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Release Notes –
Smart Array 5300A Backplane RAID Controllers

Part Number: AV-RT16E-TE / 192268-003

Sixth Edition (April 2004)

These release notes provide supplemental and updated information for the Smart Array 5300A RAID controller product not available 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.

Note: *Be sure to review the product documentation and to check the Smart Array 5300A 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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Intended Audience

This document is intended for customers who install, use, or troubleshoot the KZPDC SmartArray 5300A controller product in Alpha systems. It describes KZPDC product updates and known issues or restrictions when using the controller within particular system configurations.

KZPDC Product Updates

This release announces several Smart Array 5300A product updates which are documented more fully later in these notes. These updates include:

- New controller firmware, version 3.40, is available for download from the Smart Array controller for Alpha systems home page.
- Updated versions of the Smart Array OpenVMS runtime utilities are available which resolve prior incompatibilities between the version 3 OpenVMS Management Agent kit and the Smart Array Configuration Utility.
- Full support up to platform controller limits is now provided in the OpenVMS Smart Array runtime utilities for KZPDC installations on ES47, ES80, and GS1280 systems.
- Introducing OpenVMS version 7.3-2 support for the KZPDC controller which provides FastPath functionality for improved performance.
- New KZPDC Alpha system support for OpenVMS and Tru64 UNIX installations on the GS80, GS160, and GS320 platform.

KZPDC Product Components

Controller Firmware Support

Smart Array 5300A controller firmware version 3.40 is available as an update for the KZPDC controller. Note that the KZPDC option kit presently ships with version 2.94 firmware.

Controller firmware v3.40 is a recommended update for KZPDC controller installations on all supported Alpha system platforms under OpenVMS or Tru64 UNIX.

The v3.40 firmware image may be obtained from the Smart Array 5300A product web site or on the V6.6 Alpha Firmware CD in the OPTIONS subdirectory. Two examples of the controller firmware update command syntax are presented below. Both examples employ the Loadable Firmware Utility (LFU) function of the Alpha SRM console.

The first example will update controller instance PYA0 with the v3.40 image after booting the V6.6 Alpha Firmware CD in CD-ROM device DQA0 on any supported Alpha system:

```
UPD> update pya0 -p iso9660:[OPTIONS]kzpdc340.sys/dqa0
```

The second example employs the firmware image available on the Smart Array 5300A web site and assumes that the update media is a floppy disk in device DVA0. After unpacking the .zip archive of the v3.40 firmware image place the file onto a MS-DOS (FAT) formatted floppy disk. Place the disk into your Alpha system floppy drive and execute the following command after entering the LFU. Note that it is required to specify the .bin file extension of the firmware image. The example updates KZPDC controller instance PYC0.

```
UPD> update pyc0 -p fat:kzpdc340.bin/dva0
```

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 (or later) 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 available in versions 7.3-1 and 7.3-2 of the operating system. The product may be employed either as the system boot controller or as a data only array 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/

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.

• V5.1B Tru64 UNIX

    -- Tru64 UNIX V5.1B base operating system kit

    -- Tru64 UNIX NHD7 kit for V5.1A and V5.1B
      NHD kit name: NHD7.tar.gz

• V5.1A Tru64 UNIX

    -- Tru64 UNIX V5.1A base operating system kit

    -- Tru64 UNIX NHD7 kit for V5.1A and V5.1B
      NHD kit image name: NHD7.tar.gz

Existing Installations:

Users introducing 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. Later versions of these patch kits may be substituted when available. Boot genvmunix and follow standard procedures for creating a customized kernel using doconfig(8).

• V5.1B Tru64 UNIX

-- Tru64 UNIX V5.1B Patch Kit 3
Patch kit image name: `T64V51BB24AS0003-20030929.tar`

• V5.1A Tru64 UNIX

-- Tru64 UNIX V5.1A Patch Kit 6
Patch kit image name: `T64V51AB24AS0006-20031031.tar`

OpenVMS Software Components

• OpenVMS V7.3-2

Support for the KZPDC controller is present in the base OpenVMS V7.3-2 release. OpenVMS V7.3-2 introduces Fastpath support in the Smart Array controller driver (PKRdriver). Consult the OpenVMS V7.3-2 Operating System Release Notes and New Features documentation for more information.

-- OpenVMS V7.3-2 base operating system kit

-- There are no patch files presently required for use of the KZPDC product under OpenVMS V7.3-2.

• 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 (or version successors) 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 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 Agents kit but requires for operation the facilities provided by the Management Agent 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 Agent 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 and associated patches can be downloaded from the following location:
   http://h30097.www3.hp.com/cma/

   Users are advised to check this site periodically for patches and updates to the Tru64 UNIX Insight Management Agents kit.

Array Configuration Utility XE 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 Utility Components

General Note

New releases of the HP Insight Management Agents for OpenVMS and Array Configuration Utility XE are available which address prior incompatibilities between certain versions of the OpenVMS Management Agent kit and the Smart Array Configuration Utility. Version compatibility is detailed in the table below:

Table 1: OpenVMS Insight Management Agents Kit - ACUXE Kit Compatibility

OpenVMS Management Agent Kit Version and Package Name	Smart Array Configuration Utility Kit Version and Package Name
Version 3.02, PCSI kit name: `HP-AXPVMS-V73_MGMTAGENTS_V0300-36-1.PCSI`	Version B0126, PCSI kit name: `HP-AXPVMS-ACUXE-B0126--1.PCSI`
V3.0 and V3.01	No support
Version 2.4, PCSI kit name: `CPQ-AXPVMS-V73_MGMTAGENTS_V0204-11-1.PCSI`	Version B0105, PCSI kit name: `COMPAQ-AXPVMS-ACUXE-B0105--1.PCSI`

HP Insight Management Agents for OpenVMS

- The new v3.02 release of the HP Insight Management Agents for OpenVMS provides full Smart Array utility support for the KZPDC controller under OpenVMS versions 7.3-1 and 7.3-2. This kit must be used in conjunction with Smart Array Configuration Utility kit version B0126 or later. Kit version B0105 of the ACU-XE utility is not supported with OpenVMS Management Agent kit version 3.00 or higher.

- The v3.02 kit can be obtained from the HP Insight Management Agents for OpenVMS home page located at:
  http://h71000.www7.hp.com/openvms/products/mgmt_agents/

- The HP Management Agents for OpenVMS kit version v3.02 supersedes the kit found in the software media kit supplied with the KZPDC controller.

- Users are strongly advised to review the instructions in the v3.02 kit Installation Guide before attempting to update system/cluster environments

that have or have had a pre-v3.02 Management Agent kit installed. Failure to adhere to the guidance with respect to ensuring no WBEM or CPQ$ACUXE processes are running within the system or OpenVMS cluster environment can result in incomplete Management Agent kit component delivery.

Array Configuration Utility XE for OpenVMS

- The new B0126 release of the Smart Array Configuration Utility XE is fully compatible with the HP Insight Management Agents for OpenVMS beginning with Agent kit version 3.02.

- ACUXE kit version B0105 is not supported with OpenVMS Management Agent kits versions 3.00 and higher.

- The B0126 kit supersedes the B0105 Array Configuration Utility kit found on the software media CD-ROM supplied with the KZPDC controller. The PCSI kit version is B0126 and when extracted is entitled:

  — HP-AXPVMS-ACUXE-B0126--1.PCSI

- The B0126 kit is supported under OpenVMS versions 7.3-1 and 7.3-2.

- Installation of the B0126 ACUXE kit should be performed after first installing or updating the system or cluster environment with the v3.02 (or later) Management Agents kit.

- Users installing the B0126 kit into a system or cluster environment that has or has had the ACUXE kit version B0105 previously installed must use an installation support script, ACUXE_CLEANUP.COM, to perform the utility installation. This script will ensure that pre-installation conditions are appropriate before kit component delivery is initiated and prepare the system/cluster environment for cluster-wide installation of the kit.

  The ACUXE_CLEANUP.COM script is packaged as part of the ACUXE126.EXE self-extracting archive containing the B0126 ACUXE PCSI kit and is available from the Smart Array 5300A web site.

  After downloading the B0126 kit distribution file and placing it in SYS$UPDATE, extract the B0126 PCSI kit and the accompanying ACUXE_CLEANUP.COM script with the following command:

  ```
  $ RUN ACUXE126.EXE
  ```

This will result in creation of two files,
HP–AXPVMS–ACUXE–B0126--1.PCSI and ACUXE_CLEANUP.COM in
the indicated target directory.

- Install and upgrade the ACUXE utility by following the instruction provided
  after launching the ACUXE_CLEANUP.COM script as follows:

```
$ @SYS$UPDATE:ACUXE_CLEANUP.COM
```

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 4.3.1 or later 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 from 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
- GS80, GS160, GS320
- 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.

GS80, GS160 and GS320 System Issues

- KZPDC controller support under OpenVMS on the GS80, GS160, and GS320 system platform is available beginning with version 7.3-2 of the operating system. The KZPDC controller is not supported under OpenVMS version 7.3-1 on GS80, GS160, and GS320 systems.

- OpenVMS Galaxy system environments on the GS80, GS160, and GS320 platform must be updated with a forthcoming release of the Alpha System console version 6.7 (or later) prior to installing the KZPDC controller. System environments which are not partitioned or which employ only hard partitioning are supported with a minimum SRM console version corresponding to the v6.6 Alpha Firmware release.

- The ADFU v1.00A shipped on a CD with the Smart Array 5300A option kit does not support GS80, GS160 and GS320 platforms. A future release of the ADFU utility is planned which will provide the necessary support for these platforms. ADFU utility updates can be downloaded from the Smart Array 5300A web site when available.

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.

- ES47, ES80, and GS1280 system environments are now fully supported with the Smart Array 5300A runtime utilities under OpenVMS. This support is provided with OpenVMS Management Agents kit version 3.02 and the Smart Array Configuration Utility XE version B0126. The previous restriction has now been removed which limited support of the KZPDC product on the ES47, ES80, and GS1280 platform to a single controller instance per partition when the Smart Array 5300A utilities are installed.

- The ADFU v1.00A shipped on a CD with the Smart Array 5300A option kit does not support ES47, ES80 and GS1280 platforms. A future release of the ADFU utility is planned which will provide the necessary support for these platforms. ADFU utility updates can be downloaded from the Smart Array 5300A web site when available.

- 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 the 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.

- KZPDC controller support under OpenVMS on the GS80, GS160, and GS320 system platform is available beginning with version 7.3-2 of the operating system. KZPDC controller support is not available under OpenVMS version 7.3-1 on GS80, GS160, and GS320 systems. Consult the platform specific section of these release notes for more information.

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 advice 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

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

- 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

- Users are advised to follow the power sequencing rules below to avoid possible array volume state changes affecting the availability of user data:

  When removing power to a storage enclosure attached to a Smart Array controller, first remove power to the host system, followed by powering off the storage enclosure.

  When powering a system on, ensure all storage enclosures attached to a Smart Array controller first receive power before applying power to the host system.

- 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.

- When configuring a Smart Array 5300A controller attached to a storage enclosure configured with a dual bus I/O module, each of the enclosure's SCSI bus segments may be attached to a Smart Array controller instance. Connecting a controller or adapter other than another Smart Array controller to the second SCSI bus segment of the enclosure is however unsupported.

- 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

- The StorageWorks 4400 (MSA30) series of storage enclosures are supported for use with the KZPDC controller at up to U3 (Ultra160) SCSI data transfer rates.

- All supported external enclosures ship with U3 SCSI compliant cables. See the QuickSpec for your HP StorageWorks storage enclosure 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.