

MODELS

Smart Array 431 Controller

127695-B21

127695-291(Japan)

- Data Compatibility
- Software Consistency
- Wide Ultra3 SCSI
- 64-bit Architecture
- 64-bit PCI Bus Design
- Single internal/external SCSI channel
- Online Capacity Expansion
- Online RAID level Migration

OVERVIEW

The new Smart Array 431 Controller (SA-431) is an intelligent 64-bit array controller for entry level hardware-based fault tolerance with support for up to 14 Wide Ultra3 SCSI hard drives. The SA-431 provides one of the most cost effective alternatives to software-based RAID in the market today, thus lowering entry-level server ownership costs. In addition, the SA-431 is data compatible with all Wide Ultra3 and Wide Ultra2 drives and servers, offering an unparalleled degree of investment protection. Designed and integrated with Compaq entry-level and workgroup servers, this product provides worry-free data protection and gives the customer a single point of contact for all server data storage issues.

The SA-431 has two major advantages over previous generations of entry-level Smart Array controllers:

Advantage Number1: The SA-431 is the first Wide Ultra3 offering in Compaq's LVD Family of products. Because Wide Ultra3 is data compatible with Wide Ultra2 drives and servers, the SA-431 can offer customers unparalleled investment protection for their Wide Ultra2 and Ultra3 products.

Advantage Number2: The SA-431 achieves greater ease of use through:

- **Online Capacity Expansion:** Increases fault tolerant logical drive capacity
- **Online RAID Level Migration:** Reduction of downtime during reconfiguration

Note: Online Capacity Expansion and Online RAID Level Migration are new features for Smart Array entry-level controllers. In order to utilize these features when upgrading or migrating from previous generation Smart Array controllers, the customer must perform a backup of the existing data and recreate logical drives using the Smart Array 431 controller. For details, see User Guide.

The SA-431 is ideal for entry-level and workgroup Compaq *ProLiant* servers or in any *ProLiant* server where hardware RAID is needed at an entry-level price point. The SA-431 controller provides the best performance and capacity for RAID array controllers in the entry-level and workgroup server space.

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 creates much lower cost of ownership than many competitive server storage products. The Compaq Smart Array family brings unparalleled return on invested dollars due to these product family benefits:

Data Compatibility between all models of Smart Array Controllers means customers can upgrade their Smart Array products to get to higher performance, capacity and availability. Unlike competitor's products, successive generations of Smart Array products understand the data format of other Smart Array controllers.

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-XE, 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 one terabyte and enjoy policy-based automation to simplify system data and storage management.

Pre-Failure Warranty means that CIM not only tells you when a drive is going bad, but allows you to replace failing drives before they actually fail. Pre-Failure Warranty is available on all Compaq Prosignia and Compaq *ProLiant* servers using Compaq Insight Manager 2.1 or higher, and covers Pentium® 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.

COMPAQ

KEY FEATURES

Compatibility: with all Wide Ultra2 and Wide Ultra3 LVD family products. In addition, a seamless upgrade to next generation Compaq high performance and high capacity mainstream Wide Ultra3 Smart Array controllers.

New features for entry-level controllers: Online Capacity Expansion; Online RAID Level Migration; Online Spare Support

Software consistency: As with all Smart Array family products: ACU-XE, ACU, CIM, ADU and SmartStart

Wide Ultra3 SCSI: up to 160 MB/s SCSI bandwidth

New High Performance 64-bit Architecture

64-bit PCI Bus Design

Up to 254.8-GB of storage per server slot

New 16-MB Cache Performance Engine: Compaq has utilized 16-MB of the controller cache to create a high performance engine and optimize data throughput

Note: 16-MB of DRAM used for code, transfer buffers, and non-battery backed read cache

Pre-Failure Warranty support for hard disk drives (requires CIM)

Note: Pre-Failure Warranty is available on all Compaq Prosignia and Compaq ProLiant servers using Compaq Insight Manager 2.1 or higher, and covers Pentium® 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.

Full Compaq line-up of OS and server support (Windows NT® 4.0; Windows 2000; NetWare™ 3.2, 4.2, 5; SCI OpenServer 5; SCO UNIX™ 2X; OS/2 (not supported at announcement); Linux)

PRODUCT HIGHLIGHTS

Data Compatibility

Data compatibility between all models of Smart Array Controllers means customers can upgrade their 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 controllers, providing investment protection for your Compaq storage solution.

Performance

Compaq's New High Performance Architecture sets new boundaries of industry performance expectations!

- Wide Ultra3 SCSI
- New High Performance 64-bit Architecture

Capacity

Given the rapid growth of user data, the SA-431 is a perfect companion to rapid expansion:

- Single SCSI channel supports up to 14 disk drives
- Up to 1-TB of external storage

Availability

Provides increased server uptime by providing advanced storage functionality:

- Online RAID Level Migration (between any RAID level)
- Global Online Spare
- Pre-Failure Warranty

Ease of Use

Consistency and Upgradability make the Smart Array family unique in the industry:

- Consistent configuration and management software tools
 - Common data formatting between generations of products
 - Data migration between servers and external storage enclosures
- Note:** Applies to all Smart Array Controller attached storage.
- Online Capacity Expansion

COMPATIBILITY

Servers

For up to date compatibility, please see the following URL for complete Smart Array 431 compatibility and support information.
<http://www.compaq.com/products/servers/proliantstorage/arraycontrollers/comp.html>

SOFTWARE COMPONENTS

All Smart Array products have a single consistent configuration tool Array Configuration Utility (ACU), and a single consistent management tool Compaq Insight Manager (CIM) for the entire storage solution. This reduces the cost of training for each successive generation of product and takes much of the guess-work out of trouble-shooting field problems. Other software tools that are consistent, generation to generation, are the Array Diagnostic Utility (ADU) and Compaq SmartStart. These tools consistently lower the cost of ownership by reducing training and technical expertise necessary to install and maintain the Compaq server storage.

Compaq Insight Manager

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

Configuration Utilities

- Compaq Array Configuration Utility (ACU)
 - Powerful configuration utility 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 Array Configuration Utility XE (ACU-XE)
 - Powerful Web based configuration utility for all Smart Array controllers
 - Provides a graphical view of Compaq drive array configurations
 - Allows for management of multiple arrays over a secure internet connection from anywhere in the world
 - Easy to use Wizards for configuration
 - Runs online on NT v4.0, Windows 2000 and NetWare
- New Options ROM Configuration Capability
 - Rapid configuration of SA-431 upon initial install of the OS

SPECIFICATIONS

Protocol	Wide Ultra3 SCSI
SCSI Electrical Interface	Low Voltage Differential (LVD)
Drives Supported	Up to 14 Wide Ultra3 and Wide Ultra2 SCSI hard drives Note: The SA-431 will support all Wide Ultra2 and Wide Ultra3 servers, storage enclosures, and hard disk drives. The SA-431 does not support Single Ended SCSI devices (Wide Ultra SCSI-3 and previous generations of the SCSI protocol).
SCSI Port Connectors	Single External/Internal SCSI port
Data Transfer Method	64-Bit PCI bus-master
Maximum Transfer Rate on System Bus (peak)	266 MB/s
Simultaneous Drive Transfer Channels	One
Channel Transfer Rate	160 MB/s per channel
Software Upgradable Firmware	Yes
Cache Memory	16-MB of DRAM used for code, transfer buffers, and non-battery backed read cache
Logical Drives Supported	32
SCSI Hard Drives	Distributed Data Guarding (RAID 5) Yes Drive Mirroring (RAID 1) Yes Drive Striping (RAID 0, 1+0) Yes Automatic Data Recovery Yes

OPTIONS

Hard Drives	Wide Ultra3 SCSI Universal Drives – Hot Plug		
	36.4-GB Wide Ultra3 SCSI 15,000 rpm Drive (1")	232916-B22	
	18.2-GB Wide Ultra3 SCSI 15,000 rpm Drive (1")	188122-B22	
	9.1-GB Wide Ultra3 SCSI 15,000 rpm Drive (1")	188120-B22	
	72.8-GB Wide Ultra3 SCSI 10,000 rpm Drive (1")	232432-B22	
	36.4-GB Wide Ultra3 SCSI 10,000 rpm Drive (1")	176496-B22	
	18.2-GB Wide Ultra3 SCSI 10,000 rpm Drive (1")	142673-B22	
	9.1-GB Wide Ultra3 SCSI 10,000 rpm Drive (1")	142671-B22	
	Wide Ultra3 SCSI Drives – Non-Hot Plug		
	36.4-GB Wide Ultra3 SCSI 10,000 rpm Drive (1.6")	142676-B21	
	18.2-GB Wide Ultra3 SCSI 10,000 rpm Drive (1")	142674-B21	
	9.1-GB Wide Ultra3 SCSI 10,000 rpm Drive (1")	142672-B21	
	Wide Ultra2 SCSI Drives – Hot Plug		
	18.2-GB Wide Ultra2 SCSI 10,000 rpm Drive (1")	128418-B21	
	18.2-GB Wide Ultra2 SCSI 7,200 Drive (1")	388144-B21	
	9.1-GB Wide Ultra2 SCSI 10,000 rpm Drive (1")	328939-B22	
	9.1-GB Wide Ultra 2 SCSI 7,200 Drive (1")	123065-B22	
	4.3-GB Wide Ultra2 SCSI 10,000 rpm Drive (1")	328938-B21	
	4.3-GB Wide Ultra 2 SCSI 7,200 Drive (1")	349513-B21	
	Wide Ultra2 SCSI Drives – Non-Hot Plug		
	18.2-GB Wide Ultra2 SCSI 10,000 rpm Drive (1.6")	328943-B21	
	18.2-GB Wide Ultra2 SCSI 10,000 rpm Drive (1")	128419-B21	
	18.2-GB Wide Ultra2 SCSI 7,200 Drive (1")	388143-B21	
	9.1-GB Wide Ultra2 SCSI 10,000 rpm Drive (1")	328942-B21	
	9.1-GB Wide Ultra 2 SCSI 7,200 Drive (1")	349526-B21	
	4.3-GB Wide Ultra2 SCSI 10,000 rpm Drive (1")	328941-B21	
	4.3-GB Wide Ultra 2 SCSI 7,200 Drive (1")	349525-B21	
	Note: This is a list of supported hard disk drives (note that some drives may be discontinued).		
	Software	SANWorks Virtual Replicator	
		Note: For additional Virtual Replicator ordering information refer to http://www.compaq.com/products/StorageWorks/swr/swrorderinfo.html .	
		License & Media (CD-ROM)	191802-B21
		License Only	388932-B21

OPTIONS

Storage Enclosures		
Compaq <i>StorageWorks</i> Enclosure Model 4314T		190210-001
Compaq <i>StorageWorks</i> Enclosure Model 4314T (Int'l)		190210-B31
Compaq <i>StorageWorks</i> Enclosure Model 4314T (Japan)		190210-291
Compaq <i>StorageWorks</i> Enclosure Model 4314R		190209-001
Compaq <i>StorageWorks</i> Enclosure Model 4314R (Int'l)		190209-B31
Compaq <i>StorageWorks</i> Enclosure Model 4314R (Japan)		190209-291
Compaq <i>StorageWorks</i> Enclosure Model 4354R		190211-001
Compaq <i>StorageWorks</i> Enclosure Model 4354R (Int'l)		190211-B31
Compaq <i>StorageWorks</i> Enclosure Model 4354R (Japan)		190211-291
Compaq <i>StorageWorks</i> Enclosure Model 4214R		103381-001
Compaq <i>StorageWorks</i> Enclosure Model 4214R (Int'l)		103381-B31
Compaq <i>StorageWorks</i> Enclosure Model 4214R (Japan)		103381-291
Compaq <i>StorageWorks</i> Enclosure Model 4214T		124875-001
Compaq <i>StorageWorks</i> Enclosure Model 4214T (Int'l)		124875-B31
Compaq <i>StorageWorks</i> Enclosure Model 4214T (Japan)		124875-291
Compaq <i>StorageWorks</i> Enclosure 4254R		138151-001
Compaq <i>StorageWorks</i> Enclosure 4254R (Int'l)		138151-B31
Compaq <i>StorageWorks</i> Enclosure 4254R (Japan)		138151-291

Note: **This is a list of supported Storage Enclosures** (note that some storage enclosures may be discontinued).

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