Release Notes –
Smart Array 5300A Backplane RAID Controllers

Fourth Edition (April 2003)

These release notes contain the most recent supplemental information for the Smart Array (SA) 5300A RAID controllers. Both controllers belong to the same controller family, commonly referred to as Smart Array controllers. The SA5302A is a two-channel controller. The SA5304A is a four-channel controller.

Be sure to read these notes and to check the SA5300A World Wide Web site for the latest updates before installing these controllers into your server.

The Smart Array 5300A controller WEB site:

http://h18002.www1.hp.com/alphaserver/products/storage/sa5300a/

Release Notes Contents

This document describes any known restrictions or issues when using the controller within your system configuration, and has the following sections:

- Supported HP Servers
- Supported Operating Systems
- Restrictions and issues
- Example configurations for the Smart Array 5300A controllers

Intended Audience

This document is intended for customers who purchased or use a Smart Array 5300A controller.

Introduction

The Smart Array 5300A controllers are high-performance, 64-bit/66 Mhz PCI to Ultra3 backplane RAID controllers for use with the Compaq StorageWorks enclosures 4200 (models 4254 and 4214), 4300 (models 4354 and 4314), and BA610-6D internal disk cages.

Software Versions and Updates

The following software versions and updates are needed for Smart Array 5300A controller support:

- HP Tru64 UNIX operating system version V5.1A with the New Hardware Delivery -5 kit (NHD 5 or later).

  The New Hardware Delivery -5 kit (NHD 5) is listed on the World Wide Web as:

  Nhd5.tar.gz Tru64 UNIX V5.1A New Hardware Support

  The Web page is:

  http://ftp.service.digital.com/public/Digital_UNIX/v5.1a/nhd/

- Tru64 UNIX V5.1A Patch Kit 4 is mandatory for supporting the SA5300A controllers on the Tru64 UNIX V5.1A.

  The Patch Kit 4 is listed on the World Wide Web as:

  t64v51ab4as0004-2002xxxx.tar

  The Web page is:

   http://ftp.service.digital.com/public/Digital_UNIX/v5.1a/

- HP Tru64 UNIX operating system version V5.1B with the Patch Kit 2 (mandatory for 5300A controllers).

  The Patch Kit 2 is listed on the World Wide Web as:

  t64v51bb2as0001-2002xxxx.tar

  The Web page is:

  http://ftp.service.digital.com/public/Digital_UNIX/v5.1b/

- HP OpenVMS operating system version V7.3-1with TIMA kit: DEC-AXPVMS-VMS731_FIBRE_SCSI-H0200--4.PCSI

- HP Management Agents for Tru64 UNIX and OpenVMS are shipped on a software CD with the controller.

- The minimum version of the HP Management Agents kit that supports the Smart Array 5300A controller on Tru64 UNIX is version **3.1** with mandatory patch kit CPQIM310.STOR.01. The minimum version of the HP Management CD that support Smart Array 5300A controllers is **v6.2**.

  The HP Management Agents for Tru64 UNIX is listed on the Web as HP Management Agents **V3.1**.

  The Web page is:

  http://tru64unix.compaq.com/cma/

  The mandatory pathc kit CPQIM310.STOR.01 can be downloaded from the Web page above.

- The minimum version of the HP Management Agents kit that supports Smart Array 5300A controller on OpenVMS is V73_MGMTAGENTS **V2.4-11-1**

  The HP Management Agents for OpenVMS are listed on the Web as HP Management Agents for OpenVMS **Version 2.4**

  The Web page is:

  http://www.openvms.compaq.com/openvms/products/mgmt_agents/

- The Array Configuration Utility ACU-XE for Tru64 UNIX and Open VMS is shipped on a CD-ROM with the controller.

  The Array Configuration Utility ACU-XE is listed on the WEB as ACU-XE.

  The Web page is:

  http://h18002.www1.hp.com/alphaserver/products/storage/sa5300a/

- The minimum Alpha SRM Console firmware revision is V6.3. The latest version is always recommended.

  Alpha Console Firmware standing web page is:

  http://ftp.digital.com/pub/Digital/Alpha/firmware

- Compaq Analyze Version 4.1 should be used for SA5300A Event logging.

  The Compaq Analyze Version 4.1 is listed on the World Wide Web as: WEBES V4.1

  The Web page for the documentation is:

  http://h18023.www1.hp.com/support/svctools/webes/index.html

- Web browsers supported for operating the on-line monitoring and configuration utilities are shown in the following table:

Tru64 UNIX based utilities	OpenVMS based utilities
Netscape v4.76 or v4.78 locally	There is no support for OpenVMS embedded browsers
Netscape v4.76 or v4.78, Internet Explorer v5.x remotely	Netscape v4.76 or v4.78, Internet Explorer v5.x remotely

Supported HP Servers

The Smart Array 5300A controllers are supported on the servers listed in Table 1.

Table 1: Supported HP AlphaServers

AlphaServer	Maximum Number of Supported Controllers
DS10	1
DS20E EV68, EV67 p2.6[*]	1
ES40 EV68+	6
ES45	6
DS25	4
ES47, ES80, GS1280[**]	8 for Tru64 UNIX, 1 for OpenVMS

[*] Smart Array 5300A controllers are not supported in DS20E systems in Hose 0.

[**] There are some limitations imposed on using Smart Array 5300A controllers with ES47, ES80 and GS1280 system platforms:

- Follow system configuration rules for ES47, ES80 and GS1280 platforms

- The ADFU v1.00A shipped on a CD with the SA5300A option kit does not support the ES47, ES80 and GS1280 platforms. The ADFU version that supports these platforms will be downloadable from the SA5300A web site.

- ES47, ES80, and GS1280 OpenVMS users need to update the V2.4 HP Management Agents kit with the ECO kit found at:

    http://www.openvms.compaq.com/openvms/products/mgmt_agents/patches.html

Supported Operating Systems

The Smart Array 5300A controllers are supported on:

- Open VMS version 7.3-1 with TIMA kit: DEC-AXPVMS-VMS731_FIBRE_SCSI-H0200--4.PCSI

- Tru64 UNIX Operating System V5.1A with NHD5 or later and mandatory Patch Kit 4

- Tru64 UNIX Operating System V5.1B with mandatory Patch Kit 2

Supported Devices

The Smart Array 5300A controllers only support Ultra 160 and Ultra 80 capable universal disk drives. Some of the older drives might need to have their firmware updated before they can be used with the Smart Array controllers.

Running BIOS on the controller can identify those drives in your configuration that have to be updated. You will be presented with a list of drives - the candidates for updates.

The drive firmware update utility for the Smart Array 5300A controllers is shipped on a CD with the controller. This is a bootable CD. Insert this CD into your AlphaServer CD-ROM drive, then boot this drive and follow the instructions that are displayed.

Smart Array 5300A controllers do not support Hot Plug tape drives.

Alpha SRM console / ORCA Utility restrictions and issues

The following items are known issues with the SRM console and the ORCA utility.

- When working within ORCA (Option ROM Configuration for Arrays), pressing the space bar at the initial configuration menu may cause the utility to hang. It is possible to recover from this situation by resetting or power-cycling the system.

- The console device list is not updated after running the ORCA BIOS emulator. After invoking ORCA to add or delete a logical drive, a user issuing the 'show device' command will *not* see output necessarily representative of their actual configuration. The console device list that exists prior to invoking ORCA remains after ORCA is run. The INIT command has to be executed at the console prompt to get the device list updated.

- Thirty two logical units is the maximum possible number of logical drives that can be configured on a Smart Array 5300A controller.

- When executing a BIOS function after you receive the message:

  ```
  Press F8 to run the options config.......
  Press ESC to skip ............
  ```

  The entire screen goes blue and at the bottom of the screen half way across the screen you will see:

  ```
          pkb, pkc, pkd, ..................
  ```

  After 60 seconds the screen is repainted, and you will see other events reported.

- Boot failover is not supported to a Smart Array 5300A device residing on a Smart Array controller other that the one defined by the BOOTBIOS console variable

Tru64 UNIX restrictions and issues

The following items are known issues with Tru64 UNIX.

- Smart Array 5300A devices are only supported as data devices in Tru64 UNIX clusters, no boot support is available.

- The SA5300A devices in Tru64 UNIX clusters function as local only non-shared devices.

OpenVMS restrictions and issues

- Host based volume shadowing is not supported

- Smart Array 5300A devices are not supported as cluster interconnect devices.

On-line utilities restrictions and issues

The following items are known issues with the on-line utilities associated with the Smart Array controllers.

- Certain physical drives may be shown as "degraded" via SNMP agent when a soft error threshold is reached while the same drives are still shown as "optimal" via ACU-XE utility. These devices should be replaced.

- Resizing (dragging the border of) the Netscape "Compaq Array Configuration Utility XE" window, causes the ACU-XE session to end. A new session of ACU-XE will have to be started. This issue will be fixed in a future release of Netscape for Tru64 UNIX.

- The first attempt to log in remotely into the HP Insight Manager utility always fails with the "Incorrect, try again" message.

  This issue has not been seen when using a local connection i.e. via Netscape on Tru64 UNIX. The issue will be fixed in the future release of the utility.

- The GIF shown for an Array with a degraded Logical volume is the same as a GIF for an Array with a failed Logical volume.

- After invoking the ACU-XE daemon via "cpqacuxe -R" command the ACU-XE icon within the HP Web Management does not appear immediately. It might take up to several minutes for this application to become available.

- In some Tru64 UNIX systems with large configurations and high numbers of SA5300 logical drives, starting up or exiting the ACU-XE utility might take an extra long time (up to 20 minutes.) The user might get an impression that the utility is "hung" since no indications of what is actually happening are present. To check if the utility is still in startup or shutdown mode, you can put your cursor in the bar at the top of your window. If the utility is still active, then the cursor will change to an hour glass. This problem will be corrected in a future release of the ACU-XE utility.

- With cpqim300 installed, if you try to resize the windows between the disks (middle pane) and the detailed info (right pane), the data goes away and both panes turn dark brown/grey. A Netscape reload brings the data back. This issue will be fixed in a future release of Netscape for the Tru64 UNIX.

- Critical errors on the Smart Array 5300A controllers are accompanied by red status messages within the Array Configuration Utility. The last statement in each of these messages, "For more information, run the Array Diagnostics Utility.", should be disregarded. Please use Compaq Analyze to obtain further information about the reported errors.

- When a condition occurs, such as a hardware fault, there may be data that needs to be flushed from cache.To perform the actual cache flush, run the BIOS on the affected controller.

- On OpenVMS in the presence of heavy I/O, the SA5300A SNMP Agent process may stop running. You can restart this process by issuing the following command at the OpenVMS command prompt:

  $ @sys$sysroot:[wbem.agents]WBEM$RUN_SUBAGENTS.COM

Firmware restrictions and issues

- Logical volume capacity extension is not supported

- Max logical volume size supported by the firmware is 4 TB.

- If a Hot Spare has replaced a failed physical drive within a redundant array, the ACU-XE may show a logical volume having another volume below with "???" as the spare capacity. Replacing the failed drive will cause the array to return to the original configuration.

- In the event of a SCSI bus failure, all logical devices on this bus might become failed. There is a way these devices can be made available to the user (data integrity cannot be guaranteed, however). You have to shutdown your Alpha Server and run BIOS on the controller housing these devices, i.e:

  ```
  >>run bios pya0
  ```

  You will be presented with a choice of either recovering (making optimal) these devices or leaving them in the failed state. There is no default option under this scenario, and mandatory 'user intervention' is required.

Device Shelf Restrictions and Issues

- Storage enclosures connected to Smart Array 5300A controllers must be turned on before power is turned on on an Alpha Server.

- The BA610-6D internal disk cages are only supported with Nile logic cards P/N 3R-A1629-AA/010615-001 of rev. 0B. Cards with P/N 3R-A1629-AA/010615-001 of rev. 0A are not supported with Smart Array 5300A controllers. Customers who own BA610-6D modules with logic cards of P/N 3R-A1629-AA/010615-001 of rev. 0A and want to take advantage of internal RAID must contact HP Field Service to have their 3R-A1629-AA/010615-001 rev. 0A cards replaced.

- If you are using Smart Array 5300A controllers with the Models 4254 and 4354 enclosures, there is no support for using one of the enclosure channels to connect to a controller or adapter other than Smart Array 5300A controllers.

- If a Smart Array 5300A controller loses communication with a storage enclosure, then all physical drives in this enclosure are seen via SNMP Agent as located in an enclosure Bay 255. This typically means there is a hardware problem with the enclosure. You should contact HP Services for the enclosure troubleshooting.

Cache Memory Restrictions

Use only HP part number DIMMs with the Smart Array 5300A controllers. Follow the procedure outlined in the appendix E of the User guide to replace DIMMs. The SA5302A supports only one 128 MB cache Array Accelerator DIMM, and the SA5304A supports only one 256 MB cache Array Accelerator DIMM.

Hardware and Connection Details

- All supported external enclosures ship with Ultra 160 compliant cables. See the Smart Array 5300A Installation and Configuration guide for the list of supported cables.

- The model 4254 P/N 138151-001 (DS-SSL14-RS) contains an Ultra2 capable I/O module which is dual bus only.

- The model 4354 P/N 190211-001 (DS-SL13R-BA) contains an Ultra3 capable I/O module which is dual bus only.

- The model 4214 P/N 103381-001 (DS-SSL14-RM) contains an Ultra2 capable I/O module which is single bus only.

- The model 4314 P/N 190209-001 (DS-SL13R-AA) contains an Ultra3 capable I/O module which is a single bus only.

- For the models 4254 and 4354, the device ID's on each bus segment will be 0 through 5 and 8. ID's 6 and 7 are reserved.

- For the models 4214 and 4314 the device ID's on each bus segment will be 0 through 5 and 8 through 15. ID's 6 and 7 are reserved.

- Also contained in the 4254, 4354, 4214 and 4314 is an EMU P/N 70-40064-03 with fault bus support.

- HP StorageWorks Enclosure 4200 (models 4254 and 4214) or 4300 (models 4354 and 4314) device shelves cannot be daisy chained together.

- With Tru64 Unix, depending on the particular system configuration, using the MC2 page jumper set for 512MB may cause errors similar to "ciss_map_data"to appear in the system logs. If this happens, change the jumper to the 128MB position.

  All of the cluster members need to have the jumper configured the same way.
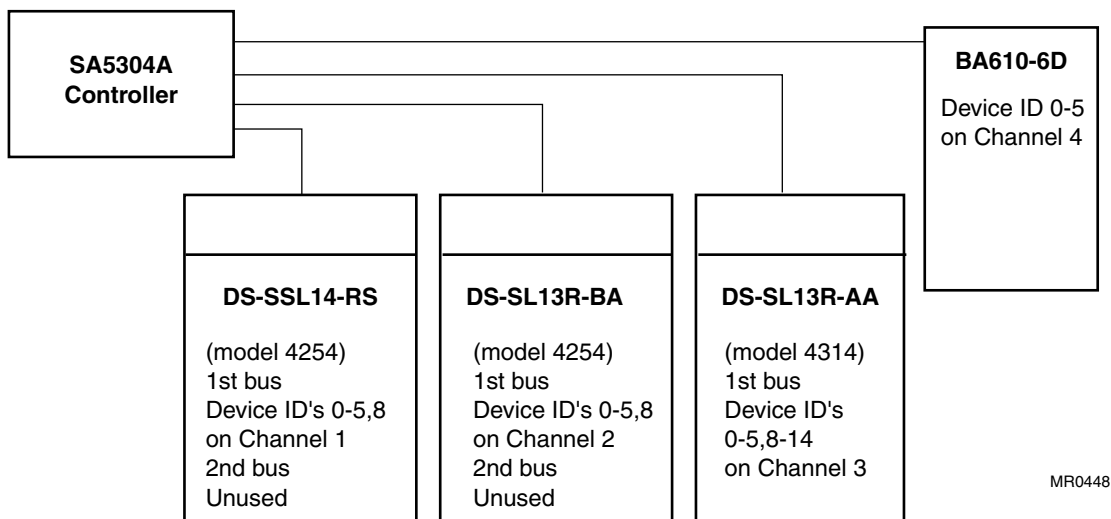
Configuration Example

Figure 1: Example Configuration with a 4- channel Smart Array 5304A controller and 4 LVD SCSI device enclosures