

MODELS

Smart Array 3200 Controller 295643-B21

- High-performance PCI intelligent array controller
- Two Wide Ultra2 SCSI Channels providing 160 MB/s total bandwidth - two internal and two external SCSI connectors
- 64-MB¹ ECC-protected and battery-backed removable read/write cache
- Configuration flexibility and intelligent storage management to ensure continuous high-performance
- Configuration flexibility and intelligent storage management to ensure continuous high-performance access to network data

Overview

The Smart Array 3200 Controller is Compaq's premier award-winning workgroup RAID controller. Supporting two internal or two external Ultra2 SCSI connections, this controller replaces the most popular PCI array controller in the market today—the SMART-2DH Array Controller. With great performance, strong PCI controller availability and support for more than typical workgroup capacity, this controller is a hallmark of the Compaq Smart Array storage solutions.

The Smart Array Advantage

Compaq's innovative design and integration work for the Smart Array family of products adds customer value unmatched in the industry. Large scale use of Smart Array products facilitates a much lower cost of ownership than many competitive server storage products. The Compaq Smart Array family brings unparalleled return on invested dollars through these product family benefits:

Data Compatibility between all models of Smart Array Controllers means customers can upgrade from other models of Smart Array products to get to higher performance, capacity and availability. Unlike competitive products, successive generations of Smart Array products understand the data format of other Smart Array controllers².

Consistent Configuration and Management Tools. All Smart Array products utilize a standard set of management and utility software. These tools consistently lower the cost of ownership by reducing training and technical expertise necessary to install and maintain the Compaq server storage. Configuration, management and diagnostic software tools includes: Array Configuration Utility, Array Diagnostic Utility, Compaq Insight Manager (CIM), and Compaq SmartStart.

Snapshots and Storage Pools. Compaq delivers the next step towards the Enterprise Network Storage Architecture vision with support for StorageWorks Virtual Replicator. With this optional software, users can instantly create "snapshots" of production data to reduce backup and restore Windows from hours to minutes. Pool storage for quick response to changing storage capacity needs, create "virtual volumes" of up to 1 terabyte and enjoy policy-based automation to simplify system data and storage management.

Pre-Failure Warranty³ means that CIM not only tells you when a drive is going bad, but allows you to replace failing drives before they actually fail.

Key Features

Integrated components ensure continuous high-performance system access with ensured fault tolerance.

Host Interface: 32-bit bus-master technology delivers maximum data performance, transferring information directly to system memory at rates up to 133 MB per second (PCI); enhanced command interface reduces command latency and maximizes transfer rates.

Intelligent Array Engines: Processing tasks are divided between two engines. Working simultaneously, one engine generates fault tolerance information and manages data flow, while the other prepares and sorts array storage commands.

Dual Wide Ultra2 SCSI Channels: Two Ultra2 SCSI channels double data bandwidth for up to 160 MB/s total controller band width.

Enhanced Array Accelerator: 64-MB read/write cache module¹ maximizes I/O performance without sacrificing data integrity. Prediction of sequential operations and retrieval of data prior to a request further enhances performance.

Fault Prevention

Allows detection of possible failures before they occur, allowing preventive action to be taken

S.M.A.R.T.: Self Monitoring Analysis and Reporting Technology first developed at Compaq detects possible hard disk failures, before they occur, allowing Compaq to replace the failed component before the actual failure occurs.

Drive Parameter Tracking: Monitors over 15 drive operational parameters, predicting failures and notifying the administrator.

Dynamic Sector Repairing: Continually performs background surface scans on the hard disk drives during inactive periods and automatically remaps bad sectors, thus ensuring data integrity.

Array Accelerator Tracking: Monitors integrity of Array Accelerator Cache, allowing Pre-Failure preventive maintenance.

Environment Tracking for External Storage System: Monitors fan speed and cabinet temperature of ProLiant Storage System and newer Compaq storage enclosures.

Drive & Array Movement: The users can move (detach & attach) drives in any order on the same controller (drive movement) or add a configured drive array to another controller (array movement), and maintain configuration information. This feature requires the system to be powered down, and there must not be any failed drives or active spare drives in the array.

Fault Tolerance

Keeps data available and server running while a failed drive is being replaced; several fault tolerance configurations are supported including:

Distributed Data Guarding (RAID 5): Allocates parity data across multiple drives and allows simultaneous write operations

Data Guarding (RAID 4): Writes parity data to a single, dedicated parity drive

Drive Mirroring (RAID 1, 0+1): Allocates half of the drive array to data and the other half to mirrored data, providing two copies of every file

Fault Recovery

Minimizes downtime and facilitates a quick recovery from component failures.

On-Line Spares: Up to four spare drives can be installed prior to drive failure. If a failure occurs, recovery begins with an On-Line spare and data is reconstructed automatically.

Array Accelerator: Onboard, battery backed cache memory protects data in the event of a controller, server or power failure. This daughter board is uniquely removable from the array in the unlikely event of a controller failure—saving critical user data for up to four days.

High Availability

Saves training and administration costs by providing online storage management tools:

Online RAID Level Migration: allows for online post-configuration change to RAID level without destroying data or volume information.

Online Capacity Expansion: lets you add storage to a live server—reducing expensive server downtime.

Volume Capacity Extension: allows for the capacity growth of existing logical volumes.

Logical Drive Capacity Extension: allows the user to increase the size of existing logical drives.

Global Online Spare: reduces the risk of data loss by facilitating automatic rebuilds after a drive failure.

Pre-Failure Warranty³: Drives attached to the Smart Array Controller and monitored under Compaq Insight Manager are supported by a Pre-Failure (replacement) Warranty.

SOFTWARE COMPONENTS

Compaq Smart Array software makes setup, storage management, configuration and trouble shooting a breeze. Compaq Smart Array products utilize a single, consistent set of utility software for storage and RAID management. This consistency across the Smart Array product line reduces the cost of ownership by reducing training and technical expertise necessary to install and maintain your Compaq server storage solution.

Array Configuration Utility & Array Diagnostic Utility

- Powerful configuration and diagnostic utilities for all Smart Array controllers
- Provides a graphical view of Compaq drive array configurations
- Easy to use Wizards for configuration
- Runs online on NT 4.0 and NetWare

Compaq Insight Manager

- Powerful server and server options/storage monitoring tool
- Monitors over 1200 different server parameters

SmartStart

- Simple to use server and storage installation tools

Compaq StorageWorks Virtual Replicator (sold separately)

- **Snapshot Back Up and Restore:** Instantly create “snapshots” of production data to reduce backup and restore windows from hours to minutes.
- **Storage Pools:** For quick response to changing storage capacity needs, create “virtual volumes” of up to 1 terabyte and enjoy policy-based automation to simplify system data and storage administration.
- **System requirements:** Windows NT 4.0 SP3, IE 3.02, 32 MB memory, and 30 MB disk space

SPECIFICATIONS

Protocol	Wide Ultra2 SCSI, Wide-Ultra SCSI-3, Fast Wide SCSI-2 or Fast SCSI-2
SCSI Electrical Interface	Low Voltage Differential (LVD)
Drives Supported	Up to 15 Wide Ultra2 SCSI, Wide-Ultra SCSI-3, Fast-Wide SCSI-2 or Fast SCSI-2 Hard Drives. When used with the ProLiant Storage System Model UE, the SA-3200 supports up to 12 HDD per channel.
Maximum Transfer Rate on System Bus (peak)	133 MB/s
Simultaneous Drive Transfer Channels	Two
Total Channel Transfer Rate	160 MB, 80 MB/s per channel ⁴
Software Upgradable Firmware	Yes
Read/Write Cache	64-MB ¹ ECC protected, battery-backed read/write cache built on Compaq's uniquely removable daughter board technology
Logical Drives Supported	32
Reliability Features	
Distributed Data Guarding (RAID 5)	Yes
Data Guarding (RAID 4)	Yes
Drive Mirroring (RAID 1, 0+1)	Yes
Drive Striping (RAID 0)	Yes
Automatic Data Recovery	Yes

Kit Contents

Controller, warranty card, support software CD, installation guide, quick install poster, and Compaq Systems Reference Library CD

Warranty

<i>Maximum:</i>	The remaining warranty of the Compaq server product in which it is installed (to a maximum three-year limited warranty ²)
<i>Minimum:</i>	One-year, on-site limited warranty ²
<i>Pre-Failure Warranty:</i>	Drives attached to the Smart Array Controller and monitored under Compaq Insight Manager are supported by a Pre-Failure (replacement) Warranty ³

OPTIONS

Hard Drives⁵

Wide Ultra2 SCSI Drives – Hot Plug

18.2-GB Ultra2 SCSI Drive (1")	388144-B21
9.1-GB Ultra2 SCSI 10,000 rpm Drive (1")	328939-B21
9.1-GB Ultra 2 SCSI Drive (1")	349514-B21
4.3-GB Ultra2 SCSI 10,000 rpm Drive (1")	328938-B21
4.3-GB Ultra2 SCSI Drive (1")	349513-B21

Wide-Ultra SCSI-3 Drives – Hot Plug

36.4-GB Wide-Ultra SCSI-3 Drive (1.6")	400740-B21
18.2-GB Wide-Ultra SCSI-3 Drive (1")	400739-B21
18.2-GB Wide-Ultra SCSI-3 10,000 rpm Drive (1.6")	336358-B21
18.2-GB Wide-Ultra SCSI-3 Drive (1.6")	313756-B21
9.1-GB Wide-Ultra SCSI-3 10,000 rpm Drive (1")	336357-B21
9.1-GB Wide-Ultra SCSI-3 Drive (1")	313706-B21
4.3-GB Wide-Ultra SCSI-3 10,000 rpm Drive (1")	336356-B21
4.3-GB Wide-Ultra SCSI-3 Drive (1")	272577-001

ProLiant Storage System/U Family

ProLiant Storage System Model UE (Single bus, Tower)	348710-B21
ProLiant Storage System Model UE (Single bus, Rack)	348700-B21
ProLiant Storage System Model U2 (Dual Bus, Tower)	304110-B22
ProLiant Storage System Model U2 (Dual Bus, Rack)	304100-B22
Recovery Server Option	304117-B21
Redundant Power Supply Option	224206-001

Software

Compaq StorageWorks Virtual Replicator

License & Media (CD-ROM)	388931-B21
License Only	388932-B21
Upgrade License & Media (CD-ROM)	135438-B21
Upgrade License Only	135439-B21

¹ 56 MB useable for Read/Write cache, 8 MB used for transfer buffer and scripts memory.

² Certain restrictions and exclusions apply. Consult the Compaq Customer Support Center at 1-800-345-1518 for details. In Canada, consult the Product Information Center at 1-800-567-1616 for details.

³ Pre-Failure Warranty is available on all Compaq Prosignia and Compaq ProLiant servers using Compaq Insight Manager 2.1 or higher, and covers Pentium® Pro processors, ECC memory and server hard drives (except the 535 MB Fast-SCSI-2 hard drive) using Compaq IDA, IDA-2, Compaq SMART SCSI Array Controllers, Compaq SMART-2 Array Controllers or Compaq Smart Array Controllers. Certain restrictions and exclusions apply. Consult the Compaq Customer Support Center for details.

⁴ In order to function at Wide Ultra2 SCSI transfer rates, the Smart Array 3200 controller must be used with Wide Ultra2 SCSI capable HDD, drivers and servers.

⁵ For complete compatibility information, refer to the Compaq SCSI Hard Drive Compatibility table located at <http://www.compaq.com/products/servers/storage/compatibility.html> and <http://www.compaq.com/products/server/storage/non-hotplug-compatibility.html>. Please note these websites are available in English only. Using hard drives in unsupported configurations will result in voiding of the warranty and could result in damage to the drive and/or loss of data.