

SANworks by Compaq

Release Notes - Windows Kit V2.0A for Enterprise Virtual Array

Part Number: AA-RR09E-TE

Fifth Edition (May 2003)

Product Version: 2.0A

This document contains the most recent product information about the *SANworks by Compaq* Windows Kit V2.0A used for integrating host servers with the *StorageWorks™* Enterprise Virtual Array (VCS Version 2.0).

For the latest version of these Release Notes and other product documentation, visit the *StorageWorks* website at:

<http://h18006.www1.hp.com/storage/index.html>

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Release Notes Contents

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Intended Audience

This document is intended to assist customers who purchased the hp StorageWorks Enterprise Virtual Array and the associated hp SANworks Operating System kits. Other associated software packages are:

- hp SANworks Virtual Controller Software Package V2.0 for Dual HSV Controllers
- hp SANworks Snapshot for Virtual Controller Software V2.0 for Dual HSV Controllers

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

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 *System Software for Enterprise Virtual Array* is the storage system software that contains Virtual Controller Software (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.
- 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 references to rack should be interpreted as the 9000-Series Enterprise Storage System Rack.
- 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 hp 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 hp SANworks HSV Element Manager.
- The term Fabric means Fibre Channel Switched (FC-SW) connectivity.

New Features

This section briefly describes new features and changes that are supported by the Version 2.0A release of the Platform Kit together with the array controller running VCS Version 2.0.

New Features for Version 2.0A

The following are major enhancements included in the V2.0A release of the Platform Kit.

- **Rapid Deployment Pack**—ProLiant Essentials Rapid Deployment Pack provides automated server deployment and redeployment via a central console using imaging and scripting technologies for ProLiant servers. The deployment console provides simple drag-and-drop functionality for deployment events. The Platform

Kit CD-ROM contains software components, drivers, and utilities that are located in the \rdp directory. See readme.txt on the CD-ROM for a more detailed description of Rapid Deployment Pack, installation instructions, and restrictions. For general information on Rapid Deployment Pack, go to <http://h18013.www1.hp.com/products/servers/management/rdp/index.html>

- **Windows Server 2003**—Platform Kits now support Windows Server 2003, 32-bit.
- **Blade Servers**—Platform Kits for Windows 2000 and Windows Server 2003 now support ProLiant Blade Servers BL20p and BL40p.
- **Secure Path Version**—A new version is available for both Windows 2000 and Windows Server 2003 and is required for ProLiant Blade Server support but is not included in this kit.

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

hp SANworks Virtual Controller Software (VCS) V2.0 provides storage software capability for the HSV110 Array Controller and is provided in the VCS V2.0 software kit.

Multiple Storage System Types

The extended interoperability of the heterogeneous SAN allows you to mix several types of *StorageWorks* storage systems. *StorageWorks* recommends the following configuration rules when different storage products are shared in the same SAN:

- HSG80 ACS Version 8.7 and EVA VCS Version 2.0—Use ACS Solution Software Version 8.7A (includes SWCC Version 2.5) and VCS Version 2.0 compatible multi-bus software/drivers.
- HSG80 ACS Version 8.6 and EVA VCS Version 2.0—Use ACS Solution Software Version 8.6 (if SWCC Version 2.4 components are desired) and VCS Version 2.0 compatible multi-bus software/drivers.

Enterprise Virtual Array Documentation

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

<http://h18006.www1.hp.com/products/storageworks/enterprise/documentation.html>

Support Release Information

For future product support release information visit

<http://h18006.www1.hp.com/storage/index.html>

This website provides downloadables for storage products.

Supported Configurations

Refer to the Enterprise Virtual Array Quick Specs for supported configurations. The *HP StorageWorks Heterogeneous Open SAN Design Reference Guide* is a detailed guide for SAN configurations and is available at:

<http://h18004.www1.hp.com/products/storageworks/san/documentation.html>

IMPORTANT: Windows 2000 Datacenter support is not included in this release because of lengthier certification requirements for Datacenter solutions. Upon certification, Platform Kit Software Version 2.0A for Windows 2000 Datacenter and its associated documentation will be made available.

Adobe Acrobat Reader

The CD-ROM that ships with this kit includes two versions of Adobe Acrobat reader—one that runs directly from the CD and one that can be installed on your server. If you access the documents on the CD through the CD browser interface, the default setup runs the reader from the CD. Alternatively, you can run *rp500enu.exe* from the \Demo\Acrobat directory to install the reader on your server.

Issues with Acrobat Reader

The following list describes issues that have been encountered with Acrobat Reader on Windows when attempting to access documents from the CD browser interface:

- Reading PDF files from within the CD browser interface (using the reader running directly from the CD) and clicking hyperlinks can produce application hangs. To work around this, try opening the documents directly from the \Docs directory on the CD.
- If Acrobat 4 is running and you attempt to access the PDF files through the CD browser interface, Acrobat 5 starts from the CD and causes errors. To avoid such errors, close Acrobat 4 and open the document again using the installed version of Acrobat Reader.

Supported Operating Systems

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

- Tru64 UNIX
- Windows NT/Windows 2000/Windows Server 2003
- OpenVMS
- Sun Solaris
- HP-UX
- IBM AIX
- Linux
- Novell NetWare (single-path only)

Table 1–1 lists the operating system’s specifications, which are compatible with the Enterprise Virtual Array.

NOTE: Table 1-1 contains current minimum level operating system specifications at the time of the Enterprise Virtual Array V2.0 release. Some component versions may change due to revision. For the latest information go to:

<http://h18006.www1.hp.com/storage/index.html>

Table 1–1: Operating System Specifications

Platform	OS Version	Clustering	FCA (HBA)	Adapter Firmware	Adapter Driver	Secure Path
Windows NT (Intel)	4.0/ SP 6a	MSCS	176479-B21	3.82a1 BIOS 1.61a2	4-4.82a14	†† _{see note}
			245299-B21 (FCA 2101)	3.82a1 BIOS 1.61a2	4-4.82a14	†† _{see note}
			308540-B21 (FCA2355)	3.82a1 BIOS 1.61a2	4-4.82a14	†† _{see note}
Windows 2000 (32-bit)	5.0 SP 2, SP 3	MSCS	176479-B21	3.82a1 BIOS 1.61a2	5-4.82a14	†† _{see note}
			245299-B21 (FCA2101)	3.82a1 BIOS 1.61a2	5-4.82a14	†† _{see note}
			308540-B21 (FCA2355)	3.82a1 BIOS 1.61a2	5-4.82a14	†† _{see note}
			281541-B21 (FCA2214)	BIOS 1.33	8.2.0.72	†† _{see note}
			321835-001 (FCA2214DC)	BIOS 1.33	8.2.0.72	†† _{see note}
			BL20p Mezzanine	BIOS 1.33	8.2.0.72 ¹	†† _{see note}
Windows Server 2003 (32-bit)	5.0	MSCS	176479-B21	3.82a1 BIOS 1.61a2	5-4.82a14	†† _{see note}
			245299-B21 (FCA2101)	3.82a1 BIOS 1.61a2	5-4.82a14	†† _{see note}
			308540-B21 (FCA2355)	3.82a1 BIOS 1.61a2	5-4.82a14	†† _{see note}
			281541-B21 (FCA2214)	BIOS 1.33	8.2.0.72	†† _{see note}
			321835-001 (FCA2214DC)	BIOS 1.33	8.2.0.72	†† _{see note}

Table 1–1: Operating System Specifications (Continued)

Platform	OS Version	Clustering	FCA (HBA)	Adapter Firmware	Adapter Driver	Secure Path
Windows Server 2003 (32-bit)	5.0	MSCS	BL20p Mezzanine	BIOS 1.33	8.2.0.72 [†]	†† _{see note}

* SecurePath V3.1A & V3.1 SP2 is only supported for migration purposes during the upgrade of VCS from V1.x to V2.0.

† Blade Server ProLiant BL20p is shipped with an in-built HBA, driver version 8.2.0.72, BIOS 1.33.

†† For supported Secure Path versions, go to <http://h18006.www1.hp.com/products/storageworks/enterprise/specifications.html>

Table 1–2 details the supported web browsers.

Table 1–2: Supported Browsers

OS	OS Version	Browser	Minimum Version
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
Windows Server 2003	5.0	Internet Explorer	V6.0

Switch Support

This Fibre Channel Platform Kit supports the Fibre Channel switches and firmware versions listed in Table 1–3.

IMPORTANT: StorageWorks recommends that you do not mix switch firmware versions in your SAN. It is considered best practice to uniformly upgrade all switches in the SAN.

Table 1–3: Fibre Channel Switch Support

Description	Part Number	Firmware Version
SAN Switch 8 (8 Port FC, 1 Gbps)	158222-B21 DS-DSGGB-AA	2.6.0h
SAN Switch 16 (16 Port FC, 1 Gbps)	158223-B21 DS-DSGGB-AB	2.6.0h
SAN Switch 8-EL (8 Port FC Entry Level, 1 Gbps)	176219-B21 DS-DSGGC-AA	2.6.0h
SAN Switch 16-EL (16 Port FC Entry Level, 1 Gbps)	212776-B21 DS-DSGGC-AB	2.6.0h

Table 1–3: Fibre Channel Switch Support (Continued)

SAN Switch 2/32(16-32 Ports FC, 2 Gbps)	230616-B21 DS-DSGGS-AA	4.0.2b
SAN Switch Integrated (32 Port FC, 1 Gbps)	230616-B21 DS-DSGGS-AA	2.6.0h
SAN Switch Integrated 64 (64 Port FC, 1 Gbps)	230617-B21 DS-DSGGS-AB	2.6.0h
SAN Switch 2/16 (16 Port FC, 2 Gbps)	240602-B21 DS-DSGGD-AA	3.02k
SAN Switch 2/8-EL (8 Port FC Entry Level, 2 Gbps)	258707-B21 DS-DSGGD-AC	3.02k
SAN Switch 2/16-EL (16 Port FC Entry Level, 2 Gbps)	283056-B21 DS-DSGGD-AD	3.02k
SAN Core Switch 2/64 (32-64 Ports FC, 2 Gbps)	254508-B21 DS-DSGGE-AB	4.0.2b
SAN Director 64 (32-64 Ports FC, 1 Gbps)	254512-B21 DS-DMGGD-AA	02.00.00
SAN Edge Switch 32 (32 Ports FC, 1 Gbps)	2T-M3032-AA (See Note)	02.00.00
SAN Edge Switch 16 (16 Ports FC, 1 Gbps)	2T-M3016-AA (See Note)	02.00.00
SAN Director 2/64 (32-64 Ports FC, 2 Gbps)	286809-B21 DS-DMGGD-BA	02.00.00
SAN Director 2/140 Switch (140 Ports FC, 2 Gbps)	316093-B21 DS-DMGGD-CA	04.01.02
SAN Edge Switch 2/32 (32 Ports FC, 2 Gbps)	286810-B21 DS-DMGGE-BC	02.00.00
SAN Edge Switch 2/16 (16 Ports FC, 2 Gbps)	286811-B21 DS-DMGGE-BB	02.00.00
SAN Edge Switch 2/24 (24 Ports FC, 2 Gbps)	316095-B21 DS-DMGGE-BD	04.01.02

NOTE: The listed 1 Gbps SAN Edge Switches are CSS (Custom Services and Solutions) orderable only. Please contact your StorageWorks sales representative at 1-800-STORWORK for further information on these CSS components.

For the latest versions of switch firmware, please visit the StorageWorks website:

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

Multiple Path Support

Windows requires the installation of Secure Path on each host to achieve high availability multiple path capability. Secure Path is licensed on a per-host basis. Each Windows host requires Secure Path for Windows. For supported Secure Path versions, go to <http://h18006.www1.hp.com/products/storageworks/enterprise/specifications.html>

Multi-Path Support Configurations

A Windows 2000, Windows NT, or Windows Server 2003 server with a single FCA supports single path mode.

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

Supported Servers

Windows supports Intel X86 Servers, ProLiant X86, and ProLiant BL20p and BL40p Blade Servers.

Operating Constraints

Any operating constraints specific to the Enterprise Virtual Array hardware and HSV Element Manager can be found in their respective release notes.

SAN Boot Procedures

Booting from the SAN is supported for Windows NT and Windows 2000 for multi path configurations. SAN boot procedures are available on the *StorageWorks* website.

<http://h18000.www1.hp.com/products/storageworks/san/documentation.html>

Failover/Failback

There are specific failback preference settings for the HSV controllers that are operating system specific (see the Enterprise Virtual Array hardware release notes for details).

Avoiding Problem Situations

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

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

In addition, avoiding problem situations pertaining Enterprise Virtual Array hardware can be found in the hardware release notes.

Secure Path Version

The Enterprise Virtual Array with VCS 2.0 should not be operated with a down version of Secure Path. For supported Secure Path versions, go to <http://h18006.www1.hp.com/products/storageworks/enterprise/specifications.html>.

Codeload Usage

When a maximum configured system is running at maximum load, codeload functionality cannot be used effectively due to Secure Path timing constraints. The system may time out before codeload is completed. Because of this behavior, VCS upgrade should 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, HP 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. Table 1–4 provides a listing of available cables.

Table 1–4: LC-SC cables

Length	Description	hp 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 1–5: LC-LC cables

Length	Description	hp 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

Licensing Support Information

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

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

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

Host Considerations

This section contains information on issues and important reminders regarding the host servers.

Windows 2000 and Windows Server 2003 Specific Notes

- There are two situations in which drive-letter remapping might occur and that could affect access to data by programs you may need to run. The first situation is one in which you replace one server with another. The second is a situation in which you simply replace an FC HBA in one of your systems. During such a system or adapter changeover, be sure to manually remap drives to drive letters using Disk Manager. This restores proper access to your data.
- If you replace an FC HBA in a server, you need to reinstall the HBA driver and then rerun the Fibre Channel Setup utility. This is so that Windows 2000/Windows Server 2003 can automatically reload the original driver for this adapter and reset many of the important registry settings. New connections are created on the HSV controller. Those WWNs should be assigned to the appropriate host.

Upgrading from Windows NT 4.0 to Windows 2000 or Windows Server 2003

If you are upgrading from Windows NT 4.0 to Windows 2000 or Windows Server 2003, you must remove the software components installed by the previous version of the Fibre Channel Setup utility. Follow these steps:

1. Remove the software components installed from the previous Fibre Channel Setup utility. To do this, locate the previous CD-ROM and run the utility. Follow the procedures in it to remove components. Alternately, you can use the **Add/Remove Programs** applet.
2. Upgrade from Windows NT 4.0 to Windows 2000 or Windows Server 2003 as instructed by Microsoft's documentation.
3. Reboot.
4. Install the HBA driver upgrade as instructed in the *hp SANworks Windows NT/Windows 2000 Kit V2.0 for Enterprise Virtual Array*.

5. Run the Fibre Channel Setup utility to complete your installation.

Registry Growth in Windows

The Windows Plug-and-Play architecture has a limitation on the number of plug-and-play devices that are added or removed from the registry. Whenever devices are added or removed, or snapshots created or deleted, entries are added to the registry by the Plug-and-Play manager, potentially causing the registry to grow beyond the allowed capacity.

If more than 700 entries are in the registry, the next time the system reboots for any reason, the following error message occurs before the operating system boots up:

Failed to load Windows 2000 due to a file missing or corrupt in the
WINNT\SYSTEM32\CONFIG\SYSTEM directory.

Refer to the Microsoft Knowledge Base article (Q269075), which provides more information about the registry growth problem.

Known Limitations, Large LUNs for Windows 2000

In Windows 2000, if any LUN greater than 7 is removed and a subsequent disk rescan is performed, the Found New Hardware wizard may ask you to finish the installation of the device that was removed. The Device Manager may show the device with a yellow warning icon on it. A reboot of the system completely removes the device.

Storage System Scripting Utility for Enterprise Virtual Array

Refer to the HSV Element Manager release notes prior to using the Storage System Scripting Utility (SSSU), as SSSU communicates directly with the element manager.

Windows 2000 Dynamic Disk SnapShots and SnapClones

The use of SnapShots and SnapClones in HP SANs is not supported in a Windows 2000 environment if the SnapShot or SnapClone is presented to the same Windows 2000 host as the LUN from which the SnapShot or SnapClone was created. SnapShots and SnapClones are features of the HSG80 and HSV110 controller based HP Storage systems. All Dynamic disks on a system have information in their metadata about the

other dynamic disks on the system that exist. When Windows is presented with two dynamic disks that have the same information on them, it does not have code to resolve the conflict.