
Release Notes – Smart Array 5300A Backplane RAID Controllers

Part Number: AV-RT16D-TE / 192268-003

Fifth Edition (November 2003)

These release notes document supplemental and updated information for the Smart Array 5300A RAID controller product not provided elsewhere. Smart Array 5300A (SA5300A) controllers are modular in design and are shipped in one of two product configurations for use in supported Alpha systems. The 3X-KZPDC-BE (SA5302A/128) is a two channel U3 SCSI controller with 128MB of installed cache. The 3X-KZPDC-DF controller (SA5304A/256) provides four channels of SCSI device interconnect and includes 256MB of cache.

Be sure to review the product documentation and to check the SA5300A product web site for updates before installing these controllers into your Alpha system.

The Smart Array 5300A controller product home page is located at:

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



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Release Notes Contents

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

[KZPDC Product Components](#)

[Controller Firmware Support](#)

[Alpha System Firmware Support](#)

[Operating System Support](#)

[Runtime Utility Support](#)

[Supported HP Alpha Systems](#)

[KZPDC Product Issues and Restrictions](#)

[Platform Specific Issues and Restrictions](#)

— [DS20E System Issues](#)

— [ES47, ES80 and GS1280 System Issues](#)

[Alpha System Firmware Issues and Restrictions](#)

[Tru64 UNIX Issues and Restrictions](#)

[OpenVMS Issues and Restrictions](#)

[Runtime Utility Issues and Restrictions](#)

[Firmware Issues and Restrictions](#)

[Storage Enclosure Issues and Restrictions](#)

Intended Audience

This document is intended for customers who install, use, or troubleshoot the Smart Array 5300A controller product in Alpha systems.

KZPDC Product Components

Controller Firmware Support

Controller firmware v2.94 is recommended for KZPDC controller installations on all supported Alpha system platforms under OpenVMS or Tru64 UNIX. The v2.94 firmware image may be obtained from the Smart Array 5300A product web site.

Alpha System Firmware Support

It is recommended that all Alpha system environments hosting the KZPDC product be updated using SRM firmware from the V6.6 Alpha Firmware CD release. The V6.6 release firmware for Alpha systems is downloadable from the following locations:

<http://www.itrc.hp.com>

<http://ftp.digital.com/pub/DEC/Alpha/firmware/>

Operating System Support

Smart Array 5300A controllers may be configured for operation under Tru64 UNIX version 5.1A or version 5.1B. OpenVMS support is presently available in version 7.3-1 of the operating system. The product may be employed either as the system boot controller or as a data only device controller in all supported OS environments. Installation requirements vary however depending on the system environment under consideration when the SA5300A product is first installed.

Consult the guidance provided below to determine what software components are required for full support of the product in these two operating system environments. Patches for OpenVMS and Tru64 UNIX customers may be obtained from the following URLs:

<http://www.itrc.hp.com>

ftp://ftp.itrc.hp.com/openvms_patches/alpha/V7.3-1/

ftp://ftp.itrc.hp.com/tru64_patches/tru64/5.1X/

The following software kits and patch updates are required for Smart Array 5300A controller installations:

Tru64 UNIX Software Components

New Installations:

Customers creating new Tru64 UNIX installations that include the KZPDC controller should follow the installation procedures detailed in the specified New Hardware Delivery (NHD) kit.

- V5.1A Tru64 UNIX
 - Tru64 UNIX V5.1A base operating system kit
 - Tru64 UNIX NHD7 kit for V5.1A and V5.1B
Patch kit name: NHD7.tar.gz
- V5.1B Tru64 UNIX
 - Tru64 UNIX V5.1B base operating system kit
 - Tru64 UNIX NHD7 kit for V5.1A and V5.1B
Patch kit image name: NHD7.tar.gz

Existing Installations:

Users installing the KZPDC controller into an existing V5.1A or V5.1B installation should first update their environment with the indicated patch kit and then install the hardware. Boot genvmunix and follow standard procedures for creating a customized kernel using doconfig(8).

- V5.1A Tru64 UNIX
 - Tru64 UNIX V5.1A Patch Kit 6
Patch kit image name: T64V51AB24AS0006-2003103.tar
- V5.1B Tru64 UNIX
 - Tru64 UNIX V5.1B Patch Kit 3
Patch kit image name: T64V51BB24AS0003-20030929.tar

OpenVMS Software Components

- OpenVMS V7.3-1

Support for the KZPDC controller is present in the base OpenVMS V7.3-1

release. Customers should ensure the following patch kits are installed in the creation of new OpenVMS installations or as part of maintaining an existing V7.3-1 installation:

- OpenVMS V7.3-1 base operating system kit
- VMS731_UPDATE-V0100
Patch kit image name:
DEC-AXPVMS-VMS731_UPDATE-V0100--4.PCSI
- VMS731_FIBRE_SCSI-V0400
Patch kit image name:
DEC-AXPVMS-VMS731_FIBRE_SCSI-V0400--4.PCSI
- VMS731_PTHREAD-V0200
Patch kit image name:
DEC-AXPVMS-VMS731_PTHREAD-V0200--4.PCSI

Runtime Utility Support

Web based utilities are provided for monitoring and configuring the Smart Array 5300A controller and attached storage under OpenVMS and Tru64 UNIX. The monitoring function is made available as part of the HP Insight Management (IM) Agents kit for the user's selected OS environment.

Online controller and array configuration and maintenance functions are provided via the SA5300A Array Configuration Utility (ACU-XE). The ACU-XE utility is installed separately from HP Insight Management kit but requires for operation the facilities provided by the Management kit.

Tru64 UNIX Utility Components

HP Insight Management Agents for Tru64 UNIX

- The Tru64 UNIX Insight Management Agent kit version v3.2 provides KZPDC utility support for V5.1A and V5.1B Tru64 UNIX installations on all Alpha system platforms. This kit supersedes the Management kit found on the software media CD-ROM supplied with the KZPDC controller. Customers are advised to update to the v3.2 kit if they have not already done so. The v3.2 Tru64 UNIX Management Agent kit can be downloaded from the following location:

<http://h30097.www3.hp.com/cma/>

Array Configuration Utility for Tru64 UNIX

- The current Array Configuration Utility kit version is v1.30.70.1a. This kit supersedes the ACU-XE kit for Tru64 UNIX found in the software media kit supplied with the KZPDC controller. The kit may be downloaded from the Smart Array 5300A product web site.

OpenVMS v7.3-1 Utility Components

CAUTION:

Versions v3.00 and v3.01 of the HP OpenVMS Insight Management Agents kit are not compatible with the current OpenVMS SA5300A ACU-XE configuration utility. Support for the KZPDC product is presently limited to the v2.4 Management (+ ECO) kit. OpenVMS system installations containing the KZPDC controller should not update to the v3.00 or v3.01 Management kit.

Users are advised to check the Smart Array 5300A and OpenVMS Insight Management web sites periodically for updates to each kit which will resolve the compatibility issue. Release of these kits is expected in the January 2004 time frame.

CAUTION:

KZPDC product installations on ES47, ES80, and GS1280 systems are restricted to a single controller instance when the Smart Array 5300A utilities are installed.

See the platform specific section for ES47, ES80, and GS1280 systems in this release note for a statement of restricted support of multiple KZPDC controllers on these systems.

HP Insight Management Agents for OpenVMS

- The HP Insight Management Agents for OpenVMS home page is located at:
http://h71000.www7.hp.com/openvms/products/mgmt_agents/
- The HP Management Agents for OpenVMS kit version 2.4 supersedes the kit found in the software media kit supplied with the KZPDC controller. This kit (and ECO) is available for download from the HP Insight Management Agents for OpenVMS home page or via the links below:

http://h71000.www7.hp.com/openvms/products/mgmt_agents/V73_MGMTAGENTS-V0204-11-1.EXE

http://h71000.www7.hp.com/openvms/products/mgmt_agents/V73_MGAGPAT-V0204-14-4.EXE

- Installation of the v2.4 HP Management Agents for OpenVMS kit should be followed by the application of the accompanying ECO patch kit.

Array Configuration Utility for OpenVMS

- The Array Configuration Utility for OpenVMS is shipped on the QuickStart CD-ROM (v1.0A) in the KZPDC option kit. The PCSI kit version is B0105 and when extracted is entitled:
 - COMPAQ-AXPVMS-ACUXE-B0105--1.PCSI

WEB Browser Support

Consult the Release Notes for the Insight Management kit you have installed for supported WEB browsers and known browser issues. In general, a web browser must provide the following capabilities for successful interaction with the Smart Array 5300A runtime utilities:

- HTML Tables
- HTML Frames
- JavaScript
- Accept all cookies
- Full Java Development Kit v1.1 (JDK 1.1) or later support
- Dynamic HTML

KZPDC Event Translation Support

WEBES kit version 4.3 provides KZPDC event translation of OpenVMS and Tru64 UNIX system error logs. The System Event Analyzer (formerly known as Compaq Analyze), is the WEBES component which permits translation of KZPDC controller events.

WEBES kits are available to customers with HP warranty or service contracts. See the following URL for more information:

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

Supported HP Alpha Systems

Smart Array 5300A controllers are supported on the following Alpha systems:

- DS10
- DS15
- DS20E EV68, EV67 p2.6
- DS25
- ES40 EV68+
- ES45
- ES47, ES80, GS1280

KZPDC Product Issues and Restrictions

Platform Specific Issues and Restrictions

NOTE:

Consult the QuickSpec for the Alpha system on which the KZPDC controller will be installed for numbers of controllers supported and other platform specific information.

DS20E System Issues

- Smart Array 5300A controllers are not supported in DS20E systems in Hose 0.

ES47, ES80 and GS1280 System Issues

- KZPDC controller placement and configuration in model ES47, GS80, and GS1280 systems is governed by the guidelines included in the associated platform QuickSpec.
- Unrestricted support for the KZPDC product on the ES47, ES80, and GS1280 platform is limited to a single controller instance per partition when the Smart Array 5300A utilities are installed.

To accommodate OpenVMS customers desiring to increase KZPDC product

connectivity in advance of the availability of revised Smart Array runtime configuration and monitoring utilities, support is provided with the following restrictions:

- Use of the OpenVMS runtime ACU-XE configuration utility is not supported in system environments containing more than one KZPDC controller instance. This applies to both existing and new OpenVMS MARVEL system installations.
- All logical volume creation must be performed using the product's offline configuration utility, ORCA. This utility is executed in the Alpha SRM console environment.
- The Smart Array monitoring facilities provided via the HP OpenVMS Management Agents software kit are supported only in systems containing a single KZPDC controller instance. Single controller support is provided solely in the version 2.4 HP Management Agent kit + ECO kit. The version 3.0 HP Management Agent kit does not presently support the KZPDC controller's Smart Array 5300A configuration and monitoring utilities.
- The restrictions detailed here will be relaxed or removed in a future KZPDC product release.
- The following product functions and features identified in the Smart Array 5300A QuickSpec are available only via the aforementioned utilities and are consequently unavailable and unsupported in system configurations including more than one KZPDC controller instance:
 - OpenVMS runtime logical volume creation and deletion
 - Controller and array status monitoring via graphical user interface
 - RAID Level Migration
 - Stripe Size Migration
 - Global Hot Spares
 - Controller cache read/write parameter modification and inspection
 - Array capacity expansion
 - Drive S.M.A.R.T. monitoring during OpenVMS runtime
 - Storage enclosure environmental monitoring during OpenVMS runtime
 - User selectable rebuild priority
 - User selectable expansion priority

- Remote network configuration and monitoring of KZPDC array volumes.

- The ADFU v1.00A shipped on a CD with the SA5300A option kit does not support the ES47, ES80 and GS1280 platforms. A future release of the ADFU utility that will provide the necessary support for these platforms will be made available for download from the Smart Array 5300A web site.
- The SRM console environment variable “HEAP_EXPAND” does not exist on ES47, ES80, and GS1280 platforms. Customers may disregard any requirement to set this variable when the KZPDC product is installed on these system types.

Alpha System Firmware Issues and Restrictions

- Smart Array 5300A logical volumes configured as operating system dump devices must be resident on a KZPDC controller which is specified by the BOOTBIOS console environment variable.
- See the ES47, ES80, and GS1280 platform specific section of this document for considerations in setting the console environment variable ‘HEAP_EXPAND’ on those platforms.

Tru64 UNIX Issues and Restrictions

- Smart Array 5300A volumes are not supported as shared storage devices in TruCluster environments.

OpenVMS Issues and Restrictions

- Prior restrictions as noted in the Smart Array 5300A Product Release Notes on the use of KZPDC logical volumes in Volume Shadowing environments are removed. Users should consult the Volume Shadowing documentation accompanying their specific OpenVMS release for guidance in configuring this feature.
- Smart Array 5300A volumes are not supported as shared storage devices in OpenVMS Cluster environments.

Runtime Utility Issues and Restrictions

The following items are known issues with the online utilities provided with Smart Array 5300A controllers.

- Users are referred to the Cautionary advise elsewhere in this document concerning compatibility of the B0105 ACUXE kit with the version 3.xx OpenVMS Management Agents kit.

- Resizing (dragging the border of) the Netscape "HP 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 GIF shown for an Array with a degraded Logical volume is the same as a GIF for an Array with a failed Logical volume.
- In some Tru64 UNIX systems with large configurations and large 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 cpqim310 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 from the SRM console on the affected controller.

Firmware Issues and Restrictions

- Thirty two is the maximum possible number of logical drives that can be configured on a Smart Array 5300A controller.
- Logical volume capacity extension is not supported
- The maximum logical volume size supported by the firmware is 2 Terabytes.
- 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.

Storage Enclosure Issues and Restrictions

- 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.

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.