StorageWorks™ Array Controller

HSZ40 Array Controller Operating Software Version 3.0 Release Notes

Order Number: EK–HSZ40–RN. J01

This document summarizes features and characteristics of the HSZ40 array controller operating software Version 3.0 that are not covered elsewhere in the documentation. These release notes also contain instructions for installing the software.

Digital Equipment Corporation
Maynard, Massachusetts

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This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense. Restrictions apply to the use of the local-connection port on this series of controllers; failure to observe these restrictions may result in harmful interference. Always disconnect this port as soon as possible after completing the setup operation. Any changes or modifications made to this equipment may void the user's authority to operate the equipment.

Warning!
This is a Class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

Achtung!
Dieses ist ein Gerät der Funkstörgrenzwertklasse A. In Wohnbereichen können bei Betrieb dieses Gerätes Rundfunkstörungen auftreten, in welchen Fällen der Benutzer für entsprechende Gegenmaßnahmen verantwortlich ist.

Avertissement!
Cet appareil est un appareil de Classe A. Dans un environnement résidentiel cet appareil peut provoquer des brouillages radioélectriques. Dans ce cas, il peut être demandé à l' utilisateur de prendre les mesures appropriées.

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Contents

Introduction

These release notes provide information for the HSZ40 array controller operating software Version 3.0[1] not covered elsewhere in the documentation. This document should be used by individuals responsible for configuring, installing, and using the HSZ40 controllers.

Read this entire document before installing or upgrading the software.

Topics Covered

These release notes cover the following topics:

- Hardware and software supported by HSOF Software Version 3.0
- New features—Modifications in the software that add significant functionality to the controller
- Changes from Version 2.7—Modifications to operating parameters or functions that do not necessarily add significant functionality to the controller
- Clarifications—Explanations of controller behavior in certain situations
- Operating constraints—Limitations placed on the operation of the controller by the nature of its design
- Avoiding Problem Situations—Information to help you avoid and recover from unusual controller behavior in certain situations, under specific conditions
- Corrections and additions to the documentation
- Installation instructions
- Identification of the software revision level

Release Package Contents

The Version 3.0 release package consists of the following:

- A cover letter
- The HSZ40 documentation set:
  – *Configuring your StorageWorks subsystem, HSZ40 Array Controllers*
  – *Servicing your StorageWorks subsystem, HSZ40 Array Controllers*
  – *CLI Reference Manual*
  – *HSZ40 Array Controller Operating Software Version 3.0 Release Notes*

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[1] The OpenVMS™ SHOW CLUSTER command and the HSOF software SHOW THIS_CONTROLLER command display the version as “V30Z”.

- *HSZ40 Array Controller Operating Software (HSOF), Version 3.0 Software Product Description*

- A PCMCIA program card containing HSOF software Version 3.0

Intended Audience

This document has been prepared for Digital customers who have purchased HSZ40 array controllers and for Digital Multivendor Customer Services personnel responsible for installing and maintaining systems that include HSZ40 array controllers.

Hardware and Software Support

This section lists the hardware and software compatible with HSOF Software Version 3.0.

Hardware Support

HSOF Software Version 3.0 supports the following revisions or higher for the HSZ40 controllers and associated hardware:

- HSZ40–B*x* and HSZ40–C*x* controller modules
- Version 2 cache module, hardware revision A (used with HSZ40-Bx/Cx controller modules and HSOF Version 2.5 and higher)
- BA350–MA controller shelf
- BA350–S*x* 8-bit SCSI device shelf
- BA356–S*x* 16-bit SCSI device shelf with BA35X-MG 8-bit I/O module
- BA35*x*–HF power supply

Operating System Support

HSOF Software Version 3.0 on HSZ40 controllers is supported by the following operating system versions, within the limitations described in *Configuring your StorageWorks subsystem, HSZ40 Array Controllers*:

- Digital UNIX™ Version 3.2c and higher.
- OpenVMS Alpha Version 6.2 and higher
- Windows NT® Server Version 3.51

Host Adapter Support

The following host adapters are supported by the Digital UNIX operating system for HSZ40 controllers:

- KZTSA (for DEC 3000™ systems) adapter firmware version A11 and higher
- PMAZC (for DEC 3000 systems – requires a DWZZ-series signal converter) adapter firmware version 2.0 and higher
- KZMSA (for DEC 7000™ and DEC 10000™ systems and for Digital AlphaServers 8200 and 8400 – requires a DWZZ-series signal converter)
- KZPSA (for Digital AlphaServers 1000/2000/2100/8200/8400) adapter firmware version A10 and higher

The following host adapters are supported by the OpenVMS Alpha operating system Version 6.2 and higher for HSZ40 controllers:

- KZTSA (for DEC 3000 systems) adapter firmware version A11 and higher

- KFTIA (for TurboLaser 8200 embedded SCSI) adapter firmware version 2.46 and higher
- PMAZC (for DEC 3000 systems – requires a DWZZ-series signal converter) adapter firmware version 2.1 and higher
- KZMSA (for DEC 7000 and DEC 10000 systems – requires a DWZZ-series signal converter)
- KZPAA (for Digital AlphaServers 1000/2000/2100 systems)
- KZPSA (for Digital AlphaServers 1000/2000/2100/8200/8400) adapter firmware version A10 and higher

The following host adapters are supported by the Windows NT operating system Version 3.51 for HSZ40 controllers:

- KZPSA (for Digital AlphaServers 400/1000/2000/2100) adapter firmware version A10 and higher

Device Support

HSOF Software Version 3.0 supports the devices listed in Table 1 through Table 4 at the indicated hardware and microcode levels or higher.

Table 1: Supported Disk Drives

Device	Capacity in Gigabytes	Minimum Microcode Version	Minimum Hardware Version
RZ25-VA	0.426	0900	B01
RZ26-VA	1.05	T392	D02
RZ26L-VA, VW	1.05	440C	A01
RZ26N-VA, VW	1.05	446	A01
RZ28-VA, VW	2.1	435E	B01
RZ28B-VA	2.1	0003	A01
RZ28D-VA, VW	2.1	0008	A01
RZ28M-VA, VW	2.1	466	A01
RZ29B-VA, VW	4.3	0007	B01
RZ74-VA	3.57	T427B	B07
SWXD3-SF	1.05	446	A01
SWXD3-WF	1.05	446	A01
SWXD3-SH	2.1	466	A01
SWXD3-WH	2.1	446	A01
SWXD3-SG	2.1	0008	A01
SWXD3-WG	2.1	0008	A01
SWXD3-SE	4.3	0007	C02
SWXD3-WE	4.3	0007	A01

Note: VW models require BA356 wide device shelves and an 8-bit I/O module

Table 2: Supported Tape Drives

Device	Capacity in Gigabytes	Minimum Microcode Version	Minimum Hardware Version	Comments
TL812	1040/2080	1.20 robot/CC33 drive	A01	Notes 1, 2, 4, 5
TL822	5080/10560	1g4F robot/CC33 drive	A01	Notes 1, 2, 4, 5
TL826	3520/7040	1g4F robot/CC33 drive	A01	Notes 1, 2, 4, 5
TZ87-VA	20 (Compressed)	930A	A01	Note 4
TZ87N-VA	20 (Compressed)	930A	A01	Notes 3, 4
TZ87-TA	20 (Compressed)	9514	B02	Notes 1, 2, 4
TZ875-NT	100 (Compressed)	930A	A01	Note 4, 5
TZ875-TA	100 (Compressed)	930A	A01	Note 1, 4, 5
TZ877-AE, AF	140	930A	A01	Note 4, 5
TZ88N-VA	20/40	CC33	A01	Note 3, 4, 5
TZ885-NT	100/200	CC33	A01	Note 1, 3, 4, 5
TZ885-TA	100/200	CC33	A01	Note 1, 3, 4, 5
TZ887-AE	140/280	CC33	A01	Note 1, 3, 4, 5

Note 1: Requires 0.2 meter SCSI–1 to SCSI–2 transition cable (Digital internal part number 17–03831–01 for table top DWZZA–AA, and Digital part number 17- 04367-01 for SBB DWZZA–VA and DWZZB–VW).

Note 2: Requires DWZZA/DWZZB single-ended to differential SCSI signal converter.

Note 3: Cannot read TK50, TK70, or TZ30 format tapes.

Note 4: Requires KZPSA or PMAZC host adapter.

Note 5: Not supported on Windows NT systems.

Table 3: Supported CD-ROM Readers

Device	Capacity in Gigabytes	Minimum Microcode Version	Minimum Hardware Version
RRD42-VB, VU	0.6	1.1a	A01
RRD43-VA	0.6	0064	A02
RRD44-VA	0.6	3493	A02
RRD45-VA, VU	0.6	1645	A01

Note: CD–ROM drives are only supported under the Digital UNIX operating system.

Table 4: Supported Solid State Disk Drives

Device	Capacity in Gigabytes	Minimum Microcode Version	Minimum Hardware Version
EZ31-VW	0.134	V064	A01
EZ32-VW	0.268	V064	A01
EZ51R-VA	0.1069	V096	D01
EZ54R-VA	0.4277	V096	A01
EZ58R-VA	0.8553	V109	C01
EZ64-VA	0.475	V064	A01
EZ69-VA	0.950	V064	A01

Do not warm swap solid state disk devices. Make sure that the device shelf power is off when inserting or removing a solid state disk device.

New Features

The following list briefly describes new HSZ40 features added since Version 2.7. A new feature is defined as a modification to the software that adds significant functionality to the controller. For more information on these features, see *Configuring your StorageWorks subsystem* and *Servicing your StorageWorks subsystem.*

Partitioning

HSOF Software Version 3.0 allows you to divide a storageset or disk drive into smaller parts, called partitions, each of which can be presented to the host as its own storage unit.

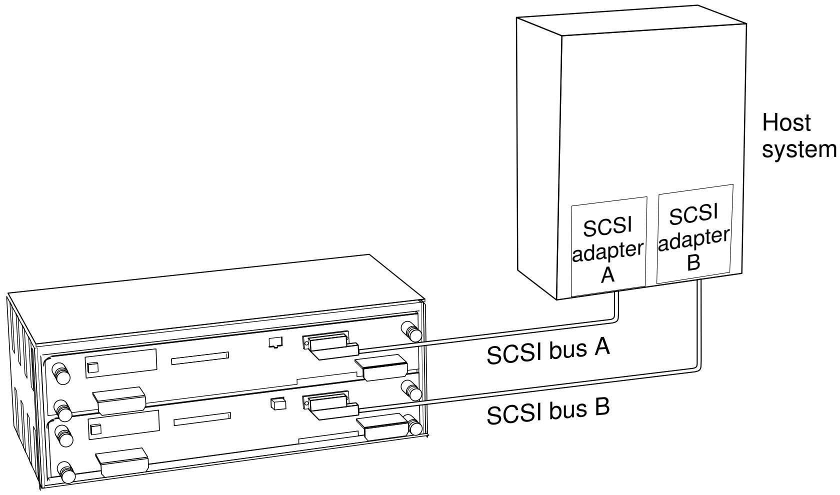
You can create up to four partitions per disk drive, RAIDset, mirrorset, stripeset, or striped mirrorset. Each partition has its own unit number so that the host can send I/O requests to the partition just as it would to any unpartitioned storageset or device. Because the partitions are separately addressable, you can use them to service more than one user group or application from the same container.

See *Configuring your StorageWorks subsystem* for more information on partitioning.

SCSI Multibus Failover

HSOF Software Version 3.0 allows you to connect each HSZ40 controller in a dual-redundant pair to separate host SCSI buses and separate host adapters, as shown in Figure 1. This configuration provides redundant paths from the host to the controllers and devices. If one path goes bad, the host can access all devices through the remaining path and controller.

Figure 1: SCSI Multibus Connections



This feature requires host operating system hardware and software support. Check your Software Product Description and Release Notes for your operating system to find out if it supports redundant connections and failover. At the time of this writing, the OpenVMS, Digital UNIX, and Windows NT operating systems do not offer software support for this feature. Refer to your *Configuring your StorageWorks subsystem manual* for instructions on how to connect and configure for SCSI multibus failover.

Windows NT Support

HSOF Software Version 3.0 allows you to connect an HSZ40 controller to a Digital Alpha system running the Windows NT operating system. The logical units behind the controller (RAIDsets, mirrorsets, partitions, and so forth) appear as disks to the operating system and can be used as normal storage devices.

Refer to *Configuring your StorageWorks subsystem* for instructions on how to use an HSZ40 controller with Windows NT.

Simultaneous Multiple Operating System Support

HSOF Software Version 3.0 allows you to set a different host function mode for each controller target ID, thus allowing the controllers to work with different host operating systems on the same SCSI bus. Because each host only addresses units through specific controller target IDs, the storage units can be assigned to those hosts as required. The command syntax for setting host function modes is:

```
CLI> SET THIS_CONTROLLER HOST_FUNCTION=(ID, mode)
```

where *ID* is one of the assigned controller target IDs, and *mode* is one of the following:

- A (normal: Digital UNIX, OpenVMS, SUN, and HPUX)
- B (IBM host mode)

- C (HSZ15 compatibility mode)
- D (Windows NT mode)

In dual-redundant configurations, setting the HOST_FUNCTION on one controller also sets the same values on the partner controller. With HSOF Version 3.0 software you may use any two or the four host modes at one time.

Refer to the *CLI Reference Manual* for more information on setting the controller HOST_FUNCTION.

Ability to Install New Tape Drive Microcode

HSOF Software Version 3.0 allows you to use the controller's HSUTIL program to install new microcode to the following tape drives, as well as to disk drives:

- TZ87
- TZ877
- TZ885
- TZ875
- TZ88
- TZ887

See *Servicing your StorageWorks subsystem* for instructions on how to install new device microcode. The controller from which HSUTIL is ran must be reinitialized after the HSUTIL operation is completed.

Changes from Version 2.7

The following list describes changes in the operation of the controller provided by the software. A change is a modification of some operating parameter or function that does not necessarily add significant functionality to the controller.

Device and Unit Failover During Battery Failure

Prior to HSOF Software Version 3.0, if the batteries in a write-back cache module failed, all units that were preferred through the associated controller would become unavailable to the host. With Version 3.0 software, the controller associated with the failed write-back cache battery shuts down and its units now failover to the surviving controller so that they can continue to be accessed by the host.

If you are in SCSI Multibus failover mode, failover is done at the host level.

Support for Larger Disk Drives

HSOF Software Version 3.0 allows you to use disk drives with capacities of up to 120GB. You can use the new partitioning feature to divide large drives into smaller units, or you can configure drives of any size into storagesets, such as RAIDsets or stripesets. The maximum size of a storageset is also 120GB, regardless of the size of the member drives.

Faster Storageset Initialization

The INITIALIZE command has been optimized in Version 3.0, and now runs significantly faster. The time to initialize a large RAIDset has been reduced from several minutes to less than 30 seconds.

Multiple Disk Drive Formatting

You can perform a low-level format on up to seven disk drives at once in Version 3.0, as opposed to only one device in previous HSOF software. Refer to *Servicing your StorageWorks subsystem* for instructions on how to format disk drives.

CLI Type Ahead, Recall, and Editing

HSOF Software Version 3.0 gives you more flexibility when entering CLI commands. You no longer need to wait for the current command to complete before entering the next command. You can recall any of the last four commands entered, and then edit that command to save time when entering new commands.

Refer to *Configuring your StorageWorks subsystem* and the *CLI Reference Manual* for more information on entering CLI commands.

Software Patches Saved to Disk

HSOF Software Version 3.0 saves any installed software patches on disks initialized with the SAVE_CONFIGURATION option. Should you need to replace a controller and restore the configuration from disk, you do not have to reenter any software patches.

Set SCSI Speed for Host and Devices

In configurations that must use long SCSI cables between the HSZ40 controller and the host system, or between the HSZ40 controller and a device, it is possible for the initiator and target to negotiate a faster data rate than is supported by the cable length. HSOF Software Version 3.0 has two new CLI commands to set a maximum data transfer rate, either between the controller and the host, or between the controller and any device. Possible settings are 10MHz, 5MHz, or asynchronous mode.

If you have more than one HSZ40 controller on the same SCSI bus connected to one or more hosts, all HSZ40 controllers must be run at the same TRANSFER_RATE_REQUESTED setting (for example, all at 5 Mhz or all at 10 Mhz). (The asynchronous mode is not supported for this release.)

Refer to *Configuring your StorageWorks subsystem* and the *CLI Reference Manual* for more information on setting the data transfer rate with regards to SCSI cable lengths.

Maintenance Terminal Port Speeds

HSOF software version 3.0 supports terminal port connections at 4800, 9600, and 19200 BPS. Connections speeds at 300, 1200, and 2400 BPS are not supported.

Clarifications

This section presents clarifications on controller behavior in certain situations.

Logical Device Event Reports

Under certain circumstances the Port, Target, and LUN fields contained in event reports associated with storageset logical devices, Event Log displays as well as sense data responses, will be set to 255(decimal) instead of the Port, Target, and LUN of the first physical device in the storageset. In addition, when the Port, Target, LUN are set to 255, the Device Type is set to 0 (magnetic disk device), and the Device Product ID and Device Firmware Revision Level fields will be ASCII space filled.

In a future release Digital intends to properly identify the Port, Target, LUN of the first physical device in the storageset in all possible cases. In cases where it is not possible to identify the first physical device in a storageset, the intention is to set the PTL values to 255 and provide storageset specific information in the Device Product ID field to aid in identifying the logical device involved in the event.

Reinitialize After HSUTIL Operations

After you have completed operations using the HSUTIL program, you must reinitialize the controller from which you ran HSUTIL before resuming normal operations.

SAVE_CONFIGURATION from Previously Initialized Storagesets

If the storagesets in your configuration were previously initialized and the INITIALIZE container-name SAVE_CONFIGURATION command was issued to save your configuration to disk, it will not be necessary to issue an INITIALIZE command again after you have reconfigured your devices with a new controller.

Using the SAVE_CONFIGURATION Switch

Digital recommends that the SAVE_CONFIGURATION switch only be used for single controller configurations. (Use the SET FAILOVER COPY= command to save configuration information for dual-redundant configurations).

Operating Constraints

This section describes the operating constraints for HSOF Software Version 3.0. An operating constraint is a limitation placed on the operation of the controller by the nature of its design. Other constraints of host adapters or other system components may also be described in this section. Keep these constraints in mind to avoid problems and to help you to get the maximum performance from your controller.

Limits on the Total Number of Storagesets

The following limits apply to storagesets configured on a single controller or dual-redundant controller configurations:

- A mirrorset can have a maximum of 6 members.
- There can be a maximum of 20 mirrorsets and/or RAIDsets.
- There can be a maximum of 30 storagesets (RAIDsets, mirrorsets, and/or stripesets).
- There can be no more than 32 physical device members total for a unit.
- There can be a maximum of 4 partitions per disk or storageset.

Restrictions on Moving Storagesets to Previous Software Versions

In HSOF Software Version 2.5, striped mirrorsets reported a different disk geometry than the same nonmirrored stripeset. This has been resolved in Version 2.7 and Version 3.0, such that striped mirrorsets initialized under these versions report a disk geometry identical to the same nonmirrored stripeset.

Due to this improvement, you should be aware of the following when moving stripesets to Version 2.5 of software:

- Striped mirrorsets created under HSOF Software Version 2.7 or 3.0 cannot be used on previous versions; the metadata is incompatible.
- Any stripeset that is converted to a striped mirrorset using the MIRROR command under HSOF Software Version 2.7 or 3.0 cannot be used on previous versions. You must UNMIRROR each of the members to return the stripeset to an earlier version.
- Any stripeset clone that is created under Version 2.7 or 3.0 (using the CLONE utility) cannot be used with previous software versions.
- Any container initialized with the SAVE_CONFIGURATION option cannot be used with previous software versions.

Striped mirrorsets created under previous software versions and used with Version 2.7 or 3.0 carry forward the same geometry they had under the previous version. If possible, back up your data and reinitialize the stripesets under Version 2.7 or 3.0 to take full advantage of geometry improvements.

Partitioning Not Supported with SCSI Multibus Failover

The SCSI Multibus Failover feature in HSOF Version 3.0 does not support partitioned disks or storagesets. You must delete any existing partitions before enabling multibus failover, and you cannot create partitions once multibus failover is in effect.

SCSI Multibus Failover Host Operating System Support

Although the HSZ40 array controller has the capability to support SCSI multibus failover, at the time of this writing, the OpenVMS, Digital UNIX, and Windows NT operating systems do not offer software support for this feature. Check your operating system-specific Software Product Description and release notes to determine whether you operating system provides support for this feature.

CFMENU Constraints

The CFMENU utility cannot be used to partition striped-mirrorsets. You must use the CLI commands to manually partition striped-mirrorsets.

CLONE Utility Constraints

The CLONE utility cannot be used with partitioned units.

Set SCSI Host Speed Restriction

The TRANSFER_RATE_REQUESTED=ASYNCHRONOUS mode for setting SCSI host speed is not supported for this release.

Avoiding Problem Situations

In certain situations, you may experience unusual controller behavior. This section presents information to help you to avoid such situations and to recover from them if they occur.

Device Adds, Moves, and Changes

The controller maintains configuration maps of device types and locations and uses those maps for communicating with devices. If you add, move, or change devices while the controller is powered off and without changing the controller configuration first, the controller is not able to work with the changed devices when it returns to service.

Tape Drive Firmware Revision

If you are not using HSUTIL to install your new tape firmware, do the following: Before installing a new version of tape drive firmware, delete the tape drive completely from the controller configuration. You can re-add the tape drive after the firmware installation is complete.

Running CONFIG or CFMENU Utilities During Backup Operations

Do not run the CONFIG or CFMENU utilities during a tape backup operation.

Documentation Additions and Corrections

Following are additions and corrections to documentation:

CLI Reference Manual HSZ40 Array Controllers HSOF Version 3.0 –

The CACHE_UPS and NOCACHE_UPS switches were included is this manual in error. These switches are not supported by HSOF Version 3.0 software.

Installation

Use the procedures described in this section to install HSOF Software Version 3.0 supplied in this kit. The procedure for upgrading your software to Version 3.0 requires that you shut down and then restart the controllers, and typically takes less than 5 minutes to accomplish.

CAUTION

HSOF Software Version 3.0 waits up to one minute after controller restart before presenting a CLI prompt or accepting commands. This delay does not affect unit availability to the host. The delay provides time for controller internal configuration operations to finish before user commands change the configuration.
After you insert the HSOF Version 3.0 program cards and press the reset button, allow 60 seconds for the CLI prompt to appear.

Digital recommends dismounting controller-attached devices before performing the upgrade procedure. If it is not convenient to dismount the devices, perform the upgrade during a period of light I/O load.

Nonredundant Configurations

You must shutdown and restart the controller during this upgrade, meaning that units will be unavailable to the host system. Before upgrading the controller software, prepare the host system for this situation, either by dismounting units or by shutting down the system.

Use the following procedure to upgrade the HSOF software in a nonredundant controller:

1. Stop all I/O to the units in your subsystem.
2. Establish a local terminal connection to the controller.
3. Use the CLCP utility to remove any software patches for software versions prior to V2.7 software (keep V2.7 patches only if you believe you may need to go back to using HSOF V2.7 software).

   If you activated the SAVE_CONFIGURATION option on any of your disk containers, the following command (along with the command in Step 10) allows your configuration data for each specified container to be updated:

   `CLI>` **`SET UNIT D`*`XXX`*` WRITE_PROTECT`**

   This command can be used for any unit attached to this controller.
4. Enter the SHUTDOWN command:

   `CLI>` **`SHUTDOWN THIS_CONTROLLER`**

   Wait for the command to complete. When the controller halts, the green Reset (//) LED stops flashing and stays lit.
5. Remove the ESD shield covering the PCMCIA program card.

6. Press the program card eject button to eject the program card from the controller.
7. Remove the program card.
8. While holding in the controller reset button, insert the V3.0 program card, pressing the card in until the eject button extends outward, then release the reset button.
9. Reinstall the ESD shield.

   The controller restarts, leading to normal operations with the host systems as described in the *Configuring your StorageWorks subsystem manual.*
10. To complete the process for updating your configuration information to disk, enter the following command:

    CLI> **SET UNIT D*XXX* NOWRITE_PROTECT**

    for the disk container specified in Step 3.

Dual-Redundant Configurations

You must shutdown and restart both controllers during this upgrade, meaning that units will be unavailable to the host system. Before upgrading the controller software, prepare the host system for this situation, either by dismounting units or by shutting down the system.

Use the following procedure to upgrade the HSOF software in a dual-redundant controller:

1. Stop all I/O to the units in your subsystem.
2. Establish a local terminal connection to one of the controllers.
3. Enter the SET NOFAILOVER command to take THIS_CONTROLLER and OTHER_CONTROLLER out of dual-redundant (failover) mode.

   CLI> **SET_NOFAILOVER**
4. Use the CLCP utility to remove any software patches for software versions prior to V2.7 software (keep V2.7 patches only if you believe you may need to go back to using HSOF V2.7 software).
5. If you activated the SAVE_CONFIGURATION option (not recommended by Digital for dual-redundant configurations) on any of your disk containers, the following command (along with the command in Step 12) allows your configuration data for each specified container to be updated:

   CLI> **SET UNIT D*XXX* WRITE_PROTECT**

   This command can be used for any unit attached to THIS controller.
6. Enter the SHUTDOWN command.

   CLI> **SHUTDOWN THIS_CONTROLLER**

   Wait for the command to complete. When the controller halts, the green Reset (//) LED stops flashing and stays lit.
7. Remove the ESD shield covering the PCMCIA program card.

8. Press the program card eject button to eject the program card from the controller.
9. Remove the program card.
10. While holding in the controller reset button, insert the V3.0 program card, pressing the card in until the eject button extends outward, then release the reset button.
11. Reinstall the ESD shield.

    The controller restarts, leading to normal operations with the host systems as described in *Configuring your StorageWorks subsystem manual.*
12. To complete the process for updating your configuration information to disk, enter the following command:

    CLI> **SET UNIT D*XXX* NOWRITE_PROTECT**

    for the disk container specified in Step 5.
13. Repeat all of the previous steps (except for Step 3) for the second controller.
14. After you complete all of the above steps on both controllers, put the controllers back into dual-redundant (failover) mode, by entering the following command:

    CLI> **SET FAILOVER COPY=***CONFIGURATION-SOURCE*

    Note: Digital does not recommend the use of the SAVE_CONFIGURATION option for dual-redundant configurations. The procedure above requires that you change your dual-redundant configuration into two single configurations for the HSOF V3.0 software upgrade.

Identifying Your HSOF Software Revision Level

You can identify HSOF Software Version 3.0 by entering the SHOW THIS_CONTROLLER command at the CLI prompt. The resulting display lists the software revision level as version "V30Z–*x*" (where *x* represents the number of patches associated with this version of software).

Order Numbers

The following table contains order numbers for controller options and preconfigured options.

HSZ40-BA/CA	StorageWorks HSZ40 Array Controller with no cache module, 6 SCSI-2 device ports
HSZ40-BD/CD	StorageWorks HSZ40 Array Controller with a 16 MB read cache module, 6 SCSI-2 device ports
HSZ40-BF/CF	StorageWorks HSZ40 Array Controller with a 32 MB read cache module, 6 SCSI-2 device ports
HSZ40-XD	16 MB read cache module
HSZ40-XF	32 MB read cache module
HSZ40-YX	Write-back cache option kit -- contains two onboard cache batteries, one battery bracket, one write-back cache license
QA-2YJAC-HS	HSOF Software and Documentation