

release notes

hp StorageWorks hsg80 acs version 8.7-1 upgrade procedures for Windows NT and Windows 2000 host systems

Product Version: 8.7-1

First Edition (December 2002)

Part Number: AA-RTEOB-TE

This document summarizes procedures for using the HSG80 Array Controller Software (ACS) Version 8.7-1 Update for Windows NT and Windows 2000 host systems.

For the latest version of these Release Notes and other HSG80 array controller or ACS documentation, access the HP storage website at: <http://thenew.hp.com/country/us/eng/prodserv/storage.html>.



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hp StorageWorks HSG80 ACS Version 8.7-1 Upgrade Procedures for Windows NT and
Windows 2000 Host Systems Release Notes
First Edition (December 2002)
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Release Notes Contents

These Release Notes cover the following major topics:

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Intended Audience

This document is intended for customers who obtain the HP StorageWorks HSG80 Array Controller Software (ACS) Version 8.7-1 Update for Windows NT and Windows 2000.

HSG80 ACS V8.7-1 Update Kit

The HSG80 ACS V8.7-1 Update kit includes:

- This document
- A program card containing ACS V8.7-1 for HP StorageWorks HSG80 array controllers

Other HP StorageWorks HSG80 Array Controller Documentation

Refer to the following supplemental documentation for additional information regarding the HSG80 array controller and ACS:

- *hp StorageWorks HSG80 ACS Solution Software Version 8.7 for Windows NT and Windows 2000 Installation and Configuration Guide*
- *hp StorageWorks Release Notes—HSG80 Enterprise/Modular Storage RAID Array Fibre Channel Solution Software Version 8.7 for Windows NT and Windows 2000*
- *hp StorageWorks HSG80 Array Controller Software V8.7 Maintenance and Service Guide*
- *hp StorageWorks HSG80 Array Controller Software V8.7 Command Language Interface Guide*
- *hp StorageWorks HSG80 Array Controller Software V8.7 Troubleshooting Guide*
- *hp StorageWorks Release Notes—Command Console Version 2.5*
- *hp StorageWorks Command Console Version 2.5 User Guide*
- *Compaq SANworks Secure Path Version 3.1 for Microsoft Windows Installation and Reference Guide*
- *Compaq SANworks Secure Path V4.0 for Windows Installation Guide*

The documents listed above and other documentation, including white papers and best practices documents, are available from the HP website at: <http://www.hp.com>.

What's New

The HSG80 ACS V8.7-1 Update contains the [Rolling Upgrade Enhancement for Windows NT and Windows 2000](#). This new enhancement is described below.

Rolling Upgrade Enhancement for Windows NT and Windows 2000

Rolling upgrade is an ACS feature that allows you to upgrade the HSG80 ACS while I/O activity continues, thus avoiding shutdown upgrades. Previously, rolling upgrades for ACS were not supported for Windows NT and Windows 2000 platforms due to the Windows Device Discovery/Plug-and-Play feature. The Windows Device Discovery/Plug-and-Play feature identifies any universal plug-and-play device connected to a given network and after recognition, allows the device to be used immediately following a reset to the host system. With this update, Windows NT and Windows 2000 users can now perform rolling upgrades by using the procedures included in these Release Notes.

Note: For more information on procedures for completing rolling upgrades, refer to the "[Solution Software Kit Upgrade Procedures](#)" section, as well as the *hp StorageWorks Array Controller Software V8.7 Maintenance and Service Guide* that shipped with the HSG80 array controller.

Software and Hardware Compatibility

This section provides the following information:

- [Windows Operating Systems Supported](#), page 5
- [Hardware Components Supported](#), page 5
- [HP StorageWorks Command Console \(SWCC\) Versions Supported](#), page 6

Windows Operating Systems Supported

The rolling upgrade feature available in the HSG80 ACS 8.7-1 Update is supported on the Windows NT and Windows 2000 operating systems listed in [Table 1](#).

Table 1: Windows NT and Windows 2000 Operating Systems and ACS Version Compatibility Chart

| Operating Systems | Operating System Versions | ACS Versions and Variants Supporting Rolling Upgrades | | Supported Secure Path Versions | FC-AL | Switch |
|-------------------|---------------------------|---|---|--------------------------------|-------|--------|
| Windows NT | V4.0, SP 6A | V8.6F V8.6G V8.6P V8.6S (All Patches) | V8.7F V8.7G V8.7P V8.7S (All Patches) | V3.1A SP 3 V4.0 | Yes | Yes |
| Windows 2000 | SP 2 SP 3 | V8.6F V8.6G V8.6P V8.6S (All Patches) | V8.7F V8.7G V8.7P V8.7S (All Patches) | V3.1A SP 3 V4.0-1 | Yes | Yes |

Hardware Components Supported

[Table 2](#) lists hardware components supported with this update.

Table 2: Supported Host Bus Adapters, Fabric Switches, and Hosts

| Component | Version | Description |
|--------------------------------|---|---------------------------|
| Host Bus Adapters (HBA) | | |
| StorageWorks 176479-B21 FCA | V3.82a1 HBA Driver V4-4.81a9 (NT) HBA Driver V5-4.81a9 (W2K) BIOS V1.60a5 | 64-bit, 1 Gbps PCI FC HBA |
| StorageWorks 245299-B21 FCA | V3.82a1 HBA Driver V4-481a9 for (NT) HBA Driver V5-4.81a9 (W2K) BIOS V1.60a5 | 64-bit, 2 Gbps PCI FC HBA |

Table 2: Supported Host Bus Adapters, Fabric Switches, and Hosts

| Component | Version | Description |
|---|----------|--|
| Fibre Channel (FC) Switches | | |
| Storage Area Network (SAN) Switch 8 | 2.6.0c | 8-Port, 1 Gbps FC Switch |
| SAN Switch 16 | 2.6.0c | 16-Port, 1 Gbps FC Switch |
| SAN Switch 8-EL | 2.6.0c | 8-Port FC Entry Level (1 Gbps) Switch |
| SAN Switch 16-EL | 2.6.0c | 16-Port FC Entry Level (1 Gbps) Switch |
| SAN Switch Integrated 32 | 2.6.0c | 32-Port FC (1 Gbps) Switch |
| SAN Switch Integrated 64 | 2.6.0c | 64-Port FC (1 Gbps) Switch |
| SAN Switch 2/16 | 3.02f | 16-Port FC (2 Gbps) Switch |
| SAN Switch 2/8-EL | 3.02f | 8-Port FC Entry Level (2 Gbps) Switch |
| SAN Switch 2/16-EL | 3.02f | 16-Port FC Entry Level (2 Gbps) Switch |
| SAN Core Switch 2/64 | 4.0.0c | 32- to 64-Port FC (2 Gbps) Switch |
| SAN Director 64 | 02.00.00 | 32- to 64-Port FC (1Gbps) Switch |
| SAN Edge Switch 32 | 02.00.00 | 32-Port FC (1 Gbps) Switch |
| SAN Edge Switch 16 | 02.00.00 | 16-Port FC (1 Gbps) Switch |
| SAN Director 2/64 | 02.00.00 | 32- to 64-Port FC (2 Gbps) Switch |
| SAN Edge Switch 2/32 | 02.00.00 | 32-Port FC (2 Gbps) Switch |
| SAN Edge Switch 2/16 | 02.00.00 | 16-Port (2 Gbps) Switch |
| Hosts | | |
| Intel and HP X86 servers are supported. | | |

HP StorageWorks Command Console (SWCC) Versions Supported

The HSG80 ACS V8.7-1 Update is supported on V2.5 of SWCC. When updating HSG80 ACS, ensure that SWCC V2.5 exists on the host system.

Note: You can obtain a copy of SWCC V2.5 from the HP website at: <http://www.hp.com>. Follow the applicable storage-related links to the appropriate software links.

You may also acquire a copy of SWCC V2.5 from the StorageWorks HSG80 Modular Storage RAID Arrays Solution Software V8.7 for Windows NT and Windows 2000 on ProLiant & X86 Platforms kit (the Solution Software kit).

Operating Constraints

When performing rolling upgrades on the HSG80 array controller, the following rules and guidelines apply:

- Rolling upgrades must occur in succession. For example, you must upgrade from V8.6 to V8.7-1.
- If you are performing a rolling upgrade, ensure that the variant for the existing ACS version being upgraded is the same as the next version to be upgraded. For example, if you want to upgrade ACS V8.6P-10, the ACS version to be upgraded must be the P variant of ACS V8.7-*x*.
- You must use a dual-redundant configuration in order to perform rolling upgrades.
- If you are upgrading the P variant of an applicable ACS version, use the procedures provided in the *hp StorageWorks HSG80 Array Controller Version 8.7 Maintenance and Service Guide*. The *hp StorageWorks HSG80 Array Controller Version 8.7 Maintenance and Service Guide* provides specific instructions on upgrading ACS on the initiator and target site.
- You must upgrade the Solution Software kit before performing the rolling upgrade procedure in the “[Upgrading ACS](#)” section.



Caution: HP StorageWorks Secure Path V3.1A for Windows, Service Pack (SP) 3 or Secure Path V4.0-1 for Windows must be used before performing the rolling upgrade procedure in the “[Upgrading ACS](#)” section. Otherwise, data loss may occur.

Solution Software Kit Upgrade Procedures

Use the following procedures for upgrades to your Solution Software kit:

1. Perform backups of data prior to upgrade.
2. Verify operating system versions, and upgrade operating systems to supported versions and patch levels.
3. Upgrade switch firmware.
4. Upgrade the Solution Software kit.
5. Quiesce all I/O and unmount all file systems for the server being updated before proceeding.
6. If installing an operating system that uses Secure Path, upgrade Secure Path to the latest version at this time.
7. Upgrade ACS software.

Note: Solely for the purpose of performing upgrades to ACS, the Solution Software kit supports ACS V8.6. HP recommends that you avoid mixing ACS versions in the same Storage Area Network (SAN).

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

- 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 multiple-bus software/drivers.
- HSG80 ACS Version 8.7 and EVA VCS Version 2.0 — Use ACS Solution Software Version 8.7 (includes SWCC Version 2.5) and VCS Version 2.0 compatible multiple-bus software/drivers.
- HSG80 ACS Version 8.6 and HSG80 ACS Version 8.7 — Use ACS Solution Software Version 8.7 (includes SWCC Version 2.5).

Any multiple-bus storage system configuration that includes EVA VCS Version 2.0 requires multiple-bus support. See [Table 1](#) for compatible Secure Path versions. ACS Version 8.7 compatible Secure Path versions and HBA drivers are compatible with VCS 2.0.

Refer to the *hp StorageWorks HSG80 Array Controller ACS Version 8.7 Maintenance and Service Guide* and the *Solution Software Release Notes—HSG80 Enterprise/Modular Storage RAID Array Fibre Channel Solution Software Version 8.7 for Windows NT and Windows 2000*, as well as the “[Upgrading ACS](#)” section for the additional information on upgrades.

Note: If upgrading ACS, complete the upgrade after all Windows server updates are finished. Be sure to back up data before updating servers.

These procedures are applicable to only Secure Path V3.1A for Windows (SP 3) or Secure Path V4.0-1 for Windows. To obtain Secure Path V3.1A for Windows (SP 3), visit the HP website at: <http://www.hp.com>. Follow the applicable storage-related links to the software download page. To obtain Secure Path V4.0-1, contact your HP technical support representative.

Note: For information on updating Solution Software kit by using Transparent Failover procedures, refer to the *hp StorageWorks HSG80 ACS Solution Software Version 8.7 for Windows 2000 Installation and Configuration Guide*.

New Solution Software Kit (V8.7) Installation Procedures

To install the Solution Software kit for the first time, complete the following steps:

1. Ensure that the Fibre Channel Adapter (FCA) is not connected at this time.
2. Using the CD that shipped with the Solution Software kit, click **Solution Software v8.7 for Windows NT\2000**.
 - a. Click **Perform FCA Driver Update** to install the HBA driver.
 - b. Click **Fibre Channel Software Setup**, and then choose one of the Multi-Bus Fibre Channel setups, based on your configuration.
 - c. Click **SWCC** (optional) to install SWCC components.

Note: Do *not* restart the server at this time if instructed to do so.

3. Using your Secure Path Software CD-ROM, install Secure Path V3.1A for Windows or Secure Path V4.0-1 for Windows in accordance with the instructions provided with that product. If you are using Secure Path V3.1A, apply the Secure Path V3.1A for Windows SP 3 update.
4. Restart the server.
5. Connect the FCA to the switch.

Updating Solution Software Kit with Secure Path on Windows NT/2000 Server

The following procedures demonstrate how to upgrade your Solution Software kit, in conjunction with your Secure Path software, in a Multiple Bus Failover environment.

Updating an Existing Standalone Server

To update an existing standalone server by using Secure Path in Multiple Bus Failover mode, complete the following steps:

1. Log in to an account with administrator privileges.
2. Stop all applications that access Secure Path storage.
3. Stop the SWCC STEAM agent in **Services**.
4. Select **Add/Remove Program** on the **Control Panel**, and uninstall:
 - a. SWCC.
 - b. *Large LUN* utility (if installed).

Note: Do *not* restart the server at this time if instructed to do so.

5. Using your Secure Path Software CD-ROM, install Secure Path V3.1A for Windows or Secure Path V4.0 for Windows in accordance with the instructions provided with that product.
6. If you are using Secure Path V3.1A for Windows, apply the Secure Path V3.1A for Windows SP 3 update.
7. If you are using Secure Path V4.0 for Windows, apply the Secure Path V4.0-1 update.
8. Reboot the server.
9. Using your Solution Software kit CD-ROM, click **Solution Software v8.7 for Windows NT\2000**.
 - a. Click **Perform FCA Driver Update** to install the HBA driver.
 - b. Click **Fibre Channel Software Setup**, and then choose one of the Multi-Bus Fibre Channel setups, based on your configuration.
 - c. Click **SWCC** (optional) to install SWCC components.

Note: The latest *Large LUN* utility must be installed if the storage system will be used prior to upgrading ACS to Version 8.7-1 and a Large LUN configuration was previously employed.

10. Restart the server.

Updating an Existing Cluster

To update an existing cluster by using Secure Path in Multiple Bus Failover mode, complete the following steps:

1. Log in to the server with an account with administrator privileges.
2. Make note of your original configuration by using **Cluster Administrator**, and then move disk resources to the other cluster node. The node being updated should not have any disk resources online.
3. Set all cluster groups to **Prevent failback**, by using **Cluster Manager**, while the upgrade is taking place.

Note: Cluster Service must continue to run on all nodes. Stopping the Cluster Service during this procedure could result in a Cluster Service failure and subsequent reinstallation.

4. Stop the SWCC STEAM agent in **Services**.
5. Select **Add/Remove Program** from the **Control Panel**, and uninstall:
 - a. SWCC.
 - b. *Large LUN* utility (if installed).

Note: Do *not* restart the system at this time if instructed to do so.

6. Using your Secure Path Software CD-ROM, install Secure Path V3.1A for Windows or Secure Path V4.0 for Windows in accordance with the instructions provided with that product.

7. If you are using Secure Path V3.1A for Windows, apply the Secure Path V3.1A for Windows SP 3 update.
8. If you are using Secure Path V4.0 for Windows, apply the Secure Path V4.0-1 update.
9. Using your Solution Software kit CD-ROM, click **Solution Software v8.7 for Windows NT\2000**.
 - a. Click **Perform FCA Driver Update** to install the HBA driver.
 - b. Click **Fibre Channel Software Setup**, and then choose one of the Multi-Bus Fibre Channel setups, based on your configuration.
 - c. Click **SWCC** (optional) to install SWCC components.

Note: The latest *Large LUN* utility must be installed if the storage system will be used prior to upgrading ACS to Version 8.7-1 and a Large LUN configuration was previously employed.

10. Restart the updated cluster node.
11. Repeat [step 2](#) through [step 10](#) for the next cluster node.
12. After all cluster nodes have been upgraded, restore all cluster groups to their original **Prevent failback** setting, and restore storage groups to their original configuration.

Upgrading ACS

The following subsections provide background and some detailed information applicable to the HSG80 ACS V8.7-1 Update. HP recommends that you review the *hp StorageWorks HSG80 Array Controller V8.7 Maintenance and Service Guide* before attempting to use the rolling upgrade feature.

Note: The following rolling upgrade procedures for ACS V8.7-1 (variants F, G, and S) take precedence over rolling upgrade procedures documented for variants F, G, and S in the *hp StorageWorks HSG80 Array Controller V8.7 Maintenance and Service Guide*.

- [About Rolling Upgrades](#), page 12
- [Rolling Upgrade Procedure](#), page 12



Caution: Failure to follow the recommendations and instructions regarding the rolling upgrade feature may result in data loss or system inoperability. Refer to the [“Operating Constraints”](#) section for additional information.



Caution: Before attempting the ACS upgrade procedure in the [“Rolling Upgrade Procedure”](#) section, verify that the subsystem is in a stable state. The HSG80 array controller **Reset** button should be flashing, and all adjacent LEDs should be off (no light). Failure to perform this verification may result in the loss of data or leave the HSG80 array controller in an unusable state.

About Rolling Upgrades

There are two ways to perform upgrades of the ACS:

- By using the rolling upgrade procedure—Rolling upgrades take advantage of HSG80 array controller failover capabilities and allow you to upgrade the ACS while I/O activity continues.
- By using the shutdown upgrade procedure—The shutdown upgrade procedure requires you to halt I/O activity, shut down your controllers, and dismount your host systems and any associated units.

Note: Shutdown upgrade procedures are documented in the *hp StorageWorks HSG80 Array Controller V8.7 Maintenance and Service Guide* that shipped with the HSG80 array controller. You can download a copy of this guide from the HP website at: <http://www.hp.com>. Follow the storage-related links to access technical documentation for the HSG80 array controllers, which are part of the HP StorageWorks Enterprise Modular Array and the HP StorageWorks Modular Array.

Rolling Upgrade Procedure

Note: The following rolling upgrade procedures for ACS V8.7-1 (variants F, G, and S) take precedence over rolling upgrade procedures documented for variants F, G, and S in the *hp StorageWorks HSG80 Array Controller V8.7 Maintenance and Service Guide*.

Note: For upgrade procedures for variant P of ACS, refer to the *hp StorageWorks HSG80 Array Controller V8.7 Maintenance and Service Guide*.

To perform a rolling upgrade, complete the following steps:

Note: Subsequent steps refer to Controller A, Controller B, HSGA>, and HSGB> to help you identify which controller is used.

1. Connect a PC or terminal to the maintenance port of Controller A, if not already done.



Caution: Attempt a rolling upgrade *only* when each controller in a dual-redundant configuration is at least 50% idle. Otherwise, I/Os may be dropped during the upgrade.

Note: If you have several servers with multiple LUNs in your storage area network (SAN), HP recommends that you verify that all units are online by using the `SHOW UNITS FULL CLI` command. Afterwards, move all LUNs to the controller to be updated last by using **Secure Path Manager**. (LUNs may be removed by either controller.)

2. Verify the utilization percentage for *each* controller by entering the following RUN command:

```
HSGA> RUN VTDPY
```

The idle percentage for the HSG80 array controller is the first item displayed on the second line of the *VTDPY* display. If the HSG80 array controller is less than 50% idle and the screen display indicates activity, the processing load should be reduced. Refer to your operating system documentation for more information on reducing the processing load.

Note: The default *VTDPY* display refreshes every ten seconds.

To exit *VTDPY*, press **<Ctrl> C**, and then enter the following:

```
HSGA> exit
```

3. Repeat [step 2](#) above on the OTHER_CONTROLLER.
4. Disable the Command Console LUN (CCL) prior to upgrading if the HSG80 array controller is running in SCSI-2 mode and the CCL is enabled:
 - a. Type the following command to verify the current SCSI mode:

```
HSGA> SHOW THIS_CONTROLLER
```

The following text is only a portion of the resulting display—arrows point to the pertinent status indication.

Controller:

```

HSG80                ZG80200258 Software V86S, Hardware E01
NODE_ID              = 5000-1FE1-0007-B780
ALLOCATION_CLASS      = 1
→ SCSI_VERSION       = SCSI-2
Configured for MULTIBUS_FAILOVER with ZG92810098
                    In dual-redundant configuration
Device Port SCSI address 7
Time: 14-MAR-2001    15:44:25
→ Command Console LUN is lun 0 (IDENTIFIER = 0)
```

- b. Record the status for restoration in [step 23](#).
 - c. Disable the CCL by using the following command:


```
HSGA> SET THIS_CONTROLLER NOCOMMAND_CONSOLE_LUN
```
5. Delete all snapshot units, if upgrading from ACS V8.6S-*x* to V8.7S-*x*.
 - a. Identify all snapshot units by using the following command:


```
HSGA> SHOW UNITS FULL
```
 - b. Record the configuration for each snapshot unit for restoration in [step 22](#).
 - c. Individually delete all snapshot units by using the following command:


```
HSGA> DELETE <snapshot-unit-name>
```
6. Verify that all appropriate units were deleted by using the following command:


```
HSGA> SHOW UNITS FULL
```

Note: If any other snapshot units exist, repeat [step 5](#) until they are all deleted.

7. Identify and record the current cache flush timer value by using the following command:

```
HSGA> SHOW THIS_CONTROLLER
```

The following text is only a portion of the resulting display—an arrow points to the pertinent status indication:

Cache:

```
256 megabyte write cache, version 0022
```

```
Cache is GOOD
```

```
No unflushed data in cache
```

```
→ CACHE_FLUSH_TIMER=DEFAULT (10 seconds)
```

Note: The cache flush timer value is displayed in the caching parameters section. This parameter is modified during the procedure and must be restored in [step 20](#).

8. For each unit, identify and record the unit write back cache, read ahead cache, read cache, and preferred path characteristics by using the following command:

```
HSGA> SHOW UNITS FULL
```

These characteristics are modified during the upgrade procedure and must be restored in [step 21](#).

Note: The switch for Preferred Path is available only with a multiple-bus configuration. It is not available in the Transparent Failover mode.

9. Set the cache flush timer to 1 second by using the following commands:

```
HSGA> SET THIS_CONTROLLER CACHE_FLUSH_TIMER=1
```

```
HSGA> SET OTHER_CONTROLLER CACHE_FLUSH_TIMER=1
```

10. Clear any unit with the *PREFERRED_PATH* switch set, by using the following command as required for each unit:

```
HSGA> SET <unit-name> NOPREFERRED_PATH
```

11. Disable writeback, read ahead, and read caching on all units by using the following command as required for each unit:

```
HSGA> SET <unit-name> NOWRITEBACK_CACHE NOREADAHEAD_CACHE NOREAD_CACHE
```

Note: The *xxx_CACHE* switches must be entered in the specified order, or the command will be rejected.

12. Determine whether all data has been flushed from the cache module by using the following command on both controllers:

```
HSGA> SHOW THIS_CONTROLLER
HSGA> SHOW OTHER_CONTROLLER
```

The following text is only a portion of the resulting display—an arrow points to the pertinent status indication:

```
Cache:
    256 megabyte write cache, version 0022
→   Cache is GOOD
    No unflushed data in cache
    CACHE_FLUSH_TIMER=1 SECOND
```

Note: Repeat [step 12](#) on both controllers (`THIS_CONTROLLER` and `OTHER_CONTROLLER`) until no unwritten data remains in either cache module memory. If unwritten data is present after several minutes, verify that the `WRITEBACK_CACHE` switch is disabled on all units by using the `SHOW UNITS FULL` command. For any units with the `WRITEBACK_CACHE` switch enabled, return to [step 11](#) and proceed.

13. Shut down Controller B by using the following command:

```
HSGA> SHUTDOWN OTHER_CONTROLLER
```

Note: Disregard any messages pertaining to misconfigured controllers or failover status.

Note: After Controller B shuts down, the **Reset** button ❶ and the first three LEDs ❷ light up (see [Figure 1](#)). Proceed only after the **Reset** button stops flashing and remains on.

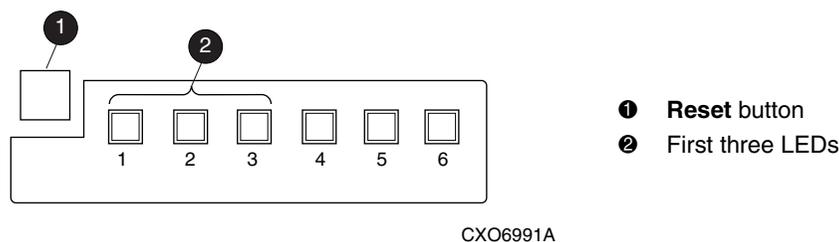


Figure 1: HSG80 array controller Reset button and first three LEDs

14. Verify that all units failed over to Controller A by using the following command to show the status of each unit:

```
HSGA> SHOW UNITS FULL
```

The following text is only a portion of the resulting display—an arrow points to the pertinent status indication:

```
State:  
→ ONLINE to this controller  
   Not reserved  
   NOPREFERRED_PATH
```

15. Run *VTDY* to verify that all units are online and that there is no I/O activity by entering the following CLI command:

```
HSGA> RUN VTDY
```

The idle percentage for the HSG80 array controller is the first item displayed on the second line of the *VTDPY* display. If the HSG80 array controller is less than 50% idle and the screen display indicates activity, the processing load should be reduced.

Note: You must wait a minimum of 60 seconds to allow for the failover and cache flushing process to complete. The *VTDPY* display refreshes every ten seconds.

To exit *VTDPY*, press **<Ctrl> C**, and then enter the following:

```
HSGA> exit
```

16. Upgrade the software on Controller B by performing the following steps:

Note: After [step 16](#) is successfully performed, the previous ACS version cannot be restored to this subsystem.

- a. Remove the program card ESD cover from Controller B.
- b. Press and hold the HSG80 array controller **Reset** button while ejecting the old program card.
- c. After ejecting the program card, release the **Reset** button.
- d. Press and hold the **Reset** button while inserting the new program card (ACS V8.7-1).
- e. After the card is fully inserted, release the **Reset** button. Controller B restarts.

Note: An HSG80 array controller restart can take as long as 60 seconds, indicated by the temporary cycling of the port LEDs and a flashing **Reset** button. Disregard messages pertaining to misconfigured controllers or failover status. When Controller B has restarted, it automatically shuts down Controller A.

- f. Install the program card ESD cover on Controller B.

17. Verify that Controller B completed initialization:
 - a. Connect the PC or terminal to the maintenance port of Controller B.
 - b. Make sure that the CLI prompt for Controller B appears.
 - c. Verify that Controller A is shut down. (The **Reset** button and the first three LEDs light up. See [Figure 1](#).) Proceed only after the **Reset** button stops flashing and remains on.
18. Run *VTDY* to verify that all Controller B units are online and that there is I/O activity by entering the following CLI command:

```
HSGB> RUN VTDY
```

Note: You must wait a minimum of 60 seconds to allow for the failover and cache flushing process to complete. The *VTDPY* display refreshes every ten seconds.

To exit *VTDPY*, press **<Ctrl> C**, and then enter the following:

```
HSGB> exit
```

19. Install the new (V8.7-1) program card on Controller A by performing the following steps:
 - a. Remove the program card ESD cover from Controller A.
 - b. Press and hold the HSG80 array controller **Reset** button while ejecting the old program card.
 - c. After ejecting the program card, release the **Reset** button.
 - d. Press and hold the **Reset** button while inserting the new program card (ACS V8.7-1).
 - e. After the card is fully inserted, release the **Reset** button.

Note: An HSG80 array controller restart can take as long as 60 seconds, indicated by the temporary cycling of the port LEDs and a flashing **Reset** button. Disregard messages pertaining to misconfigured controllers or failover status.

- f. Install the program card ESD cover on Controller A.
- g. Connect the PC or terminal to the maintenance port of Controller A.

Note: Wait for the CLI prompt to display on the PC or terminal before proceeding.

20. After the CLI prompt displays for Controller A, restore the *CACHE_FLUSH_TIMER* to the value recorded in [step 9](#) by using the following commands:

```
HSGA> SET THIS_CONTROLLER CACHE_FLUSH_TIMER=<n>
```

```
HSGA> SET OTHER_CONTROLLER CACHE_FLUSH_TIMER=<n>
```

21. For each unit, restore the *PREFERRED_PATH*, *WRITEBACK_CACHE*, *READ_CACHE*, and *READAHEAD_CACHE* switch settings as recorded in [step 10](#) and [step 11](#) by using the following command:

```
HSGA> SET <unit-name> PREFERRED_PATH=THIS_CONTROLLER WRITEBACK_CACHE  
READ_CACHE READAHEAD_CACHE
```

22. Restore all snapshot units removed in [step 5](#).

23. If the CCL was disabled in [step 4](#), enable it by using the following command:

```
HSGA> SET THIS_CONTROLLER COMMAND_CONSOLE_LUN
```

24. Disconnect the PC or terminal from the maintenance port of Controller A.

Anomalies

The following describes known anomalies of the HSG80 ACS 8.7-1 Update.

SWCC Agent Configuration Utility and the Displayed ACS Firmware Version

After upgrading from ACS V8.6 (any variant or patch) to ACS V8.7-1, the *SWCC Agent Configuration* utility displays the previous ACS version before the upgrade (same variant) on the **NT Agent Configuration Step 3 of 3** screen.

Note: If you have already installed ACS 8.7 and then upgrade to ACS 8.7-1, SWCC displays the proper ACS version number on the **NT Configuration Step 3 of 3** screen.

Figure 2 shows where the ACS version displays ❸ the previous version (before the upgrade) in SWCC after you upgrade from ACS V8.6 to V8.7-1.

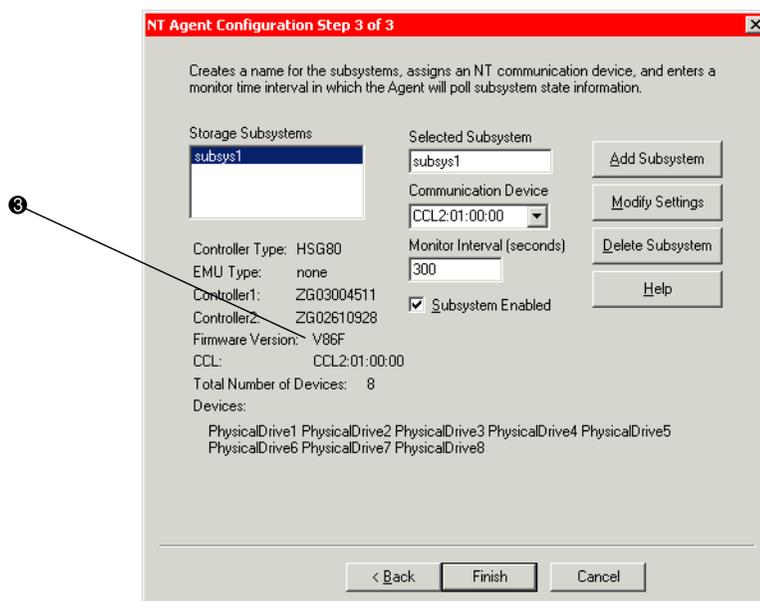


Figure 2: Location of the SWCC version number when upgrading from ACS V8.6 to V8.7-1

To verify the correct version of ACS in this scenario on the HSG80 array controller, always use the `SHOW THIS_CONTROLLER` or `SHOW OTHER_CONTROLLER` CLI command from a CLI window or any CLI prompt.