

hp StorageWorks

Addendum for ACS Solution Software Version 8.7 Differences Between HSG60 and HSG80 Array Controllers

Part Number: AV-RS8CA-TE

First Edition (August 2002)

Product Version: ACS 8.7

This document describes the differences between HSG60 and HSG80 array controllers. The full suite of HSG80 user documentation is being used with all HSG60 products, with this document detailing the differences between the two HSG products. For the latest version of these Addendum and other product documentation, visit the StorageWorks website at:

<http://www.compaq.com/storage/index.html>

IMPORTANT: Use this HSG60 information in combination with the full suite of HSG80 user documentation in order to minimize potential problems that might arise from using older information.



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Taking advantage of full set of HSG80 documentation

The standard HSG80 ACS Solution Software Version 8.7 documentation set is provided to HSG60 customers as it is the most complete set of information on the HSG product line.

Only upgrade customers are targeted for the ACS Version 8.7 delivery. The impact on customers is considered minimal since existing HSG60 customers are already familiar with their HSG60 equipment.

In this way, HSG60 customers receive the most complete set of information, and this document, which also describes the specific differences between HSG60 and HSG80 array controllers.

Specific Differences between HSG60 and HSG80

The following topics detail the specific differences between HSG60 and HSG80 array controllers:

- Using CLI commands - HSG80 or HSG60?, page 1
- Layered Software Applications, page 2
- Saving HSG60 Configurations to Previously Initialized Stagesets, page 2
- SWCC Client Installation, page 3
- SCSI Bus Limitation, page 3
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- Rolling Upgrade Limitation, HSG60 and IBM AIX, page 3
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- HSG60 Supported Disk Drives, page 4

Related Documentation

- ACS v8.7 controller documentation (software delivered via PCMCIA cards)
- HSG80 CLI Reference Guide, EK-G80CL-RA.B01
- HSG80 Maintenance and Service Guide, EK-G80MS-SA.B01
- HSG80 Troubleshooting and Reference Guide, EK-G80TR-SA.B01
- SWCC v2.5 documentation (client software delivered in solutions kits)
- Command Console User Guide, AA-RFA2J-TE
- Command Console Release Notes, AV-RPBKB-TE
- Command Console Help Files, AA-RS20A-TE and AA-RS21A-TE
- Host-specific documentation (SWCC Agent and HBA software delivered in solutions kits)
- Installation and Configuration Guide (platform-specific)
- Solution Software Release Notes (platform-specific)
- FC-AL Application Note (AA-RS1ZA-TE) - Solution software host support includes the following platforms:
 - IBM AIX
 - HP-UX
 - Linux (Red Hat x86/Alpha, SuSE x86/Alpha, Caldera x86)
 - Novell NetWare
 - Open VMS
 - Sun Solaris
 - Tru64 UNIX
 - Windows NT/2000

Additional support required by HSG80 ACS Solution Software Version 8.7, but delivered through external programs, include the following:

- Heterogeneous “rules based” SAN configurations
- Host-Bus Adapter (HBA) products
- Applicable Storage Utility Management Suite (SUMS) components
- Vendor-specific switch products

- Secure Path Products (Windows, NetWare, Sun, AIX, HP-UX)
- Data Replication Manager (DRM) under ACS 8.7P
- Enterprise Volume Manager (EVM) under ACS 8.7S
- Enterprise Backup Solution (EBS)
- Additional ACS Variants (W, R)

Quick Review of HSG60 or HSG80 Array Controllers

The HSG60 and HSG80 Fibre Channel array controllers (see Figure 1–1) are intelligent mass storage controllers that interface between host computer systems using a Fibre Channel bus, Ultra Wide attached mass storage devices, and Ultra Wide Single Ended SCSI buses. They are used in the MA8000 and EMA12000 Fibre Channel storage systems.

The solution kit, consisting of hardware, software and firmware, for the HSG60 or HSG80 array controller also contains the latest version of StorageWorks Command Console (SWCC) software.

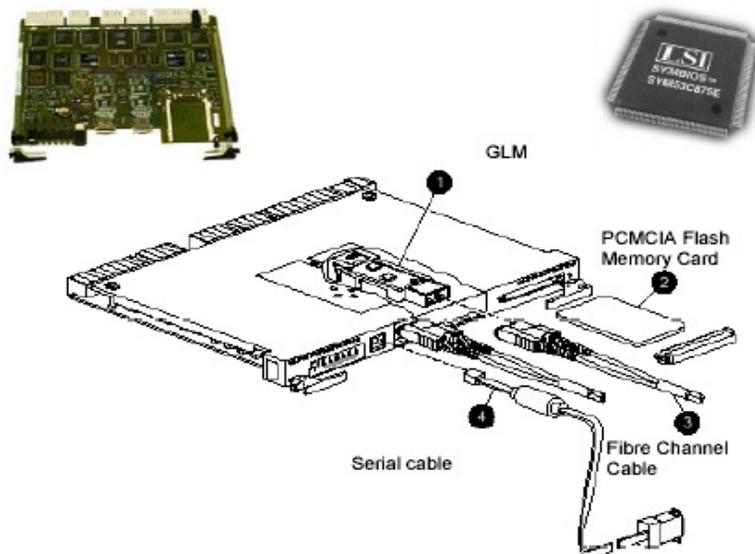


Figure 1–1: HSG array controller

Features of the HSG60 or HSG80 Array Controller include:

- Channel transfer rate up to 100MB/s for each path
- Up to over 24,000 I/Os per second per controller pair
- Protocol and drive support, Ultra3 and Ultra2 SCSI (the maximum number of disks varies by storage system configuration)
- RAID levels 0, 1, 0+1, 3/5, and JBOD
- 256MB memory cache (upgradeable to 512MB) with battery backup
- CLI command line interface built into firmware

Array Controller Software

Array Controller Software (ACS) is firmware used on the HSG60 and HSG80 array controllers. ACS resides on the controller through a PCMCIA card and requires a specific solution kit for each operating system.

Features of the Array Controller Software, used with HSG60 and HSG80 controllers, include:

- 72GB drives in a 1-inch form factor.
- An increased number of maximum supported host connections from 64 to 96.
- 14 drives on a single SCSI bus.
- 84 total drives behind one controller pair with six fully loaded shelves of 14 drives each.
- RAID storage set size of up to 1.024TB.

Specific Differences

Using CLI commands - HSG80 or HSG60?

On a HSG60 array controller system, the CLI command line will appear as follows:

```
HSG60 >
```

The following HSG80 CLI commands do not work with HSG60 controllers.

- Add remote copy sets
- Delete associations
- Delete remote copy set name
- Set associations
- Set DRM
- Set remote copy set name
- Site failover

All other CLI commands in the *Storageworks HSG80 Array Controller ACS Version 8.7 CLI Reference Guide* work with either HSG80 or HSG60 array controllers.

Layered Software Applications

Compatibility between HSG60 controllers and StorageWorks-layered software applications is defined in Table 1–1.

Table 1–1: Layered Application Compatibility

Application	Version	Supported ACS Variants
Command Scriptor (1)	Version 1.0	Version 8.7L
Network View (2)	Version 2.0B	Version 8.7L
Management Appliance	Version 1.0C	Version 8.7L

(1) This application is supported by IBM AIX, HP-UX, Compaq OpenVMS, Sun Solaris, Compaq Tru64, and Windows.

(2) This application is supported by IBM AIX, Novell Netware, Compaq OpenVMS, Sun Solaris, Compaq Tru64, and Windows.

For more information on these and other Storage Management software, see the product documentation that comes with the product, or visit the following StorageWorks website:

http://www.compaq.com/storage/software_index.html

Saving HSG60 Configurations to Previously Initialized Stagesets

If any stageset within the configuration was previously initialized with the INITIALIZE container-name SAVE_CONFIGURATION command to save your configuration to disk, it will not be necessary to reconfigure your devices with a new HSG60 controller. SAVE_CONFIGURATION also retains code patch information to the software. This option is supported on single controller configurations only.

ACS Version 8.7 saves any installed software patches on disks initialized with the SAVE_CONFIGURATION option. To replace a controller and restore the configuration from a disk, you will not have to reinstall any software patches.

Configuration information cannot be retrieved from stagesets created on other HSx controllers (for example, HSD, HSJ, or HSZ controllers). You can only restore a configuration from a configuration saved on HSG60 array controllers.

SWCC Client Installation

SWCC employs different applets for different controllers. The SWCC client installation will differ between HSG60 and HSG80. The SWCC Agent and HBA drivers are identical for HSG60 and HSG80 array controllers.

SCSI Bus Limitation

The array controller firmware can address up to 14 disks per SCSI bus.

- Since the HSG60 array controller has two SCSI buses, the maximum number of disks supported is 28. The SCSI-2 bus can not be configured split-bus.
- Since the HSG80 array controller has six SCSI buses, the maximum number of disks supported is 84.

Ordering Storage Systems - HSG60 Limitation

The predefined HSG60 model provides a set number of controller shelves and drive shelves in a Modular Storage Cabinet and is limited to:

- MA6000: One Model 2200 controller enclosure and three dual bus Model 4354 disk enclosures in a 22U Modular Storage Cabinet

There are more predefined HSG80 models available including: MA8000; EMA12000 D14; EMA12000 S14; EMA1200 Blue; EMA 16000 S14; and, EMA16000 D14.

Rolling Upgrade Limitation, HSG60 and IBM AIX

For HSG60 controller configurations, rolling upgrades are not supported on IBM AIX with this release. The shutdown method is required to perform an ACS upgrade from ACS Version 8.6 to Version 8.7 on IBM AIX systems.

Rolling Upgrade Limitation, HSG60 and HP-UX

For HSG60 controller configurations, HP-UX does not support rolling upgrades. HP-UX in a HSG60 controller configuration is limited to SCSI-2 only and loop only.

HSG60 Supported Disk Drives

The following table lists the disk drives supported by HSG60 and not by HSG80.

Table 1: HSG60 Supported Disk Drives

Option Part Number	Device/ Model	Capacity (GB)	Speed (RPM)	Minimum Microcode Version	Minimum Hardware Version
176494-B21	BC072638A2	72.8	10,000	BDC7	A01
232432-B22	BD07264546			B209	
	BD0726459C			B008	
	BD0726536C			3B02	
232916-B22	BF03664664	36.4	15,000	3B06	A01
	BF03665223			B003	
176496-B22	BD0366349C	36.4	10,000	3B02	A01
	BD036635C5			B020	A05
	BD03663622			BDC4	A01
	BD03664545			B209	
	BD03664553			3B04	
	BD0366459B			B005	
	BD0366536B			3B02	
188122-B22	BF01863644	18.2	15,000	3B01	A01
	BF01864663			3B06	
	BF01865222			B003	
128418-B22	BD018122C9	18.2	10,000	B016	A01

Table 1: HSG60 Supported Disk Drives (Continued)

Option Part Number	Device/ Model	Capacity (GB)	Speed (RPM)	Minimum Microcode Version	Minimum Hardware Version
142673-B22	BD01862A67	18.2	10,000	B007	A01
	BD01862376			BCJE	
	BD018635C4			B020	
	BD01864544			B209	
	BD01864552			3B04	
	BD0186459A			B008	
388144-B22	BB01811C9C	18.2	7,200	3B05	A01
188120-B22	BF00963643	9.1	15,000	3B01	A01
328939-B22	BD009122BA	9.1	10,000	3B07	A01
142671-B22	BD00962373	9.1	10,000	BCJE	A01
	BD00962A66			B007	
	BD009635C3			B020	
123065-B22	BB00911CA0	9.1	7,200	3B05	A01

