HP ProLiant
Insight Management Agents
and
System Management Homepage
for Solaris 10 x64/x86
User Guide

Contents

Introduction

This document describes the installation, configuration, functionality, and maintenance of the HP ProLiant Insight Management Agents and the HP System Management Homepage packages (`HPQhma` and `HPQsmh`) for select HP ProLiant systems running Sun Solaris 10 x64/x86 operating system in 64-bit kernel mode.

Functionality

The HP ProLiant Insight Management Agents package is a collection of SNMP agents that provide a wide range of detailed information about ProLiant servers. Currently, the package includes the following agents:

- The *Health Agent* provides various health-related information about a system's components and environment, such as power supplies, cooling system, memory, and temperatures.

- The *Host Agent* provides information about the host, such as operating system information, filesystem usage, CPU utilization, and versions of installed HP software.

- The *NIC Agent* provides information about select network interface controllers present in the system, such as device configuration, device status, and packet and error statistics.

- The *SM2 Agent* provides information about the server's iLO management configuration and status.

- The *Rack Agent* provides information of the Rack, enclosure and blade under execution. It collects the information from *hpqriisd*, which coordinates the routing of information, such as alerts, to and from the BL-p enclosure management contollers in the rack.

- The *Standard Equipment Agent* provides various information about the system's components, such as PCI devices, CPUs, and other system information.

- The *Storage Agent* provides information about select storage devices present in the system, such as device configuration, device status, and logical volume information.

- The *Threshold Agent* monitors thresholds of user-selected SNMP OIDs, and is useful for monitoring values such as CPU utilization, filesystem usage, etc. When threshold conditions are met, the agent generates traps which can be received by SNMP management stations, such as HP SIM.

The HP System Management Homepage package contains a small web server that provides secure web-based access to the information that is collected by the HP ProLiant Insight Management Agents.

Package Distribution

Format

The `HPQhma` and `HPQsmh` packages are distributed in compressed tar files and can be extracted using the *gunzip(1)* and *tar(1)* utilities on a system running Solaris 10 x64/x86.

Contents

The `HPQhma` package contains:

- HP ProLiant Health SNMP Agent (*hmahealthd(1M)*).

- HP ProLiant Host SNMP Agent (*hmahostd(1M)*).

- HP ProLiant NIC SNMP Agent (*hmanicd(1M)*).

- HP ProLiant SM2 SNMP Agent (*hmasm2d(1M)*).

- HP ProLiant Rack SNMP Agent (*hmarackd(1M)*).

- HP ProLiant Standard Equipment SNMP Agent (*hmastdeqd(1M)*).

- HP ProLiant Storage SNMP Agent (*hmastord(1M)*).

- HP ProLiant Threshold SNMP Agent (*hmathreshd(1M)*).

- Supporting documentation (release notes, man pages).

The HPQsmh package contains:

- HP System Management Homepage web service (*hpsmhd(1M)*).

- Supporting documentation (release notes, man pages).

System Requirements

The following list of hardware and software requirements are necessary in order to use the HPQhma and HPQsmh packages:

Hardware Requirements

- An HP ProLiant server listed in the ProLiant – Solaris Support Matrix.

- 140MB of disk space in /opt during installation, approximately 50MB following installation.

- A minimum of 256MB of memory is recommended.

Software Requirements

- Solaris 10 x64/x86 operating system running in 64-bit kernel mode.

- HP ProLiant Health Monitor (HPQhealth). *Required by several agents*.

- HP ProLiant iLO Management Interface Driver (HPQilo). *Required by SM2 and Rack agents*.

- HP ProLiant Blade utilities package (HPQblade). *Required by the Rack agent*.

- HP Smart Array Controller Driver (`CPQary3`), version 1.60 or greater. *Required by the Storage Agent if the server is equipped with an HP Smart Array Controller*.

Installation and Configuration

The installation and configuration of the Management Agents and the System Management Homepage requires more than a few steps, which are divided here into three phases: preparation, installation, and configuration.

The first phase covers verification of system requirements and preparation for installation. The next phase details the installation of the `HPQhma` and `HPQsmh` packages, and the final phase discusses configuring and enabling the agents and the homepage web service.

> **NOTE:** In the instructions that follow, $x.y.z$ is the version number of a package. It should be substituted with the appropriate version when executing the listed commands.

Preparation

Prepare for installation as follows:

1. Verify that the target HP ProLiant server meets the requirements listed under **Hardware Requirements** above.

2. Verify that the HP ProLiant Health Monitor is installed and enabled on the target server using *pkginfo(1)* and *svcs(1)*:

    ```
    $ pkginfo HPQhealth
    system      HPQhealth HP ProLiant Health Monitor
    $ svcs hpasmd
    STATE         STIME    FMRI
    online        11:35:38 svc:/system/hpasmd:default
    ```

    If the `HPQhealth` package is not installed or if the health monitor is not enabled, see the *HP ProLiant Health Monitor User Guide* for information on configuring the health monitor.

3. If the target server is equipped with an HP Smart Array Controller, then verify that the HP Smart Array Controller Driver is of the correct version:

```
$ pkginfo -l CPQary3
   PKGINST:  CPQary3
      NAME:  Third Generation Array Controllers
  CATEGORY:  system
      ARCH:  i386
   VERSION:  1.6.0,Rev=2006.05.18.01.06
   BASEDIR:  /
    VENDOR:  Hewlett-Packard Company
      DESC:  Third Generation Array Controllers
    PSTAMP:  Tintin030924165540
  INSTDATE:  June 12 2006 12:03
   HOTLINE:  Please contact your local service provider
    STATUS:  completely installed
     FILES:        17 installed pathnames
                   13 shared pathnames
                   10 directories
                    3 executables
                  308 blocks used (approx)
```

A driver of version 1.60 or greater is required (shown above as "VERSION: 1.6.0,.."). If the installed CPQary3 package is insufficient, see the *HP Smart Array Controller Driver User Guide* for information on upgrading the driver.

4. If the target server is equipped with an iLO Controller, Verify that the HP ProLiant iLO Management Interface Driver is installed and loaded on the target server using *pkginfo(1)* and *modinfo(1)*:

```
$ pkginfo HPQilo
system      HPQilo HP ProLiant iLO Management Interface Driver
$ modinfo |grep cpqci
.......  cpqci (HP Channel Interface Drv Vx.y.z)
```

If the HPQilo package is not installed or if the iLO Mnagement interface driver is not loaded, see the *HP ProLiant iLO Management Interface Driver Guide* for information on installation of iLO Management Interface Driver.

5. If the target system is a blade server, then verify that the HP Blade utilities package is installed, and also make sure that the rack infrastructure service (*hpqriisd(1M)*) is online using *pkginfo(1)* and *svcs(1)*:

    ```
    $ pkginfo HPQblade
    system      HPQblade HP ProLiant Blade Utilities
    $ svcs hpqriisd
    STATE          STIME    FMRI
    online         11:35:38 svc:/system/hpqriisd:default
    ```

    If the HPQblade package is not installed or if *hpqriisd* is not enabled, see the *HP ProLiant Blade Utilities User Guide* for information on configuring the Blade utilities.

    > **NOTE:** The HPQblade package is not supported on HP ProLiant C Class blades.

6. Transfer the HPQhma distribution compressed tar file to a temporary local directory, such as /tmp. The name of the compressed tar file has the form HPQhma-*x.y.z*-solaris10.i386.tar.gz.

7. Transfer the HPQsmh distribution compressed tar file to a temporary local directory, such as /tmp. The name of the compressed tar file has the form HPQsmh-*x.y.z*-solaris10.i386.tar.gz.

8. Uncompress and un-tar the compressed tar files to extract the packages:

    ```
    $ cd /tmp
    $ gunzip HPQhma-x.y.z-solaris10-i386.tar.gz
    $ tar xvf HPQhma-x.y.z-solaris10-i386.tar
    $ gunzip HPQsmh-x.y.z-solaris10-i386.tar.gz
    $ tar xvf HPQsmh-x.y.z-solaris10-i386.tar
    ```

9. Review the licenses and release notes included in the distributions:

    ```
    $ cd /tmp/HPQhma-x.y.z-solaris10-i386
    $ more LICENSE.HPQhma
    $ more RELEASENOTES.HPQhma
    $ cd /tmp/HPQsmh-x.y.z-solaris10-i386
    ```

```
$ more LICENSE.HPQsmh
$ more RELEASENOTES.HPQsmh
```

You must agree to the terms of the licenses in order to install and use the `HPQhma` and `HPQsmh` packages and their components.

Installation

Install the `HPQhma` and `HPQsmh` packages as follows:

1. Use *pkgadd(1M)* to install the `HPQhma` package on to the system (you will need to be user `root` in order to use *pkgadd*):

    ```
    $ su
    # pwd
    /tmp/HPQhma-x.y.z-solaris10-i386
    # pkgadd -d HPQhma-x.y.z-solaris10-i386.pkg
    ```

    During an interactive session, several prompts will appear during installation:

    (a) ```
         The following packages are available:
            1 HPQhma   HP ProLiant Insight Management Agents
                           (i386) x.y.z

         Select package(s) you wish to process (or 'all' to process
         all packages). (default: all) [?,??,q]:
         ```

    Here, select `all` or the `HPQhma` package (1).

    (b)  ```
         The selected base directory </opt/HPQhma> must exist
         before installation is attempted.

         Do you want this directory created now [y,n,?,q]
         ```

    Select 'y' to create the base directory.

(c) `This package contains scripts which will be executed with`
    `super-user permission during the process of installing this`
    `package.`

    `Do you want to continue with the installation of`
    `<HPQhma> [y,n,?]`

    The `HPQhma` package installation needs to install *smf(5)* service mani-
    fests, and this operation requires `root` privileges. Select 'y' to continue
    with the installation.

Successful installation of the `HPQhma` package will display a message similar
to the following:

```
HP ProLiant Insight Management Agents

Installation Notes

Please see /opt/HPQhma/RELEASENOTES.HPQhma for more information
on this version of the HP ProLiant Insight Management Agents
package.

The man pages for this package have been installed in
/opt/HPQhma/share/man/.  Please see HPQhma(5).

The configuration for the Solaris master SNMP agent
(/etc/sma/snmp/snmpd.conf) has been modified to support the HP
Management Agents.  It is necessary to restart the master
agent, before enabling the HP Agents, in order for these
changes to take effect.  To restart the master SNMP agent:

    # /etc/init.d/init.sma restart

By default, the agents are disabled.  The agents are configured
to run under Solaris's service management facility (see smf(5)).
The agents can be enabled as follows:

    # svcadm enable svc:/application/management/hmahealthd:default
    # svcadm enable svc:/application/management/hmahostd:default
    # svcadm enable svc:/application/management/hmanicd:default
    # svcadm enable svc:/application/management/hmasm2d:default
    # svcadm enable svc:/application/management/hmarackd:default
    # svcadm enable svc:/application/management/hmastdeqd:default
```

```
      # svcadm enable svc:/application/management/hmastord:default
      # svcadm enable svc:/application/management/hmathreshd:default

Snmp subagents on Solaris 10 U2(06/06):
Starting Update 2(06/06), Solaris 10 has both 32 bit and 64 bit
versions of SNMP master agents. It is observed that the Agent-X
based SNMP sub agents are unable to contact the 64bit version
of the Solaris master agent, where as the communication is OK
with the 32bit version.

By default Solaris starts the 64bit version of master agent,
if booted in 64 bit mode and as a result sub-agents will
not work as expected.

Here is a workaround for this issue:
1)Stop the 64 bit version of the Solaris SNMP Master agent by
issuing the following command
        #/etc/init.d/init.sma stop
2) Start the 32 bit version of Solaris SNMP master agent by
issuing the following command.
        # cd /usr/sfw/sbin/i86/; ./snmpd


See also svcadm(1M), snmpd(1M), hmahealthd(1M), hmahostd(1M),
hmanicd(1M), hmasm2d(1M), hmarackd(1M), hmastdeqd(1M), hmastord(1M),
hmathreshd(1M).

These Installation Notes are available in
/opt/HPQhma/INSTALLNOTES.HPQhma.

Installation of <HPQhma> was successful.
```

2. Use *pkgadd(1M)* to install the HPQsmh package on to the system (you will need to be user root in order to use *pkgadd*):

    ```
    $ su
    # pwd
    /tmp/HPQsmh-x.y.z-solaris10-i386
    # pkgadd -d HPQsmh-x.y.z-solaris10-i386.pkg
    ```

    During an interactive session, several prompts will appear during installation:

(a) The following packages are available:
    1 HPQsmh   HP System Management Homepage
             (i386) *x.y.z*

Select package(s) you wish to process (or 'all' to process
all packages). (default: all) [?,??,q]:

Here, select all or the HPQsmh package (1).

(b) This package contains scripts which will be executed with
super-user permission during the process of installing this
package.

Do you want to continue with the installation of
<HPQsmh> [y,n,?]

The HPQsmh package installation needs to install an *smf(5)* service man-
ifest, and this operation requires root privileges. Select 'y' to continue
with the installation.

Successful installation of the HPQsmh package will display a message similar
to the following:

HP System Management Homepage

Installation Notes

By default, HP System Management Homepage is disabled. This
is configured to run under Solaris's service management
facility (see smf(5)). It can be enabled as follows:

    # svcadm enable hpsmhd

Please wait ...

Installation of <HPQsmh> was successful.

Following a successful installation of the HPQhma and HPQsmh packages, proceed
to **Configuration** below.

Configuration

Configure and activate the HP Agents and the HP Management Homepage service as follows:

> **WARNING:** SNMP is known for its lack of security. To maximize what little is available, ensure the following: (1) `/etc/sma/snmp/snmpd.conf` can be *both read and written* only by trusted users, (2) read/write communities are restricted to the `localhost`, and (3) read/write community strings are sufficiently difficult to guess (eg. random). See *snmpd.conf(4)* for more information.

1. **Optional:** In order to change settings from the Homepage, such as configuring thresholds and clearing the Integrated Management Log, a read-write SNMP community for at least the `localhost` must be defined in `/etc/sma/snmp/snmpd.conf`. If such a community does not exist, one can be configured as follows:

   (a) Verify that only user `root` can read `snmpd.conf`. If this is not the case, use *chmod(1)* to change the file's access permissions.

   (b) Select a community string to use. A random one can be created as follows:

   ```
   # dd if=/dev/urandom bs=1 count=9 2> /dev/null |
     uuencode -m /dev/fd/1 | head -2 | tail -1
   vD6Ib9vFnPgg
   ```

   (c) Add a line of the following form to `/etc/sma/snmp/snmpd.conf`:

   ```
   rwcommunity commstr localhost
   ```

   Where `commstr` is the community string selected in the previous step.

2. During the installation of the `HPQhma` package, the configuration of the Solaris master SNMP agent (`/etc/sma/snmp/snmpd.conf`) was modified to support the HP Management Agents. It is necessary to restart the master agent in order for these changes to take effect. To restart the master SNMP agent:

   ```
   # /etc/init.d/init.sma restart
   ```

3. The HP ProLiant Insight Management agents are configured to run under So-
    laris's service management facility (see *smf(5)*), and, by default, the agents are
    disabled.

    Enable the agents as follows:

    ```
    # svcadm enable hmahealthd
    # svcadm enable hmahostd
    # svcadm enable hmanicd
    # svcadm enable hmasm2d
    # svcadm enable hmarackd
    # svcadm enable hmastdeqd
    # svcadm enable hmastord
    # svcadm enable hmathreshd
    ```

4. The HP System Management Homepage web service is also configured to run
    under SMF. Enable the Homepage web service as follows:

    ```
    # svcadm enable hpsmhd
    ```

At this point, the Management Agents and the System Management Homepage are
ready to use. Direct a web browser to `https://`*`hostname`*`:2381` to begin using the
HP System Management Homepage.

Optional Configuration

The `HPQhma` and `HPQsmh` packages and their components do not require any
configuration beyond what is described above. The following are some optional
configuration steps:

Add Packages to `MANPATH`

The man pages installed as part of the packages are delivered to
`/opt/HPQhma/share/man/` and `/opt/hp/hpsmh/man/`. To allow easier ac-
cess to the documentation, these paths can be added to the `MANPATH` environment
variable. For example, for `sh`/`ksh`/`bash` shells, the following could be added to
`/etc/profile`:

```
    .
    .
+   MANPATH="${MANPATH}:/opt/HPQhma/share/man"
+   MANPATH="${MANPATH}:/opt/hp/hpsmh/man"

    export MANPATH
    .
    .
```

Agent Configuration

Each agent supports a few options, as described in their associated man pages. To make use of these options, they must be specified in the `/opt/HPQhma/etc/hma.conf` file. This file contains lines of the following form:

```
HMAAGENTD_OPTS="[opt1 [opt2 [...]]]"
```

Where *HMAAGENTD* is the name of the agent, in all upper case, such as HMAHEALTHD, for which options are being specified.

See each agents' man page for more information on the options that are supported by each agent.

> **NOTE:** If `hma.conf` is modified and the agent(s) whose options were modified are already running, then those agent(s) must be restarted in order for the changes to take effect.

Useful References

For more information, please consult the following sources:

- **Release Notes**   The release notes for the installed version of the `HPQhma` package are available at `/opt/HPQhma/RELEASENOTES.HPQhma`. The release notes for the `HPQsmh` package are available in the distribution tarball. These notes contain information such as the revision history, new features added, obsolete features removed, and a list of known issues.

- *man(1)* **Pages**   The man pages provided with the packages include: *HPQhma(5)*, *hmahealthd(1M)*, *hmahostd(1M)*, *hmanicd(1M)*, *hmasm2d(1M)*, *hmarackd(1M)*, *hmastdeqd(1M)*, *hmastord(1M)* and *hmathreshd(1M)*.

- **Online Help**   The HP System Mangement Homepage offers extensive online help (accessible via web browser).

- **Additional Documentation**   The following additional documentation contains more information:

  - *HP System Management Homepage*

    `http://h20000.www2.hp.com/bc/docs/support/SupportManual/c00293364/c00293364.pdf`
  - *HP ProLiant Health Monitor User Guide*
  - *HP Smart Array Controller Driver User Guide*
  - *HP iLO Management Interface Driver User Guide*
  - *HP Blade Utilities User Guide*

Package Maintenance

Package Removal

To remove the System Management Homepage, the Management Agents and the HPQsmh and HPQhma packages, use *pkgrm(1M)*:

```
$ su
# pkgrm HPQsmh
# pkgrm HPQhma
```

pkgrm will stop the Homepage web service and the Agents, if necessary, and re-move the packages and their components from the system.

> **IMPORTANT:** *pkgrm* should be run on the server from which the package is being removed. It is recommended that the -R option to *pkgrm* **not** be used because, in addition to removing files, package removal must also unconfigure the *smf(5)* services, which cannot be done if *pkgrm* is operating on an alternate root directory.

Terms and Definitions

CPQary3   HP Smart Array Controller Driver package

HPQilo   HP iLO Management Interface Driver package

HPQblade   HP Blade Utilities package

HPQhma   HP Proliant Insight Management Agents package

HPQsmh   HP System Management Homepage package

HP SIM   HP Systems Insight Manager http://www.hp.com/go/hpsim

hmahealthd   HP ProLiant Health SNMP Agent

hmahostd   HP ProLiant Host SNMP Agent

hmanicd   HP ProLiant NIC SNMP Agent

hmasm2d   HP ProLiant SM2 SNMP Agent

hmarackd   HP ProLiant Rack SNMP Agent

hmastdeqd   HP ProLiant Standard Equipment SNMP Agent

hmastord   HP ProLiant Storage SNMP Agent

hmathreshd   HP ProLiant Threshold SNMP Agent

hpsmhd   HP System Management Homepage service

iLO   HP Integrated Lights Out

SNMP   Simple Network Management Protocol