

**installation  
guide**

# **hp surestore virtual array**

## **VA 7100 and VA 7400**

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**i n v e n t**



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## Format Conventions

**WARNING** Identifies a hazard that can cause personal injury

**Caution** Identifies a hazard that can cause hardware or software damage

**Note** Identifies significant concepts or operating instructions

*this font* - used for all text to be typed verbatim: all commands, path names, file names, and directory names also, text displayed on the screen

*<this font>* - used for variables used in commands

**this font** - used for GUI menu options and screen controls

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## In This Guide

This guide is intended for use by information technology (IT), service, and other personnel involved in the installation of the HP SureStore Virtual Array (VA) 7100 and 7400. It includes an installation flowchart, hardware tasks, and software tasks required for the successful installation of the product.

## Revision History

September 2001

<b>Change</b>	<b>Page</b>
Added Quick Connect Guides to list of documents available during installation.	<a href="#">7</a>
Clarified the valid range for loop ID is 0 -125	<a href="#">22</a>
Added HP-UX 11.20 to the supported operating systems for Command View SDM	<a href="#">27</a>
Changed disk enclosure numbering from 1-6 to 0-5.	<a href="#">24</a>
Added information on identifying what array settings to change	<a href="#">20</a>

January 2002

<b>Change</b>	<b>Page</b>
Added additional non-native supported operating systems.	<a href="#">27</a>
Added additional host port behaviors	<a href="#">37</a>



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# Virtual Array Installation Guide

This guide provides instructions on installing the hardware and software components for the HP SureStore Virtual Arrays (VA) 7100 and 7400. When the steps in this guide are completed, the virtual array will be fully operational and ready for use.

## Other Information You Will Need

In addition to this guide, you should have the following documents and information available:

- *HP SureStore Virtual Array Family Rack Installation Guide* - includes instructions for installing the array into the supported computer racks.
- *HP SureStore Virtual Array User & Service Guide* - includes step-by-step instructions for operating, servicing, and upgrading the array.
- *HP SureStore Command View SDM Installation and User Guide* - describes how to install and use the Command View SDM software to manage your array.
- *HP SureStore Secure Manager Virtual Array Installation and User Guide* - describes how to use the Secure Manager feature of the array to implement LUN security.
- *Quick Connect Guide(s)* and *Connectivity Streams Documents* - these documents provide detailed, operating system-specific configuration and installation information. They are particularly valuable when installing on a non-native operating system. These guides can be downloaded from the following internal HP web site:

<http://hps0.rose.hp.com/spock/#NASL>

## Virtual Array Configurations

Enclosure Nameplate	Type of Enclosure	No. of Enclosures in VA 7100	No. of Enclosures in VA 7400	Field Rackable (A) Factory Racked (AZ) Deskside (D)
Virtual Array	Controller	1	1	A, AZ, D
Disk System	Disk	0	0 to 6	A, AZ

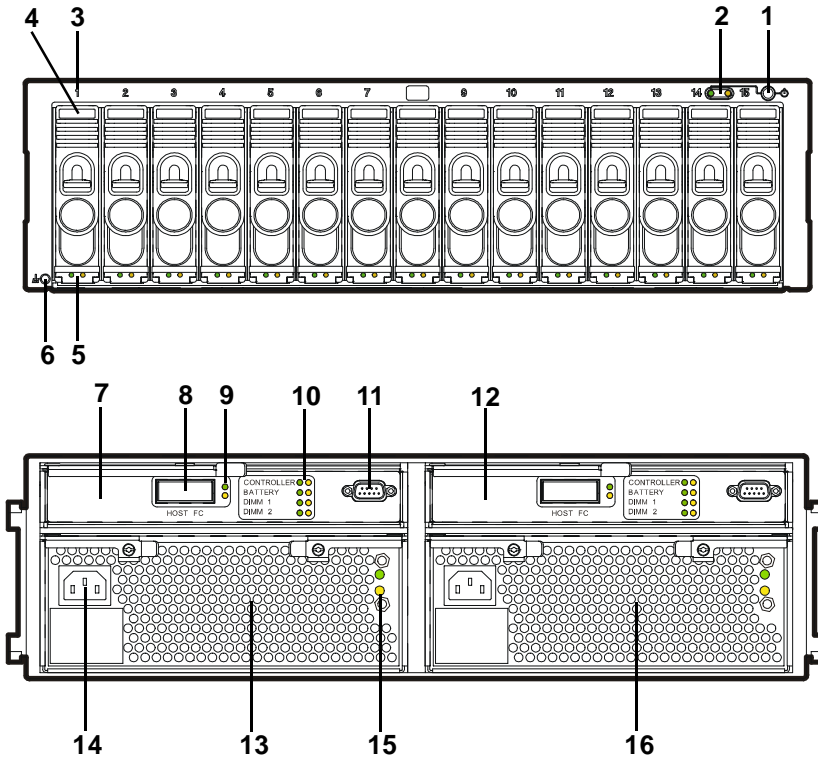
## Virtual Array Enclosures

Figure 1 through Figure 4 show the enclosures and their associated controls, indicators, and connectors.



## VA 7100 Controller Enclosure (A/AZ)

**Figure 1** VA 7100 Controller Enclosure (A/AZ)

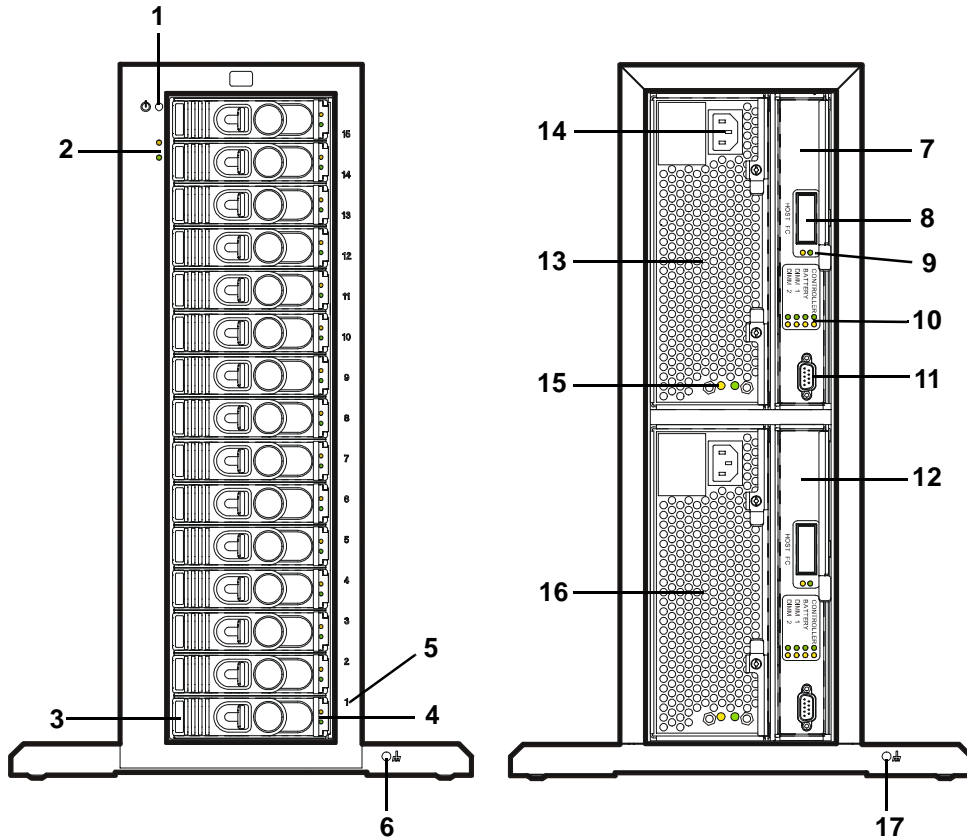


- 1 - Power/Standby Switch
- 2 - System LEDs
- 3 - Disk Drive Slot No. 1 (of 15)
- 4 - Disk Drive 1 (of 15)
- 5 - Disk Drive LEDs
- 6 - ESD Ground Receptacle
- 7 - Array Controller Card 1
- 8 - HOST FC Connector

- 9 - HOST FC LEDs
- 10 - Array Controller LEDs
- 11 - RS-232 Connector
- 12 - Array Controller Card 2
- 13 - Power Module 1
- 14 - AC Power Connector
- 15 - Power Module LEDs
- 16 - Power Module 2

## VA 7100 Controller Enclosure (D)

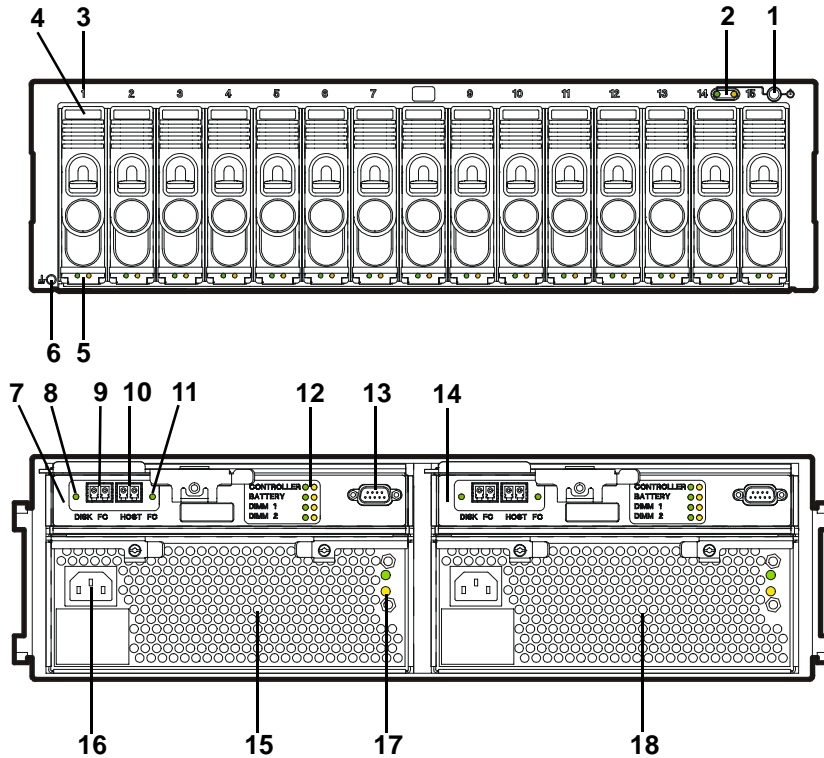
**Figure 2** VA 7100 Controller Enclosure (D)



- |                                   |                                 |
|-----------------------------------|---------------------------------|
| 1 - Power/Standby Switch          | 10 - Array Controller LEDs      |
| 2 - System LEDs                   | 11 - RS-232 Connector           |
| 3 - Disk Drive 1 (of 15)          | 12 - Array Controller Card 2    |
| 4 - Disk Drive LEDs               | 13 - AC Power Connector         |
| 5 - Disk Drive Slot No. 1 (of 15) | 14 - Power Module 1             |
| 6 - Front ESD Ground Receptacle   | 15 - Power Module LEDs          |
| 7 - Array Controller Card 1       | 16 - Power Module 2             |
| 8 - HOST FC Connector             | 17 - Rear ESD Ground Receptacle |
| 9 - HOST FC LEDs                  |                                 |

## VA 7400 Controller Enclosure (A/AZ)

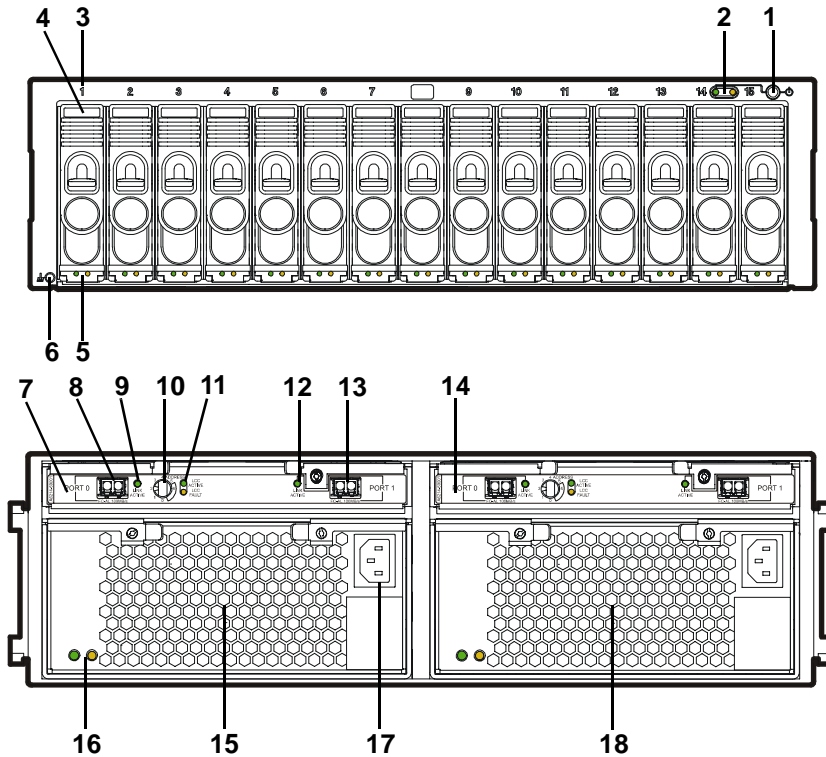
**Figure 3** VA 7400 Controller Enclosure (A/AZ)



- |                                   |                              |
|-----------------------------------|------------------------------|
| 1 - Power/Standby Switch          | 10 - HOST FC Connector       |
| 2 - System LEDs                   | 11 - HOST FC LED             |
| 3 - Disk Drive Slot No. 1 (of 15) | 12 - Array Controller LEDs   |
| 4 - Disk Drive 1 (of 15)          | 13 - RS-232 Connector        |
| 5 - Disk Drive LEDs               | 14 - Array Controller Card 2 |
| 6 - ESD Ground Receptacle         | 15 - Power Module 1          |
| 7 - Array Controller Card 1       | 16 - AC Power Connector      |
| 8 - DISK FC LED                   | 17 - Power Module LEDs       |
| 9 - DISK FC Connector             | 18 - Power Module 2          |

## VA 7400 Disk Enclosure (A/AZ)

**Figure 4** VA 7400 Disk Enclosure (A/AZ)



- |                                   |                             |
|-----------------------------------|-----------------------------|
| 1 - Power/Standby Switch          | 10 - ADDRESS Switch         |
| 2 - System LEDs                   | 11 - LCC LEDs               |
| 3 - Disk Drive Slot No. 1 (of 15) | 12 - PORT 1 LINK ACTIVE LED |
| 4 - Disk Drive 1 (of 15)          | 13 - PORT 1 FC-AL Connector |
| 5 - Disk Drive LEDs               | 14 - Link Controller Card 2 |
| 6 - ESD Ground Receptacle         | 15 - Power Module 1         |
| 7 - Link Controller Card 1        | 16 - Power Module LEDs      |
| 8 - PORT 0 FC-AL Connector        | 17 - AC Power Connector     |
| 9 - PORT 0 LINK ACTIVE LED        | 18 - Power Module 2         |

---

# Hardware Installation

## Step 1. Unpack the array.

- 1 Follow the unpacking instructions printed on the shipping container to unpack the controller enclosure.
- 2 Follow the unpacking instructions printed on the shipping container to unpack any disk enclosures (VA 7400 only).

## Step 2. Rack the array.

**WARNING** To prevent the rack from tipping over, install the enclosures to maintain the center of gravity as low as possible.

A full enclosure may weigh up to 104 pounds (47 kg). To avoid serious injury, use a mechanical lift, or remove all disk modules and power modules before lifting an enclosure into the rack. Refer to “Servicing and Upgrading” in the *HP SureStore Virtual Array User & Service Guide*.

To install enclosures into supported racks, refer to the appropriate instructions for your rack in the *HP SureStore Virtual Array Family Rack Installation Guide*. [Table 1](#) shows the supported racks for the virtual arrays.

**Table 1** Virtual Array Supported Racks

Rack Product No.	Rack Name	Height meters (EIA Units)	No. of EIA Units Per Encl. <sup>1</sup>	No. of Enclosures Per Rack <sup>2</sup>
J1500A	HP Rack System/E41	1.96 m (41 U)	3	13
J1501A	HP Rack System/E33	1.60 m (33 U)	3	11
J1502A	HP Rack System/E25	1.25 m (25 U)	3	8
C2785A	HP Computer Cabinet	1.10 m (21 U)	4	5
C2786A	HP Computer Cabinet	1.60 m (32 U)	4	8
C2787A	HP Computer Cabinet	1.96 m (41 U)	4	10
9142	Compaq 9000 Rack	2.0 m (42 U)	3	14
9136	Compaq 9000 Rack	1.7 m (36 U)	3	12
9122	Compaq 9000 Rack	1.1 m (22 U)	3	7

<sup>1</sup>HP Computer Cabinet requires a 1U filler panel to hide the mounting rails.

<sup>2</sup>Does not include space that may be required for PDUs.

### Step 3. Connect the power cords.

**WARNING** To avoid electrical fire hazard, use a branch circuit breaker properly rated for each power supply. If multiple enclosures are connected to a single branch circuit, multiply the number of enclosures times the maximum current, then select a circuit breaker with at least a 20% higher current rating. See [Table 2](#).

To optimize system availability, each power supply should be connected to a separate power bus. All wiring should meet or exceed local electrical wiring codes.

The product power cords are used as main disconnect devices. To ensure that the power cords can be disconnected quickly, locate the product near an easily accessible power outlet.

**Table 2** Enclosure Electrical Specifications

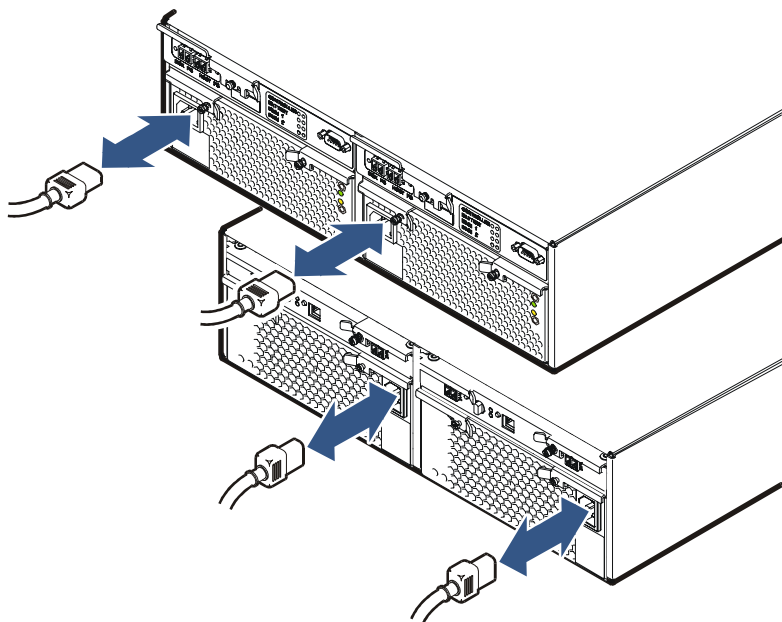
Controller Enclosure	Disk Enclosure
685 Volt-Amps	500 Volt-Amps
2288 BTU/Hour	1611 BTU/Hour

- 1 Connect the male ends of the power cords to the one of the following ac power outlets:
  - Separate ac circuits.
  - Separate uninterruptible power supplies (UPSs).
  - For racked enclosures, separate power distribution units (PDUs).
- 2 Connect the female ends of the power cords to the ac power connectors on controller enclosures and disk enclosures. See [Figure 5](#).

**Note** Make sure that the locations of power cables do not interfere with the removal of field replaceable units.

**Figure 5** Connecting Enclosure Power Cords

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**Caution** If it becomes necessary to completely remove power from the array, you must unplug both power cords from both ac power connectors on the array rear panel.

## Step 4. Connect the RS-232 terminal.

- 1 Connect one end of the null-modem serial cable to the RS-232 port on either array controller. See [Figure 6](#).

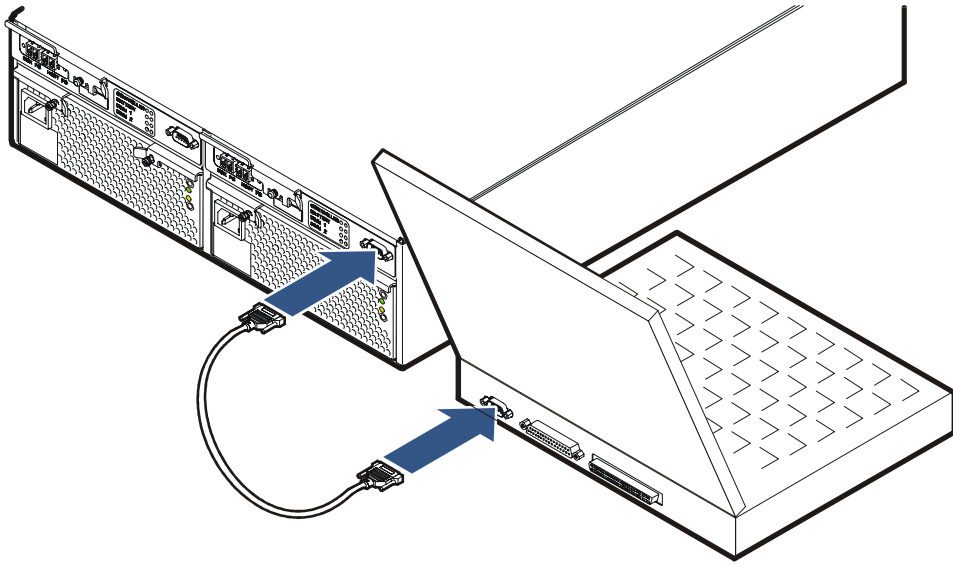
**Note** The RS-232 port on either array controller can communicate with both controllers.

- 2 Connect the other end of the null-modem serial cable to the RS-232 port on a laptop PC, desktop PC, or any RS-232 terminal.
- 3 Power-on the PC.
- 4 Start a terminal emulator using *HyperTerminal* or *Reflections*. Use the following settings:
  - Bits per second: 9600
  - Data bits: 8
  - Parity: None
  - Stop bits: 1
  - Flow control: None



**Figure 6** Connecting the Null-Modem Serial Cable

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## Step 5. Power-on the array controller enclosure.

- a Push in the power/standby switch to the "ON" position. See Figure 7. Immediately after the array is powered on, each component in the array enclosure performs a power-on self-test.
- b Verify the power-on self-test passed: all LEDs should be solid green.

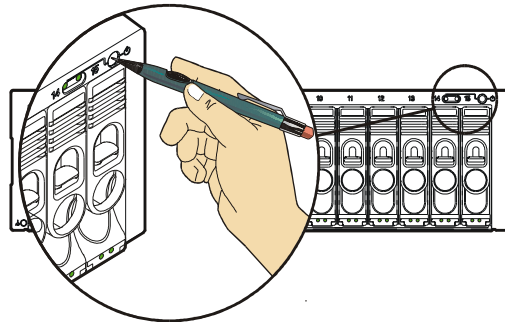
During power-on self-test, the following initialization sequence and Ready prompt are displayed on the PC connected to the serial port:

```
102EX15I1214002213 : Initializing:  
02 04 06 08 0A 0C 0E 12 16 18 1A 1C 1D 1E 20 22 24 26  
102EX15I1214002213 : Ready  
Ready >
```

If the array does not display a Ready status, see ["Solving Installation Problems" on page 40](#) for help in solving the problem.

**Figure 7** Operating the Power/Standby Switch

---



## Disk Sector Reformatting

If the disks in the array controller enclosure are formatted with 512-byte sectors, they are reformatted to 520-byte sectors at this time. Sector reformatting takes 30 to 60 minutes to complete, depending on disk drive capacity. Larger capacity disks take longer to reformat. If the disks have 520-byte sectors, this process is not performed.

The disk activity LEDs will flash during sector reformatting. When all disk light are stable, the reformatting process is complete, and the installation can continue.

**Caution** Do not proceed with the installation of the array until the reformatting is complete.

To prevent format corruption, do not remove disk drives or power-off the array during the reformatting sequence. If a disk drive is removed or the array is powered off, the array will detect a corrupt format, re-issue the Format command, and re-start the formatting process.

---

## Configuring the Array Operating Settings

There are several settings that control the operation of the array. The values selected for these settings are determined by the operating environment.

The various settings and when they need to be changed are listed in the following table. Identify the settings that need to be changed and perform the required steps.

**Note** To view the current array settings, type `vfpdsp -s`

Setting	Default	When to change
Host port behavior	HP-UX	If the host(s) connected to the array are running an operating system other than HP-UX. Also, if the Command View SDM management host is not an HP-UX host.
Port data rate* (VA7400 only)	1 gigabit/second	If the array will be connected to a host/switch with a 2 gigabit/second data rate
Port topology*	Private loop	If the array will be operating in a Public Loop or Direct Fabric Attach topology
Controller Loop ID*	controller 1: 108 controller 2: 110	If the default settings conflict with any other devices on the loop

\* Changing any of these settings requires that the array be reset before the new setting is used. Only one reset is required to invoke all new settings, so change all the necessary settings and then reset the array.

---

## Step 6. Change the controller default host port behavior.

**Note** It is recommended that the default controller port behavior be set to match the host running *HP Command View SDM*. This ensures that the management station will still function if the host port behavior table in the array is corrupted or lost.

- 1 To change the host port behavior for Controller 1 enter the following command, selecting the appropriate behavior value:

```
vfpmgr -os <nt|Win2k|Linux|Solaris|AIX|NetWare|MPE|
Tru64|OpenVMS> -c 1
```

- 2 To change the host port behavior for Controller 2, enter the following command, selecting the same behavior used for controller 1:

```
vfpmgr -os <nt|win2k|linux|solaris|aix|netware|MPE|
Tru64|OpenVMS> -c 2
```

To view the current host port behavior setting for controller 1 or controller 2, enter the following command:

```
vfpdsp -c 1|2
```

## Step 7. Change the controller port data rate to 2 Gbits/s. (VA 7400 Only)

- 1 To change the port data rate to 2 gigabits/second for controller 1, enter:

```
vfpmgr -S 2 -c 1
```

- 2 When prompted to reset, enter `no`.

- 3 To change the port data rate for controller 2, enter:

```
vfpmgr -S 2 -c 2
```

- 4 When prompted to reset, enter `no` if additional settings must be changed. If all changes have been made, enter `yes` to reset the array.

## Step 8. Change the controller port topology.

- 1 To change the port topology for controller 1 enter the following command, selecting 2 for Public Loop or 4 for Direct Fabric Attach:

```
vfpmgr -t < 2 / 4 > -c 1
```

- 2 When prompted to reset, enter `no`.
- 3 To change the port topology for controller 2 enter the following command, using the same topology value used for controller 1:  

```
vfpmgr -t < 2 / 4 > -c 2
```
- 4 When prompted to reset, enter `no` if additional settings must be changed. If all changes have been made, enter `yes` to reset the array.

## Step 9. Change the controller loop ID.

- 1 To change the loop ID for Controller 1, enter:  

```
vfpmgr -L loop_ID -c 1
```

where *loop\_ID* is a value from 1 to 125
- 2 When prompted to reset, enter `no`.
- 3 To change the loop ID for Controller 2, enter:  

```
vfpmgr -L loop_ID -c 2
```
- 4 When prompted to reset, enter `yes` to reset the array.

## Step 10. Format the array controller enclosure.

Formatting the array controller enclosure performs the following operations:

- Places identifying drive stamps on each drive in the array.
  - Reserves two image disks in the controller enclosure.
  - Deletes all LUNs.
  - Initializes the memory maps.
  - Creates LUN 0 allocated with zero bytes so the host will recognize the array.
- To format the array, enter the following command:  

```
vfpfmt
```

## Step 11. Power-off the array controller enclosure.

- Push in the power/standby switch then release it to the standby position. See [Figure 7](#).

**Note** The system power/activity LED will turn off when the power/standby switch is set to the standby position.

## Step 12. Disconnect the RS-232 terminal.

- 1 Power-off the RS-232 terminal.
- 2 Remove the null-modem cable from the array controller.
- 3 Remove the null-modem cable from the RS-232 terminal.

## Step 13. Connect fiber optic cables.

### Connecting front-end fibre optic cables

Connect front-end fiber optic cables to the HOST FC connectors on the array controllers and to the host adapter, hub, or switch.

Front-end fiber optic connections depend on the type of connectors used by the controller and the type of host adapter or type of connector in the hub or switch.

- The VA 7100 controller uses GBICs with SC (large form factor) connectors. It only supports host adapters with SC connectors, and uses cables with SC-SC connectors.
- The VA 7400 controller uses integrated LC (small form factor) connectors. It supports host adapters with LC connectors, using LC-LC cables, or host adapters with SC connectors, using LC-SC adapter cables with couplers.

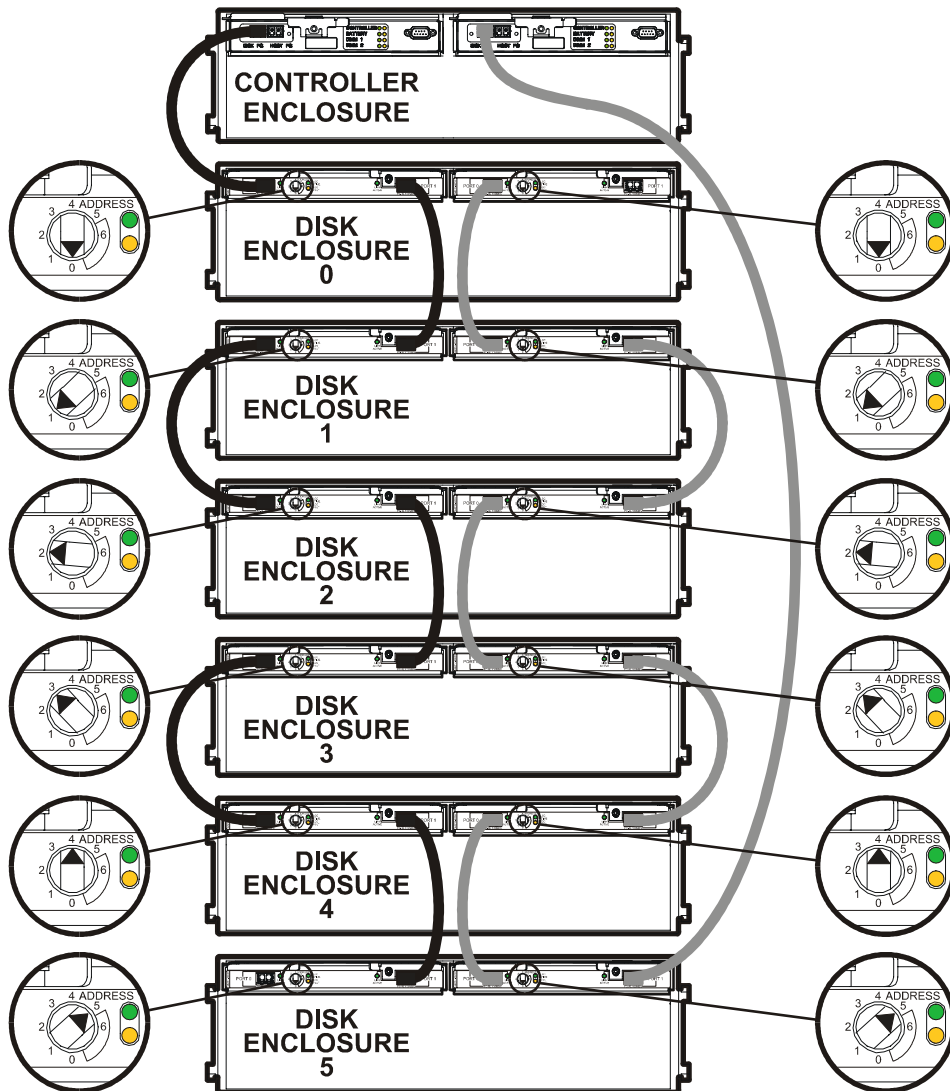
See [Figure 9](#) for information on supported fiber optic cables and configurations.

### Connecting back-end fibre optic cables and setting address switches (VA 7400 Only)

- 1 Connect the back-end fiber optic cables to the PORT 0 and PORT 1 FC-AL connectors on the link controller cards and to the DISK FC connectors on the array controllers. [Figure 8](#) illustrates the recommended cabling configuration. Up to 6 disk enclosures can be connected to the controller enclosure.
- 2 Set the address switches on the disk enclosures. See [Figure 8](#). Each disk enclosure must have a unique address. Both link controller cards in the enclosure must be set to the same address.

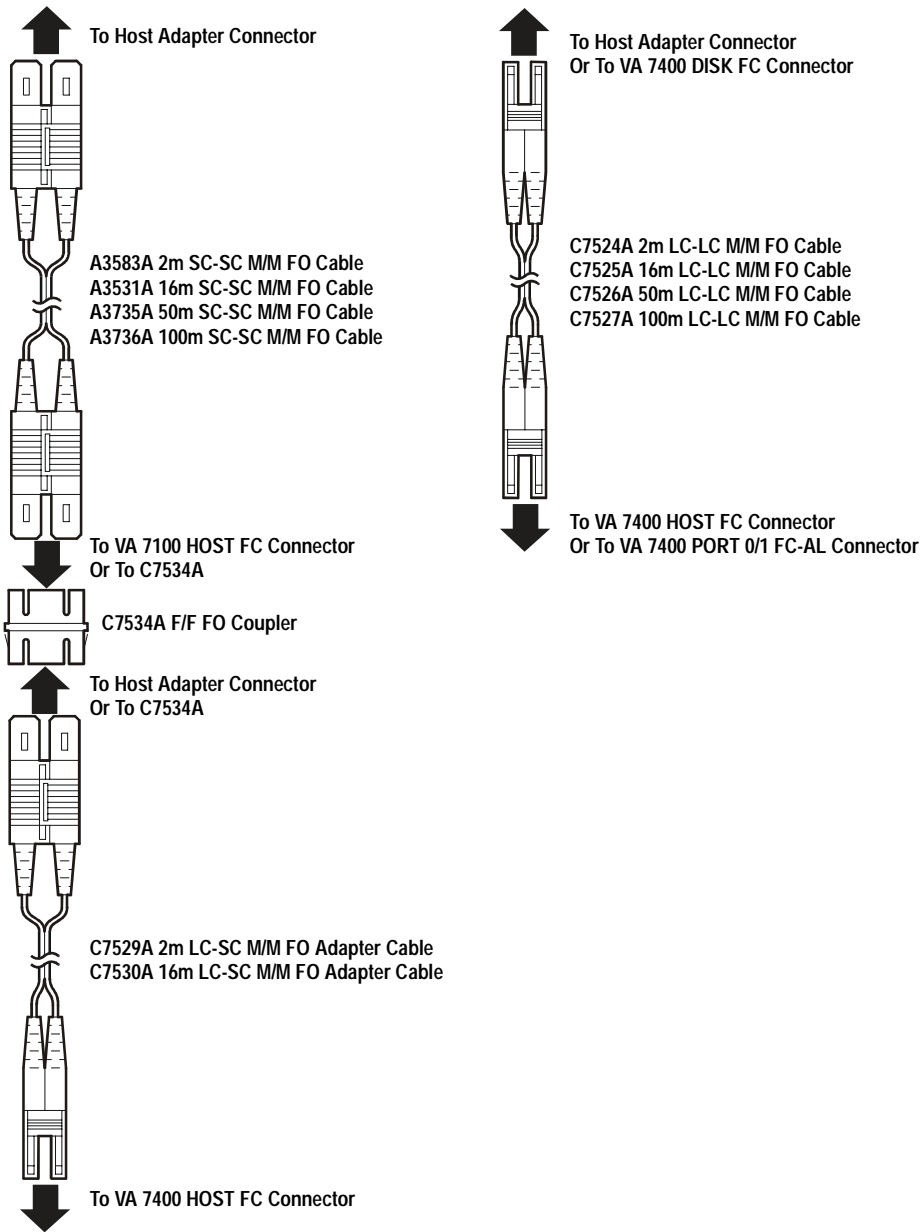
**Note** It is recommended that you set the disk enclosure addresses starting with 0 and incrementing by 1 for each enclosure.

**Figure 8** VA 7400 Back-End Fiber Optic Cabling & Addressing (6 Disk Enclosures)





**Figure 9** Fiber Optic Cables & Configurations



## Step 14. Power-on all array enclosures.

- 1 Power-on the disk enclosures.
- 2 Power-on the controller enclosure.

### Disk Sector Reformatting

If the disks in the disk enclosures are formatted with 512-byte sectors, they are reformatted to 520-byte sectors at this time. Sector reformatting takes 30 to 60 minutes to complete, depending on disk drive capacity. Larger capacity disks take longer to reformat. If the disks have 520-byte sectors, this process is not performed.

The disk activity LEDs will flash during sector reformatting. When all disk light are stable, the reformatting process is complete, and the installation can continue.

**Caution** Do not proceed with the installation of the array until the reformatting is complete.

To prevent format corruption, do not remove disk drives or power-off the array during the power-on sequence. If a disk drive is removed or the array is powered off, the array will detect a corrupt format, re-issue the Format command, and re-start the formatting process.

---

## What's Next?

- If you are adding an array to a new system that will require the installation of the Command View SDM software, continue with ["Step 15. Install Command View SDM software."](#)
- If you are adding an array to an existing system that is currently being managed using Command View SDM, you must add the new array to the management configuration. Perform the following steps to do this.
  - 1 From a Command View SDM host connected to the array, type the following command:

```
armdiscover
```

Depending on the complexity of the system configuration, the discovery process may take several minutes to complete.
  - 2 Continue with ["Step 16. Gather Host WWNs"](#).

## Step 15. Install Command View SDM software.

### Native operating systems

Command View SDM is supported and can be installed on a host or client running one of the following native operating systems. All array management can be done from a host or client running Command View SDM.

- HP-UX 11.x
- Windows 2000/NT 4.0
- Red Hat Linux

### Non-native operating systems

The VA 7100 and VA 7400 arrays are supported on the following non-native operating systems. However, Command View SDM is not supported on these operating systems. Command View SDM must be installed on a management station running one of the native operating systems, and all array management must be done from there.

- Sun Solaris
- IBM AIX
- NetWare
- MPE/iX

- Compaq OpenVMS
- Compaq Tru64
- HP-UX 10.20

## Installation Tips

- For the latest updates on Command View SDM installation procedures, refer to the README file provided on the *HP Command View SDM* CD-ROM.
- Before installing Command View SDM, make sure the latest operating system patches and the latest host adapter drivers and patches are installed on the host.
- Have a copy of the *HP Command View SDM Installation and User Guide* available for reference. It contains more detail on the installation procedures, and additional information on configuring Command View SDM for client access.

---

# Installing Command View SDM on HP-UX

## Minimum System Requirements for HP-UX

Virtual Array	■ Firmware version HP11 or greater
Host	■ HP-UX 11.0/11.11/11.20 (plus the Support Plus Hardware Enablement Bundle, version September 2001 or later)
	■ RAM: 256 Mbyte
	■ Screen Resolution: 800 x 600 (for the GUI) (Recommended 1024 X 768)
	■ Video Support: 64K colors or better
	■ Disk Space: 60 Mbyte in the /var directory
	■ Disk Space for Logs: 16 Mbyte per 2 months

### Locating HP-UX Patches

Support Plus Hardware/Critical Patch Bundle information can be found on the *HP-UX Support Plus* CD-ROM, or on the following web page:

[http://www.software.hp.com/SUPPORT\\_PLUS/hwe.html](http://www.software.hp.com/SUPPORT_PLUS/hwe.html)

The latest Java patches for HP-UX can be downloaded from the following web site:

<http://www.hp.com/products1/unix/java/infolibrary/patches.html>

### Installation Tips

- For the latest information on installing and upgrading the software, refer to the README file on the *Command View SDM* Installation CD. The README is located in the corresponding operating system directory.

- Make sure EMS hardware monitoring is installed and operating on the host **before** installing Command View SDM. This will ensure that the array is automatically added to the EMS configuration and array events will be detected and reported.

## Installation Steps

- 1 Log onto the system as root or superuser.
- 2 Insert the HP Command View SDM software CD into the CD-ROM drive.
- 3 Identify the device file for the CD-ROM:  

```
ioscan -fnCdisk
```
- 4 Create a mount point directory. For example:  

```
mkdir /cdrom
```

Use a directory that does not exist
- 5 Mount the CD device file using the device file and directory from the preceding steps. For example:  

```
mount -o ro /dev/dsk/c0t0d0 /cdrom
```
- 6 Run `swinstall` using the appropriate command:  
HP-UX 11.0  

```
swinstall -s /cdrom/hpux/cvsdm_11_00_v103xxxx.depot
```

  
HP-UX 11.11  

```
swinstall -s /cdrom/hpux/cvsdm_11_11_v103xxxx.depot
```

  
HP-UX 11.20  

```
swinstall -s /cdrom/hpux/cvsdm_11_20_v103xxxx.depot
```

Check the appropriate `/cdrom/hpux` directory for the complete version name of the depot file.
- 7 Highlight **CMDVIEWSDM** from the list, then **Mark** it for installation from the **Action** menu.
- 8 Start the installation by selecting **Install** from the **Action** menu. Complete the information requested on the `swinstall` screens.
- 9 Once the software installation is complete, log out, then log back in to reset the path.

This completes the installation of the Command View SDM software. See the *HP Command View SDM Installation and User Guide* for information on configuring and using the management software.

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# Installing Command View SDM on Windows

## Minimum System Requirements for Windows

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Virtual Array	— Firmware version HP11 or greater
Host	<ul style="list-style-type: none"><li>— Administrator privileges (Required)</li><li>— Windows NT 4.0 with Service Pack 6a or Windows 2000 with Service Pack 1 or 2</li><li>— 500 MHz processor speed or better</li><li>— 256 Mbyte RAM</li><li>— Screen resolution 800 x 600 (for GUI use) (Recommended resolution: 1024 X 768)</li><li>— Video support: 64K colors or better</li><li>— Disk space for logs: 16 Mbyte per 2 months</li><li>— Disk space:<ul style="list-style-type: none"><li>60 Mbytes of permanent space for the application</li><li>30 Mbytes of temporary space in the Windows Temp directory (typically C:/Temp) used during installation</li></ul></li></ul>

---

### Installation Tips

- For the latest software updates, refer to the README file on the *Command View SDM* CD. The README is located in the corresponding operating system directory.

### Installation Steps

- 1 Insert the *Command View SDM* CD into the CD-ROM drive on the host.
- 2 From the **Start** menu, select **Run**.
- 3 Enter the letter of your CD-ROM drive, followed by `win\setup.exe`. For example, if your CD-ROM drive is "E", enter:  
`E:\win\setup.exe`
- 4 Follow the instructions to complete the installation.





hp command view sdm

Once the installation is complete, an icon for HP Command View SDM Launcher is placed on the desktop.

This completes the installation of the *HP Command View SDM* software. See the *HP Command View SDM Installation and User Guide* for information on configuring and using the management software.

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# Installing Command View SDM on Linux Red Hat

## Minimum System Requirements for Linux Red Hat

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Virtual Array	– Firmware version HP11 or greater
Host	<ul style="list-style-type: none"><li>– Red Hat Linux 6.2, kernels 2.2.16 and 2.2.19 (plus patches, see web site mentioned below)</li><li>– Intel Pentium III 500 MHz processor</li><li>– RAM: 256 Mbyte</li><li>– Video Resolution: 800x600 (for GUI) (Recommended 1024 X 768)</li><li>– Video Support: 64K colors or better</li><li>– Disk Space: 60 Mbyte</li><li>– Disk Space for Logs: 16 Mbyte per 2 months</li></ul>

---

### Where to Get the Latest Linux Information

For the most current supported Linux Kernel version and required patches for Command View SDM, refer to the web documents, “Kernel Configuration” and “Linux Tips”. These documents and all the latest information can be found at the following HP support web site:

<http://www.hp.com/support/cvsdm>

### Installation Tips.

- For the latest software updates, refer to the README file on the *Command View SDM* CD. The README is located in the corresponding operating system directory.

## Installation Steps

- 1 Log on as root or or superuser.
- 2 Create a directory for the software. For example:  

```
mkdir /tmp/cmdview
```
- 3 Insert the HP Command View SDM software CD into the CD-ROM drive.

- 4 If necessary mount the CD device file. For example:

```
mount /dev/cdrom /mnt/cdrom
```

- 5 Copy the contents of the CD (or download from the web) into the directory created in step 3. For example:

```
cp -pr /mnt/cdrom/linux /tmp/cmdview
```

- 6 Change directories to the /linux install directory by entering:

```
cd /tmp/cmdview/linux
```

- 7 Install the software by entering:

```
install_cmdview -server
```

The installation will take several minutes.

**Note** The Host Agent installer writes a log file to  
/tmp/SanMgrInstall.log

The Command View installer writes a log file to  
/tmp/CommandViewInstall.log

- 8 For convenience you may want to add the following line to your path variable:

```
export PATH=$PATH:/opt/sanmgr/commandview/client/sbin
```

Log out, then log back in to reset the path.

This completes the installation of the *HP Command View SDM* software. See the *HP Command View SDM Installation and User Guide* for information on configuring and using the management software.

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# Final Array Configuration

## Step 16. Gather Host WWNs

The host WWN is used for defining the port behavior for a host, and for managing LUN security. Either the node or port WWN can be used. Before building either the host port behavior table or the LUN security table, you must gather the WWNs associated with each host that will be accessing the array.

There are two options for identifying the host WWN.

### Using the *armtopology* command

The *armtopology* command available in the CLUI displays information, including the WWN, for any host running Command View SDM. If Command View SDM is loaded on all hosts, you can identify all host WWNs using *armtopology*.

The *armtopology* command has the following structure:

```
armtopology <Host_1> <Host_2> <Host_3> ... <Host_n>
```

where *<Host\_n>* is the DNS name or the IP address of each host

Example output:

Host	Host Node WWN	Host Port WWN	Product	SerialNumber	C	RG	LUN	Device path
host1	50060b0000017ee0	50060b0000017ee1	A6188A	00USP1001064	1	1	1	\\.\PHYSICALDRIVE1
host2	50060b00000158f8	50060b00000158f9	A6188A	00USP1001064	2	2	0	/dev/rdisk/c0t0d0
host3	50060b000006a964	50060b000006a965	A6189A	00USP1001234	1	1	0	/dev/rdisk/c1t0d0

### Using Host and Adapter Utilities

For hosts not running Command View SDM, another method must be used to determine the host WWN. Each host should have specific utilities - operating system or host adapter - which can be used to identify the host WWNs.

- For HP-UX, run the *fcutil* command. For example, for a fibre channel array named "fcms1", enter:

```
/opt/fcms/bin/fcmsutil/dev/fcms1
```

- For other supported operating systems use the utilities included with their respective host adapter. The *Quick Connect Guide* should include information on how to locate and use the operating system or host adapter utilities.

## Step 17. Build the Host Port Behavior Table.

The host port behavior table is used in heterogeneous environments to identify hosts that do not use the controller default host port behavior. If all hosts use the default behavior, skip this step.

The host port behavior table is created using an ASCII text file containing entries identifying a host (by WWN) and its associated behavior. Table entries use the following format:

```
<WWN> <host_port_behavior>
```

<WWN> is the WWN for the host or the host adapter(s).

<host\_port\_behavior> is the behavior value for the host. [Table 3](#) lists the valid host port behavior values for each supported operating system.

**Table 3** Host Port Behavior Strings

Operating System	VA 7100 (Firmware HP 01 and HP02)	VA 7100 or VA 7400 (Firmware HP11 and greater)
HP-UX	hpuxfcdriver	Hpux
Windows NT	windows/linuxfcdriver	WinNT
Windows 2000	windows/linuxfcdriver	Win2000
Linux	windows/linuxfcdriver	Linux
Solaris	Not Supported	Solaris
AIX	Not Supported	AIX
NetWare	Not Supported	NetWare
OpenVMS	Not Supported	OpenVMS
Tru64	Not Supported	Tru64
MPE/iX	Not Supported	MPE

To build the host port behavior table:

- 1 Using an ASCII text editor, create a host port behavior table file. In this sample procedure the file is named `behavior.txt`.
- 2 Add an entry to the file for each host or host adapter that will access the array. In this example two entries are made for an NT host, one entry for a Linux host, and one entry for a Solaris host.

```
50060b0000017ee0 winnt
50060c6670019060 winnt
50060b00000158f8 linux
50060b000006a964 solaris
```

- 3 Save the host port behavior file.
- 4 Write the host port behavior table to the disk array:

```
armhost -w -f behavior.txt <array_id>
```

## Step 18. Create LUNs.

Creating the desired LUN structure on the array requires close coordination with the customer. Make sure the customer has clearly defined the LUN requirements.

Using the Command View SDM interface of choice, create the required LUNs. Refer to the on-line help or man pages for more information on creating LUNs.

Valid LUN number ranges are listed in the following table.

Product (Firmware Rev)	LUN Number Range
VA 7100 (HP01 and HP02)	0-63
VA 7100 ( HP11 and greater)	0-127
VA 7400	0-1023

### A Word About LUN 0

It is recommended that you always create LUN 0. When LUN 0 is created, it is automatically assigned a LUN security permission of configure-write for all hosts. This ensures that regardless of which host you install the Command View SDM software on, it will be able to manage the array. Because LUN 0 will be accessible to all hosts, you may want to make the size of the LUN small and not use it to store any data.

## Step 19. Build the LUN Security Table.

LUN security is required in a multi-host environment. For information on managing LUN security, refer to the *HP SureStore Secure Manager Virtual Array Installation and User Guide* included in the Secure Manager Software Media Kit (T1003A).

## Installation of the virtual array is now complete!

### What's Next?

- For information on operating, troubleshooting, servicing, and upgrading the array, refer to the *HP SureStore Virtual Array User & Service Guide* included with your array.
- For information on managing the array, refer to the *HP SureStore Command View SDM Installation and User Guide*.

---

## Solving Installation Problems

The following section identifies common installation problems and solutions. If the problem is not included here, contact support for assistance.

### PROBLEM

#### **VFP Status Not "Ready"**

### SOLUTION

If the array status displayed in the VFP is not "Ready", perform the following steps:

- 1 Reset the array:

```
vfpmgr -R full
```

When the reset is complete, check the array status. If it still not Ready, continue with the next step.

**Caution** The next step will destroy all data on the array. If this is unacceptable, contact support for assistance.

- 2 Format the array:

```
vfpfmt
```

When the format is complete, check the array status. If it still not Ready, continue with the next step.

- 3 Display array status information:

```
vfpdsp -s
```

At the end of the status output is the array status information. Record this information, and contact support for assistance.

### PROBLEM

#### **Command View stops working when Secure Manager is enabled.**

### SOLUTION

#### **Command View cannot manage the array.**

If Command View cannot communicate with array, it indicates that the host on which Command View is running does not have "Configure" (C) permissions on any LUN it can access on the array. Typically the LUN 0 entry in the LUN security table is used to grant Configure permission to all hosts. If access to LUN 0 is restricted, the host may no longer be able to use Command View to manage the array.



Correcting this problem requires editing the array LUN security table. If there is another Command View host which can communicate with the array, you can use that host to edit the LUN security table. From the functioning host, perform the steps below.

If there is not another Command View host, you will have to disable LUN security using the virtual front panel. For more information on using the virtual front panel, see the *hp surestore virtual arrays installation guide*. When security has been disabled, continue with the steps below.

- 1 Read the LUN security table from the array into a file:

```
armsecure -r -f <filename> -p <password>} <array-id>
```

- 2 Identify which LUNs the non-functioning host can access. You will need to know the World Wide Node name of the host to identify its entries in the table.

- 3 On one of the entries which grants the host access to a LUN, modify the permissions to include configure (C). The entry will look like this, which grants access to LUN 1:

```
NODEWWN 4001a5500b060012 1 WC ← Add "C" to permission
```

- 4 Write the updated LUN security table back to the array:

```
armsecure -w -c -f <filename> -p <password>} <array-id>
```

- 5 Enable Secure Manager:

```
armsecure -e -p <password>} <array-id>
```

- 6 Discover the management path to the array:

```
armdiscover
```

## PROBLEM

**I get a 401 error when trying to manage the array from a browser.**

## SOLUTION

This indicates that the correct access permissions have not been set on the Command View host. Access permissions are managed using a configuration file on the Command View host. To allow a remote client to manage the array, the IP address of the remote client must be added to the file.

The following files are used to control client access:

- `access.dat` - HP-UX, Linux, and Windows (standard installation)
- `authorizedClients.dat` - HP OpenView Storage Area Manager (SAM) installation

To set up remote client access:

- 1 On the Command View SDM host, open the configuration file in an ASCII text editor. The file is located in the following directory:

```
/opt/sanmgr/hostagent/config/ << HP-UX and Linux
\sanmgr\hostagent\config\ << Windows
\sanmgr\managementserver\config\ << Windows - HP OpenView SAM
```

- 2 Add the IP address for each client requiring access to the arrays connected to the host. Or remove the IP address for any clients you no longer want to have access.

Single client IP addresses can be added, or a range of IP addresses can be added using the wild card "\*\*". For example; 10.62.128.\* grants access to any client on subnet 128. The use of wildcards is recommended when connecting from clients configured for dynamic host configuration protocol (DHCP).

- 3 Save the configuration file.
- 4 Verify that the client browser now has access by entering the following URL:

```
http://<hostname-or-ipaddress>:4096
```

The following message should be returned by the host:

```
(c) Copyright 2000 - Hewlett-Packard Company
commandview sdm web server
```

## PROBLEM

**After installing Command View, the arrays I expected to see in the Launcher do not appear.**

**When I run the `armdsp -i` command, the arrays I expected to see in the output do not appear.**

## SOLUTION

During the software installation process, the `armdiscover` command is launched to locate all arrays connected to the host. This information is then used to populate the Launcher screen. If there is a functional array connected to the host that does not appear in the Launcher screen, it may be necessary to repeat the discovery process.

To rediscover the arrays:

- 1 Check the disk array hardware and make sure it is operating properly, and that the array is connected to the host, switch, or hub.
- 2 Manually stop the HostAgent and OpenDIAL services. Refer to the *hp command view sdm installation and user guide* for more information on this procedure.

- 3 Delete all files in the `./sanmgr/hostagent/pdb` folder. This causes OpenDIAL to rebuild the database files with the array devices that are discovered.
- 4 Manually restart the HostAgent and OpenDIAL services.
- 5 Execute the `armdiscover` command to initiate the discovery process.
- 6 Check the Launcher to ensure the array is now displayed. You can also execute the `armdsp -i` command to display the arrays that were discovered.

If this does not solve the problem, contact support for assistance.

## PROBLEM

