AGENTX_PEER <IP address 2>`

   `...`

   `AGENTX_PEER <IP address n>`

   where: "IP address 1", "IP address 2", . . ., "IP address n" are the IP addresses configured on each NIC interface of the OpenVMS system.

3. Comment out any SMUX_PEER from the `TCPWARE:SNMPD.CONF` file, as follows:

   `! SMUX_PEER <IP address>`

4. Add the READ community strings to `TCPWARE: SNMPD.CONF`:

   `community public 127.0.0.1 READ-ONLY`

   `community public <IP address 1> READ-ONLY`

   `community public <IP address 2> READ-ONLY`

   `...`

```
community public <IP address n> READ-ONLY
```

where: "IP address 1", "IP address 2", . . ., "IP address n" are the IP addresses configured on each NIC interface of the OpenVMS system.

> **NOTE:** The community name "public" used above can be replaced with any other community name of preference.

5. Add the WRITE community strings to `TCPWARE:SNMPD.CONF`, as follows:

```
community elmginkgo 127.0.0.1 READ-WRITE
community elmginkgo <IP address 1> READ-WRITE
community elmginkgo <IP address 2> READ-WRITE
...
community elmginkgo <IP address n> READ-WRITE
```

where: "IP address 1", "IP address 2", . . ., "IP address n" are the IP addresses configured on each NIC interface of the OpenVMS system.

> **NOTE:**
> - The WRITE community string is required only if HP SMH is used to set some information (such as disk/memory/CPU thresholds).
> - The community name "elmginkgo" used above can be replaced with any other community name of preference.

6. If you want to send a Trap to a system, do the following steps:
   a. Add the following line to `TCPWARE:SNMPD.CONF` file:

   ```
   community elmginkgo <IP address of target system> TRAPS
   ```

   where "IP address of target system" , is the system which receives the Traps. If the Trap needs to be received on the local system, then add the following line:

   ```
   community elmginkgo 127.0.0.1 TRAPS
   ```

   b. Add the following line to
   `SYS$SYSDEVICE:[TCPIP$SNMP]TCPIP$VMS_SNMP_CONF.DAT` file:

   ```
   config trap v1 elmginkgo <IP address of target system>
   ```

   where "IP address of target system", is the system which receives the Traps. If the traps needs to be received on the local system, then add the following line:

   ```
   config elmginkgo traps 127.0.0.1
   ```

> **NOTE:** The community name "elmginkgo" used above can be replaced with any other community name of preference.

7. Extract TCPIP$ACCESS_SHR.EXE and TCPIP$ESNMP_SHR.EXE from the HP TCP/IP Services V5.4-15 or later kit and place them in SYS$COMMON:[SYSLIB] by entering the following command:

```
$ PRODUCT EXTRACT FILE/SELECT=<filename>
```

> **NOTE:** Ensure that all files extracted from the TCP/IP Services kit are protected with WORLD:RE.

8. Copy TCPIP$ESNMP_SHR.EXE to SYS$COMMON:[SYSLIB]UCX$ESNMP_SHR.EXE.
9. Extract TCPIP$HR_MIB.EXE from the TCP/IP Services kit and place it in the SYS$SYSTEM directory. You must also define the following logical names by entering the following DCL commands:

```
$ DEFINE/SYSTEM TCPIP$AGENTX_INET_PORT 705
$ DEFINE/SYSTEM TCPIP$AGENTX_LOCAL_PORT 705
```

10. Create the `SYS$SYSDEVICE:[TCPIP$SNMP]TCPIP$VMS_SNMP_CONF.DAT` file on the target system. The contents of the `TCPIP$VMS_SNMP_CONF.DAT` file must look similar to the following:

```
#
# TCPIP$VMS_SNMP_CONF.dat - Sample config file for SNMP
#
# configuration extensions.
#
# Note about general format, tab vs. spaces.
# Note about # as comment.
#
# Keyword "config" precedes any options which will be assigned to
process
# usermode logical. "TCPIP$" is prepended to each logical, so for
example
# SNMP_TRACE becomes logical name TCPIP$SNMP_TRACE.
# Some default, some no need value.
# Examples:
# config SNMP_TRACE
#
# if want process visible, first #config is:
# config SNMP_SYSTEM_LOGICALS
# Keyword "accept" controls for remote subagents.
#
# Other keywords as in UNIX snmpd.conf. Note about sysname
# sysname Moxie909
config snmp_allow_inet_transport config trap v1 elmginkgo 127.0.0.1
```

> **NOTE:** The community name "elmginkgo" used above can be replaced with any other community name of preference.

11. Enable the SNMP with the AGENTX service and start the TCPware SNMP services. For more information see the Configuring SNMP Services section of the *TCPware Installation Guide*.

12. Start HR_MIB process if it is not already running by entering the DCL command:

```
$ RUN/PROCESS=HR_MIB SYS$SYSTEM:TCPIP$HR_MIB
```

The Host Resources MIB (RFC 1514) supplied with TCP/IP Services now works with MultiNet.

C SNMP MIB Variables (Attributes) and Traps

This chapter lists all the SNMP MIB Variables (Attributes) and Traps supported by the HP SMH for OpenVMS.

The cpqHealth Agent

Attributes	
cpqHeMibRev Group	cpqHeMibRevMajor
	cpqHeMibRevMinor
	cpqHeMibCondition
cpqHeOsCommon	cpqHeOsCommonPollFreq
cpqHePostMsg	cpqHePostMsgCondition
	cpqHePostMsgIndex
	cpqHePostMsgCode
	cpqHePostMsgDesc
cpqHeThermal	cpqHeThermalCondition
	cpqHeThermalDegradedAction
	cpqHeThermalTempStatus
	cpqHeThermalSystemFanStatus
	cpqHeThermalCpuFanStatus
	cpqHeThermalFanIndex
	cpqHeThermalFanRequired
	cpqHeThermalFanPresent
	cpqHeThermalFanCpuFan
	cpqHeThermalFanStatus
cpqHeTemperature	cpqHeTemperatureChassis
	cpqHeTemperatureIndex
	cpqHeTemperatureLocale
	cpqHeTemperatureCelsius
	cpqHeTemperatureThreshold
	cpqHeTemperatureCondition
cpqHeFltTolPwrSupply	cpqHeFltTolPwrSupplyCondit
cpqHeCriticalErrorTable	cpqHeCriticalErrorIndex
	cpqHeCriticalErrorStatus
	cpqHeCriticalErrorType
	cpqHeCriticalErrorTime

Traps
cpqHe3ThermalTempDegraded
cpqHe3ThermalTempOK
cpqHe3ThermalSystemFanFailed
cpqHe3ThermalSystemFanOK
cpqHe3FltTolPwrSupplyDegraded

The cpqHost Agent

	Attributes
cpqHoCpuUtilEntry	cpqHoCpuUtilUnitIndex
	cpqHoCpuUtilMin
	cpqHoCpuUtilFiveMin
	cpqHoCpuUtilThirtyMin
	cpqHoCpuUtilHour
cpqHoFileSysTable	cpqHoFileSysIndex
	cpqHoFileSysDesc
	cpqHoFileSysSpaceTotal
	cpqHoFileSysSpaceUsed
	cpqHoFileSysPercentSpaceUsed
cpqHoInfo	cpqHoName
	cpqHoVersion
	cpqHoDesc
	cpqHoOsType
	cpqHoTelnet
cpqHoMibRev	cpqHoMibRevMajor
	cpqHoMibRevMinor
	cpqHoMibCondition
cpqHoOsCommon	cpqHoOsCommonPollFreq
cpqHoSWRunning Table	cpqHoSWRunningIndex
	cpqHoSWRunningName
	cpqHoSWRunningDesc
qHoSwVerTable	cpqHoSwVerIndex
	cpqHoSwVerName
	cpqHoSwVerDescription
	cpqHoSwVerLocation
	cpqHoSwVerVersion
cpqHoSystemStatus	cpqHoMibStatusArray

Traps
None

The cpqStore Agent

Attributes	
IDE	
cpqIdeMibRev	cpqIdeMibRevMajor
	cpqIdeMibRevMinor
	cpqIdeMibCondition
cpqIdeOsCommon	cpqIdeOsCommonPollFreq
SCSI	
cpqScsiCntlrTable	cpqScsiCntlrIndex
	cpqScsiCntlrBusIndex
	cpqScsiCntlrModel
	cpqScsiCntlrSlot
	cpqScsiCntlrStatus
	cpqScsiCntlrCondition
	cpqScsiCntlrSerialNum
	cpqScsiCntlrBusWidth
cpqScsiMibRev	cpqScsiMibRevMajor
	cpqScsiMibRevMinor
cpqScsiOsCommon	cpqScsiOsCommonPollFreq
	cpqScsiOsCommonModuleIndex
cpqScsiOsCommonModuleTable	cpqScsiOsCommonModuleName
	cpqScsiOsCommonModulePurpose

	Attributes
	cpqScsiPhyDrvCntlrIndex
	cpqScsiPhyDrvBusIndex
	cpqScsiPhyDrvIndex
	cpqScsiPhyDrvModel
	cpqScsiPhyDrvFWRev
	cpqScsiPhyDrvVendor
	cpqScsiPhyDrvSize
	cpqScsiPhyDrvScsiId
	cpqScsiPhyDrvStatus
	cpqScsiPhyDrvHighReadSectors
	cpqScsiPhyDrvLowReadSectors
cpqScsiPhyDrvTable	cpqScsiPhyDrvHighWriteSectors
	cpqScsiPhyDrvLowWriteSectors
	cpqScsiPhyDrvHardReadErrs
	cpqScsiPhyDrvSeekErrs
	cpqScsiPhyDrvUsedReallocs
	cpqScsiPhyDrvCondition
	cpqScsiPhyDrvSerialNum
	cpqScsiPhyDrvLocation
	cpqScsiPhyDrvParent
	cpqScsiPhyDrvSectorSize
	cpqScsiPhyDrvHotPlug
	cpqScsiPhyDrvPlacement
	cpqScsiTargetCntlrIndex
	cpqScsiTargetBusIndex
	cpqScsiTargetScsiIdIndex
	cpqScsiTargetType
cpqScsiTargetTable	cpqScsiTargetModel
	cpqScsiTargetFWRev
	cpqScsiTargetVendor
	cpqScsiTargetLocation
	cpqScsiTargetPhyWidth
SAS	

Attributes	
CpqSasHbaEntry	cpqSasHbaIndex
	cpqSasHbaHwLocation
	cpqSasHbaModel
	cpqSasHbaStatus
	cpqSasHbaCondition
	cpqSasHbaOverallCondition
	cpqSasHbaSerialNumber
	cpqSasHbaFwVersion
cpqSasPhyDrvEntry	cpqSasPhyDrvHbaIndex
	cpqSasPhyDrvIndex
	cpqSasPhyDrvLocationString
	cpqSasPhyDrvModel
	cpqSasPhyDrvStatus
	cpqSasPhyDrvCondition
	cpqSasPhyDrvSize
	cpqSasPhyDrvMemberLogDrv
	cpqSasPhyDrvType
	cpqSasPhyDrvSasAddress
cpqSasLogDrvEntry	cpqSasLogDrvHbaIndex
	cpqSasLogDrvIndex
	cpqSasLogDrvRaidLevel
	cpqSasLogDrvStatus
	cpqSasLogDrvCondition
	cpqSasLogDrvCapacity
	cpqSasLogDrvStripeSize
	cpqSasLogDrvPhyDrvIds
	cpqSasLogDrvSpareIds
	cpqSasLogDrvRebuildingPercent

Attributes
Fiber Channel

Attributes
cpqFcaCntlrBoxIndex
cpqFcaCntlrBoxIoSlot
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The cpqSysInfo Agent

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	cpqSiMibCondition
cpqSiOsCommon	cpqSiOsCommonPollFreq
cpqSiSystemBoard	cpqSiProductId
	cpqSiProductName

Traps
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The cpqStdEqip Agent

	Attributes
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	cpqSeCpuCacheLevelIndex
	cpqSeCpuCacheSize
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	cpqSeFpuSpeed
	cpqSeFpuType

Attributes	
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The cpqThresh Agent

Attributes	
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	cpqMeMibRevMajor
	cpqMeMibRevMinor
	cpqMeMibCondition
	cpqMeAlarmIndex
	cpqMeAlarmInterval
	cpqMeAlarmVariable
	cpqMeAlarmSampleType
cpqMeMibRev	cpqMeAlarmValue
	cpqMeAlarmStartupAlarm
	cpqMeAlarmRisingThreshold
	cpqMeAlarmFallingThreshold
	cpqMeAlarmPermanence
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Traps
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The cpqNIC Agent

Attributes
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cpqNicMibRevMinor
cpqNicMibCondition
cpqNicIfLogMapIndex
cpqNicIfLogMapIfNumber
cpqNicIfLogMapDescription
cpqNicIfLogMapGroupType
cpqNicIfLogMapAdapterCount
cpqNicIfLogMapAdapterOKCount
cpqNicIfLogMapPhysicalAdapters
cpqNicIfLogMapMACAddress
cpqNicIfLogMapSwitchoverMode
cpqNicIfLogMapCondition
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cpqNicIfLogMapOverallCondition
cpqNicIfPhysAdapterPort
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cpqNicIfPhysAdapterEntry.length
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cpqNicIfLogMapGroupType
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cpqNicIfPhysAdapterExcessiveCollisions
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cpqNicIfPhysAdapterInternalMacTransmitErrors
cpqNicIfPhysAdapterCondition
cpqNicIfPhysAdapterState
cpqNicIfPhysAdapterStatsValid

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cpqNicIfPhysAdapterOutOctets

Traps
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The svrClu Agent

Attributes
svrCluMibMajorRev
svrCluMibMinorRev
svrCluSoftwareVendor
svrCluSoftwareVersion
svrCluSoftwareStatus
svrCluClusterType
svrCluExtensionOID
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svrCluMemberComment
svrCluMemberStatus
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The cpqIDA Agent

Attributes
cpqDaMibRevMajor
cpqDaMibRevMinor
cpqDaMibCondition
cpqDaOsCommonPollFreq
cpqDaCntlrIndex
cpqDaCntlrModel
cpqDaCntlrFWRev

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cpqDaCntlrStndIntr
cpqDaCntlrSlot
cpqDaCntlrCondition
cpqDaCntlrProductRev
cpqDaCntlrPartnerSlot
cpqDaCntlrCurrentRole
cpqDaCntlrBoardStatus
cpqDaCntlrPartnerBoardStatus
cpqDaCntlrBoardCondition
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cpqDaCntlrDriveOwnership
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cpqDaCntlrRedundancyType
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cpqDaCntlrAccessModuleStatus
cpqDaCntlrDaughterBoardType
cpqDaCntlrHwLocation
cpqDaAccelCntlrIndex
cpqDaAccelStatus
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cpqDaPhyDrvHardWriteErrs
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The cpqStsys Agent

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