HP P6000 Command View Software Suite Installation Guide

Abstract

This guide is for customers who are experienced with Enterprise Virtual Arrays, storage area networks, and associated software.

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Acknowledgments

NOTE: IPv6 is supported on array-based management HP P6000 Command View Software Suite beginning with version 9.2.

NOTE: USGv6 is supported on array-based management HP P6000 Command View Software Suite beginning with version 10.1. Internet Protocol Security (IPsec) is not supported with HP P6000 Command View Software Suite array-based management.

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1 Preparation

IMPORTANT: Be sure to read the following before installing or upgrading server-based HP P6000 Command View. If you install this software and have any of these legacy components, you will be unable to manage the arrays. HP strongly recommends that you contact HP Support before upgrading a configuration that contains these arrays.

Server-based HP P6000 Command View, version 10.x and later, cannot be used to manage the following legacy products:

- HP 3000 EVA storage systems
- HP 5000 EVA storage systems
- Controller software XCS 5.x running on HP 4000 EVA storage systems
- Controller software XCS 5.x running on HP 6000 EVA storage systems
- Controller software XCS 5.x running on HP 8000 EVA storage systems

The HP P6000 Command View Software Suite kit contains the following components.

- HP P6000 Command View Software (server-based)
- HP P6000 Performance Advisor Software
- HP P6000 Performance Data Collector Software
- HP P6000 Control Panel Software
- HP P6000 SmartStart Software (Windows)
- HP EVAInfo
- HP Management Integration Framework Software
- HP SMI-S EVA CIMOM
- HP Storage System Scripting Utility (multi-platform)
- HP P6000 Replication Solutions Manager Software (server)
- HP P6000 Replication Solutions Manager Software (host agents)
- HP P6000 SmartStart Software (Linux)
- HP EVA to 3PAR StoreServ Online Import
- Documentation

For descriptions of software suite components and details about DVD and CD contents, see the *HP P6000 Command View Software Suite Kit Contents* or " HP P6000 Command View Software Suite components" (page 41). For an explanation of acronyms and terms, see the "Glossary".

You will need the following documents to complete the installation:

- *HP P6000 Command View Software Suite Release Notes*
- *HP P6000 Enterprise Virtual Array Compatibility Reference*

If you plan to migrate EVA data to a 3PAR storage system, you will also need the *EVA to 3PAR Online Import Migration Guide*.

When you purchase HP P6000 Command View, you can choose to receive a software DVD or an E-Delivery kit. If you choose an E-Delivery kit, you will receive an email from HP with download instructions.

IMPORTANT: For E-Delivery kits, be sure to save the HP mail with the download instructions. You will need them if you need to download the software again.

The HP IT Resource Center (ITRC) reached its end of life in June 2011. The new HP Support Center will provide you a more personalized online support experience with access to information, tools and experts to keep your technology running in the Instant-On connected world.

1. Sign-in to the HP Support Center (http://www.hp.com/go/hpsc) with HP Passport (or register first for HP Passport if you have not already obtained one.)
2. Start your ITRC migration by clicking on the Profile Migration Feature in the home page on HP Support Center.
3. Provide your ITRC username and password. After the system verifies and confirms that you are the owner of the ITRC username and password, the migration will begin. You will get a confirmation from the system when the migration is complete.

   NOTE: If you used a single ITRC login (username and password) for multiple users, you will need separate HP Passport sign-ins for each individual on the HP Support Center. An ITRC account can only be migrated once, and only to one HP Passport account on HP Support Center. HP recommends that you identify an individual within your team to claim the ITRC account. This person will then need to create shares to enable others to obtain the important benefits of the linked entitlements.

   If you had a linked contract on ITRC, this contract is migrated to your HP Passport account and is now available on HP Support Center. Any members who shared the contract in ITRC will be part of the new share and will have access to the same services as on ITRC once they complete the migration steps above.

   NOTE: The owner of the share does not have to migrate first. Migration can be done in any order by the owner or any of the individuals who share the linked entitlement.

4. Use HP Support Center to review your profile, contracts and warranties (including managing sharing).

If you have questions or require additional assistance go to:

http://welcome.hp.com/country/us/en/wwcontact_us.html and select your country/region.

Installation prerequisites

Server-based P6000 Command View software runs on general purpose servers, including c-class and p-class blades, or servers that meet the following hardware and software requirements:

Hardware requirements

- X86 and x64 architectures are supported
- 1.26Ghz processor (minimum)
- 2 GB memory (minimum)
- Disk Space Requirements
  - 200 MB for HP Command View software installation
  - 2 GB for HP Command View log files
  - 10 MB for each managed array
  - 550 MB for HP Replication Solutions Manager
  - Additional 300-400 MB for HP Replication Solutions Manager installation to accommodate log and database growth

For additional information, see the *HP P6000 Enterprise Virtual Array Compatibility Reference*, Tables 3.6, "Management module software compatibility" and 4.2, "Supported P6000 software operating environments."

Server-based management prerequisites

Ensure that you have satisfied the prerequisites before starting your installation.

P6000 Command View software suite

Before you install the software suite:

Read the *HP P6000 Command View Software Suite Release Notes* for any installation or post-installation requirements specific to this release.

IMPORTANT: Do not change the localhost mapping in the `etc\hosts` file (by default 127.0.0.1 is mapped to `localhost`) or the HP P6000 Performance Advisor database service may fail to start.

Software requirements

To install HP P6000 Command View without HP P6000 Performance Advisor and without HP EVA to 3PAR StoreServ Online Import, the following free space is required:

- 1 GB for installation (Windows system drive)
- 1 GB for use (software destination directory)

To install HP P6000 Command View with HP P6000 Performance Advisor and HP EVA to 3PAR StoreServ Online Import, the following free space is required:

- 5 GB for installation
- 1 GB for use
- 20 GB for database storage

HP EVA P6000 Command View Software Suite is supported on the Windows Server 2012, Windows Server 2012 Datacenter edition, and Windows Server 2008 R2 English base operating systems with the Multilingual User Interface (MUI) set to the German, French, Spanish, Italian, or Portuguese Language Pack. The language support is in addition to English and Japanese which is currently supported by HP P6000 Command View Software. The HP P6000 Command View Software is localized to English or Japanese only.

To install and use HP P6000 Command View Software 10.0 or later on a German, French, Spanish, Italian, or Portuguese Windows Server 2008 R2 MUI Language Pack locale, or equivalent, on the Windows Server 2012 Datacenter edition, the following requirements must be met:

- The management server must be a Windows Server 2008 R2, or Windows Server 2012 Datacenter edition with the English base Operating System.
- Before installation, create the Administrators group and Administrator user account using English locale spelling.
- Using the **Control Panel > Change display language**, under the Format tab, ensure that the keyboard input language is set to 'English (United States) – US'.
- Install the HP P6000 Command View Software Suite as described later in this document.

HP P6000 Command View Software with the Japanese language is supported on either a Windows Japanese or English (with Japanese Language Pack) base Operating System. The keyboard input language can be set to either 'English (United States) – US' or 'Japanese'.

NOTE: HP P6000 Command View supports a limited ASCII character set in the object name and comment fields, no matter which Windows language is used. See "Illegal characters in names and comments" (page 43) for a list of characters illegal in names.

TIP: The HP P6000 Command View Software Suite GUI is only localized to English and Japanese. Running the HP P6000 Command View Software Suite on a German, French, Spanish, Italian, or Portuguese operating system displays GUI content in English, or Japanese, if a Japanese localized copy is used.

1. To install the entire software suite, your environment must include the following:
   - One or more arrays.
   - A management server running a supported version of Microsoft Windows (see *the HP P6000 Enterprise Virtual Array Compatibility Reference* for supported versions).
   - Management server with dual-core 1.86 GHz processor or above.
   - 4 GB memory.
   - More than 20 GB free space on the hard drive for the HP P6000 Performance Advisor database.
   - If your server is a domain node, to install HP P6000 Command View, the logged-in user must have read and execute permission at the OS drive and user-installation drive levels.
   - Adobe Flash Player plugin is required when using the browser to access HP P6000 Command View. (See Adobe Flash port configuration details at http://www.adobe.com; search for *configure ports* for specific information.)
   - If using firewalls, take the ports in "TCP ports summary" (page 64) into consideration.
   - If using firewalls and if fixed ports are required in the MIF process, consult the *HP Management Integration Framework Administrator Guide* to configure them.
   - If the time set on your system is not your local time, the installation may fail. Check the time set on your system to ensure it is set for local time.
2. If your environment includes iSCSI or multifunction router devices, see the Manuals page on the HP Support Center website:

   http://www.hp.com/support/manuals

   For EVA Array iSCSI Connectivity Option documentation, under storage, select **Options and Accessories** and then select **Storage Array Options** under Options and Accessories for Storage. Finally, select **Storage EVA Array iSCSI Connectivity Option**.

   For MPX200 Multifunction Router documentation, under storage, select **Storage Networking** and then select **HP MPX200 Multifunction Router** under Routers/Gateways/Multiplexes.
3. If you use the VMware guest operating system, you must have a host running VMware 3.5 or later and a virtual machine connected to the VMware host running a supported version of Windows (the guest operating system on the virtual machine). See your operating system documentation for details about setting up a virtual machine. Installing, upgrading, and removing HP P6000 Command View on a virtual machine is the same as installing HP P6000 Command View on a management server (a physical machine).

   When using the VMware guest operating system, two methods are supported:
   - Virtualized SCSI Mode: With this method, only the active path to LUN 0 of a single controller can be made visible to HP P6000 Command View on the virtual machine. Virtualized SCSI Mode is enabled by default when you install HP P6000 Command View 9.3 or later.
   - VMDirectPath (PCI pass-through): Supported on HP P6000 Command View 9.3 or later. See Table 4.0, HP software deployment options, in the *HP P6000 Enterprise Virtual Array Compatibility Reference* for VMDirectPath hardware requirements. For information on

VMDirectPath support and to configure VMDirectPath, see "Configuring VMDirectPath I/O for HP ProLiant Servers," which is available on the VMware website at:

http://kb.vmware.com/kb/1025641

IMPORTANT: Do not install HP P6000 Command View on a virtual disk. Because HP P6000 Command View is the sole management interface for the array, it must be available at all times.

4. See the *HP P6000 Enterprise Virtual Array Compatibility Reference* for a list of supported operating systems.
5. Configure the browser settings for any server that will be used to access the HP P6000 Command View user interface. See "Browser configuration" (page 66) for details on browser configuration.

For information about upgrading from previous versions, see "Upgrading HP P6000 Command View software" (page 20).

HP Management Integration Framework (MIF) is installed automatically when you install HP P6000 Command View.

- HP MIF is intended primarily for security administrators.
- HP MIF has two interfaces (Configuration and Security), which you can access from HP P6000 Command View, or you can browse to each interface directly.
- Accessing or browsing to either HP MIF interface requires an Adobe Flash Player plugin on the browser.
- You may need to install Management Group digital certificates to access these HP MIF interfaces.
- You can install HP MIF without Command View, if desired. For example, you may want to install MIF to gain the ability to do single sign-on to HP Command View, MIF, and the Control Panel.

See the *HP Management Integration Framework Administrator Guide* for more information.

HP SMI-S EVA

NOTE: If you have layered applications requiring HP SMI-S EVA, you can install the HP SMI-S EVA component on any server that is either connected to the array/SAN or has access to HP P6000 Command View via the Ethernet. You can access the array-based version of HP P6000 Command View using the Discoverer tool.

Before you install HP SMI-S EVA, note the following:

- HP strongly recommends that you install HP Insight Remote Support software to complete the installation or upgrade of your product. For more information, see "HP Insight Remote Support software" (page 13).
- You can install HP SMI-S EVA separately; it does not need to be on the same management server as HP P6000 Command View. However, if HP SMI-S EVA is installed on the same server, ensure that you are logged in to the management server as a local user with local administrative privileges (the user must be a member of the local Administrators group).
- Install SLP, which enables you to receive information about applications that are registered with it. For example, when CIMOM is registered with SLP, you can receive information about CIMOM, such as the CIMOM URL and attributes.
- You can install HP P6000 Command View and HP SMI-S EVA on the same server as the HP P9000 Command View Advanced Edition Software.

Management server types

When using server-based management, you can install the software on the following servers:

- **General-purpose server**—A server that runs customer applications, such as file and print services
- **Dedicated management server**—A Windows host intended solely for HP storage software, such as HP OpenView Storage Node Manager, HP OpenView Storage Area add-on software modules, or HP array-integrated software
- **HP X1000/X3000 Network Storage Systems and Gateways**—A server similar to the general-purpose server, used to manage arrays in the SAN as well as traditional NAS-based applications

For hardware and software specifications, see the *HP P6000 Enterprise Virtual Array Compatibility Reference*.

Setting credentials

NOTE: The information in this section applies only to HP P6000 Command View server-based management. For array-based management, there is one admin account and one user account. The default user name for the admin account is *admin*; for the user account, it is *user*. By default, there is no password for either account. See the *HP P6000 Command View Software Suite User Guide* for information about changing account information.

The existence of groups and users during software installation ensures:

- Authentication of users by login to the underlying operating system
- Assignment of predefined privileges to users

NOTE: In this section, unless a reference is made to the HP Storage Users group, *user* refers to anyone who can access HP P6000 Command View.

Management server

The installation process creates Groups automatically. If the management server is part of a domain or a domain controller, you can also create Groups manually before starting the software installation.

NOTE: In HP P6000 Command View 8.0 or later, HP SMI-S EVA, HP P6000 Performance Data Collector, HP P6000 Performance Advisor, and HP P6000 Replication Solutions Manager use the same groups.

Uninstallation does not delete groups created during installation.

To create groups and users on the management server:

1. You must have administrator privileges.
2. Use the Windows operating system feature to create the following global groups:
   - HP Storage Admins whose members can view and perform all tasks
   - HP Storage Users whose members can only view information

IMPORTANT: To ensure successful authorization of groups, you must create the group names exactly as described in this step. See your Windows documentation for instructions on creating groups and users.

These groups are created for local authentication only. If the management server is part of a domain or domain controller, as administrator, you can create these groups manually and you can modify these group names during installation.

These groups have the following default privileges: members of the HP Storage Admins group can view and perform all tasks; members of the HP Storage Users group can only view information.

3. Create users and assign them to groups by entering a name and password for each user and assigning each user to a group.

IMPORTANT: Ensure that the **User must change password at next logon** option is *not* selected when creating users.

For information on configuring HP P6000 Command View credentials, see Installing Management Group security certificates in the *HP Management Integration Framework Administrator Guide*.

Ensuring successful authorization

Windows accounts used for authentication must have the **Access this computer from the network** permission enabled. By default, this permission is granted to Everyone, but some systems have a more restrictive setting where Everyone is removed and permission is enabled for application-specific groups; on such a system, you cannot authenticate with valid credentials.

To ensure successful authentication:

1. Access the Local Security Policy feature on the Windows operating system.

   The Local Security Settings window opens.
2. Select **Security Settings > Local Policies > User Rights Assignment**.
3. Double-click the **Access this computer from the network** policy in the right content pane.
4. Click **Add User or Group**.
5. Add the users you have created to this permission.

Array-based management prerequisites

Array-based management applies only to the following:

- An HP EVA4400, P63x0 or P65x0
- A server running any supported operating system that you can connect to an EVA4400, P63x0 or P65x0

Ensure that your environment includes the following:

- Adobe Flash Player plugin is required when using the browser to access HP P6000 Command View. (See Adobe Flash port configuration details at http://www.adobe.com; search for *configure ports* for specific information.)
- If using firewalls, take the ports in "TCP ports summary" (page 64) into consideration.
- If using firewalls and if fixed ports are required in the MIF process, consult the *HP Management Integration Framework Administrator Guide* to configure them.

IMPORTANT: When first setting up array-based management, connect directly to the Ethernet port to configure the array-based management IP address.

TIP: Whenever a Management Integration Framework configuration is changed, the user is prompted to restart the MIF ports; it can take up to a minute to restart the array-based management system.

These arrays are shipped with HP P6000 Command View pre-installed on the management module.

- Read the *HP P6000 Command View Software Suite Release Notes* for any installation or post-installation requirements specific to the latest release.
- Configure the browser settings for any server that will be used to access HP P6000 Command View.
- See "Updating the HP Command View software suite on the management module" (page 26) for the procedure to update management module software.

HP Insight Remote Support software

HP strongly recommends that you install HP Insight Remote Support software to complete the installation or upgrade of your product and to enable enhanced delivery of your HP Warranty, HP Care Pack Service, or HP contractual support agreement. Notifications may be sent to your authorized HP Channel Partner for on-site service, if configured and available in your country. The software is available in two variants:

- HP Insight Remote Support Standard supports server and storage devices, is optimized for environments with 1-50 servers, and is ideal for customers who can benefit from proactive notification but do not need proactive service delivery and integration with a management platform.
- HP Insight Remote Support Advanced provides comprehensive remote monitoring and proactive service support for most HP servers, storage, network, and SAN environments, and selected non-HP servers with a support obligation with HP. It is integrated with HP Systems Insight Manager. HP recommends that a dedicated server host both HP Systems Insight Manager and HP Insight Remote Support Advanced.

For more information or to download either HP Insight Remote Support Standard or HP Insight Remote Support Advanced, go to http://www.hp.com/go/insightremotesupport.

2 Installing server-based software

This chapter provides information on how to install the HP P6000 Command View software suite on the management server (server-based management), how to remove it from the management server, and how to install it on the management module. For information on how to install HP P6000 Command View with HP P6000 Replication Solutions Manager and HP P6000 Command View for Tape Libraries, see the latest version of the *HP P6000 Command View Software Suite Release Notes*. HP Management Integration Framework can be installed alone and is mandatory for installing HP P6000 Command View, HP P6000 Performance Advisor, HP P6000 Performance Data Collector and HP SMI-S. It cannot be uninstalled if any of these were installed. HP P6000 Command View and HP Storage System Scripting Utility are installed and removed together. HP P6000 Performance Advisor, HP P6000 Performance Data Collector, HP P6000 SMI-S EVA, and HP EVA to 3PAR StoreServ Online Import can be optionally installed.

IMPORTANT: Do not use Remote Desktop to install or upgrade the HP P6000 Command View software suite. HP recommends that you close all applications on the server before starting the installation.

When installing on Windows Server 2008 or later, use the **Run as Administrator** option to install the software.

Upgrading HP P6000 Command View does not reboot the system after uninstalling the previous version. The installer prompts for the server reboot. Once the reboot occurs, you must start the HP P6000 Command View installation manually.

If the firewall is enabled, the CV Suite installer creates a firewall exception for:

1. Command View ports
2. Management Integration Framework ports
3. HP EVA to 3PAR StoreServ Online Importports

Installing the software suite on a management server

HP P6000 SmartStart installs the HP P6000 Command View suite installer that installs the following software components:

- HP Management Integration Framework (always installed in the default location)
- HP P6000 Command View
- HP P6000 Performance Data Collector
- HP SMI-S EVA (SMI-S EVA Provider and CIMOM)
- HP P6000 Performance Advisor
- HP Storage System Scripting Utility
- HP EVA to 3PAR StoreServ Online Import

If you are using server-based management, you can install any combination of these components (typical or custom installation).

HP P6000 Command View suite installer provides an option to select the target installation directory for typical or custom installation.

To import data from EVA to 3PAR, see the *EVA to 3PAR Online Import Migration Guide*.

To configure HP P6000 Performance Advisor, see the *HP P6000 Performance Advisor User Guide*.

Starting the installer

1. Insert DVD 1. The HP P6000 SmartStart wizard opens.

   Allow 1 to 2 minutes for the HP P6000 SmartStart wizard to automatically begin. If the HP P6000 SmartStart wizard does not automatically start, navigate to the DVD in Windows Explorer and double-click the file `P6000SmartStart.exe`. The HP P6000 SmartStart wizard opens in a browser window.

   In rare cases, a popup may appear. See "SmartStart required software popup" (page 32).
2. Read the HP P6000 SmartStart End User License Agreement and click **Accept**. A Welcome page opens.
3. Click the **Install HP P6000 Command View Suite** button. The HP P6000 Command View Software Suite installer opens in a separate window. Allow 1 to 2 minutes for the installer window to open.

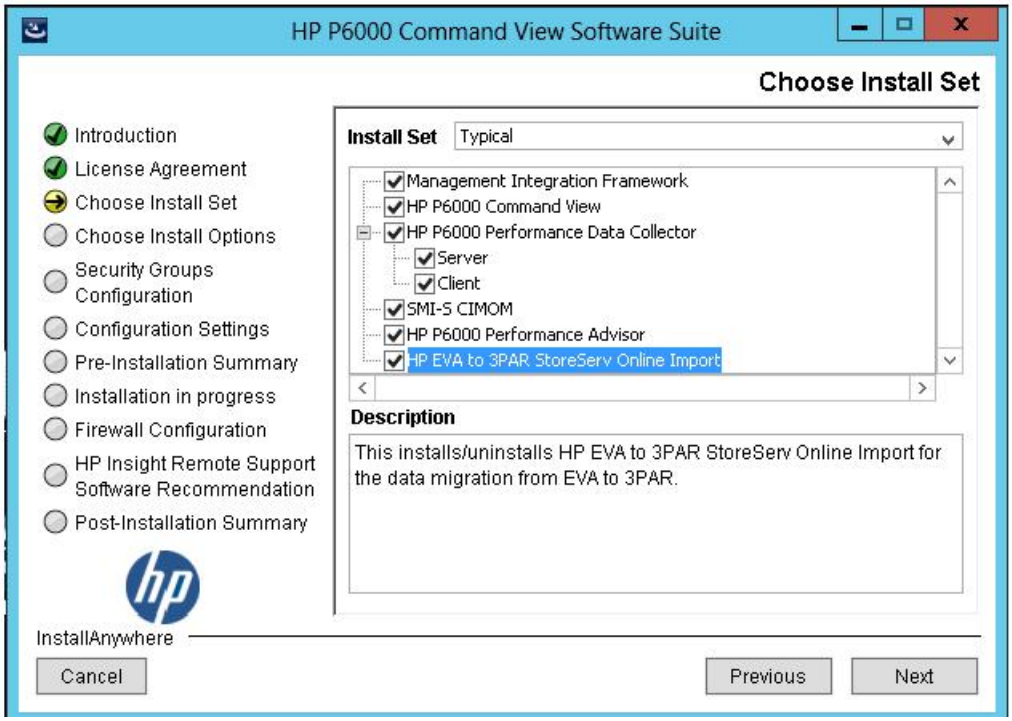
Introduction and license agreement

1. Read the introduction and important information before proceeding.
2. Read and respond to the licensing information and navigate until the Choose Install Set page opens.

If the same version of HP P6000 Command View is already installed, the Introduction and License Agreement pages are not displayed.

Choosing software and options

The following steps show installation of a full install set — all components. If some software in the suite has been previously installed, or if you choose a partial install set, some of the following steps will not be required. Your requirements determine if you do not need all the components shown.



1. Do one of the following:
   - To install the suite in the default folder, accept *Typical* in the Install Set box.
   - To install the suite in a folder that you specify or install only some of the items shown, select *Custom* in the Install Set box and uncheck those items you do not want to install.

2. Click **Next**
   - If you accept Typical, the Security Groups Configuration page opens.
   - If you select Custom, the Install Options page opens. Specify the folder to install in and click **Next**.

Only components that can be installed or upgraded on a Windows server or host are displayed. Components of the same version that are already installed are not displayed.

The installer prompts you when certain components must be installed together. For example, when installing HP P6000 Command View, HP Management Integration Framework must also be installed on the same server.

Security groups configuration

The installer verifies or creates the following Windows security groups on the server:

- Admin Group: *HP Storage Admins*
- User Group: *HP Storage Users*

You can use local or domain security groups to control access (log in) to HP P6000 software components.

1. Accept **Use local security groups** or select **Use domain security groups** as appropriate and click **Next**.
2. Read the on screen reminder to add users to these groups and click **Next**.

The Windows security groups are automatically created if they do not already exist.

HP P6000 Performance Advisor database folder

Installation includes installation of a database for HP P6000 Performance Advisor.

1. Do one of the following:
   - Accept the default location.
   - Click **Choose** and specify a location. You can use this choice to specify the location for a new database or to specify a database that already exists in a custom location.
2. Click **Next**. The installer checks folder choices and available space and the Pre-installation Summary page opens.

Ports Configuration

If the default ports for the applications are in use, the installation tool asks the user to enter free ports in the available range.

When the Configuration Settings Port Configuration window displays ports available on the management server.

IMPORTANT: This window appears only if the installation wizard detects that any of the default ports are in use, as follows:

Table 1 HP P6000 Command View and HP P6000 Performance Advisor Default Ports

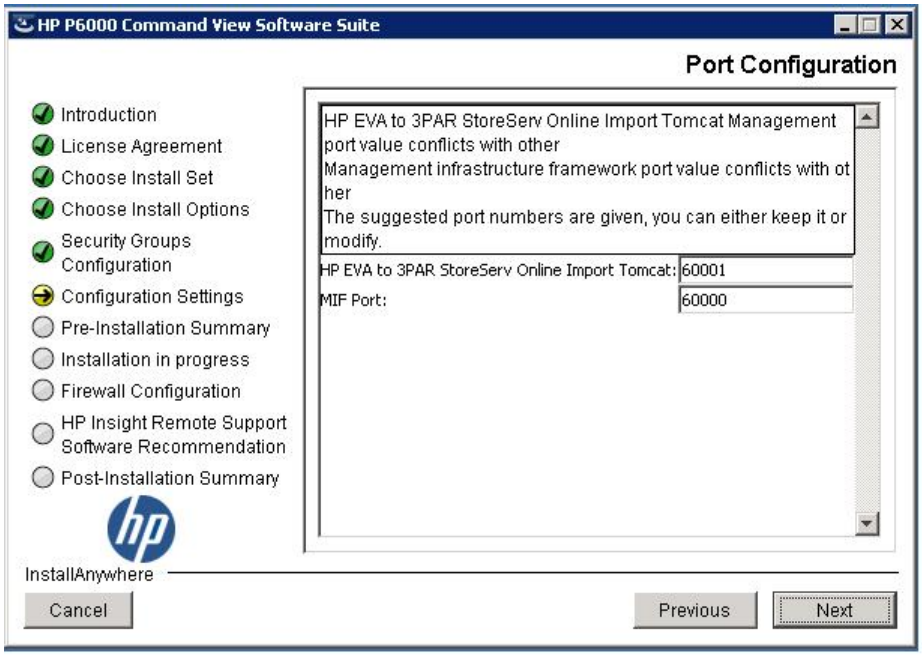
Command View and Performance Advisor services	Port
CVEVA Port	2372
XF	2374
CIMOM 1	5988
CIMOM 2	5989
EVAPA Server	2376
EVAPA DB	2377
EVAPA Tomcat Management	2379
EVAPerf	860

Table 2 EVA to 3PAR Online Imports Default Ports

EVA to 3PAR Online Imports	Ports
EVA to 3PAR Online Tomcat Management	2386
EVA to 3PAR Server	2384

Table 3 HP P6000 Software Suite Default Ports

HP SMI-S	5988, 5989
HP MIF	2374
HP P6000 Command View	2372
HP Performance Data Collector	860



Keep the ports that are displayed or enter the port numbers that you want to use.

If port 2372 is busy, the following screen appears:

When installing HP SMI-S EVA CIMOM, the installer checks for ports 5988 and 5989, which are used with the CIMOM service. If the ports are not available, the Ports busy screen with the following message is displayed:

```
CIMOM Port 1 port is not available, CIMOM Port 2 port is not available.
```

It displays the available port numbers and provides an option to edit the port number, if the user wants to change any port number.

To continue the installation, you must enter alternate port numbers (in the range 60000 to 65536).

HP firewall configuration

See also "HP P6000 software TCP ports" (page 64).

- When installing HP P6000 Command View, the installer checks to see if a Windows firewall is enabled on the server. Windows firewalls may apply to HP P6000 Command View, HP Management Integrations Framework and HP EVA to 3PAR StoreServ Online Import. If a Windows firewall is already enabled, one of the following messages is displayed so that the port can be configured for use:

  ```
  Setup has detected that a Windows firewall is enabled on the system.
  Do you want setup to configure port 2372 for HP P6000 Command View
  on Windows firewall?
  ```

  ```
  Setup has detected that a Windows firewall is enabled on the system.
  Do you want setup to configure port 2374 for Management Integration
  Framework on Windows firewall?
  ```

  ```
  Setup has detected that a Windows firewall is enabled on the system.
  Do you want setup to configure port 2386 for HP EVA to 3PAR StoreServ
  Online Importon Windows firewall?
  ```

  NOTE: If the ports are busy, CV suite installer displays the available ports.

  If you enable the specific port, the installer configures it on the firewall. Check the "HP P6000 software TCP ports" (page 64) to verify port usage.

  The XF secure web service ports and XF unsecure web service ports must be enabled otherwise accessing the HP Command View software from a remote system fails. By default, the XF secure web service ports and XF unsecure web service ports are selected by system. These ports can be defined and then they can be enabled.

See also "HP P6000 software TCP ports" (page 64).

HP Insight Remote Support software

HP recommends installing HP Insight Remote Support software (available separately). For more information, see "HP Insight Remote Support software" (page 13).

1. Review the information about installing HP Insight Remote Support software.
2. Click **Next**. The Install complete page opens.

Install complete

HP recommends that you sign up to receive support alerts.

1. Review the information about receiving support alerts.
2. Click **Done**. The installer window closes.

Checking services and icons

Windows services for the applications should be in the *Started* state.

- HP P6000 Command View. The service name is *HP P6000 Command View*. The desktop icon is  .
- HP P6000 Performance Data Collector. The service name is *HP P6000 Performance Data Collector*. The desktop icon is  .
- HP SSSU. The desktop icon is  .
- HP P6000 Performance Advisor. The service names are *HP P6000 PA Server* and *HP P6000 PA Database*.

- HP Management Integration Framework. The service name is *HP MIF*.
- HP EVA to 3PAR StoreServ Online Import. The service name is HP EVA to 3PAR StoreServ Online Import.
- HP SMI-S EVA. The service name is *HP StorageWorks CIM Object Manager*.

Removing server-based software

The following steps remove all HP P6000 Command View Software Suite components. Removal (uninstallation) of all components can take several minutes.

1. In Windows, select the feature to remove programs. For example, in Windows server 2008: select **Start > Control Panel > Programs and Features > HP P6000 Command View Software Suite**.
2. Click **Uninstall/Change**. The Uninstall_HP Suite window opens.
3. Read the Uninstaller Introduction, then click **Next**. The Uninstall Options page opens.
4. Accept the Complete Uninstall choice, or select Uninstall Specific Features, then click **Next**. The HP P6000 Performance Advisor Data page opens.
5. Accept the choice to Retain P6000 PA Data, or select Uninstall P6000 PA Data, then click **Uninstall**. Uninstallation progress is shown, then the Uninstall Complete page opens
6. Click **Done**.

Uninstalling the software applications does not remove the HP Storage Admins and HP Storage Users groups.

Upgrading HP P6000 Command View software

For details about supported upgrade paths, see Table 2.1, HP P6000 Command View upgrade support, in the *HP P6000 Enterprise Virtual Array Compatibility Reference*.

IMPORTANT: HP recommends that before starting the HP P6000 Command View upgrade you:

- Close all applications.
- Back up your existing HP P6000 Command View configuration files. (See Table 5 (page 22) for locations.)
- If the upgrade fails, all installed components are removed. This applies to upgrades from both HP Command View 10.1 and 10.2 to 10.3.

HP recommends that you upgrade all HP P6000 Command View 10.1 or 10.2 servers to the latest version of HP P6000 Command View 10.3 as follows:

1. Upgrade all HP Command View GUI Servers from HP Command View 10.1 or 10.2 to HP Command View 10.3.

TIP: Non-GUI Servers will not display the aggregate GUI Tree on the SPoG.

2. Upgrade all other HP Command View 10.2 servers to HP Command View 10.3.

For unsupported upgrade paths, the previous version must be removed first. If the previous version is not removed, the following error message appears when installing the latest version of HP P6000 Command View:

```
An older version of CV is detected on the target machine. Uninstall it
from Add/Remove panel and try installing Command View 10.3
```

If this message is displayed, do the following:

1. Go to the directory `Program Files\Common Files\InstallShield\Universal`.

2. Locate any directories named `HP_MasterInstaller`*`XX`* and delete them.

   There may be a directory for each previous version of HP P6000 Command View that was installed on the system.

3. Continue with the upgrade.

For supported upgrade paths, you do not have to remove the earlier version before upgrading to the latest version of the HP P6000 Command View Software Suite. During the upgrade, the following message is displayed:

```
IMPORTANT: The installer has detected an earlier version of HP Command
View EVA. The following actions will be performed during upgrade: The
earlier version will be removed. Note: Back up your existing Command
View EVA configuration files and close all open applications before
proceeding with the upgrade process
```

To continue with the upgrade, ensure that all other applications are closed, and then click **OK**.

All software components that were installed with the earlier version are upgraded to the latest version.

If limited software components were installed with the earlier version, select the additional software components when prompted during the upgrade.

NOTE: If an error occurs during the upgrade (for example, files are marked for deletion), a system reboot is required. After rebooting, you must start the installation manually. The installation proceeds as an upgrade. Backup data is restored, if required.

PMM backup during an upgrade from Command View version 10.2 to version 10.3

During an upgrade from Command View version 10.2 to 10.3, the `PMM_Bkp` folder is created and all the files required for the backup are copied to this folder. After successful installation of HP Command View 10.3, the backup files are restored to their respective HP EVA to 3PAR StoreServ online directories and `PMM_Bkp` folder is deleted.

NOTE: If the backup is required for future reference, take the backup of the files manually.

Backup file locations

During an upgrade, the EVAPA_Bkp folder is created, and the files are copied to the folder. After successful installation of HP Command View 10.3, the backup files are restored to their respective HP EVA Performance Advisor directories. The data folder is not uninstalled and remains during the upgrade. As part of the upgrade procedure, Postgre SQL scripts are executed to upgrade the Postgre SQL database.

NOTE: Do not select a 64–bit location for the EVAPA data folder because the EVAPA database is a 32–bit application.

Table 4 Backup files

Folder	Subfolder\Filename
EVAPA	EvapaTools\tomcat\32bit\apache-tomcat-6.0.24\webapps\p6000pa\exporttoevaperffromat
EVAPA	EvapaTools\tomcat\32bit\apache-tomcat-6.0.24\webapps\p6000pa\mibfile\evapamib.mib
EVAPA	EvapaTools\tomcat\32bit\apache-tomcat-6.0.24\webapps\p6000pa\reports*.*
EVAPA	EvapaTools\tomcat\32bit\apache-tomcat-6.0.24\webapps\p6000pa\companyLogo*.*
EVAPA	EvapaTools\tomcat\32bit\apache-tomcat-6.0.24\webapps\WEB-INF\classes\applicationConfig.properties

Table 4 Backup files *(continued)*

Folder	Subfolder\Filename
EVAPA	EvapaTools\tomcat\32bit\apache-tomcat-6.0.24\conf\server.xml\
EVAPA	DataBase\Postgres\postgresql.conf\

Table 5 (page 22) lists the locations of the HP P6000 Command View backup files.

NOTE: During the upgrade, HP SMI-S CIMOM and Provider files are restored from the directory *<SMIS_INSTALL_DIR>*\SMIS_*<Installed version>*_bkp_*<SYS_DATE_TIME>* to the directory *<SMIS_INSTALL_dir>*.

Table 5 Backup file locations

Files	Location
HP P6000 Command View configuration data files	*<install dir>*\CVEVA_*<Majorver>*_*<Minorver>*_bkp_*<date_time>*\
HP P6000 Command View and HP P6000 Performance Data Collector performance history backup	CVEVA_*<Installed Version>*_bkp_*<SYS_DATE_TIME>*\
HP SMI-S EVA backup and restore configuration files: `cxlog4j.properties` `cxws.properties`	*<SMIS_INSTALL_DIR>*\SMIS_*<Installed version>*_bkp_*<SYS_DATE_TIME>*\SMI-S\CXWSCimom
EVA Provider files: `evaProvider.properties` `indication.cfg` `LifeCycleIndication.cfg` `log4j.properties`	*<SMIS_INSTALL_DIR>*\SMIS_*<Installed version>*_bkp_*<SYS_DATE_TIME>*\SMI-S\EVAProvider

Upgrading EVA P6000 Performance Advisor from version 10.1 or 10.2 to 10.3

During an EVA P6000 Performance Advisor upgrade from version 10.1 or 10.2 to version 10.3, retain the data folder from the location *<Install Dir>*\EVAPA\DataBase\Postgres\data

NOTE: The following files and folders must be backed up and restored during the upgrade:

- `applicationconfig.properties` file. After the upgrade, this file must be merged with the new version of the file.
- *<Install Dir>*\EVAPA\EvapaTools\tomcat\32bit\apache-tomcat-6.0.24\webapps\p6000pa\reports folder
- *<Install Dir>*\EVAPA\EvapaTools\tomcat\32bit\apache-tomcat-6.0.24\webapps\p6000pa\companyLogo folder
- Folder containing generated db export files
- Uploaded MIB file

To upgrade the database (DB):

- To upgrade database from version 10.1 to 10.3, run SQL upgrade scripts to upgrade from version 10.1 to 10.2 first, and then from version 10.2 to 10.3.
- To upgrade database from version 10.2 to 10.3, run SQL upgrade scripts to upgrade from version 10.2 to 10.3.

Removing the software suite

NOTE: This procedure applies to server-based management only. You cannot remove HP P6000 Command View from the management module.

Performance data from HP P6000 Performance Advisor and HP P6000 Performance Data Collector remains in the `performance_history` folder when you remove the software suite. See "Retaining HP P6000 Performance Data Collector performance data" (page 23) for more information.

If you are removing HP P6000 Command View from one drive and installing it on another drive, after you remove it, HP recommends that you reboot the server to clear services that may still be running.

To remove the software suite:

An uninstallation can be done only by an administrator. If the logged in user is not an administrator, the uninstaller will exit the following error message:

```
The current user does not have administrator privileges. Only a user
with administrator privileges can run the uninstallation.
```

1. Select **HP P6000 Command View Software Suite** in Add or Remove Programs, and then click **Remove**.

   The InstallAnywhere window opens.
2. Click **Next**.

   The Uninstall Options window opens.
3. Select **Complete Uninstall**, which removes all installed components from the server.
4. Click **Uninstall**.

   When removal is complete, the summary information window opens.
5. Click **Finish**.
6. A reboot is required only if a message appears during uninstallation as files are marked for deletion and services are in a disabled state.

Retaining HP P6000 Performance Data Collector performance data

When running HP P6000 Command View 9.0 or later (including HP P6000 Performance Data Collector), the performance history of HP P6000 Performance Data Collector is retained by default, when you remove the software. The performance history is available at:

`<Install_Location>\CVEVAxx_bkp_<date_time>\EVA Performance Monitor\performance_history`

If you are running HP P6000 Command View 8.x or earlier (including HP P6000 Performance Data Collector) and the performance history folder contains any files or folders, you are prompted to retain the performance history. Select one of the following options:

- Click **yes** to retain the performance history.
- Click **no** to remove the performance history folder.

If you choose to keep the performance history, the following message is displayed when software removal is complete:

`Unable to remove directory: <Install_Location>\EVA Performance Monitor.`

Removing individual components

NOTE: This procedure applies only to server-based management.

If the user uninstalls only HP Management Integration Framework, the following error message will be displayed:

```
Management Integration Framework cannot be uninstalled when other
features are already installed.
```

To remove individual components:

1. Select **HP P6000 Command View software suite** in Add or Remove Programs, and then click **Remove**.

   The InstallAnywhere window opens.
2. Click **Next**.

   The Uninstall Options window opens.
3. Select **Uninstall Specific Feature**.
4. Select the components to be removed and click **Uninstall**.

   When removal is complete, the summary information window opens.
5. Click **Finish**.

Removing HP P6000 Performance Advisor

IMPORTANT: While removing HP P6000 Performance Advisor, you are prompted to either retain or remove HP P6000 Performance Advisor data. If you choose to retain the data, HP P6000 Performance Advisor is removed but the Performance Advisor database remains intact.

Downgrading HP P6000 Command View

To downgrade to an earlier version of HP P6000 Command View:

1. Remove the current version of HP P6000 Command View from the management server.
2. Install the applicable earlier version of the software.

See the *HP P6000 Enterprise Virtual Array Compatibility Reference* for supported downgrade paths.

IMPORTANT: After downgrading a system from HP P6000 Command View 10.3 to 10.2, 10.1, 10.0, 9.4, 9.3, or 9.2:

- For an array-based management system, reset the system using the reset button.
- For a server-based management system, perform a complete uninstall of HP P6000 Command View 10.3 and reinstall the earlier version.

3 Upgrading array-based software

Array-based software is factory-installed on the following HP P6000 EVA storage system models:

- HP EVA4400
- HP P6300/6350
- HP P6500/P6550

This chapter describes how to upgrade factory-installed software using HP P6000 ABM package files, which contain:

- Array-based HP P6000 Command View software
- HP P6000 Control Panel software
- HP Management Integration Framework software

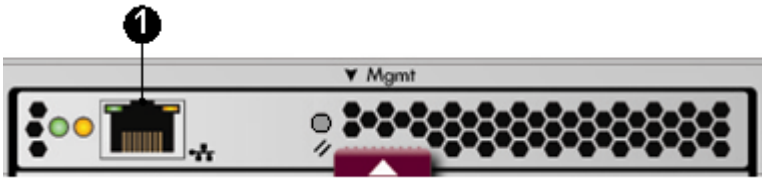
Installing ABM package files

You will need:

- DVD 1 from the kit
- A server with DVD drive
- A LAN cable

1. Locate the management module at the back of the storage system.
2. Connect a server with a DVD drive to the management module port on the controller enclosure (1, Figure 1 (page 25)).

Figure 1 Management module



3. Insert DVD 1 in the server drive.
4. Open a browser and navigate to the HP P6000 Control Panel:

   `https://<HP EVA storage system IP address>:2373`

   The HP P6000 Control Panel login window opens.

   (Use port 2372 if upgrading HP P6000 Command View 8.*x.x* or earlier and management module firmware earlier than 0001.1000.)
5. Log in as an HP storage administrator. The default user name is `admin` with no password; or use the user name and password you assigned in the HP P6000 Control Panel.

   The HP P6000 Control Panel GUI opens.
6. In the navigation pane, select **Update management module firmware**.

   The Update Management Module Firmware window opens.
7. Click **Browse** and navigate to DVD 1.
8. Open the `ABM` folder and select the `ABM.pkg` file and click **Next step**.
9. Follow the on-screen instructions and click **Finish**. A confirmation window opens.

10. Click **OK**.

    The Management Module Restart in Progress window opens and the image files are loaded. Upon completion, the HP P6000 Control Panel login window opens. This step can take several minutes.

Verifying installations

Logging in

Log in to the interfaces to verify that applications are installed. See "Installing Management Group security certificates" (page 28) for dealing with a blocked connection.

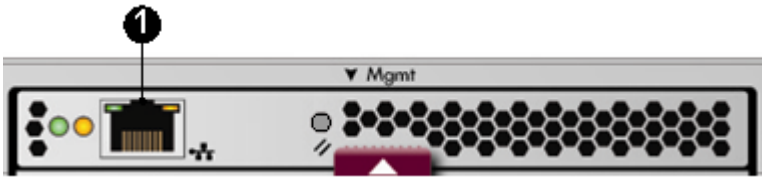
The management module will restart upon completion of the update. Allow up to 15 minutes to re-establish a browser connection. Do *not* reseat, restart, or reset the management module during this interval if you are unable to reconnect from your browser.

Updating the HP Command View software suite on the management module

EVA4400, P6300, P6350, P6500 or P6550 systems ship with HP P6000 Command View and HP MIF array-based management software pre-loaded. To update these components of management module software, you can update them on the management module as follows:

1. Connect a server with a DVD drive to the management module port on the controller enclosure (1, Figure 2 (page 26)).

   Figure 2 Management module

2. Insert the installation DVD in the drive.
3. Open a browser and navigate to the HP P6000 Control Panel:

   `https://HP EVA storage system IP address:2373`

IMPORTANT: If you are currently running HP P6000 Command View 8.*x.x* or earlier (and management module firmware earlier than 0001.1000), use port 2372.

TIP: If you have not yet accessed the management module, see "Connecting to the management module" in either the installation guide for the EVA4400 or for the P63x0/P65x0 EVA. See "Documents" (page 39) for document location.

The HP P6000 Control Panel login window opens.

4. Log in as an HP administrator. The default login information is `admin` for the user name and no password; or, use the modified user name and password you assigned in the HP P6000 Control Panel.

   The HP P6000 Control Panel GUI opens.

5. In the navigation pane, select **Update management module firmware**.

   The Update Management Module Firmware window opens.

6. Click **Browse** and navigate to the installation DVD.
7. Select the `ABM.pkg` file and click **Next step**.

8. Follow the online instructions and click **Finish**.

   A confirmation window opens.

9. Click **OK**.

   The Management Module Restart in Progress window opens and the image files are loaded. Upon completion, the HP P6000 Control Panel login window opens. This step can take several minutes.

IMPORTANT: The management module will restart upon completion of this update. Allow up to 15 minutes to re-establish a browser connection. Do *not* reseat, restart, or reset the management module during this interval if you are unable to reconnect from your browser.

Verifying the installation on the management module

NOTE: Adobe Flash Player plugin is required.

To verify that the software was installed successfully:

1. Open a browser and navigate to HP P6000 Command View:

   `https://EVA storage system IP address:2372`

2. Log in using the same login credentials that you use for the HP P6000 Control Panel login.
3. Verify that the correct local time is set:
   a. On the Initialized Storage System Properties window, select **System Options**.
   b. Select **Set time options**.
   c. Verify that the time displayed in the **Current system time** box is correct. If it is incorrect, enter the correct time and save your changes.

IMPORTANT: If the time set on your system in not your local time, the installation can fail. For instructions to recover, see the *HP P6000 Command View Software Suite Release Notes*.

4 Logging in to HP P6000 browser-based applications

Verify application installation

Log in to the interfaces to verify that applications are installed. See "Installing Management Group security certificates" (page 28).

Viewing HP P6000 browser-based interfaces requires a supported browser and Flash Player plug-in. Supported browsers and Flash Players are listed in the *HP Enterprise Virtual Array Compatibility Reference*.

- Server-based HP P6000 Command View, HP P6000 Performance Advisor, and HP EVA to 3PAR StoreServ Online Import— browse to the application login page: `https://<server name or IP address>:2374 / <free port chosen during MIF installation>`
- Array-based HP P6000 Command View — browse to the login page: `https://<P6000 EVA storage system IP address>:2374 / <free port chosen during MIF installation>`
- HP P6000 Control Panel — browse to the login page: `https://<P6000 EVA storage system IP address>:2373`
- HP Management Integration Framework configuration interface — browse to the login page: `https://<machine name or IP address>:2374/Configuration`

  Machine name includes names of servers and HP P6000 storage system with array-based management.
- HP Management Integration Framework security interface — browse to the login page: `https://<machine name or IP address>:2374/Security / <free port chosen during MIF installation>`

  Machine name includes names of servers and HP P6000 storage system with array-based management.

Installing Management Group security certificates

Installation of HP P6000 browser-based applications generates Management Group security certificates. The first time a browser attempts to connect to the application login window, the connection is blocked. To continue, do the following:

1. Allow the browser to continue to the blocked page. A login page opens indicating that the Management Group certificate may not be installed. This does not indicate a problem. This is a normal security feature of HP Management Integration Framework software.
2. On the login page, click the link **Click here to install the Management Group certificate**.
3. Follow the on-screen instructions to install the certificate and refresh and close the browser.
4. When the login page reappears, you can log in.

For more information, see the appropriate application user guide or the *HP Management Integration Framework Administrator Guide*.

5 Installing HP EVAInfo software

HP EVAInfo is command-line software that helps you map HP-UX and Linux files to virtual disks (LUNs) on HP P6000 EVA storage systems, and displays information about connected ports and controllers.

- HP EVAInfo can be installed on hosts that are connected to HP P6000 EVA storage systems.
- To install HP EVAInfo software, copy executable files from DVD 1 to the hosts.

HP EVAInfo files on the DVD

Table 6 EVAInfo files on the DVD

Directory	Files
`hp-ux` (Also works on version 11.23.)	`evainfo_HPUX_11.11_PARISC` `evainfo_HPUX_11.31_PARISC` `evainfo_HPUX_11.31_IA64`
`linux` (Works on 64–bit versions of SUSE 10, RHEL 4, and RHEL 5.)	`evainfo_LINUX64_ITANIUM`
`linux` (Works on 64–bit AMD versions of SUSE 10 and RHEL 4.)	`evainfo_LINUX_AMD64`
`linux`(Works on 32–bit versions of SUSE 10, RHEL 4 and RHEL 5.)	`evainfo_LINUX_INTEL`
`linux` (Works on 64–bit AMD versions of RHEL 5.)	`evainfo_RHEL_AMD64`

Installing HP EVAInfo files

To Install HP EVAInfo files:

1. Insert DVD 1 in the drive on the host.
2. Navigate to the `EVAInfo` folder on the DVD.
3. Select the executable file for the applicable host operating system (Table 6 (page 29)).
4. Copy the file to the server or host.
5. Ensure that the binary file has execute permission. You can use the `chmod` command to set execute permission. For example, `# chmod 555 evainfo` or `# chmod u+x evainfo`.
6. Execute the binary as *root*.

6 Installing HP SSSU software

HP SSSU provides a command line interface that lets you script and run repetitious and complex storage system tasks.

- HP SSSU (Windows) is automatically installed on, and removed from, a server when you install or remove server-based HP P6000 Command View.
- You can also install HP SSSU by itself by copying HP SSSU executable files to hosts.
- HP SSSU cannot be directly installed on storage systems that run array-based HP P6000 Command View, but you can install HP SSSU on hosts with network access to those storage systems.
- HP SSSU (Windows) requires the Microsoft Visual C++ 2008 SP1 Redistributable Package. When server-based HP P6000 Command View is installed, the C++ package is automatically installed. The C++ package is also available for download from the Microsoft Download Center website http://www.microsoft.com/downloads/en/default.aspx.
- You can install HP SSSU from the DVD included in the HP P6000 Command View Software Suite media kit.

See the *HP Storage System Scripting Utility Reference* for HP SSSU post installation configuration and use.

HP SSSU files

Table 7 Files in SSSU folder on the DVD

Subdirectory	Files
hp_ux11.23/ia64	sssu_hpuxia
hp_ux11.23/parisc	sssu_hpuxpa
ibm_aix	sssu_aix
linux/i386	sssu_linuxX86
linux/ia64	sssu_linuxia64
linux/x86_64	sssu_linuxX64
sun_os/i386	sssu_solarisX86
sun_os/sparc	sssu_solarissparc
VMS	SSSU_VMS_ALPHA.EXE SSSU_VMS_IA64.EXE
Win32	sssu.exe
WinIA64	SSSUIA64.exe
WinX64	sssuX64.exe

NOTE: HP SSSU can be installed on non-Windows operating system manually. The procedure for OpenVMS is shown below; other non-Windows operating systems follow their standard installation procedure.

Mounting the DVD on an HP OpenVMS host

Use the following command to mount the DVD on an HP OpenVMS host:

```
$ mount/media_format=dvd/undefined_FAT=fixed:none:8192/over=id
<HOSTNAME>$DQA0:
```

For example:

```
$ mount/media_format=dvd/undefined_FAT=fixed:none:8192/over=id
IA641$DQA0:
```

Installing HP SSSU files

To install HP SSSU on a Windows host:

1. Insert DVD 1. Allow 1 to 2 minutes for the HP P6000 SmartStart wizard to automatically begin. If the HP P6000 SmartStart wizard does not automatically begin, navigate to the DVD in Windows Explorer and double-click the file `P6000SmartStart.exe`. The HP P6000 SmartStart wizard opens in a browser window.
2. Read the HP P6000 SmartStart End User License Agreement and click **Accept**. A Welcome page opens.
3. Click the **SSSU package file** button. The folder of SSSU files opens in a separate window.
4. Select the executable file (Table 7 (page 30)).
5. Copy the file to the host.

To install HP SSSU on a non-Windows host:

1. Insert DVD 1 in the drive on the host and mount it.
2. Navigate to the `SSSU` folder on the DVD.
3. Copy the file to the host.

Verifying HP SSSU installations

For management server

The default installation location for the HP SSSU Windows executable is: `C:\Program Files\Hewlett-Packard\Sanworks\Element Manager for StorageWorks HSV`.

1. On the management server Windows desktop, locate the HP SSSU icon.

2. Double-click the icon. The display should show `SSSU for HP P6000 Command View` with the version and build number.

For hosts

1. Open the HP SSSU executable on the host.
2. The display should show `SSSU for HP P6000 Command View` with the version and build number.

7 Installation troubleshooting

SmartStart required software popup

If the server does not have the required Microsoft .NET 4.0 or Windows Hotfix KB932755, the HP P6000 SmartStart wizard provides following options

- Install the required software and continue with the HP P6000 SmartStart wizard.
- Cancel the wizard and run the HP P6000 Command View Suite installer.

Select the appropriate option and proceed with the installation.

HP Management Integration Framework installation troubleshooting

Failed to connect to discovery

If you see the warning message:

```
Failed to connect. The Management Group (MG) may not be installed.
Please refer to help for more information.
```

Install the Management Group Certificate in the browser and then restart the browser. See the *HP Management Integration Framework Administrator Guide*, version 1.4 or later, for more information.

HP firewall exception ports check

When installing HP Management Integration Framework software (either explicitly or silently with other software), the installer checks to see if a Windows firewall is enabled on the server.

- Port 2372 is the default port for logging in to HP P6000 Command View.

  If a Windows firewall is enabled, the following message is displayed:

  ```
  Setup has detected that a Windows firewall is enabled on the system.
  Do you want setup to configure port 2372 for HP P6000 Command View
  on Windows firewall?
  ```

- Port 2374 is the default port for logging in to HP P6000 Management Integration Framework and the HP P6000 software components that it supports.

  If a Windows firewall is enabled, the following message is displayed:

  ```
  Setup has detected that a Windows firewall is enabled on the system.
  Do you want setup to configure port 2374 for Management Integration
  Framework on Windows firewall?
  ```

- Port 2386 is the default port for logging in to HP EVA to 3PAR StoreServ Online Import.

  If a Windows firewall is enabled, the following message is displayed:

  ```
  Setup has detected that a Windows firewall is enabled on the system.
  Do you want setup to configure port 2386 for HP EVA to 3PAR StoreServ
  Online Importon Windows firewall?
  ```

See the *HP Management Integration Framework Administrator Guide*, version 1.4 or later, for more information about HP MIF ports.

HP SMI-S EVA CIMOM installation troubleshooting

HP SMI-S EVA CIMOM ports check

- When installing HP SMI-S EVA CIMOM, the installer checks for ports 5988 and 5989, which are used with the CIMOM service. If the ports are not available, the Ports busy screen with the following message is displayed:

  ```
  CIMOM Port 1 port is not available, CIMOM Port 2 port is not
  available.
  ```

  It displays the available port numbers and provides an option to edit the port number, if the user wants to change any port number.

  To continue the installation, you must enter alternate port numbers (in the range 60000 to 65536).

See also "HP P6000 software TCP ports" (page 64).

Antivirus software may degrade performance

To avoid HP P6000 Command View performance issues when antivirus software is installed on the management server, HP recommends that you exclude from the antivirus software scan the log-related files that change frequently, including the following:

- `\Program Files\Hewlett-Packard\Sanworks\Element Manager for StorageWorks HSV\cache`
- `\Program Files\Hewlett-Packard\Sanworks\Element Manager for StorageWorks HSV\log`
- `\Program Files\Hewlett-Packard\Sanworks\Element Manager for StorageWorks HSV\logs`
- `\Program Files\Hewlett-Packard\Sanworks\Element Manager for StorageWorks HSV\trace`

If HP P6000 Performance Data Collector is installed:

- `\Program Files\Hewlett-Packard\EVA Performance Monitor\logs`
- `\Program Files\Hewlett-Packard\EVA Performance Monitor\cache`

If HP SMI-S EVA is installed:

- `\Program Files\Hewlett-Packard\SMI-S\CXWSCimom\logs`
- `\Program Files\Hewlett-Packard\SMI-S\EVAProvider\logs`

If HP EVA to 3PAR StoreServ Online Importis installed:

- `\Program Files\Hewlett-Packard\PMM\PMMTools\tomcat\32-bit\apache-tomcat-7.0.27\logs`

If HP P6000 Performance Advisor is installed:

- `\Program Files\Hewlett-Packard\EVAPA\EvapaTools\tomcat\32bit\apache-tomcat-6.0.24\logs`
- `\Program Files\Hewlett-Packard\EVAPA\DataBase\Postgres\data\pg_log`

NOTE: If HP P6000 Command View is installed on a 64-bit machine, the top level folder is `\ProgramFiles (x86)`.

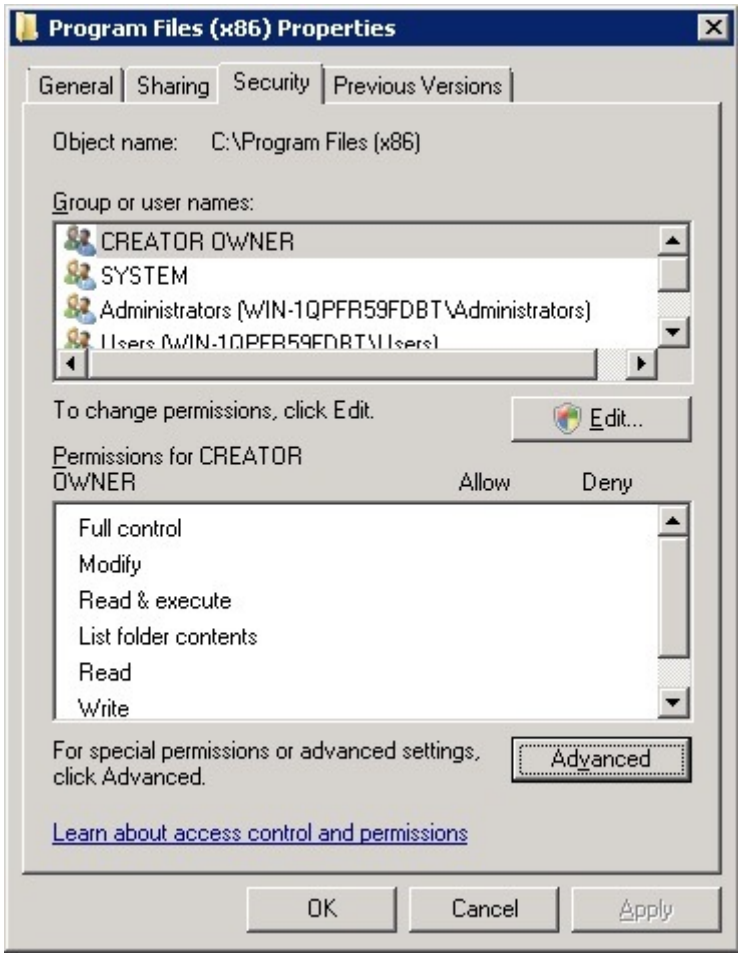
Command View 10.2 or later Postgres installation fails in default installation directory

The logged-in user does not have permission to install Command View 10.2 or later in the Program Files (x86) folder, even though the user had set the permission at the Windows drive itself. Due to this, the Command View 10.2 or later Postgres installation failed.

To assign the correct permissions to the Program Files (x86) directory:

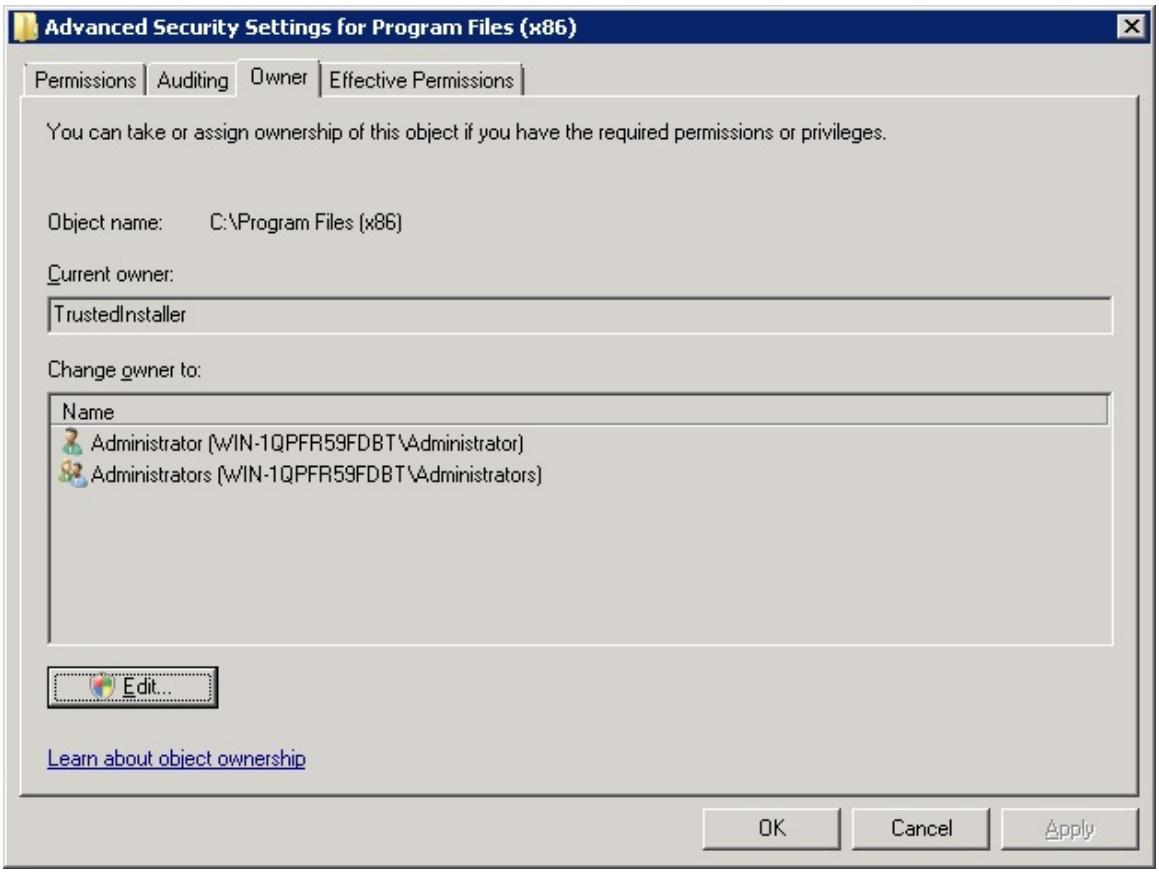
1. Right-click Program Files (x86) Properties, select the **Security** tab and then click **Advanced.**

Figure 3 Program Files (x86) Properties



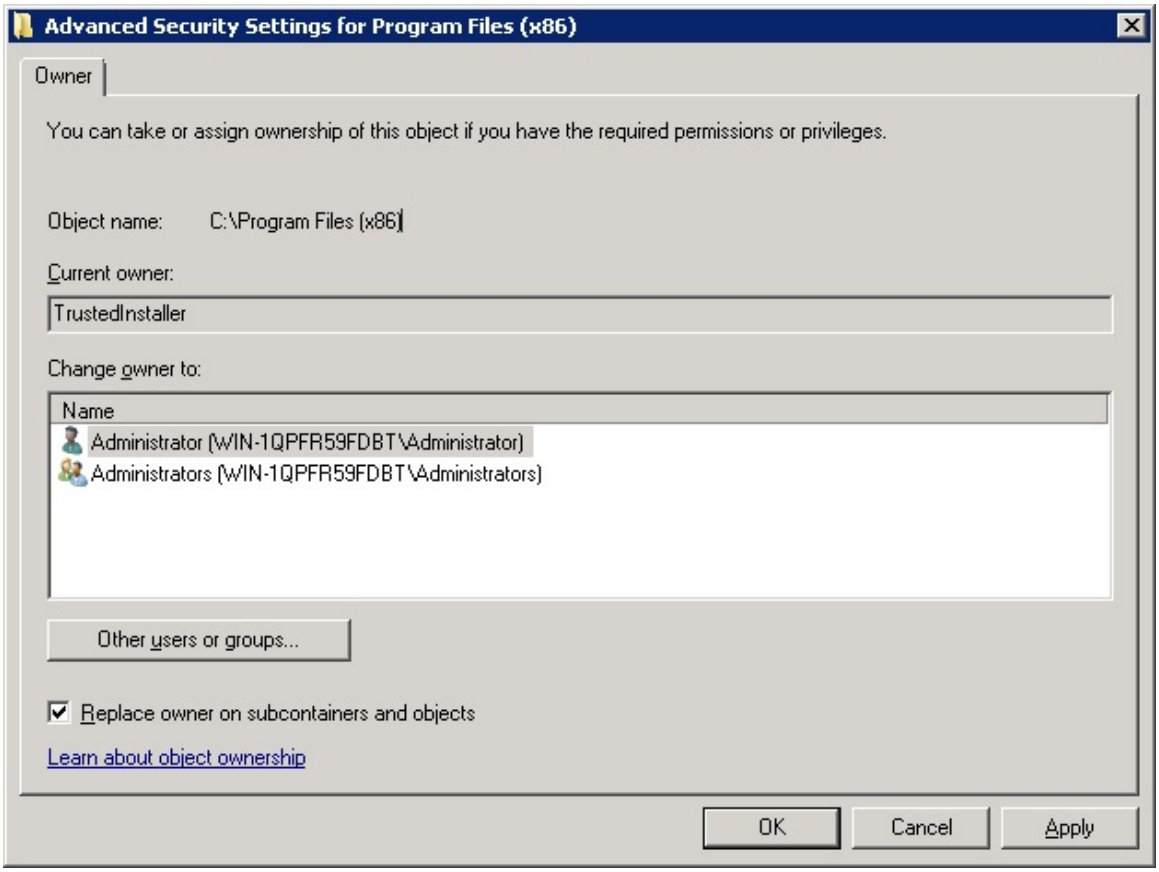
2. Select the **Owner** tab and then click **Edit**.

Figure 4 Advanced Security Settings for Program Files



3. Select **Administrator** from **Change owner to**, select **Replace owner on subcontainers and objects** and then click **Apply.**

Figure 5 Advanced Security Settings



After assigning the correct permissions to the Program Files (x86) directory, add the Administrator user and provide read, write, and execute permissions for the Program Files (x86) folder.

8 Completing storage system installations

Completing installations overview

To complete storage system installations:

1. Browse to HP P6000 Command View. See "Installing Management Group security certificates" (page 28)
2. If using server-based HP P6000 Command View, verify the communication path to the storage system. See "Verifying the communication path" (page 37).
3. Initialize the storage system. See "Initializing newly installed storage systems" (page 37)
4. Create a storage system password. See "Creating a storage system password" (page 38).
5. If using server-based HP P6000 Command View, enable management of the storage system. See "Enabling management of a password-protected storage system" (page 38).
6. Set the date and time on the storage system. See "Setting the date and time on the storage system" (page 38)
7. If you have any HP licenses for basic or optional features, enter them. If you do not, be sure to obtain and install them before the instant-on license activation period ends See the *HP P6000 Command View User Guide* or online help for more information.

Verifying the communication path

This step is required only for storage systems that are managed by server-based HP P6000 Command View.

Storage systems icons in HP P6000 Command View indicate when the communication path is normal.

- Green icon — normal. Indicates that communication is good. You can complete the installation.
- Other icons. Indicate problems that must be corrected before you can complete the installation. See "Installation troubleshooting" (page 32).

To check the icons:

1. In HP P6000 Command View, locate the storage system in the Uninitialized Storage Systems folder of the settings point of view.
2. Check the storage system icon.

Initializing newly installed storage systems

When you install HP P6000 EVA storage systems, they appear as *uninitialized* in the settings point of view of HP P6000 Command View.

Initialization makes a storage system ready to use with your servers and can include one or more of the following actions:

- Establishing the storage system name.
- Creating a default disk group.
- Setting a disk-failure protection level (disk spares).
- Setting the storage system date and time.

To initialize the storage system:

1. In the HP P6000 Command View settings point of view, select the instance of HP Command View that is managing the storage system.
2. Open the Uninitialized Storage Systems folder and click the storage system. The Uninitialized Storage System Properties page opens.
3. Click **Initialize**. Follow the instructions on the Initialization pages.
4. After a storage system is initialized, it appears in the storage systems point of view.

Creating a storage system password

IMPORTANT: HP recommends that you password protect your HP P6000 storage systems. Password protection is optional but strongly recommended, especially for SAN fabrics that include multiple instances of server-based HP P6000 Command View.

- For most HP P6000 EVA models, password protection is set using an LCD operator control panel on the storage system controllers. See the *HP Enterprise Virtual Array User Guide*.
- For some models, password protection is set using the storage system's HP P6000 Control Panel software interface. See the *HP P6000 Control Panel User Guide* or HP P6000 Control Panel online help.

Enabling management of a password-protected storage system

This step is required only when completing installation of storage systems that are managed by server-based HP P6000 Command View.

- If you have multiple management servers, you must perform this procedure with each instance of server-based HP P6000 Command View that you want to manage the password-protected storage system.
- This procedure does not *create* storage system passwords. Storage system passwords are created by using an LCD operator control panel or HP P6000 Control Panel software.

To enable management:

1. Browse to server-based HP P6000 Command View and log in. See "Installing Management Group security certificates" (page 28).
2. In the settings point of view, click the instance of server-based HP P6000 Command View. The HP P6000 Command View Management Properties page opens.
3. Click **Management Options**. The Management Options page opens.
4. Click **Manage storage system password access**. The Storage System Password Access page opens. Follow the on-screen instructions.

Setting the date and time on the storage system

To verify or set the date and time:

1. In the storage systems point of view, select the storage system. The Initialized Storage System Properties page opens.
2. Select **System options** then click **Set time options**. The Set System Time page appears.
3. Review the date and time. If necessary, follow the instructions on the page to change the date and time

9 Support and other resources

Contacting HP

HP technical support

Telephone numbers for worldwide technical support are listed on the HP support website:

http://www.hp.com/support/

Collect the following information before calling:

- Technical support registration number (if applicable)
- Product serial numbers
- Product model names and numbers
- Error messages
- Operating system type and revision level
- Detailed questions

For continuous quality improvement, calls may be recorded or monitored.

Subscription service

HP recommends that you register your product at the Subscriber's Choice for Business website:

http://www.hp.com/go/wwalerts

After registering, you will receive email notification of product enhancements, new driver versions, firmware updates, and other product resources.

Product feedback

To make comments and suggestions about HP P6000 Command View, please send a message to **CVfeedback@hp.com**.

Documentation feedback

HP welcomes your feedback.

To make comments and suggestions about product documentation, please send a message to **storagedocsFeedback@hp.com**. All submissions become the property of HP.

Related information

Documents

You can find the documents referenced in this guide on the Manuals page of the HP Business Support Center website:

http://www.hp.com/support/manuals

In the Storage section, click **Disk Storage Systems** or **Storage Software**, and then select your product.

Websites

- HP:
  http://www.hp.com
- HP Storage:
  http://www.hp.com/go/storage

- HP Partner Locator:
  http://www.hp.com/service_locator
- HP Software Downloads:
  http://www.hp.com/support/downloads
- HP Software Depot:
  http://www.software.hp.com
- HP Single Point of Connectivity Knowledge (SPOCK):
  http://www.hp.com/storage/spock

Typographic conventions

Table 8 Document conventions

Convention	Element
Medium blue text: Table 8 (page 40)	Cross-reference links
Medium blue, underlined text: http://www.hp.com	Website addresses
Bold text	• Keys that are pressed • Text typed into a GUI element, such as into a box • GUI elements that are clicked or selected, such as menu and list items, buttons, and check boxes
Italic text	Text emphasis
`Monospace` text	• File and directory names • System output • Code • Commands, their arguments, and argument values
`Monospace, italic` text	• Code variables • Command variables
`Monospace, bold` text	Emphasized monospace text
. . .	Indication that the example continues
WARNING!	An alert that calls attention to important information that if not understood or followed can result in personal injury.
CAUTION:	An alert that calls attention to important information that if not understood or followed can result in data loss, data corruption, or damage to hardware or software.
IMPORTANT:	An alert that calls attention to essential information.
NOTE:	An alert that calls attention to additional or supplementary information.
TIP:	An alert that calls attention to helpful hints and shortcuts.

A HP P6000 Command View Software Suite components

This appendix describes components you may install.

HP P6000 Command View can be implemented in two ways:

- **Server-based management**— HP P6000 Command View is installed on a management server connected to the array, providing management of multiple HP P6000 EVA storage systems. All components of the software suite (HP P6000 Command View, HP P6000 Performance Advisor, HP P6000 Performance Data Collector, HP SSSU, HP SMI-S EVA, HP EVA to 3PAR StoreServ Online Import, and HP Management Integration Framework) are installed.
- **Array-based management**— The EVA4400 and the P63x0/P65x0 arrays are shipped with HP P6000 Command View pre-installed on the management module in the controller enclosure. Only one component of the software suite (HP P6000 Command View) is installed. Array-based management applies only to the EVA4400 and P63x0/P65x0 arrays (see "Updating the HP Command View software suite on the management module" (page 26)).

HP P6000 SW Suite CV/SmartStart/SSSU/Docs 10.3 DVD

- HP P6000 Command View Software (server-based) — is a graphical user interface for centralized monitoring and managing of multiple HP P6000 EVA storage systems. This software is installed on Windows management servers. To install, see "Installing server-based software" (page 14).
- HP P6000 Command View Software (array-based) — is a graphical user interface for monitoring and managing individual HP P6000 EVA storage systems. This software is factory installed on certain models of HP P6000 EVA storage systems. To upgrade this software, see "Upgrading array-based software" (page 25).
- HP P6000 Performance Advisor Software — is a graphical user interface for monitoring and reporting the performance of HP P6000 EVA storage systems. This software can be installed on Windows management servers and hosts. To install, see "Installing server-based software" (page 14).
- HP P6000 Performance Data Collector Software — collects P6000 EVA storage system performance metrics for use with HP P6000 Performance Advisor. It can also be used from its command line interface or with other software such as Windows Performance Monitor. This software can be installed on Windows management servers and hosts. To install, see "Installing server-based software" (page 14).
- HP P6000 Control Panel Software — is a graphical user interface for configuring and servicing HP P6000 EVA storage systems that do not have hardware control panels. This software is factory installed on certain models of HP P6000 EVA storage systems. To upgrade this software, see "Upgrading array-based software" (page 25).
- HP P6000 SmartStart Software (Windows) — is a wizard for installing server-based HP P6000 software and performing basic Windows host configuration, storage volume provisioning and mounting of storage volumes on Windows hosts. HP P6000 SmartStart Software (Windows) is not installed; rather, the software is run from the kit DVD.
- HP EVAInfo — EVAInfo is a command line utility for mapping HP-UX and Linux device special files to HP P6000 EVA presented virtual disks (LUNs). The utility also displays information about connected ports and controllers. EVAInfo software can be installed on HP-UX and Linux hosts. To install, see "Installing HP EVAInfo software" (page 29).
- HP Management Integration Framework Software — provides storage-related security features and user interface capabilities for other HP P6000 storage software. It also includes graphical user interfaces for configuration and security administration. This software is installed on Windows management servers and hosts. To install, see "Installing server-based software" (page 14) and "Upgrading array-based software" (page 25).
- HP SMI-S EVA CIMOM — is an SMI-S compliant provider for HP P6000 EVA storage systems. The software uses a storage CIMOM agent and is integrated with HP P6000 Command View for management control. The software can be installed on Windows management servers and hosts. See "Installing the software suite on a management server" (page 14).

- HP Storage System Scripting Utility (multi-platform) — is a command line utility for scripting and running repetitious and complex storage system tasks. HP SSSU is available in Windows and non-Windows versions. A Windows version is automatically installed with server-based HP P6000 Command View on Windows management servers. See "Installing server-based software" (page 14). HP SSSU can also be installed separately on hosts. See "Installing HP SSSU software" (page 30).
- HP EVA to 3PAR StoreServ Online Import — is a data migration tool used to migrate data from an HP EVA storage array to a 3PAR storage array. This tool is part of the server-based HP Command View installation; it cannot be installed on array-based HP Command View and cannot be used from the CLUI.
- Documentation — Includes documentation in PDF format for HP P6000 Command View and related software components. Documentation is accessible by running HP P6000 SmartStart or navigating to the `Documentation` folder on the DVD.

HP P6000 SmartStart SW for Linux v4.3 CD

- HP P6000 SmartStart Software (Linux) — is a wizard for performing Linux host configuration, storage volume provisioning and mounting of storage volumes on Linux hosts. HP P6000 SmartStart Software (Linux) is not installed; rather, the software is run from the kit CD.

B Illegal characters in names and comments

Characters outside the ASCII character set 0x20(decimal 32) to 0x80(decimal 128) and the following characters cannot be used in names.

Character	Character	Character	Character
? question mark	" double quotes	/ forward slash	\ back slash
< less than sign	> greater than sign		
* asterisk	| vertical bar	: colon	+ plus sign
, comma	& ampersand	% percent sign	two consecutive spaces

Characters outside of the ASCII character set 0x20(decimal 32) to 0x80(decimal 128) and the following characters cannot be used in comments.

Character	Character	Character	Character
? question mark	" double quotes	< less than sign	> greater than sign
+ plus sign	& ampersand	% percent sign	

C Server-based software

Adding users to security groups

After installing server-based HP P6000 Command View, a Windows user with administrator privileges must create accounts for other users and assign them to one of the following groups:

- **HP Storage Admins** — Members have view and manage capabilities for HP P6000 Command View and HP SMI-S EVA.
- **HP Storage Users** — Members have view capability only for HP P6000 Command View and HP SMI-S EVA.

Upgrading HP P6000 software suite

For details about supported upgrade paths, see Table 2.1, HP P6000 Command View upgrade support, in the *HP P6000 Enterprise Virtual Array Compatibility Reference*.

HP recommends that before starting the upgrade you:

- Close all applications.
- Back up your HP P6000 Command View configuration files.

  For details, see "Backup file locations" (page 44).

Backup file locations

Table 9 (page 44) lists the locations of the server-based HP P6000 Command View backup files.

- During an upgrade, HP SMI-S EVA CIMOM and Provider files are restored from the directory `<SMIS_INSTALL_DIR>\SMIS_<Installed version>\_bkp_<SYS_DATE_TIME>` to the directory `<SMIS_INSTALL_dir>`.

Table 9 Server-based software backup file locations

Files	Location
HP P6000 Command View Configuration data files	`<install dir>\CVEVA_<Majorver>_<Minorver>_bkp_<date_time>\`
HP P6000 Command View performance history backup	`<install_directory>\Sanworks\Element Manager for StorageWorks HSV\config\cveva.cfg\log\*.* Trace\*.* cache\*.*`
Backup folder name:	`CVEVA_<Installed Version>_<installed_minor_version>_bkp_<SYS_DATE_TIME>\`
HP P6000 Performance Data Collector	`<EVAPerf_Install_dir>\EVA Performance Monitor\performance_history\*.*`
HP SMI-S EVA backup and restore configuration files: `cxlog4j.properties` `cxws.properties`	`<SMIS_INSTALL_DIR>\SMIS_<Installed version>_bkp_<SYS_DATE_TIME>\SMI-S\CXWSCimom`
EVA Provider files: `evaProvider.properties` `indication.cfg` `LifeCycleIndication.cfg` `log4j.properties`	`<SMIS_INSTALL_DIR>\SMIS_<Installed version>_bkp_<SYS_DATE_TIME>\SMI-S\EVAProvider`

Table 9 Server-based software backup file locations *(continued)*

Files	Location
EVA Performance Advisor files: `exporttoevaperfromat` `mibfile\evapamib.mib` `reports` `companyLogo`	`WEB-INF\classes \applicationconfig.properties`
EVA Performance Advisor server:	*<install_dir>*`\Hewlett-Packard \EVAPA\EvapaTools \romcat\32bit\apache-tomcat-6.0.24`

Example of a named backup file: `CVEVA_10_1_bkp_05_23_2012145129`

Supported upgrade paths

For server-based HP P6000 Command View supported upgrade paths, you do not have to remove the earlier version before upgrading to the latest version. During an upgrade, the following message is displayed:

```
IMPORTANT: The installer has detected an earlier version of HP Command View EVA. The following actions will be performed during upgrade: The earlier version will be removed. Note: Back up your existing Command View EVA configuration files and close all open applications before proceeding with the upgrade process
```

To continue with the upgrade, click **OK**.

Unsupported upgrade paths

For unsupported upgrade paths, the previous version must be removed first. After removing the previous version, the following error message may appear when installing the latest version of HP P6000 Command View:

```
An older version of CV is detected on the target machine. Uninstall it from Add/Remove panel and try installing Command View 10.3
```

If this message is displayed, do the following:

1. Go to the directory `Program Files\Common Files\InstallShield\Universal`.
2. Locate any directories named `HP_MasterInstaller`*XX* and delete them.

   There may be a directory for each previous version of HP P6000 Command View that was installed on the system.
3. Continue with the upgrade.

D Server-based HP P6000 Command View

Installing HP P6000 Command View and HP Systems Insight Manager on the same server

To run server-based HP P6000 Command View and HP Systems Insight Manager on the same server, and be able to discover and perform data collection on arrays, you must change certain settings for HP Systems Insight Manager during HP P6000 Command View installation. Perform the following steps:

1. Install HP Systems Insight Manager.
2. Install server-based HP P6000 Command View.

   The installer will issue a message that `Wbemport 5988/5989` is already in use.
3. Change the port to any available port in the range 60000 through 65536.
4. Complete the server-based HP P6000 Command View installation.

Restart the services or reboot the server, then perform the following steps:

1. Navigate to the directory `C:\Program Files\Hewlett-Packard\SMI-S\CXWSCimom\config\cxws.properties`.
2. Check the port details. Port information similar to the following is displayed:

   ```
   cxws.http.port=60001
   cxws.https.port=60002
   ```
3. Navigate to the directory `C:\Program Files\HP\Systems Insight Manager\config\identification\wbemportlist.xml`. Port information similar to the following is displayed:

   ```
   wbemportlist
   port id="5989" protocol="https
    ..................
   port id="60001" protocol="https
   interopnamespacelist
   interopnamespace name="interop" /
   /interopnamespacelist
   /port
   /wbemportlis
   ```
4. Restart the HP Systems Insight Manager service.

Localization and supported languages

The HP P6000 Command View installer works with any language supported on the installation system.

Excluding antivirus software scans

To avoid HP P6000 Command View performance issues when antivirus software is installed on the same management server, HP recommends that you exclude from the antivirus software scan the log-related files that change frequently, including the following:

- `\Program Files\Hewlett-Packard\Sanworks\Element Manager for HSV\cache`
- `\Program Files\Hewlett-Packard\Sanworks\Element Manager for HSV\log`
- `\Program Files\Hewlett-Packard\Sanworks\Element Manager for HSV\logs`
- `\Program Files\Hewlett-Packard\Sanworks\Element Manager for HSV\trace`
- `\Program Files\Hewlett-Packard\XFROOT\log`

If HP 6000 Performance Advisor and HP P6000 Performance Data Collector are installed:

- `\Program Files\Hewlett-Packard\EVA Performance Monitor\logs`
- `\Program Files\Hewlett-Packard\EVA Performance Monitor\cache`

If HP SMI-S CIMOM is installed:

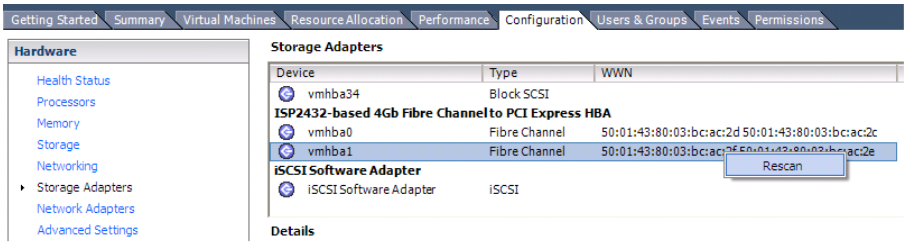
- `\Program Files\Hewlett-Packard\SMI-S\CXWSCimom\logs`
- `\Program Files\Hewlett-Packard\SMI-S\EVAProvider\logs`

Configuring the VMware guest operating system for HP P6000 Command View

To manage arrays through server-based HP P6000 Command View on a guest operating system, you will need to add the arrays through the VMware vSphere Client and VMware Infrastructure client so that HP P6000 Command View can discover them. After installing HP P6000 Command View for the first time, or when adding a new array to your SAN, complete the following steps:

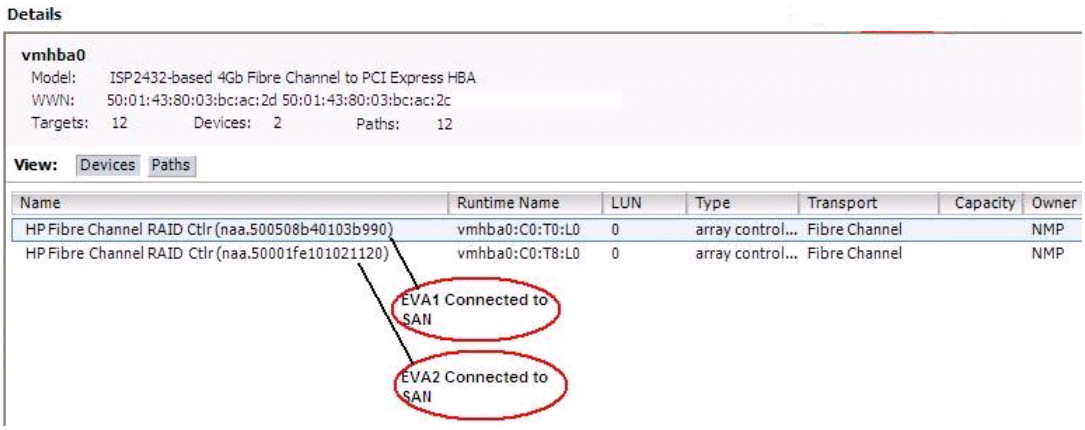
1. To verify that the VMware ESX server has discovered the HP storage array on the SAN, launch the VMware vSphere Client, enter the appropriate credentials, and click **Login**.
2. Select the ESX server, and then click the **Configuration** tab. Right-click the HBA and click **Rescan**.

Figure 6 VMware rescan



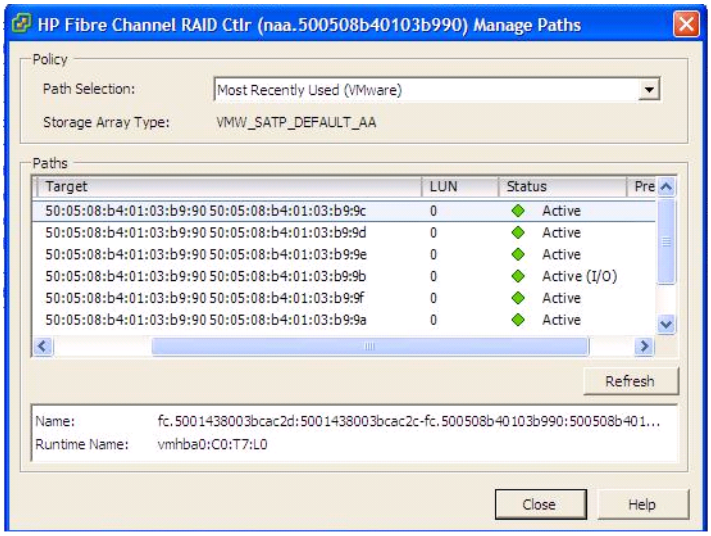
3. After the rescan is complete, you should see the array information displayed under the details of the HBA.

Figure 7 VMware details



4. Right-click the array, select **Manage Paths**, and set the policy as recommended by VMware. Click **Close**.

Figure 8 VMware policy



5. To configure the array for the guest operating system, launch the VMware Infrastructure client, enter the appropriate credentials, and click **Login**.
6. Right-click the virtual machine icon and select **Edit Settings**.

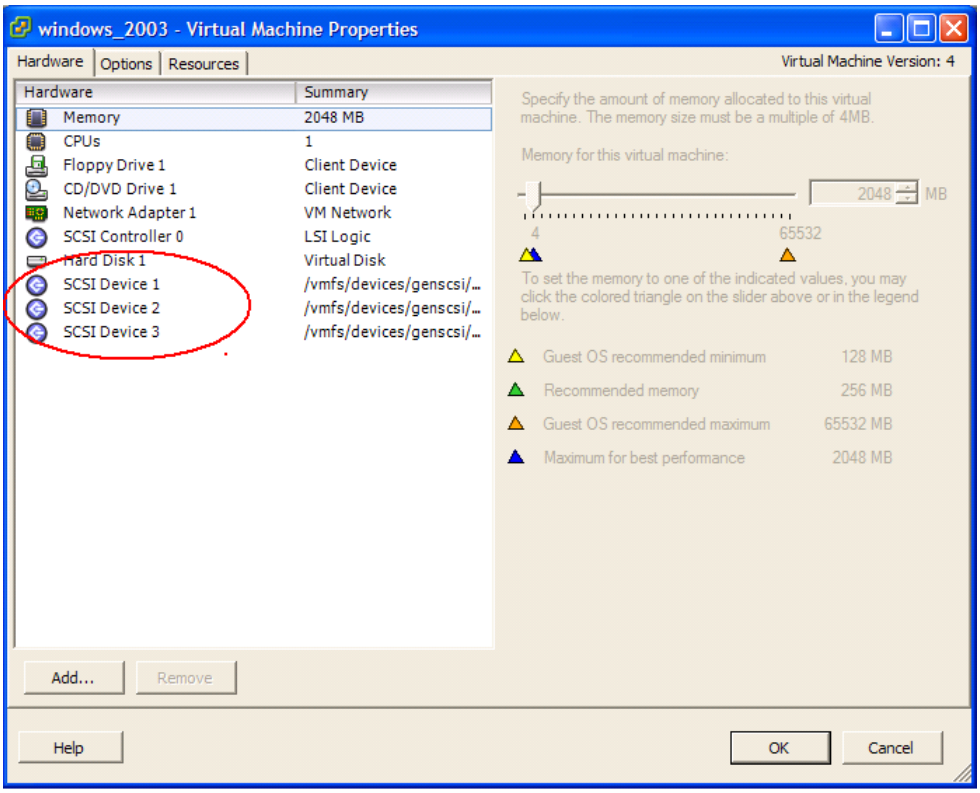
   The Virtual Machine Properties window displays the hardware visible to the guest operating system. Select **Add**.

   The Add Hardware Wizard appears.
7. Select **SCSI Device**, and then click **Next**.
8. From the SCSI Device list, select the applicable device (for example, RAID-HP), and then click **Next**. If the list is empty, check the zoning. If you are connected to several HP arrays, multiple RAID-HP entries will be visible.

9. Click **Finish** in the Ready to Complete window.

   In the Virtual Machine Properties window, the added SCSI device should appear. Click **OK**. Repeat Step 6 through Step 9 for each RAID-HP device. Each device will have a different Virtual Device Node value, such as SCSI(0:1) or SCSI(0:2).

Figure 9 VMware Virtual Machine Properties



Downgrading server-based HP P6000 Command View

To downgrade to an earlier version of HP P6000 Command View:

1. Remove the current version of HP P6000 Command View from the management server.
2. Install the applicable earlier version of the software.

See the *HP P6000 Enterprise Virtual Array Compatibility Reference* for supported downgrade paths.

E HP SMI-S EVA configuration

This chapter describes how to configure HP SMI-S EVA after installation of the HP P6000 Command View software suite.

NOTE: If you have layered applications requiring HP SMI-S EVA, you can install the HP SMI-S EVA component on any server that is either connected to the array/SAN or has access to HP P6000 Command View Software Suite over the Ethernet. You can access the array-based version of HP P6000 Command View using the Discoverer tool. See "Configuring HP SMI-S EVA to discover arrays" (page 51) for more information.

Configuring HP SMI-S EVA after installation

By default, the `-Xmx` value in the `CxwsCimomService.cfg` file is set to `1024m`, but this may not always be the correct value.

To determine the correct value for `-Xmx`, perform the following procedure immediately after installing the software suite.

△ **CAUTION:** HP recommends that you exercise caution when modifying these parameters.

To adjust memory usage or other JVM options:

1. Check the default parameters in the `CxwsCimomService.cfg` file. This file contains the Java options (in the JAVA_OPTIONS section) used by CIMOM and is located at:

   `<Install_Location>:\Program Files\Hewlett-Packard\SMI-S\CXWSCimom\config\CxwsCimomService.cfg`

   The default parameters in the `CxwsCimomService.cfg` file are:

   - `-Xms128m` (Minimum Heap Memory Usage in mb)
   - `-Xmx1024m` (Maximum Heap Memory Usage in mb)

2. On the command line, enter `<Install_Location>:\Program Files\Hewlett-Packard\SMI-S\CXWSCimom\jre\bin\java -Xmx1024m -version`. If the Java version number is returned, the default value of `1024m` for `-Xmx` is correct. If the Java version number is not returned, retry the command using lower values until the Java version number is returned.
3. For scaled configurations (configurations that contain hundreds of Vdisks created and presented with frequent performance data collection), the value of 1024m for -Xmx is insufficient. To determine the Max Heap Space for the machine, enter the following command at the command line:

   `<Install_Location>:\SMI-S\CXWSCimom\jre\bin\java –Xmx1600m —version`

   If the Java version number is returned, the value of 1600m is correct. If you try higher values and the Java version number is not returned, retry the command with lower values until the Java version number is returned. Then use the last value you entered.
4. Add the value that returned the Java version number as the `-Xmx` value in the `CxwsCimomService.cfg` file located in the directory `<Install_Location>:\Program Files\Hewlett-Packard\SMI-S\CXWSCimom\`.
5. After changing the `CxwsCimomService.cfg` file, restart the HP CIM Object Manager service.
6. Verify that the following files are available:
   - `<Install_Location>:\Program Files\Hewlett-Packard\SMI-S\EVAProvider\lib\hpEVA.jar`
   - *`<Install_Location>:`*`\Program Files\Hewlett-Packard\SMI-S\EVAProvider\lib\SALEva.jar`
   - *`<Install_Location>:`*`\Program Files\Hewlett-Packard\SMI-S\EVAProvider\lib\SALCommon.jar`

- *<Install_Location>*:\Program Files\Hewlett-Packard\SMI-S\CXWSCimom\lib-native\WindowsAuthenticator.dll
- *<Install_Location>*:\Program Files\Hewlett-Packard\SMI-S\CXWSCimom\lib-native\WindowsEventLoggingUtil.dll
- *<Install_Location>*:\Program Files\Hewlett-Packard\SMI-S\EVAProvider\lib-native\Indication.dll
- *<Install_Location>*:\Program Files\Hewlett-Packard\SMI-S\CXWSCimom\bin\ccbgn.cfg
- *<Install_Location>*:\Program Files\Hewlett-Packard\SMI-S\CXWSCimom\jre\bin\ccbgn.cfg

Configuring HP SMI-S EVA to discover arrays

HP SMI-S EVA includes a Java-based CLI Discoverer tool that enables discovery of arrays managed by both the array-based and server-based management implementations of HP P6000 Command View.

Use the Discoverer tool to:

- Add or remove an array-based or server-based IP address to HP SMI-S EVA.
- Perform a custom installation of HP SMI-S EVA only. If you plan to install HP P6000 Command View later, you must still add a localhost address to complete the HP SMI-S EVA installation.
- View existing array-based or server-based IP addresses from HP SMI-S EVA.

The Discoverer tool lets you perform these tasks in both interactive and noninteractive modes. See Using Discoverer modes for more information.

Importing Single Sign-on trust certificates with the Discoverer tool

To import a Single Sign-on certificate with the Discoverer tool:

1. Enter the management server credentials.
2. Enter the management server IP address.

The Single Sign-on trust certificate is automatically imported after the management server IP address is added to the Discoverer tool.

If HP SMI-S EVA cannot connect to the management server IP address, the Discoverer tool adds the IP address to HP SMI-S EVA and the following warning message appears:

```
WARNING: IP is added into SMIS successfully
but SSO certificate import to CV has failed.
Please import the certificate manually.
```

If this message appears, import the Single Sign-on trust certificate manually to ensure that HP SMI-S EVA and HP P6000 Command View can communicate.

Manually importing a Single Sign-on Trust Certificate

To manually import a Single Sign-on Trust Certificate:

1. Launch HP P6000 Command View from the server on which HP SMI-S EVA is installed.
2. Navigate to **Management Options > Other application trust relationships.**
3. Locate the Single Sign-on Trust Certificate in the following directory:

   ```
   <Install_Location>:\Program Files\Hewlett-Packard\SMI-S\EVAProvider\config\HPSMISSSO.cert
   ```

HP SMI-S EVA caching and performance

Due to the time required for initial cache building, applications using HP SMI-S EVA do not have immediate access to configuration details after the management server IP address is added to the Discoverer tool. Data-completion time depends on the number of arrays and objects being discovered. Use the `GetArrayRefreshStatus` tool included with HP SMI-S EVA to retrieve the

status of cache building. Due to initial cache-building time, frequently adding or removing the IP address is not recommended. See "Using the GetArrayRefreshStatus tool" (page 59) for more information.

IMPORTANT:

- The Discoverer tool and the HP SMI-S EVA server do not recognize IP addresses that cannot be reached on the network.
- When an IP address is added to HP SMI-S EVA, HP SMI-S EVA will try to connect to HP P6000 Command View. If the IP address cannot be reached or if HP SMI-S EVA cannot find a management server to communicate with, HP SMI-S EVA will try to connect to the IP address three times every 30 minutes.
- Adding unreachable or invalid IP addresses to the Discoverer tool degrades performance on HP SMI-S EVA.

Using the Discoverer tool

The Discoverer tool has both interactive and non-interactive modes and is located in the following directory:

```
<Install_Location>:\Program Files\Hewlett-Packard\SMI-S\EVAProvider\bin
```

Using the Discoverer tool in interactive mode.

1. To start the Discoverer tool, execute `discoverer.bat`.
2. Enter the HP SMI-S EVA server details in the following format:

   `http://IP_address:SMIS_HTTP_port_number`

   For example, to have the Discoverer tool connect to HP SMI-S EVA running on local host port 5988, enter the IP address, the local host port number and click **Enter** as follows:

   `http://15.154.59.192:5988`
3. Enter your HP SMI-S EVA user name and password.

   NOTE: The password is masked, so nothing is displayed.

   Once connected to HP SMI-S EVA, the following options are displayed:

```
1. Add a CV IP:
2. Remove a CV IP:
3. Get the list of CV IPs:
0. Exit
```

   In the following example, the user chose option `1. Add a CV IP` and responded to the following prompts:

```
Please enter your choice :1

Enter the IP address of CommandView :xx.yyy.zz.abc / 15.154.59.220

Enter the CommandView username :usrname

Enter the CommandView password :pswd

Operation in progress....Please wait....

Operation successful!!
```

Using the Discoverer tool in noninteractive mode

Use the following syntax when using the Discoverer tool in noninteractive mode:

Usage: `-h <hostname_url_or_IP_address> -u username -p password [-a ipaddress] -cvusername <cvusername> -cvpassword <cvpassword> [-r ipaddress] [-l]`

Command examples:

- To add an IP address:

  ```
  Discoverer -h http://15.154.59.192:5988 -u elastigirl -p gemini10
  -a 15.154.59.192:5988 -cvusername pacman -cvpassword noway
  ```

- To remove an IP address:

  ```
  Discoverer -h http://15.154.59.192:5988 -u elastigirl -p gemini10
  -r 15.154.59.192
  ```

- To list the IP addresses:

  ```
  Discoverer -h http://15.154.59.192:5988 -u elastigirl -p gemini10
  -l
  ```

Managing users in HP SMI-S EVA

By default, all HP P6000 Command View users are HP SMI-S EVA users.

CIM client connection to the management server

If you are using SSL mode, the SSL certificate on the management server must be made available on the HP SMI-S EVA client to establish a CIM connection with the management server. This is required only if your client application requires a secure connection over SSL and does not use a trust-all certificate manager.

This certificate is available in `client.pem` and is converted as a trust file with the name `hpSMIS.trust`. All certificates are located in the following directory:

```
<Install_Location>:\Program Files\Hewlett-Packard\SMI-S\CXWSCimom
```

NOTE: Use the following procedure only if your client application requires a secure connection over SSL and does *not* use a trust-all certificate manager. By default, HP Storage Essentials and HP Systems Insight Manager use a trust-all certificate manager, but you can configure them to authenticate each connection against certificates in their truststore.

For Java-based clients:

1. Copy the `hpSMIS.trust` file located in `<Install_Location>:\Program Files\Hewlett-Packard\SMI-S\CXWSCimom\` to the CIM client machine.
2. On the CIM client machine, specify the following options to connect to the HP SMI-S EVA server using SSL mode:

   ```
   java -Djavax.net.ssl.trustStoreType=jks
   -Djavax.net.ssl.trustStore=hpSMIS.trust
   ```

3. Change the *classpath* variable to include the directory for the `hpSMIS.trust` file.

The non-Java-based clients must use `client.pem` to connect to the management server.

Importing the HP SIM SSL certificate for indication delivery

To deliver indications to an HP SIM central management server that is configured for indication delivery in CIMOM:

1. Copy the certificate from the HP SIM central management server to the system where the CIMOM is installed.
2. From a command window, navigate to the directory `<Install_Location>:\Program Files\Hewlett-Packard\SMI-S\CXWSCimom\bin`.
3. Run the following script: `importSIMCert.bat`.

   Use the following syntax: `prompt> importSIMCert.bat -cert SIM_CMS_certificate_name_with_path> [-alias <key_alias>]`

   NOTE: The value of `<key_alias>` must be different for each certificate imported into the keystore.

Configuring CIM indications

For CIM, you can configure lifecycle and alert indications.

Lifecycle indication

You can modify the `LifeCycleIndication.cfg` file to configure lifecycle indications. The file is located in the directory `<Install_Location>:\Program Files\Hewlett-Packard\SMI-S\EVAProvider\config`. Table 10 (page 54) describes lifecycle indication configurable properties.

NOTE: Long file names in the following table are arbitrarily wrapped. They contain no spaces.

Table 10 Configurable properties in `LifeCycleIndication.cfg`

Property	Default value	Description
`LifeCycleIndication.Enable`	FALSE	Configures lifecycle indication. To enable, set the value to TRUE.
`LifeCycleIndication .Disable.Vdisk`	FALSE	Configures lifecycle indication for the virtual disk. To disable, set the value to TRUE.
`LifeCycleIndication .Disable.Array`	FALSE	Configures lifecycle indication for the array. To disable, set the value to TRUE.
`LifeCycleIndication .Disable.FCport`	FALSE	Configures lifecycle indication for the FC_port. To disable, set the value to TRUE.
`LifeCycleIndication .PollingInterval`	10	Sets provider polling interval (in minutes) for periodic generation of lifecycle indications.

For example, the following line in `LifeCycleIndication.cfg` enables lifecycle indications for storage volumes:

```
LifeCycleIndication.Disable.Vdisk=FALSE
```

HP SMI-S EVA supports lifecycle indications for the following array elements:

- Vdisk—Modeled as CIM_StorageVolume. Supports lifecycle indications for creating, modifying, and deleting instances.
- Array—Modeled as CIM_ComputerSystem. Supports lifecycle indications for instance modification.
- FCPort—Modeled as CIM_FCPort. Supports lifecycle indications for instance modification.

To customize lifecycle indication

Customize the lifecycle indication features using the configuration file.

To enable lifecycle indication

By default, lifecycle indication is disabled (`LifeCycleIndication.Enable` is set to `FALSE`). To enable lifecycle indication, set its value to `TRUE`.

To disable lifecycle indication for Vdisk, Array, or FCPort

By default, LifeCycle Indications for Vdisk, Array and FCPort are enabled (set to FALSE). To disable lifecycle indication for the supported elements, set the value for each to `TRUE`:

- `LifeCycleIndication.Disable.Vdisk=TRUE`
- `LifeCycleIndication.Disable.Array=TRUE`
- `LifeCycleIndication.Disable.FCport=TRUE`

To configure the Polling Interval

Polling is done at 10-minute intervals by default. To change the interval, set the value for `LifeCycleIndication.PollingInterval` in minutes. For example, to set the polling interval for 1 hour, set the value as follows: `LifeCycleIndication.PollingInterval=60`

Alert indication

NOTE: Alert indications are not supported for array-based management.

Use the file `Indication.cfg` to configure alert indications. This file is located at:

`<Install_Location>:\Program Files\Hewlett-Packard\SMI-S\EVAProvider\config`.

Table 11 (page 55) describes the configurable properties in `Indication.cfg`.

Table 11 Configurable properties in `Indication.cfg`

Property	Default value	Description
`LogLevel`	1	Set to 0 for ERROR-level logging; set to 1 for INFO-level logging; set to 2 for DEBUG-level logging.
`LogFileSize`	250	Maximum size of the `Indication.log` file, in KB.
`SnmpAgtIps`		Controls the source IP address of the SNMP trap. Use the comma (,) to set more than one IP address. If this property value is blank, SNMP traps are accepted from any IP address.

For example, the following line in the file `Indication.cfg` produces debug logs:

```
LogLevel=2
```

Configuring HP SMI-S EVA to generate alerts using HP Insight Remote Support

After installing HP Insight Remote Support, you must configure HP WEBES to forward SNMP events. Use the `desta` tool to add the host to the HP Insight Remote Support SNMP list; then run the commands `desta SNMP off` and `desta SNMP on`.

You must configure HP SMI-S EVA to generate alerts using HP Insight Remote Support if either of the following situations occurs:

- You install HP Insight Remote Support and the HP P6000 Command View software suite on the same management server for the first time.
- You observe that events are listed in the HP Insight Remote Support user interface, but alert indications are not received through the HP SMI-S EVA client.

To configure HP SMI-S EVA to generate alerts using HP Insight Remote Support:

1. Open a command window (`C:\`) on the management server.
2. Change to the directory where HP Insight Remote Support is installed. (Typically, the directory is *`<Install_Location>:`*`\Program Files\Hewlett-Packard\svctools\common\bin`.)
3. Enter the following commands at the system prompts:

```
<Install_Location>:\Program Files\Hewlett-Packard\svctools\common\bin> desta snmp off
Do you really want to turn off SNMP service trap notification [Yes]: yes

SNMP Service Trap notification is now disabled.
```

4. Enter the following commands at the system prompts:

```
<Install_Location>:\Program Files\Hewlett-Packard\svctools\common\bin> desta snmp on
Which host(s) should receive service traps for logged calls
 (comma-separated)[127.0.0.1]: 127.0.0.1
Which Trap type to use(Enter 2 or 3) [null]: 3

SNMP Service Trap notification is now enabled.
```

SMI-S supports both type 2 and 3 traps. The `desta snmp` command enables or disables support notification to management applications. All HP Insight Remote Support clients (such as HP Systems Insight Manager and HP OpenView Operations) using SNMP notification from HP Insight Remote Support will be affected momentarily when you execute the `desta snmp off` command. HP

Insight Remote Support clients using other notification mechanisms (such as SMTP) will not be affected. For more information on notification mechanisms that will not be affected, see your HP Insight Remote Support documentation.

Configuring HP SMI-S EVA logging using the dynamic log-level setting tool

The dynamic log-level setting tool enables you to change the log levels of both the CIMOM and HP SMI-S Provider without restarting the service.

NOTE:

- The log levels are `ALL, DEBUG, ERROR, INFO, WARN, OFF`.
- The log levels are case sensitive. Specify the desired log level using only uppercase characters.
- After you change the log level, it may take a few minutes for the changes to take effect.

To change the log level:

1. Open a command prompt window (`C:\`).
2. Set the path to the specified directory, as shown in the following example:

   `<Install_Location>:\Program Files\Hewlett-Packard\SMI-S\CXWSCimom\bin`
3. Enter the `Set_LogLevel` command, as shown in the following example:

   `cscript Set_LogLevel.vbs <loglevel>`

   After you enter the CIMOM and HP SMI-S Provider `Set_LogLevel` command, the log level is set to the desired log level. A message similar to the following is displayed:

   `Log Level Set to: log level`

   For example: if you enter the following:

   ```
   C:\Program
   Files\Hewlett-Packard\SMI-S\CXWSCimom\bin>cscriptSet_LogLevel.vbs
   ALL
   ```

   the following output is displayed:

   `Set_LogLevel.vbs ALL`

Installer log files

The following logs are available in the directory where HP SMI-S EVA is installed:

- `HP_SMI-S_EVA_InstallLog.log`
- `HP_SMI-S_CIMOM_InstallLog.log`

Using the CollectLogs tool

The CollectLogs tool enables you to archive all log and configuration files required for debugging to a temporary folder you specify.

To archive the files:

1. Open a command prompt window (`C:\`).
2. Set the path to the specified directory, as shown in the following example:

   `<Install_Location>:\Program Files\Hewlett-Packard\SMI-S\CXWSCimom\bin`
3. Enter the `cscript CollectLogs` command, as shown in the following example:

   `cscript CollectLogs.vbs`

   After you enter the CIMOM and HP SMI-S Provider `CollectLogs` command, a message similar to the following is displayed:

   `Information collected successfully Location: C:\Program Files\Hewlett-Packard\SMI-S\Zip_Folder_Name`

   For example, if you enter the following:

```
C:\Program Files\Hewlett-Packard\SMI-S\CXWSCimom\bin>cscript
CollectLogs.vbs
```

The following: output is displayed:

```
Information collected successfully Location: C:\Program
Files\Hewlett-Packard\SMI-S\support_ d200896_t105335.zip
```

Ensuring successful restart of CIMOM

To verify that the CIMOM service has restarted successfully:

1. Open the `cxws.log` file, which is in the the directory *<Install_Location>*`:\Program Files\Hewlett-Packard\SMI-S\CXWSCimom\logs`. For example, in the `cxlog4j.properties` file, if the log level is set to INFO, then the log file contains the following information:

[071127 17:32:58	main	StartCXWS] HTTP service started
[071127 17:32:58	main	StartCXWS] AliveThread is started and is running
[071127 17:32:58	main	StartCXWS] Cimom Service is started
[071127 17:32:58	main	StartCXWS] ProviderLoader is started

2. Verify that the timestamps are from the latest restart. If yes, then CIMOM has restarted successfully.

Other CIMOM server configurable properties

(page 57) describes CIMOM properties that can be configured in the following file:

<Install_Location>`:\Program Files\Hewlett-Packard\SMI-S\CXWSCimom\config\cxws.properties`

Table 12 CIMOM server configurable properties

Property	Value	Description
`enableHttp`	`TRUE`	Enables CIMOM to handle HTTP requests.
	`FALSE`	Disables CIMOM from handling HTTP requests.
`enableHttps`	`TRUE`	Enables CIMOM to handle HTTPS requests.
	`FALSE`	Disables CIMOM from handling HTTPS requests.
`cxws.http.port`	`5988`	Port at which CIMOM listens for HTTP requests; default is 5988.
`cxws.https.port`	`5989`	Port at which CIMOM listens for HTTPS requests; default is 5989.
`cxws.slpRegistrationLifetime`	`360`	Time interval (in seconds) at which CIMOM tries to re-register for SLP.

Other Provider configurable properties

Table 13 (page 58) describes the Provider properties that can be configured in the following file:

<Install_Location>`:\Program Files\Hewlett-Packard\SMI-S\EVAProvider\evaProvider.properties`

NOTE: Long file names in the following table are arbitrarily wrapped and contain no spaces.

Table 13 Provider configurable properties

Property	Value	Description
refreshPeriod	1800	Interval (in seconds) at which the cache is refreshed.
discoveryPeriod	120	Interval (in seconds) at which the state of the arrays is refreshed.
provider.eva.provisioning .pool.diskType	online	Specifies that online disks will be used to create a storage pool.
	nearonline	Specifies that nearline disks will be used to create a storage pool.
provider.eva.provisioning .pool.diskFailureProtection	none	No disk failure protection while creating a storage pool (default).
	single	Single protection level while creating a storage pool.
	double	Double protection level while creating a storage pool.
provider.eva.provisioning.pool .occupanyAlarmLevel	90	Threshold percentage for occupancy alarm; default is 90.
provider.eva.provisioning .tubpool.diskFailureProtection	none	No disk failure protection while creating a storage pool with tub drives (default).
	single	Single protection level while creating a storage pool with tub drives.
	double	Double protection level while creating a storage pool with tub drives.
provider.eva.provisioning .tubpool.occupanyAlarmLevel	90	Threshold percentage for occupancy alarm for pools with tub drives; default is 90.
provider.eva.allocatedPoolReq	1	Set this property to 0 if Allocated Pool is not required.
provider.eva.syncVolumeCreation	0	Set this property to 1 if volumes will be created synchronously.
provider.eva.validateMinPoolSize	1	Set this property to 0 to disable validation for minimum pool size during pool creation.
provider.eva .calculateUsedPoolSizeFromVDisks	0	Set this property to 1 if the SpaceConsumed parameter in the StoragePool field is calculated as a sum of the individual virtual disks (StorageVolume) comprising the pool. By default, SpaceConsumed is allocated from the usedstoragespacegb, as returned by HP P6000 Command View.
provider.sal.MaxSupportedLogLevel	3	Set this property to 6 to enable maximum logging for the SAL component of the HP SMI-S Provider.
provider.eva.defaultRaid	0	The HP SMI-S Provider considers that the RAID level is sent by the client application.
	1	By default, HP SMI-S Provider uses the RAID level of the source virtual disk or existing snapshot when creating snapshots.

Restarting the CIMOM service

The CIMOM service restarts automatically after a failure. No manual configuration is required for restarts after a successful installation.

Using the CLIRefresh tool

CLIRefresh is a CLI interface for immediate cache refresh, if needed, as operations performed on arrays outside HP SMI-S EVA may not be reflected in cache data until the next refresh.

NOTE:

- If you make changes to any objects used between two storage systems (for example, changes in DR groups), you must refresh each storage system.
- The time required for a cache update depends on array size.

To update cache data:

1. Open a command prompt window (`C:\`).
2. Set the path to the specified directory, for example:

   `<Install_Location>:\Program Files\Hewlett-Packard\SMI-S\CXWSCimom\bin`
3. Execute the `CLIRefreshTool.bat` command script.

   Enter the host IP, user name, and password, and select the array when prompted. For example:

```
C:\Program Files\Hewlett-Packard\SMI-S\CXWSCimom\bin> CLIRefreshTool.bat
Enter the internet address of the host in the format- http://HOSTNAME:http://localhost
Enter the username: UserName
Enter the password: password
NameSpace:/root/eva/
```

NOTE: The password is not masked.

Sample output follows:

```
SELECT A STORAGE SYSTEM


(1)---> DEXL_FDB0
(2)---> LE2-2110
(3)---> LE4-7F10
(2)---> XL-B340



(0)---> EXIT
Enter your choice:1
Choice entered:1
Refreshing:DEXL_FDB0
Refresh of the Storage System: DEXL_FDB0 started
Refresh of the Storage System: DEXL_FDB0 is complete
```

Using the GetArrayRefreshStatus tool

Use the `GetArrayRefreshStatus` tool to obtain the following values:

- Cache initialization state
- Cache refresh status
- Cache refresh completion percent

NOTE: The `HPEVA_ArrayRefreshStatus` class uses only arrays that are in a good state when calculating refresh percentages.

NOTE: In GetArrayRefreshStatus tool, the non-secure port (5988) is hard coded in the batch file. If a non-standard port is selected during install, this tool will not work. You must edit the batch file for the tool to work.

To obtain the values using `GetArrayRefreshStatus`:

1. Open a command prompt window (C:\).
2. Set the path to the specified directory, as shown in the following example:

   <Install_Location>:\Program Files\Hewlett-Packard\SMI-S\CXWSCimom\bin
3. Execute the following command:

   C:\Program Files\Hewlett-Packard\SMI-S\CXWSCimom\bin>
   GetArrayRefreshStatus.bat *<SMI-S_username>* *<SMI-S_password>*

   The result is:

```
C:\Program Files\Hewlett-Packard\SMI-S\CXWSCimom\bin>
GetArrayRefreshStatus.bat username password

This tool can be used to know cache refresh status of EVA Provider.
This queries the HPEVA_ArrayRefreshStatus class of EVA provider to get the details.
HPEVA_ArrayRefreshStatus considers only the EVAs that are in Good state for
 'Refresh Percentage calculation'.

Following Table Gives the value Map for the RefreshStatus used in
HPEVA_ArrayRefreshStatus Provider

================================================================
RefreshStatus Values map (Value - Description)
================================================================

0 - Initial Refresh In Progress
1 - Initial Refresh Completed, Cache upgrade in progress
2 - Initial Refresh Completed
3 - SAL Cache state is idle, no update is in progress
4 - EVA STATE UNMANAGED
5 - EVA STATE NOT GOOD
6 - EVA PASSWORD PROTECTED

==============START OF HPEVA_ArrayRefreshStatus INSTANCES========

// enumerating "\\root\\eva:HPEVA_ArrayRefreshStatus"
// 4380 bytes
instance of HPEVA_ArrayRefreshStatus as $hpeva_arrayrefreshstatus0
{
  Provider = "ArrayRefreshStatus Provider";   // key
  SystemWWN = { "5000XXXXXXXX80F0", "5000XXXXXXXX8DD0" };
  RefreshStatus = { 3, 3 };
  CacheRefreshProgressPercent = 100;
  isCacheInitialised = true;
  ProxyCommandViewIPs = { "15.154.56.156" };
};


==============END OF HPEVA_ArrayRefreshStatus INSTANCES==========
```

Removing HP SMI-S EVA

When removing the HP SMI-S Provider, the following actions occur:

1. The HP SMI-S Provider installer checks for the number of HP SMI-S EVA providers registered, which is the component count.
2. During HP SMI-S EVA component removal:
   - If the HP SMI-S CIMOM component count is greater than one, the count is reduced by one; if the HP SMI-S CIMOM component count equals one, the component is removed completely.
   - If the HP SMI-S Provider component count is greater than one, the count is reduced by one; if the HP SMI-S Provider component count equals one, the component is removed completely.

To remove HP SMI-S EVA:

1. Select **HP P6000 Command View software suite** in Add or Remove Programs and click **Remove**.

   The InstallAnywhere window opens.
2. Click **Next**.
3. Select **Uninstall Specific Feature**.

   The Features window opens.

4. Select the HP SMI-S EVA component, and click **Uninstall**.
   When removal is complete, the summary information window opens.
5. Click **Finish**.

F Array-based HP P6000 Command View

Security group configuration

For array-based HP P6000 Command View there is one admin security group and one user group. The default user name for the admin account is *admin*; for the user account, it is *user*. By default, there is no password for either account. See the *HP P6000 Control Panel User Guide* for information about changing account information.

Controller time zone reset to UTC after upgrading

After updating array-based HP P6000 Command View, the controller time zone might be reset to UTC. To ensure proper event handling, set the time zone and time to the local time. The correct time can be set from HP P6000 Command View by selecting **System Options→Set time options**.

G HP P6000 Performance tools

HP P6000 Performance Advisor

The HP P6000 Performance Advisor GUI helps you monitor and manage systems.

HP P6000 Performance Advisor installation planning

Before installing HP P6000 Performance Advisor, review the supported deployment models. For more information, see *Deployment Architecture* in the *HP P6000 Performance Advisor User Guide*.

- *Deployment model 1*. Server-based HP P6000 Command View, HP P6000 Performance Data Collector, and HP P6000 Performance Advisor are installed on the same management server.
- *Deployment model 2*. Server-based HP P6000 Command View and HP P6000 Performance Data Collector are installed on a Fibre Channel-attached management server, and HP P6000 Performance Advisor are installed on a network-attached management server. Both management servers belong to the same Management Group.
- *Deployment model 3*. Multiple instances of server-based HP P6000 Command View, HP P6000 Performance Data Collector, and HP P6000 Performance Advisor are installed on different management servers. All management servers on which HP P6000 Performance Advisor and server-based HP P6000 Command View are installed belong to the same Management Group.
- *Deployment model 4*. Server-based HP P6000 Command View is installed on a VMware guest OS management server; HP P6000 Performance Data Collector and HP P6000 Performance Advisor are installed on different physical management servers. All management servers on which HP P6000 Performance Advisor and HP P6000 Command View are installed belong to the same Management Group.
- *Deployment model 5*. Array-based HP P6000 Command View is on certain models of HP storage systems (factory installation), HP P6000 Performance Data Collector and HP P6000 Performance Advisor are installed on Fibre Channel-attached management servers.
- *Deployment model 6*. For HP P6000 Continuous Access remote replication, server-based HP P6000 Command View, HP P6000 Performance Data Collector, and HP P6000 Performance Advisor are installed on the management servers at both the source and destination sites.

HP P6000 Performance Data Collector

HP P6000 Performance Data Collector installation planning

HP P6000 Performance Data Collector can also be installed and used without HP P6000 Performance Advisor. To use HP P6000 Performance Data Collector without HP P6000 Performance Advisor, see the *Monitoring array performance using HP P6000 Performance Data Collector* in the HP P6000 Command View User Guide.

Retaining HP P6000 Performance Data Collector data

When running HP P6000 Command View 9.0 or later (including HP P6000 Performance Data Collector), the performance history of HP P6000 Performance Data Collector is retained by default, when you remove the software. The performance history is available at:

`<install_location>\CVEVAxx_bkp_<date_time>\EVA Performance Monitor\performance_history`

If you are running HP P6000 Command View 8.x or earlier (including HP P6000 Performance Data Collector) and the performance history folder contains any files or folders, you are prompted to retain the performance history. Select one of the following options:

- Click **yes** to retain the performance history.
- Click **no** to remove the performance history folder.

If you keep the performance history, this message appears when software removal is complete:

`Unable to remove directory: <install_location>\EVA Performance Monitor.`

H HP P6000 software TCP ports

TCP ports summary

The following table provides information on open TCP ports that may be used in your server-based or array-based management configuration.

Table 14 Open tcp ports

Process	Protocol	Port	Port Configurable	Initial Connection Role	Use	Applicable Platforms
cveva	smtp/tpc	25	No	Client	HP P6000 Command View Email notification feature	ABM/SBM
cveva	snmptrap /udp	162	No	Client	HP P6000 Command View SNMP Trap notification feature	ABM/SBM
cveva	https/tcp	2372[1]/2374[2]	No (ABM) / Yes (SBM)	Server	HP P6000 Command View Web Server	ABM/SBM
cveva	tcp	Variable RPC Ports	No	Client	HP P6000 Command View iSCSI router configuration	ABM/SBM
cveva	tcp	5001+	No	Server	HP P6000 Command View File upload via command line client	ABM/SBM
tomcat7/PMM[3]	https/tcp	2384/2386	Yes (SBM)	Server	HP EVA to 3PAR StoreServ Online Import	SBM
evapdcs	tcp	860	No	Server	Performance Data Collection Service	SBM
JavaWrapper	wbem/tcp	5988	No	Server	SMI-S	SBM
JavaWrapper	wbem/tcp	5989	No	Server	SMI-S	SBM
JavaWrapper	tcp	1372	No	Server	SMI-S/RSM communications	SBM
JavaWrapper	tcp	2008	No	Server	SMI-S	SBM
ntpd	ntp/udp	123	No	Client	HP P6000 Command View NTP time sync feature	ABM
portmap	tcp	111	No	Server	RPC Service	ABM
sim	tcp	900... 900+2*Num arrays configured controller	Yes	Server	Simulator controller paths	SBM
simcl	tcp	950	Yes	Client	Simulator CLUI	SBM
sim	http/tcp	2375	Yes	Server	Simulator GUI	SBM
vocp	https/tcp	2373	No	Server	HP P6000 Control Panel	ABM
WCCPProxy	tcp	7920	No	Server	WEBES Support	ABM/SBM
xf	https/tcp	2374	Yes	Server	MIF Web Server	ABM/SBM
xf	udp	9000	Yes	Server	MIF Discovery	ABM/SBM

Table 14 Open tcp ports *(continued)*

Process	Protocol	Port	Port Configurable	Initial Connection Role	Use	Applicable Platforms
mif	http/tcp	Default in range selected by OS	Yes	Server	MIF Unsecured Web Service	ABM/SBM
xf	https/tcp	Default in range selected by OS	Yes	Server	MIF Secured Web Service	ABM/SBM

[1] For HP P6000 Command View.

[2] For HP P6000 Management Integration Framework.

[3] For HP EVA to 3PAR StoreServ Online Import.

I Browser configuration

Configure your browser as described in this section to ensure that the HP P6000 Command View user interface works correctly.

Configuring Internet Explorer for single sign-on

Use the following procedure to prevent an Internet Explorer browser from displaying a login dialog prior to initiating the single sign-on authentication with the Management Integration Framework web server.

Considerations

- The format for entering a URL is: `https://<IP Address>:2374`.

Procedure

1. In Internet Explorer, select **Tools > Internet Options**.
2. Select **Security > Local intranet**, then click **Sites**.
3. Deselect **Automatically detect intranet network**, then select these settings:

   Include all local (intranet) sites not listed in other zones

   Include all sites that bypass the proxy server

   Include all network paths (UNCs)
4. To enable specific sites, click **Advanced**, then enter the URL each site, then click **Close**.

Configuring Firefox for single sign-on

Use the following procedure to prevent a Firefox browser from displaying a login dialog prior to initiating the single sign-on authentication with the Management Integration Framework web server.

Considerations

- The format for entering a URL is: `https://<IP Address>:2374`.
- Multiple URLs should be separated with commas.

Procedure

1. In Firefox, enter **about:config** in the address bar. The about:config page opens with a list of preference names.
2. In the Filter box, enter **network.automatic-ntlm-auth.trusted-uris**. The corresponding Preference Name is displayed.
3. Double-click the Preference Name. A dialog opens. Enter the URLs and click **OK**.

Internet Explorer settings

For server-based management

HP recommends that you configure the management server with the security settings appropriate for your environment, and browse to the management server from a client machine using Internet Explorer settings appropriate for HP P6000 Command View.

In Windows environments, you may not be able to achieve the proper Internet Explorer settings on a management server with Microsoft's IE ESC or other policy-enforced preconfigured settings. If you are browsing from an IE ESC-configured management server, you must remove IE ESC and manually configure Internet Explorer with the required HP P6000 Command View browser settings.

For array-based management

You must configure the server you are using to access HP P6000 Command View with the browser settings noted in this section.

Table 15 (page 67) describes the browser settings for Internet Explorer. The settings are not all-inclusive; only those settings that apply to HP P6000 Command View are listed. If a setting appears in bold, you must configure the setting as described.

NOTE: Only 32–bit browsers are supported for use with HP P6000 Command View, HP P6000 Performance Advisor, and HP Management Integration Framework.

Table 15 Internet Explorer settings

Menu option	Setting[1]	Value
View	Text Size	Medium This setting may affect the screen resolution setting. If it distorts HP P6000 Command View page layouts, select a text size that enables text to fit in tables in the content pane.
Tools > Internet Options > General		
Temporary Internet Files > Settings	**Check for newer versions of stored pages**	• **Automatically—For a homogeneous environment (EVA arrays only)** • Never—For a heterogeneous environment (EVA and HSG80 arrays)
	Amount of disk space to use	**10 MB** (minimum)
Colors	Use Windows colors	Selected
	Use hover color	Selected
Fonts	Language script	Latin-based
Tools > Internet Options > Security > Local Intranet > Custom Level		
Downloads	**File download**	**Enable**
	Font download	Enable
Miscellaneous	Access data sources across domains	Prompt
	Allow META REFRESH	**Enable**
	Allow scripting of Microsoft web browser controls	Enable
	Allow script-initiated windows without size or position constraints	Enable
	Allow webpages to use restricted protocols for active content	Prompt
	Display mixed content	**Enable**
	Submit nonencrypted form data	**Enable**
	Use pop-up blocker	**Disable**
	Userdata persistence	Disable
	Websites in less privileged web content zone can navigate into this zone	Enable
Scripting	Active scripting	Enable
User authentication	Logon	Automatic logon only in Intranet zone
Tools > Internet Options > Privacy		
Settings	Setting for the Internet zone	Set the bar at the very bottom of the scale
	Pop-up Blocker	Not selected

Table 15 Internet Explorer settings *(continued)*

Menu option	Setting[1]	Value
Tools > Internet Options > Connections		
Local Area Network (LAN) Settings	**Configure to enable browsing to the management server[2] on which HP P6000 Command View is installed**	**Settings will vary based on your local network configuration**
Tools > Internet Options > Advanced		
Browsing	Disable script debugging (Internet Explorer)	Selected
	Disable script debugging (Other)	Selected
	Display a notification about every script error	Not selected
	Enable third-party browser extensions (requires restart)	Selected
	Enable visual styles on buttons and controls in webpages	**Selected**
	Reuse windows for launching shortcuts (when tabbed browsing is off)	**Not selected**
	Show friendly HTTP error messages	Selected
Multimedia	**Enable Automatic Image Resizing**	**Selected**
	Play animations in webpages	**Selected**
	Show pictures	Selected
	Smart image dithering[3]	Selected
Security	Check for server certificate revocation(requires restart)	Not selected
	Check for signatures on downloaded programs	Selected
	Do not save encrypted pages to disk	**Not selected**
	Use SSL 3.0	**Selected**
	Warn if changing between secure and not secure mode	**Not selected**
	Warn if forms submittal being redirected	**Selected**

[1] These settings apply to both IE 8 and IE 9.

[2] Applies to both server-based management and array-based management, and to all software interfaces including Command View, Performance Advisor, Performance Data Collector, and MIF.

[3] Not for IE 9.

Mozilla browser settings

Table 16 (page 69) describes the browser settings for Mozilla. The settings are not all-inclusive; only those settings that apply to HP P6000 Command View are listed. If a setting appears in bold, you must configure the setting as described.

The recommended settings generally enable the browser to display HP P6000 Command View fonts and page layouts correctly. Many UNIX environments, however, do not handle fonts and page layouts consistently, so you may want to make adjustments to obtain the most readable HP P6000 Command View page layouts. For example, setting your browser for large fonts may cause the HP P6000 Command View property tables to appear crowded and unreadable. If this occurs, reduce the font size for your browser.

NOTE: ToolTips are not available in Mozilla.

NOTE: Only 32–bit browsers are supported for use with HP P6000 Command View, HP P6000 Performance Advisor, and HP Management Integration Framework.

Table 16 Mozilla browser settings[1]

Menu option	Setting	Value
Tools > Options > Content		
Block pop-up windows	**Block unrequested pop-up windows**	**Not selected**
Javascript	Enable Javascript	Selected
	Advanced	Select all options
Fonts & Colors > Advanced	Allow pages to choose their own fonts, instead of my selections above	Selected
Colors	Allow pages to choose their own colors, instead of my selections above	Selected
Tools > Options > Privacy		
History	**Firefox will**	**Remember history**
Javascript	Enable Javascript	Select
	Advanced	Select all options
Tools > Options > Advanced > Encryption		
Protocols	Use SSL 3.0	Selected
Validation	Use the Online Certificate Status Protocol (OCSP) to confirm the current validity of certificates	Not selected
Tools > Options > Advanced		
Protocols	Use SSL 3.0	Selected
Network > Offline storage	**Cache**	**10 MB**
		When the page is out of date—For a homogeneous environment (EVA arrays only) Never—For a heterogeneous environment (EVA and HSG80 arrays)
Configure Proxies to Access the Internet	**Configure to enable browsing to the management server on which HP P6000 Command View is installed**	**Settings will vary based on your local network configuration**

[1] These settings apply to both Mozilla 3.6 and 4.

Clearing the browser cache

After you upgrade HP P6000 Command View, clear your browser's cache completely:

- In Internet Explorer, select **Tools→Internet Options→Browsing history→Delete →Temporary Internet files→Delete files**.
- In Mozilla, select **Tools→Clear Recent History→Everything→Details→Cache→Clear Now**, or press **Shift** and click **Reload** simultaneously.

Glossary

This glossary defines terms that are used in this guide or are related to the software.

A

ABM Array-based management.

array Synonymous with storage array, storage system, and virtual array. A group of disks in one or more disk enclosures connected to two controllers running controller software that presents disk storage capacity as one or more virtual disks. *See also* virtual array, storage system.

array-based management A management structure in which HP P6000 Command View is installed on the management module within the controller enclosure.

C

CIMOM Common information model object manager.

client An intelligent device that requests services from other intelligent devices. In the context of HP P6000 Command View, a client is a computer that is used to access the software remotely using a supported browser.

D

default disk group The disk group created when the array is initialized. The disk group must contain a minimum of eight disks. The maximum is the number of installed disks."

disk group A named group of disks selected from all the available disks in a disk array. One or more virtual disks can be created from a disk group. Also refers to the physical disk locations associated with a parity group.

E

Enterprise Virtual Array An HP disk array product that allows pooled disk capacity to be presented to hosts as one or more variably sized physical devices. An array consists of disks, controllers, cables, power supplies, and controller software. Storage system, virtual array, and storage array are other names for an array.

ESX An enterprise-level virtualization product offered by VMware.

F

FCIP Fibre Channel Internet Protocol.

G

GBIC Gigabit interface converter. A hardware module that connects fiber optic cables to a device and converts electrical signals to optical signals.

general-purpose server A server that runs customer applications such as file and print services. HP P6000 Command View and HP P6000 Replication Solutions Manager can be used on a general purpose server in limited configurations.

H

host A computer that runs user applications and uses the information stored on an array.

HP P6000 Control Panel Operator and hardware operator control panel or view. HP P6000 Control View is the software control panel for HP EVA4400 and P63x0/P65x0 arrays.

HP P6000 Control View The software control view for HP EVA4400 and P63x0/P65x0 arrays.

I

IE ESC Internet Explorer Enhanced Security Configuration.

J

JVM Java Virtual Machine.

L

LUN Logical unit number. A LUN results from mapping a SCSI logical unit number, port ID, and LDEV ID to a RAID group. The size of the LUN is determined by the emulation mode of the LDEV and the number of LDEVs associated with the LUN. For example, a LUN associated with two OPEN-3 LDEVs has a size of 4,693 MB.

M

management server A server on which HP P6000 Enterprise Virtual Array management software is installed, such as HP P6000 Command View and HP P6000 Replication Solutions Manager.

N

NAS Network attached storage.

O

OCSP Online Certificate Status Protocol.

R

RSM Replication Solutions Manager.

S

SAL Storage Abstraction Layer.

SAN Storage area network. A network of storage devices available to one or more servers.

SBM Server-based management.

server-based management Management from a server.
See also management server.

SLP Service locator protocol.

SMIS-EVA Storage Management Initiative Specification for Enterprise Virtual Arrays.

snapclone A copy that begins as a fully allocated snapshot and becomes an independent virtual disk. Applies only to the HP Enterprise Virtual Array.

snapshot A nearly instantaneous copy of the contents of a virtual disk created without interruption of operations on the source virtual disk. Snapshots are typically used for short-term tasks such as backups.

SPOCK Single Point of Connectivity Knowledge website. SPOCK is the primary portal used to obtain detailed information about supported HP storage product configurations.

SSL Secure Sockets Layer.

SSSU Storage System Scripting Utility. An HP command line interface used to configure and control arrays.

storage area network *See* SAN.

storage array *See* array.

storage system A system consisting of one or more arrays; synonymous with virtual array.
See also array.

Storage System Scripting Utility *See* SSSU.

U

UTC Universal Time Coordinated.

UUID Unique Universal Identifier. A unique 128-bit identifier for each component of an array. UUIDs are internal system values that users cannot modify.

V

virtual array Synonymous with disk array and storage system, a group of disks in one or more disk enclosures combined with control software that presents disk storage capacity as one or more virtual disks. *See also* virtual disk.

virtual disk Variable disk capacity that is defined and managed by the array controller and presented to hosts as a disk. May be called Vdisk in the user interface.

VM Virtual Machine.

W

WWNN World wide node name. A globally unique 64-bit identifier assigned to each Fibre Channel node process.

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