

SANworks by Compaq

Release Notes Enterprise Virtual Array

Part Number: EK-E1REL-RA. D01

Fourth Edition (July 2002)

Product Version: 2.0

This document contains the most recent product information about the *StorageWorks*[™] Enterprise Virtual Array by Compaq, as well as supplemental, support, and product feature details (VCS Version 2.00).

For the latest version of these Release Notes and other Storage System documentation, visit the Compaq storage website at: <http://www.compaq.com/products/storageworks>

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Release Notes Enterprise Virtual Array
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Intended Audience

This document is intended to assist customers who purchased the StorageWorks™ Enterprise Virtual Array by Compaq and the associated software.

- SANworks™ Virtual Controller Software Package V2.0 for Dual HSV Controllers by Compaq
- SANworks Snapshot for Virtual Controller Software V2.0 for Dual HSV Controllers by Compaq

This document is also intended for use by Compaq Customer Service personnel responsible for installing and maintaining designated devices associated with this storage system.

Virtual Controller Software (VCS) Minimum Revision Level

VCS V1.02 is the minimum version required for upgrading the Enterprise Virtual Array to V2.0. Prompt installation of VCS V2.0 will ensure the highest level of availability, functionality, and performance of your Enterprise Storage System.

IMPORTANT: VCS V2.0 provides the mandatory upgrade path for future system software releases.

Installing VCS V2.0

VCS V2.0 is preinstalled on your new Enterprise Virtual Array and a copy of VCS V2.0 is provided in the VCS 2.0 Kit. If you need to install a copy, follow the instructions provided in the System Software for Enterprise Virtual Array Installation Card.

For those installing VCS V2.0 as an upgrade, follow the instructions found in the *Compaq SANworks Upgrade Instructions for Enterprise Virtual Array*. You must be at VCS V1.02 prior to upgrading to VCS V2.0.

NOTE: During installation, you will be asked to access and select the filename of the file that contains the V2.0 upgrade. The filename is ent-vxxxx.sss.

Special Consideration for 1-GB and 2-GB Switch Users

If you operate 1-GB or 2-GB switches in your Enterprise Storage System and are preparing to upgrade your switch firmware to revision level 2.6 (1-GB switches), or revision level 3.02 (2-GB switches), determine whether VCS V1.02 is already installed. You must install VCS 1.02 **prior** to installing the switch firmware upgrade.

Conventions

The following conventions are used throughout this document:

- Unless otherwise specified, all references to VCS V2.0 refer to the software package (kit) and documentation version level. These software packages and documentation support VCS V2.0.
- Unless otherwise specified, all documentation that supports VCS V1.0, VCS V1.01, and VCS V1.02, also supports VCS 2.0.
- The *SANworks System Software for Enterprise Virtual Array by Compaq* is the storage system software that contains VCS, Environmental Monitoring Unit (EMU) firmware, programmable component images, diagnostics, and message files. This storage system software is usually represented by a four-digit number, for example V2.000. The VCS version number is the first three digits of the storage system software version, for example, V2.00. It may also be referred to as V2.0, when both the second and third digits are zero.
- Unless otherwise specified, all references to a controller or controller pair should be interpreted as the HSV110 Controller or HSV110 Controller pair.

- Unless otherwise specified, all references to the Enterprise Storage System or storage system should be interpreted as the Enterprise Virtual Array.
- Unless otherwise specified, all licensing references to host ID should be interpreted as the storage system World Wide Name (WWN).
- Unless otherwise specified, all references to the management appliance should be interpreted as the Compaq SANworks Management Appliance.
- Unless otherwise specified, all references to a single instance of a management agent, or the element manager, should be interpreted as the Compaq SANworks HSV Element Manager.
- The term Fabric means Fibre Channel Switched (FC-SW) connectivity.

Enterprise Virtual Array Storage System

This document contains the most recent product information about the Enterprise Virtual Array. An Enterprise Virtual Array storage system consists of the following:

- One pair of HSV110 Controllers.
- An array of physical disk drives that the controller pair controls. The disk drives are located in drive enclosures that house the support systems for the disk drives.
- Associated physical, electrical, and environmental systems.
- The HSV Element Manager, which is the graphical interface to the storage system. The element manager software resides on the Management Appliance and is accessed through a browser.
- Management Appliance, switches and cabling.
- At least one host attached through the fabric.

Enterprise Virtual Array System Software

The *SANworks System Software for Enterprise Virtual Array by Compaq* is the storage system software that contains VCS, EMU firmware, programmable component images, diagnostics, and message files. It provides storage software capability for the HSV110 Array Controller. It is preinstalled on the Enterprise Virtual Array V2.0 and is provided in the VCS V2.0 software kit.

VCS Software Descriptions

VCS V2.0 provides storage controller software capability for the HSV110 array controller. It is preinstalled on the Enterprise Virtual Array V2.0 and is provided in the VCS V2.0 software kit. Dual-redundant HSV110 array controllers are configured into the Enterprise Virtual Array, Compaq's ultrahigh performance, capacity, and availability, VersaStor-enabled, virtual RAID (Vraid) storage solution. One VCS base controller software license is required per controller pair.

SANworks Snapshot for VCS controller software is an optional product. Snapshot for VCS software provides three types of point-in-time copy functionality:

- Virtually Capacity-Free Snapshots (Vsnaps) that are snapshots of data that do not require pre-allocation of disk capacity equal to the snapped volume. Disk capacity is used on an as-needed basis.
- Standard Snapshots (Snapshots) that are snapshots of data requiring preallocation of disk capacity equal to the snapped volume.
- Virtually Instantaneous Snapclones that provide instantaneous data duplication through the use of the snapshot technology. You have immediate access to the duplicated data, while the background operation of creating the clone is accomplished over time.

Each Snapshot license covers a pair of HSV110 controllers and is ordered separately from the required VCS base software. Snapshot for VCS controller software is licensed by capacity point based on the total disk storage capacity connected to the controller pair.

Enterprise Virtual Array Element Manager

The SANworks by Compaq HSV Element Manager can be found on the HSV Element Manager V2.0 CD-ROM. The CD-ROM is contained in the Management Appliance V1.0C Service Pack 2 with label MA1.0C Service Pack 2 which is shrink-wrapped and is in the SANworks by Compaq VCS 2.0 Kit.

Enterprise Virtual Array Documentation

The Enterprise Virtual Array Catalog of Associated Documentation is included on the Technical Documentation page. Select this document to display a comprehensive list of Enterprise Virtual Array documentation, as well as accessing associated product documentation that may be required to operate your storage system. To access the Technical Documentation page, go to:

<http://www.compaq.com/products/storageworks/enterprise/documentation.html>

Kit Descriptions

The purpose of this section is to describe the SANworks by Compaq VCS 2.0 Kit contents.

The SANworks by Compaq Virtual Controller Software V2.0 kit contains the following items:

- *SANworks by Compaq Release Notes for Enterprise Virtual Array*
- *SANworks by Compaq System Software for Enterprise Virtual Array Installation Card*
- *StorageWorks by Compaq Enterprise Virtual Array Read Me First*
- Licensing Materials
- CD-ROM

It also contains the following shrink wrapped kits:

- Management Appliance V1.0C Service Pack 2 with the following contents:
 - *SANworks by Compaq Release Notes for HSV Element Manager*
 - *SANworks by Compaq HSV Element Manager Installation Card*
 - Management Appliance Software Update V1.0C Service Pack 2 CD-ROM
- Management Appliance Update January 2002 with the following contents:
 - Management Appliance Update CD-ROM (also contains HSV Element Manager V1.01)
 - *SANworks by Compaq Release Notes Management Appliance Update January 2002*
 - *SANworks by Compaq Management Appliance Update Installation Card*
- Additional documentation

NOTE: The Management Appliance Update January 2002 kit contains an earlier copy of *Compaq SANworks Element Manager for Enterprise Only User Guide*. Do not use this guide. Use the *SANworks by Compaq HSV Element Manager for Enterprise Virtual Array Reference Guide* which is available under the topic Technical Documentation at this web location:

Support Release Information

Additional documentation, including white papers, best practices, and switch documents, are available via the Compaq website at: <http://www.compaq.com>.

For product support release information, visit <http://www.compaq.com/support/files/storage/index.html>. This website provides downloadables for storage products.

To download Management Appliance updates, go to: <http://www.compaq.com/products/sanworks/managementappliance>. You can access the latest update by selecting Software & Drivers.

To access Enterprise Virtual Array product support, go to: <http://www.compaq.com/products/storageworks/enterprise>

Supported Configurations

Refer to the Enterprise Virtual Array Quick Specs for supported configurations.

Supported Operating Systems

The Enterprise Virtual Array storage system is compatible with the following operating systems:

- Tru64 UNIX
- Windows NT
- Windows 2000
- Windows Data Center Advanced Server
- OpenVMS
- Sun Solaris
- HP-UX
- IBM AIX

Table 1–1 lists those operating systems specifications which are compatible with the Enterprise Virtual Array.

NOTE: Table 1-1 contains current minimum level operating system specifications at the time of Enterprise Virtual Array V2.0 release. Some operating system component versions may change due to revision. For the latest version information, go to: <http://www.compaq.com>.

Table 1–1: Operating System Specifications

Operating System	OS Version	Clustering	HBA (FCA)	Adapter Firmware	Adapter Driver	Secure Path
Windows NT (Intel)	4.0SP 6a	MSCS	LP8000	ddb382a1BIOS 1.60a5	4-4.81a9	4.0* (kit 1030B)
			LP952 (FCA2101)	rcb382a1BIOS 1.60a5	4-4.81a9	4.0* (kit 1030B)
Windows2000 (32-bit)	5.0SP 2, SP 3	MSCS	LP8000	ddb382a1BIOS 1.60a5	5-4.81a9	4.0* (kit 1030B)
			LP952 (FCA2101)	rcb382a1BIOS 1.60a5	5-4.81a9	4.0* (kit 1030B)
Data Center 32-bit Advanced Server	5.0SP 2	MSCS	LP8000	ddb382a1BIOS 1.60a5	5-4.81a9	4.0* (kit 1030B)
			LP952 (FCA2101)	rcb382a1 BIOS 1.60a5	5-4.81a9	4.0* (kit 1030B)
Tru64 UNIX	5.1*****	TruCluster	LP8000	dd3.81a4	2.02	NR
			LP9002 (FCA2354)	cd3.81a4	2.02	
	5.1a*****	TruCluster	LP8000	dd3.81a4	2.02	NR
			LP9002 (FCA2354)	cd3.81a4	2.02	

Table 1–1: Operating System Specifications (Continued)

Operating System	OS Version	Clustering	HBA (FCA)	Adapter Firmware	Adapter Driver	Secure Path
Open VMS	7.2-2w/FIBRE_SCSI-V0200	VMS Cluster	LP8000	dd3.81a4	NR	NR
			LP9002 (FCA2354)	cd3.81a4	NR	
	7.3w/FIBRE_SCSI-V0300, 7.3-1****	VMS Cluster	LP8000	dd3.81a4	NR	NR
			LP9002 (FCA2354)	cd3.81a4	NR	
SUN 4U and SunFireSeries	6 (2.6), 7, 8	SunCluster 2.2	JNI 32 bit PCI	3.0.3	2.5.9-03	3.0a***
			JNI 64 bit S-bus	13.3.7	2.5.9-03	3.0a***
		Veritas Cluster1.3	QlogicPCI 2Gb (FCA2257P)	FCode 1.18.5	3.26	3.0a***
			QlogicSbus 1Gb (FCA2257S)	FCode 1.18.3	3.26	3.0a***
			Qlogic **cPCI 1Gb (FCA2257C)	FCode 1.18.5	3.26	3.0a***
HP-UX	11.0	MCService Guard 11.13 (not supported at this time)	A5158A 1GbPCI	Native	11.00.10	3.0a
			A6685A 1GbHSC	Native	11.11.10	3.0a
			A6795A 2GbPCI	Native	11.11.10	3.0a
	11.i (v1.0)	MCService Guard 11.13 (not supported at this time)	A5158A 1GbPCI	Native	11.11.09	3.0a
			A6685A 1GbHSC	Native	11.11.09	3.0a
			A6795A 2GbPCI	Native	11.11.09	3.0a
IBM-AIX	4.3.3, 5.1	HACMP4.4	Cambex PCI-1000f	2.01.19	1.5.19.1	2.0b

NR - Not required

* SecurePath V3.1a & V3.1aSP2 are only supported for migration purposes during the upgrade of VCS from V1.x to V2.0.

**Qlogic cPCI 1-Gb adapter is supported only on Solaris 8 for Enterprise Version 2.0.

*** SecurePath V2.1D is only supported for migration purposes during the upgrade of VCS from V1.x to V2.0.

**** Will be supported in August 2002.

***** Before installing the HSV110 V2.0 firmware on the controller attached to your Tru64 operating system you will need to install the patches listed on the Tru64 Customer Reference Library, HSV110 V2.0 firmware. Please apply the most current version of the

Tru64 patch kit as well as the separate early release patch for the HSV110 V2.0 firmware found at:

http://wwwss1.pro.compaq.com/support/reference_library/viewreferencelibrary.asp?countrycode=1000&catid=773&famid=809&prodid=811|Tru64%20Unix

Multipathing Support

Compaq OpenVMS and Compaq Tru64 UNIX require no additional software for high availability multipathing capability; multipathing is integrated into recent releases of these operating systems.

Windows, Sun Solaris, Data Center, HP-UX, and IBM-AIX require the installation of Compaq SANworks Secure Path to achieve high availability multipathing capability. Secure Path is licensed on a per-host basis. Each Windows host requires Secure Path for Windows and each Sun Solaris host requires Secure Path for Sun Solaris. Reference Table 1–1 for the specific Secure Path versions.

Singlepathing Support Configurations

The following platforms are supported configurations using servers with a single HBA:

- HP-UX
- Windows 2000 and Windows NT
- Sun Solaris
- OpenVMS
- Tru64 UNIX

NOTE: HP OpenVMS and Tru64 UNIX have "built in" Secure Path features that are not removable, but single pathing is supported.

IMPORTANT: Single pathing should not be used in mission critical environments. See the white paper for further details.

See *Connecting Single HBA Servers to the Enterprise Virtual Array without Secure Path* white paper for more information at:

<http://thenew.hp.com/country/us/eng/prodserv/storage.html>

Supported Switches

Table 1–2 lists the switches supported by the Enterprise Virtual Array.

Table 1–2: Fibre Channel Switches Supported

FC Switch	Firmware
FC SAN Switch 8-port, 16-port	2.6.0c
FC SAN Switch 8-EL, 16-EL	2.6.0c
FC SAN Switch Integrated -32 -64	2.6.0c
FC SAN 2-Gb Switch 16-port	3.0.2f
SAN Director 64	02.00.02
Hp StorageWorks director 2/64	02.00.02
Hp StorageWorks edge switch 2/32	02.00.02
Hp StorageWorks edge switch 2/16	02.00.02

Compaq Fibre Channel SAN Switch Web Page

<http://osfsrv.shr.cpqcorp.net:8008/>

McData FibreChannel switch share

\\spdsrsvr\Draco\Draco_II+

Supported Disks

Table 1–3 lists the disks supported by the Enterprise Virtual Array.

Table 1–3: Disks Supported

Fibre Channel Disk	Compaq Model	Firmware
10K RPM 3-6GB dual-ported	BD03654499	3BE3
10K RPM 72-GB dual-ported	BD07254498	3BE3
15K RPM 36-GB dual-ported	BF03654564	3BE6

NOTE: Mixing disk types within a disk group is not recommended.

Supported Browsers

Table 1–4 lists the browsers supported by the Enterprise Virtual Array.

Table 1–4: Supported Browsers

OS	OS Version	Browser	Version
SUN Solaris	v6 (v2.6), v7 and v8	Netscape Communicator	V4.79
Windows NT (Intel)	4.0	Netscape Communicator	V4.79
		Internet Explorer	V5.5
Windows 2000 (32-bit)	5.0	Netscape Communicator	V4.79
		Internet Explorer	V5.5
Data Center 32-bit Advanced Server	5.0	Netscape - Not Supported	N/A
		Internet Explorer	V5.5
Tru64 UNIX	5.1 and 5.1a	Netscape Communicator	V4.77
OpenVMS	7.2-2, 7.3, and 7.3-1*	Not Supported - customer needs to use an alternative supported platform for browsing	N/A
HP-UX	11.0 and 11.i	Netscape Communicator	V4.79
IBM-AIX	4.3.3 and 5.1	Netscape Communicator	V4.79

*Will be supported in August 2002.

Supported Servers

The following sections list the servers supported by the Enterprise Virtual Array.

Supported Compaq Proliant Servers

Table 1–5 contains those Compaq Proliant-series servers that are compatible with the Enterprise Virtual Array.

Table 1–5: Supported Compaq Proliant Servers

Proliant	NT4.0/W2K Compaq Single Server supported	NT4.0/W2K Compaq Cluster supported	NT 4.0 Microsoft HCL Certified*	Windows 2000 Microsoft HCL Certified
DL760	✓	✓	x	✓
DL580	✓	✓	x	✓
DL380	✓	✓	x	✓
DL360	✓	✓	x	✓
ML750	✓	✓	x	Will certify on demand
ML570	✓	✓	x	Will certify on demand
ML530	✓	✓	x	Will certify on demand
ML370	✓	x	x	x
ML350	✓	x	x	Will not be certified
8500	✓	✓	x	Will certify on demand
8000	✓	✓	x	x
7000	✓	x	x	x
6500	✓	x	x	x
6400R	✓	✓	x	x
6000	✓	x	x	x
5500R	✓	x	x	x
3000	✓	x	x	x
1850R	✓	✓	x	x
1600	✓	x	x	x
800	✓	x	x	x

Legend:

✓ - Supported; Certified

x - Not supported; Not certified

* Microsoft will no longer accept submittals for HCL certification on NT 4.0.

Supported Alpha Servers

Table 1–6 contains those Alpha servers that are compatible with the Enterprise Virtual Array.

Table 1–6: Alpha Servers Supported

Product	Maximum Number of FCAs/Alpha System			
	Tru 64 UNIX Switch		OpenVMS Switch	
	Single	Cluster	Single	Cluster
AS800	2	2	2	2
AS1200	4	4	4	4
AS4100	4	4	4	4
AS4000	4	4	4	4
AS8200	64	32	26	26
AS8400	64	32	26	26
DS10	2	2	2	2
DS20	4	4	4	4
DS20 E	4	4	4	4
ES40	4	4	4	4
ES45	4	4	4	4
GS60	64	32	26	26
GS80	64	32	26	26
GS160	64	32	26	26
GS320	64	32	26	26
GS140	64	32	26	26

Supported Sun Servers

The following list contains those Sun server models that are compatible with the Enterprise Virtual Array.

4U Architecture

- 4500
- 3500
- 220
- 3000
- 450
- 420
- R10K

Sunfire Models

- 4800
- 4810
- 6800
- 3800 - Uses compact PCI slots. There is a new qualified Fibre Channel Adapter for compact PCI.

Supported HP-UX Servers

The following list contains those HP server models that are compatible with the Enterprise Virtual Array.

- A-class** • 4xx • 5xx • rp2300 • rp24xx •
- B-class** • B2000 • B3000
- C-class** • C3000 • C3650 • C3700
- K-class** • 2XX • 3XX • 4XX • 5XX
- L-class** • 1000 • 2000 • rp5470 • 1000 • 2000
 - rp5430
 - rp5450
- N-class** • rp7410 • rp7400 • 8400 • Superdome (16, 32, 64-way)
- J-class** • J5600 • J6000 • J6700

Supported IBM-AIX Servers

The following list contains those IBM server models that are compatible with the Enterprise Virtual Array

- P270
- F50
- H70
- S70
- M80
- P610
- F80
- H80
- S7A
- S80
- P620
- P660
- P680
- P690 with restrictions*
- P640

*For restrictions, see the SanWorks by Compaq Release Notes for IBM AIX Kit V2.0 for Enterprise Virtual Array

Operating Constraints

This section contains operating constraints specific to the Enterprise Virtual Array Hardware, and Enterprise Virtual Array VCS can be found as follows:

- Operating constraints specific to the Compaq SANworks Management Appliance can be found in the Management Appliance Update January 2002 Release Notes.
- Operating constraints specific to the Compaq SANworks HSV Element Manager can be found in the HSV Element Manager Release Notes.

In addition, any operating constraints pertaining to the operating system can be found in the individual operating system release notes.

One HSV Element Manager Per Fabric

It is imperative for reasons of management data integrity that no more than one HSV Element Manager ever be active on a fabric at the same time. One HSV Element Manager (management agent) can manage up to 16 storage systems, but a given Enterprise storage system must never be simultaneously managed by more than one HSV element manager. Individual instances of HSV element manager can be isolated by the use of separate fabrics or zoning.

Failover/Failback

Failback Preference Setting for HSV Controllers

Table 1–7 describes the failback preference mode for each of the operating systems supported with HSV controllers and the HSV Element Manager.

Table 1–7: Failback Preference Settings

Setting	Point in Time	Behavior
No Preference	At initial presentation	The units are alternately brought online to Controller A or to Controller B.
	On dual boot or controller resynch	If there is cache data for a LUN on a particular controller, the unit will be brought online there. Otherwise, the units are alternately brought online to Controller A or to Controller B.
	On controller failover	All LUNs are brought online to the surviving controller.
	On controller failback	All LUNs remain on the surviving controller. There is no failback except if a host moves it using SCSI commands.
Path A - Failover Only	At initial presentation	The units are brought online to Controller A.
	On dual boot or controller resynch	If there is cache data for a LUN on a particular controller, the unit will be brought online there. Otherwise, the units are brought online to Controller A.
	On controller failover	All LUNs are brought online to the surviving controller.
	On controller failback	All LUNs remain on the surviving controller. There is no failback except if a host moves it using SCSI commands.

Table 1–7: Failback Preference Settings (Continued)

Setting	Point in Time	Behavior
Path B - Failover Only	At initial presentation	The units are brought online to Controller B.
	On dual boot or controller resynch	If there is cache data for a LUN on a particular controller, the unit will be brought online there. Otherwise, the units are brought online to Controller B.
	On controller failover	All LUNs are brought online to the surviving controller.
	On controller failback	All LUNs remain on the surviving controller. There is no failback except if a host moves it using SCSI commands.
Path A - Failover/Failback	At initial presentation	The units are brought online to Controller A.
	On dual boot or controller resynch	If there is cache data for a LUN on a particular controller, the unit will be brought online there. Otherwise, the units are brought online to Controller A.
	On controller failover	All LUNs are brought online to the surviving controller.
	On controller failback	All LUNs remain on the surviving controller. After controller restoration, the units that are online to Controller B and set to Path A are brought online to Controller A. This is a one time occurrence. If the host then moves the LUN using SCSI commands, it will remain where moved.

Table 1–7: Failback Preference Settings (Continued)

Setting	Point in Time	Behavior
Path B - Failover/Failback	At initial presentation	The units are brought online to Controller B.
	On dual boot or controller resynch	If there is cache data for a LUN on a particular controller, the unit will be brought online there. Otherwise, the units are brought online to Controller B.
	On controller failover	All LUNs are brought online to the surviving controller.
	On controller failback	All LUNs remain on the surviving controller. After controller restoration, the units that are online to Controller A and set to Path B are brought online to Controller B. This is a one time occurrence. If the host then moves the LUN using SCSI commands, it will remain where moved.

Table 1–8 describes the failback default behavior and settings allowed for each operating system. The table indicates when Secure Path is used in conjunction with the operating system.

Table 1–8: Failback Settings by Operating System

Operating System	Default Behavior	Settings Allowed
Windows Secure Path	Autoback done by the host	No Preference, Path A/B - Failover Only
Sun UNIX Secure Path	Autoback done by the host	No Preference, Path A/B - Failover Only
HP Secure Path	Autoback done by the host	No Preference, Path A/B - Failover Only
IBM AIX Secure Path	Autoback done by the host	No Preference, Path A/B - Failover Only
Tru64 UNIX	Host follows the unit	All settings allowed. Recommended setting: Path A/B - Failover/Failback.
VMS (7.3 and below)	Attempts to move the unit to the first path discovered	No Preference, Path A/B - Failover Only

Table 1–8: Failback Settings by Operating System (Continued)

Operating System	Default Behavior	Settings Allowed
VMS (7.3-1 and greater)	Host follows the unit	All settings allowed. Recommended setting: Path A/B - Failover/Failback

VCS V2.0 Software Cannot be Downgraded

It is important to note that you cannot downgrade VCS V2.0 to an earlier version of system software.

Minimum Disk Group Sizes

Compaq requires that a disk group contain no fewer than eight disks. The HSV Element Manager default is four disks. **Do not use this default.** You must specify eight disks.

Avoiding Problem Situations

This section addresses avoiding problem situations specific to the Enterprise Virtual Array hardware and Enterprise Virtual Array VCS software.

Avoiding problem situations specific to the Compaq SANworks Management Appliance can be found in the Management Appliance Update January 2002 Release Notes.

Avoiding problem situations specific to the Compaq SANworks HSV Element Manager can be found in the HSV Element Manager Release Notes.

In addition, avoiding problem situations pertaining operating systems can be found in the individual operating system release notes.

One HSV Element Manager Per Fabric

It is imperative for reasons of management data integrity that no more than one HSV Element Manager ever be active on a fabric at the same time. One HSV Element Manager (management agent) can manage up to 16 storage systems, but a given Enterprise storage system must never be simultaneously managed by more than one HSV element manager. Individual instances of HSV element manager can be isolated by the use of separate fabrics or zoning.

Licensing and the Upgrade Process

It is mandatory that the user first obtain and enter all licenses prior to performing the VCS upgrade. If the licenses are not entered before performing the upgrade, the user will get an "HSV upgrade manager - open file read failure" error and will be dropped from the code load process. The user will then have to re-enter the code load process and proceed as usual.

Operating HSV Controller at or Near Storage Limit

When operating the HSV controller at or near its available storage limit, use the high water threshold warnings to ensure you are aware when you must add more storage to the system.

Secure Path Version

The Enterprise Virtual Array with VCS 2.0 should not be operated with a down version of Secure Path. Ensure that you have the current version for your operating system (see Table 1-1).

HSV Element Manager Version

Only the HSV Element Manager Version 2.0 can communicate with the Enterprise running VCS Version 2.0. HSV Element Manager Version 2.0 is shipped with the VCS Version 2.0 kit and should be installed. If you are upgrading your Enterprise Virtual Array, install the HSV Element Manager V2.0 prior to upgrading the Enterprise Virtual Array.

Upgrading to VCS V2.0 Software

Your Enterprise Virtual Array VCS must be at V1.02 in order for you to upgrade to VCS V2.0. You cannot upgrade from any other version level. Contact your Compaq Authorized Service Provider if your controller is below V1.02.

Code Load Usage

When a maximum configured system is running at maximum load, code load may not complete fast enough to avoid application time-outs. Because of this behavior, it is recommended that VCS upgrade be done during off peak usage.

Disk Resource Pending Timeout for Large Configurations

In order to ensure continuous operation of disk resources across SAN perturbations with disk resource counts greater than eight, Compaq recommends that the Pending Timeout parameter for each disk resource be increased from 180 seconds to 360 seconds.

To view and set the Pending Timeout parameter:

1. Open the **Microsoft Cluster Administrator**.
2. Select a **Disk Group** resource in the left pane.
3. Right click Each Disk Resource in right pane, one at a time, and select **Properties**.
4. Select the **Advanced** tab from the **Properties** menu.
5. Locate the **Pending Timeout** value and change it to **360**.
6. Click **OK**.

Enterprise Storage System Notes

Cable Requirements

When an Enterprise Virtual Array is installed, an SC-to-LC (1-Gb to 2-Gb) cable is required for host connectivity. Tables 1-9 and 1-10 provide a listing of available cables.

Table 1–9: LC-SC cables

Length	Description	Compaq Part Number
2.0 m ± 40 mm	CA ASSY, LC-SC, Optical 2M	187891-002
5.0 m ± 80 mm	CA ASSY, LC-SC, Optical 5M	187891-005
15.0 m ± 150 mm	CA ASSY, LC-SC, Optical 15M	187891-015
30.0 m ± 300 mm	CA-ASSY, LC-SC, Optical 30M	187891-030
50.0 m ± 500 mm	CA-ASSY, LC-SC, Optical 50M	187891-050

Table 1–10: LC-LC Cables

Length (m +/- mm)	Description	Compaq Part Number
2.0 m ± 40 mm	2-meter LC-LC Multi-Mode Fibre Cable	221692-B21
5.0 m ± 80 mm	5-meter LC-LC Multi-Mode Fibre Cable	221692-B22
15.0 m ± 150 mm	15-meter LC-LC Multi-Mode Fibre Cable	221692-B23
30.0 m ± 300 mm	30-meter LC-LC Multi-Mode Fibre Cable	221692-B26
50.0 m ± 500 mm	50-meter LC-LC Multi-Mode Fibre Cable	221692-B27

Dynamic Volume Expansion

If you need a virtual disk to be bigger than you originally specified, use dynamic volume expansion functionality to increase the capacity. Your host operating system must support dynamic volume expansion.

Upgrading the Storage System Software from V1.021 to V2.000

When upgrading your Storage System software from V 1.021 to 2.000, get the latest version of any Enterprise documentation at the following URL:

<http://www.compaq.com/products/storageworks/enterprise/documentation.html>

Licensing Support Information

If you have trouble obtaining a License Key or need other licensing support information, refer to the *StorageWorks by Compaq Enterprise Virtual Array License Instructions* which is shipped with the VCS V2.0 software kit.

For assistance with incorrect Authorization ID, contact your authorized Compaq Authorized Service Provider.

For assistance with lost Authorization ID and Authorization ID not shipped, contact your Compaq order channel.

Documentation Anomalies

This section contains corrections and additions to the Enterprise Virtual Array documentation.

Incorrect Document Title

On Page xvi of the *StorageWorks by Compaq Enterprise Virtual Array User Guide*, *StorageWorks by Compaq Enterprise Virtual Array Upgrade Instructions* should read: *StorageWorks by Compaq Upgrade Instructions for the Enterprise Virtual Array*.

Documentation Correction

In the *StorageWorks by Compaq Enterprise Virtual Array User Guide*, the first bullet on page 1-13 should read: Enterprise 42U Rack—Available in opal with a depth of 909mm (35.8 in) with industry standard 19-in mounting rails. This rack has a space capacity of 42U.