

hp WBEM Services for Tru64 UNIX

Administrator's Guide 1.0

September 2002

Operating System and Version: Tru64 UNIX, Version 5.1 and higher

PRELIMINARY

This document describes the hp WBEM Services for Tru64 UNIX and provides the installation procedure.

© 2002 Hewlett-Packard Company

Microsoft, Windows, Windows 200, Windows NT, and Windows XP are trademarks of Microsoft Corporation in the U.S. and/or other countries. UNIX and The Open Group are trademarks of the Open Group in the U.S. and/or other countries. All other product names mentioned herein may be trademarks of their respective companies.

Confidential computer software. Valid license from Compaq Computer Corporation, a wholly owned subsidiary of Hewlett-Packard Company, required for possession, use, or copying. Consistent with FAR 12.211 and 12.212, Commercial Computer Software, Computer Software Documentation, and Technical Data for Commercial Items are licensed to the U.S. Government under vendor's standard commercial license.

None of Compaq, HP, or any of their subsidiaries shall be liable for technical or editorial errors or omissions contained herein. The information is provided "as is" without warranty of any kind and is subject to change without notice. The warranties for HP or Compaq products are set forth in the express limited warranty statements accompanying such products. Nothing herein should be construed as constituting an additional warranty.

Contents

1 Introduction

1.1	Introducing Web-Based Enterprise Management	1-1
1.2	The CIM Object Manager (CIMOM)	1-2
1.3	Providers	1-2

2 Installing and Running the Software

2.1	System Requirements	2-1
2.2	Installation Procedure	2-1
2.3	Starting and Stopping the hp WBEM Services Software	2-3
2.4	Verifying the Installation and Operation	2-3
2.5	Removing the hp WBEM Services Software	2-4

3 Known Problems

Introduction

1.1 Introducing Web-Based Enterprise Management

Web-Based Enterprise Management (WBEM) is a set of standards, developed by the Distributed Management Task Force (DMTF), to unify the management of enterprise computing environments, allowing a variety of information processing elements from different vendors to be managed in a uniform way. Systems managed with WBEM may be general-purpose computer systems running any operating system, or they may be printers, network switches or routers, storage arrays, or any other device reachable on a network.

WBEM Services acts as an information broker. WBEM is a means by which providers and clients communicate.

Provider A provider is developed to offer access to a resource. The provider defines the resource and tells WBEM Services what information they will provide to clients, and what actions they will perform for clients.

Client Clients send requests to WBEM to get information about, and access to, the registered resources.

hp WBEM Services for Tru64 UNIX runs on Tru64 UNIX AlphaServers. However, communication is not limited to this operating system. The information is stored and exchanged using widely accepted WBEM standards developed by the Distributed Management Task Force, Inc. (see <http://www.dmtf.org>). WBEM Services is based on The Open Group's Pegasus Open Source Software (OSS) Project (see <http://www.opengroup.org/pegasus>).

Because information is formatted for the web, the exchange is not platform-dependent. WBEM-standard products can provide information about resources on several operating systems and platforms.

To understand more about WBEM standards and design, go to <http://www.dmtf.org/education/index.php> and begin the tutorial for CIM (Common Interface Model).

The key components of the hp WBEM Services for Tru64 UNIX are the CIM Object Manager and the Tru64 UNIX providers. These are discussed in the following sections.

1.2 The CIM Object Manager (CIMOM)

A WBEM/CIM server could operate directly on the underlying system by calling the system's commands, services, and library functions, or it can pass requests from clients onward to "plug-in" modules called Object Providers or simply Providers. This plug-in approach is preferred for general-purpose computer systems, which may have hundreds of different classes of objects and an almost unlimited number of possible configurations. For a device such as a network printer or a SOHO router, where memory and other resources are limited, a "monolithic" server (that is, one that does all the work in a single program and does not use plug-ins) may be an appropriate optimization. A general-purpose WBEM server implemented using the plug-in approach contains a CIM Object Manager, or CIMOM, that directs the communication between clients and providers. hp WBEM Services for Tru64 UNIX contains a CIMOM, which maintains the information it needs to direct client requests, as well as other information that controls its behavior, in a kind of database called a repository.

The CIM repository keeps definitions of the data about all the managed objects and their providers. When a valid request is received, WBEM Services goes to the repository and looks up the managed resource. The resource owners register their provider with WBEM Services, telling which information or methods they will provide and how. WBEM Services can request the appropriate information from the provider.

1.3 Providers

Providers acquire information about the system and fulfill requests on behalf of client applications. Clients deal with instances of the classes of objects defined by CIM. An instance is a representation of a single manageable entity (for example, a disk), and contains data obtained from the system by a provider. Providers perform the conversion between the platform's commands, services, and data formats and CIM, the object-based representation that a WBEM client application understands.

The interface between the server/CIMOM infrastructure and the plug-in providers is called the Provider Application Programming Interface (API). The CIMOM calls a function of the Provider API when it needs to have a provider perform an operation requested by a client.

Providers are linked to create a shared library. A single shared library may contain one or more providers.

The hp WBEM Services for Tru64 UNIX has three specific providers:

PG_ComputerSystem	This provider is responsible for the information on the hardware, that is, the AlphaServer system.
PG_OperatingSystem	This provider is responsible for the Tru64 UNIX operating system information.
PG_UnixProcess	This provider is responsible for individual processes currently running on the operating system.

The capabilities of these providers are described in the Tru64 UNIX CIM Provider Data Sheet, an HTML file ([t64upds.htm](#)) that accompanies this manual on the hp Management CD.

2

Installing and Running the Software

This chapter details the system requirements that must be fulfilled before installation, describes the installation procedure and how to start and stop the hp WBEM Services for Tru64 UNIX software, and provides a means to verify the installation.

2.1 System Requirements

hp WBEM Services for Tru64 UNIX are supported on hp AlphaServers running the Tru64 UNIX operating system. These services require the following hardware and software:

Hardware and Software	Minimum Requirements
Operating System	Tru64 UNIX Version 5.1 or higher.
Disk Space	Installation requires at least 15 MB of reserved disk space.

2.2 Installation Procedure

The hp Management CD provides software and documentation for hp WBEM Services for Tru64 UNIX.

The following instructions discuss how to install hp WBEM Services for Tru64 UNIX from the Management CD.

Note

To install this software on a TruCluster system, install it on one cluster member only. The software will be propagated to the other cluster members automatically.

1. Log in as superuser (root).
2. Determine the device name of the CD-ROM drive as follows:

Enter the following command:

```
# ls /dev/disk/cdrom*c  
/dev/disk/cdrom0c
```

In this example, the result of the command above shows that the CD-ROM device name is `/dev/disk/cdrom0c`.

3. Make a directory to serve as the mount point for the CD-ROM if you have not already done so.

```
# mkdir /cdrom
```

In this example, `cdrom` indicates the mount point directory for the CD-ROM.

4. Insert the hp Management CD into the CD-ROM drive and mount the compact disc.

Use the following command to mount the CD-ROM:

```
# /usr/sbin/mount -t cdfs -o noversion /dev/disk/cdrom0c /cdrom
```

The device name of the CD-ROM drive is assumed to be `cdrom0`; please verify the device name of your CD-ROM drive as you did in step 2.

5. Create a temporary directory if it does not already exist.

```
# mkdir /TMPDIR
```

In this example, `TMPDIR` indicates the temporary directory.

6. Locate and copy the tape archive (tar) file named `wbemddd.tar` on the CD-ROM and copy it to the temporary directory.

```
# ls /cdrom/tru64/wbem*.tar
/cdrom/tru64/wbemddd.tar
# cp /cdrom/tru64/wbemddd.tar /TMPDIR/
```

A three digit number, `ddd`, indicates the current version of hp WBEM Services software.

7. Extract the hp WBEM Services software from the tape archive file.

```
# cd /TMPDIR
# tar xvf wbemddd.tar
```

The `tar` utility creates a directory named `hpwbemddd`, which contains the hp WBEM Services software. See `tar(1)` for more information.

8. Use the `setld` utility to install the hp WBEM Services software.

```
# /usr/sbin/setld -l hpwbemddd
*** Enter subset selections ***
```

The following subsets are mandatory and are installed automatically unless you choose to exit without installing any subsets:

```
* HP WBEM Services V#.# for Tru64 UNIX
```

You may choose one of the following options:

- 1) ALL of the above
- 2) CANCEL selections and redisplay menus
- 3) EXIT without installing any subsets

```
Estimated free disk space(MB) in root:###.# usr:###.# var:###.#
```

```
Enter your choices or press RETURN to redisplay menus.
```

```
Choices (for example, 1 2 4-6): 1
```

Select the first option, ALL of the above.

The `setld` utility proceeds to install the software subsets for the hp Management Agents.

See `setld(8)` for more information.

9. Examine the output of the `setld` utility. It describes how to start the `cimserver` daemon.

See Section 2.3 for information on how to start and stop the `cimserver` daemon.

10. Optionally delete the temporary directory and its contents.

```
# rm -fr /TMPDIR
```

11. Unmount the compact disc and remove it from the CD-ROM drive.

```
# /usr/sbin/umount /cdrom
```

2.3 Starting and Stopping the hp WBEM Services Software

As superuser, use the following command to start the `cimserver` daemon:

```
# /usr/bin/cimserver start
```

Be sure to run the `cimserver` daemon on each cluster member (of a TruCluster system) from which you want to retrieve data.

As superuser, use the following command to stop the `cimserver` daemon:

```
# /usr/bin/cimserver stop
```

2.4 Verifying the Installation and Operation

After you install the hp WBEM Services for Tru64 UNIX and start the `cimserver` daemon, verify the installation by entering the following command on the command line:

```
# /usr/bin/osinfo
```

This command connects with the CIMOM Object Manager, requests select properties from the `PG_OperatingSystem` provider and displays the results on the screen.

2.5 Removing the hp WBEM Services Software

Use the following procedure if you decide to remove the hp WBEM Services for Tru64 UNIX software from your system.

1. Log in as superuser.
2. Use the `-i` option of the `setld` command to determine the name of the subset:

```
# setld -i | grep hpwbem
hpwbemddd ...
```

This command also stops the `cimserver` daemon automatically. On TruCluster systems, the `cimserver` daemon is stopped on all cluster members automatically.

3. Use the `-d` option of the `setld` command with the subset name returned in the previous step to remove the software:

```
# setld -d hpwbemddd
```

Use this command only once for a TruCluster system; the software will be removed from all cluster members automatically.

3

Known Problems

The following describes known problems that you might encounter when using hp WBEM Services for Tru64 UNIX.

- The `PG_UnixProcess` provider displays negative `nice` values as zero. Use the `ps` command to view the actual `nice` value.