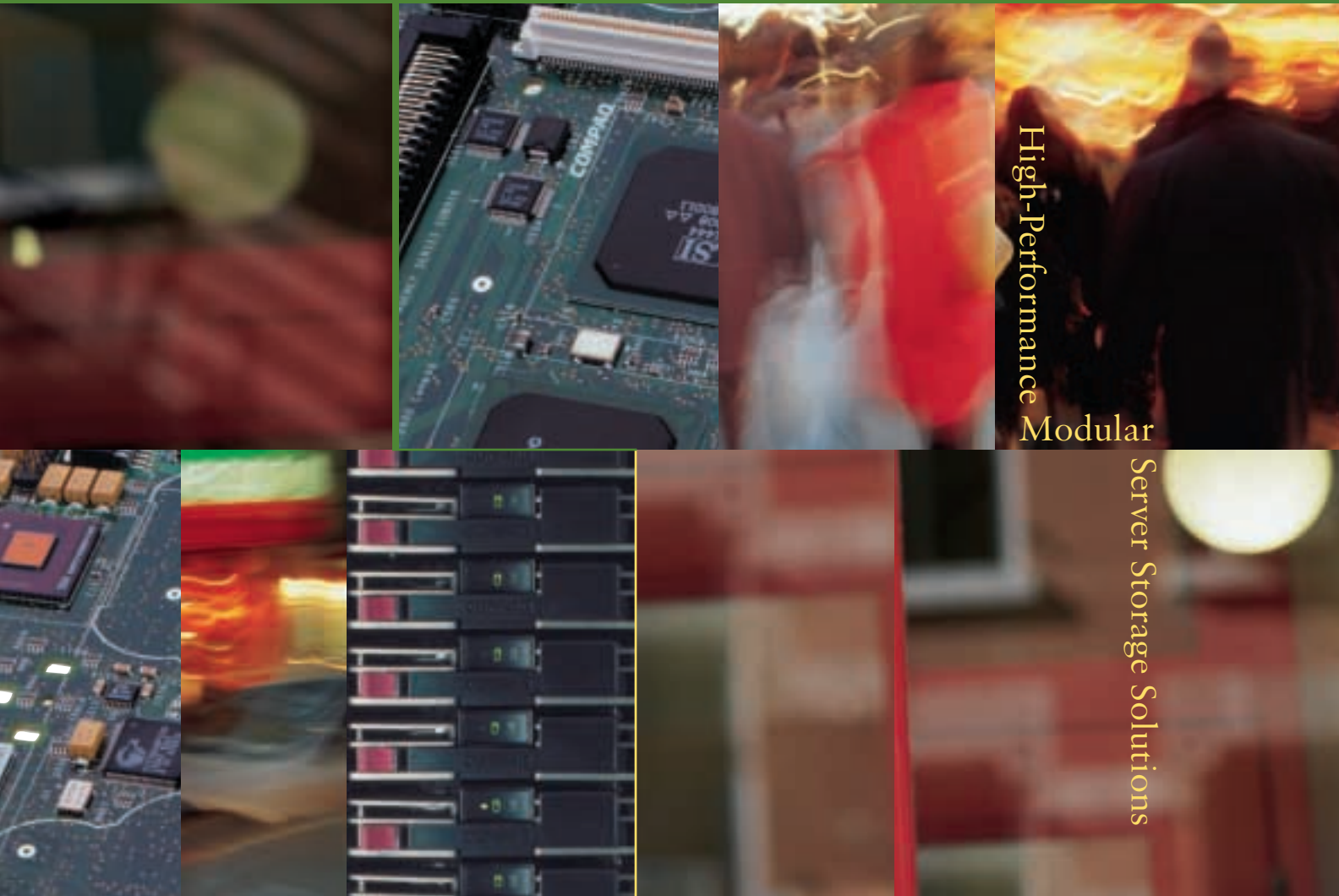


# Compaq StorageWorks™

Smart Array 5300 Controller Series  
StorageWorks Enclosure 4300 Family



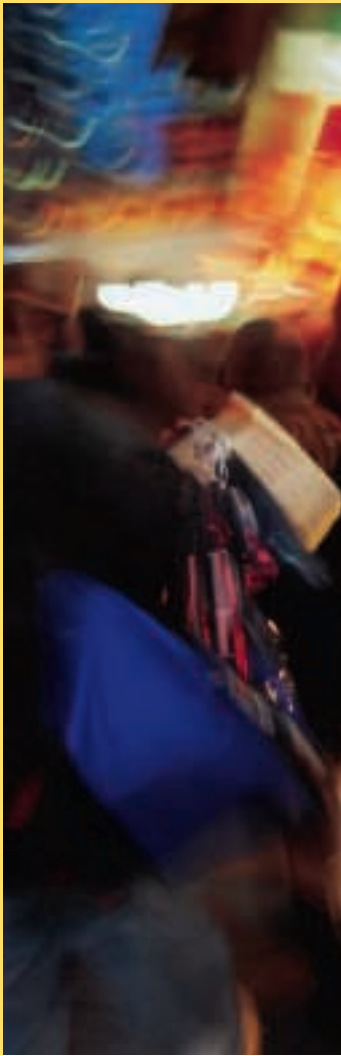
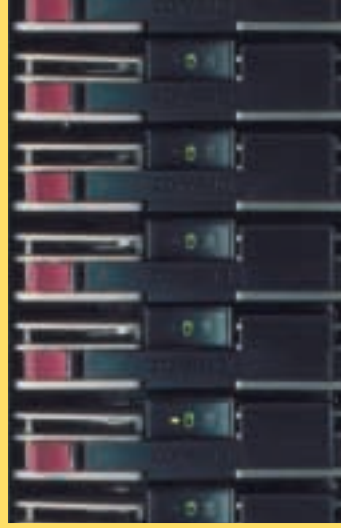
High-Performance  
Modular  
Server Storage Solutions

**COMPAQ**  
*NonStop™*

for today's server

# storage & tomorrow's Open SANs

E-business is skyrocketing. Undisrupted 24x7 business is now the norm. And data volumes are growing at a staggering pace. All of which adds to your business' storage requirements.



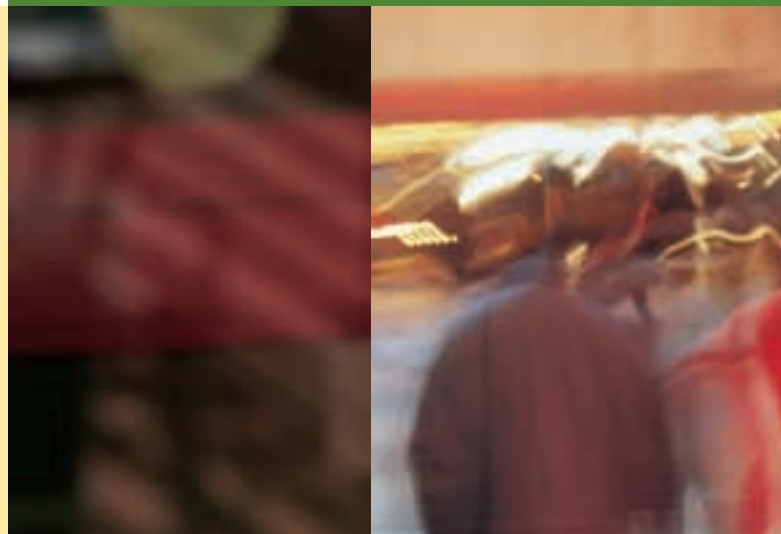
So what does it take to stay ahead? It takes flexible, modular storage solutions that protect your investments, yet perform at Internet speed — solutions like the Smart Array 5300 Controller series and *StorageWorks* Enclosure 4300 family.

This new generation of Ultra3 SCSI-based storage products provides revolutionary modularity, investment protection and performance for today's server storage and tomorrow's Open SANs, not to mention unprecedented data protection from exclusive technologies like Advanced Data Guarding (RAID ADG).

**The Compaq Smart Array 5300 Controller series and *StorageWorks* 4300 family work together to:**

- Protect your technology investments with easy upgrades, mix-and-match drive capabilities and universal components that span all your Compaq storage devices.
- Provide unprecedented controller expandability through a modular design that permits multiple cache and channel configurations.
- Deliver record-breaking performance, with a next-generation controller architecture and superior integration with your Compaq servers.

protect your  
investments yet  
perform at  
Internet speed



high-performance modular  
server storage solutions

provides  
unprecedented

high performance and robust data protection

## Smart Array 5300 Controller Series

The Smart Array 5300 series of Ultra3 array controllers provides flexibility and data protection thanks to an innovative modular design and exclusive features like RAID ADG. In addition, the Smart Array 5300 Controller raises the performance bar with enhancements that include a new memory architecture and RAID engine.

- **High performance** the best performance of any Smart Array controller to optimize the performance of your server.
- **Expandability** a new modular design lets you add Ultra3 SCSI channels with expandable capacity up to 2 TB from a single PCI slot.
- **Improved data protection** a new advanced RAID level for today's larger storage volumes.
- **Reliability** designed and tested with *Compaq ProLiant™* servers and *StorageWorks* enclosures for easy configuration, manageability and greater reliability.
- **Investment protection** Smart Array innovations provide outstanding protection of your storage investments, including a modular design, mix-and-match Ultra2 and Ultra3 compatibility, generational data compatibility, software consistency and the Compaq exclusive Pre-Failure Warranty.



protecting  
cached data

### Innovative Cache Memory Design

- Smart Array cache memory offers a unique battery-backed design protecting cached data in the event of a server or controller failure.
- Redundant batteries are a snap to replace.
- A range of cache sizes (32, 64, 128 MB) offers customers choices based upon the following requirements: best performance or best price.

# Introducing Advanced Data Guarding

## Breakthrough RAID protection — exclusively from Compaq

Only the Smart Array 5300 controller offers Compaq's exclusive Advanced Data Guarding (RAID ADG) technology\*. It offers dramatically higher fault tolerance than RAID 5 with lower implementation costs than RAID 1.

## Larger volumes — without the risk

RAID ADG is ideal for applications requiring large logical volumes, because it can safely protect a single volume that spans up to four channels and 56 disk drives.

- RAID ADG can withstand two simultaneous drive failures without downtime or data loss.
- Similar to RAID 5, data and parity is distributed across all drives.
- The net capacity of two drives is reserved for parity information.

\* Smart Array 5300 model with 128 MB cache are shipped RAID ADG-ready. A quick firmware upgrade to enable the technology will be available as of Q4 2000 at [www.compaq.com/smartarray](http://www.compaq.com/smartarray).

## Specs at a glance

- Ultra3 SCSI technology delivers high performance and data bandwidth of 160 MB/s per channel.
- Up to four channels provide the highest capacity per slot in the industry.
- Battery-backed cache protects cached data in the event of server or controller failure; and redundant batteries take that protection even further.
- A 64-bit, 66 MHz PCI interface boosts bandwidth up to a 533 MB/s.
- Management features include Online Capacity Expansion, RAID Level Migration, Stripe Size Migration, Global Spares, User-Selectable Read/Write Cache and User Selectable Rebuild Priority.

## The Smart Array advantages — only from Compaq

The most proven controllers in the market, Smart Array controllers are tested and trusted by more system administrators than any other PCI Array Controller you can buy.

- Data compatibility between generations of controllers makes upgrading servers easy, without backup and restore.
- Consistent configuration and management tools reduce training costs and human errors.
- Seamless upgrades for controllers boost capacity, availability and performance without unnecessary server downtime.
- The unique Compaq Pre-Failure Warranty, combined with Compaq Insight Manager, provides monitoring and replacement of drives before they fail, reducing the risks of data loss and disruption.

## Want to replace an earlier controller? Upgrade in an instant.\*\*

1.

Verify that you're running the latest device driver and Smart Array firmware.

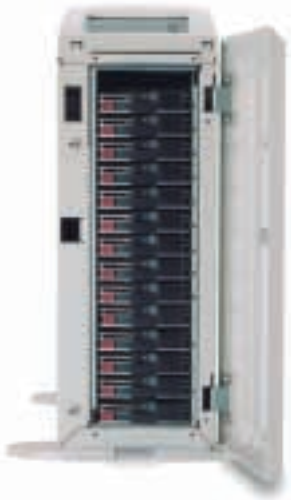
2.

Replace the old controller and cables with the new controller and cables.

3.

Reboot the server, and data will be seamlessly recognized.

\*\* Compaq recommends that you perform a complete backup before you begin any server upgrades.



## StorageWorks Enclosure 4300 Family

The *StorageWorks* Enclosure 4300 family delivers state-of-the-art Ultra3 SCSI performance, outstanding capacity, availability and investment protection in a storage disk enclosure. It's ideal for users who want a low-cost enclosure to expand current storage capacity. And it makes technology transitions smoother and less costly as you grow, thanks to easy upgrading and mix-and-match compatibility among Ultra2 and Ultra3 components. This universal enclosure spans all *Compaq ProLiant* servers, *Compaq AlphaServer™* systems and many of the *StorageWorks* solutions.

→ **Maximum performance**  
Ultra3 SCSI transfer rates combined with the highest spindle count per U of rack space in its class give you the highest I/O-per-second rate in the industry.

state-of-the-art

## Ultra3 SCSI performance



→ **More storage per square inch**

With 14 hard disk drives per 3U, you can house up to 14 enclosures in one 42U rack, for total rack storage capacity of up to 7.13 TB of disk storage (using 36.4 GB 1-inch hard drives).

→ **Investment protection**

Ultra3 single and dual I/O upgrade modules make upgrading the *StorageWorks* Enclosure 4200 to support Ultra3 quick and easy. And the *StorageWorks* Enclosure 4300 offers a common storage platform for future SAN consolidation.

→ **Smoother technology transitions**

With the ability to upgrade, as well as mix and match, existing Ultra2 components with Ultra3, transitions are easy as your needs change.

→ **Lower inventory costs**

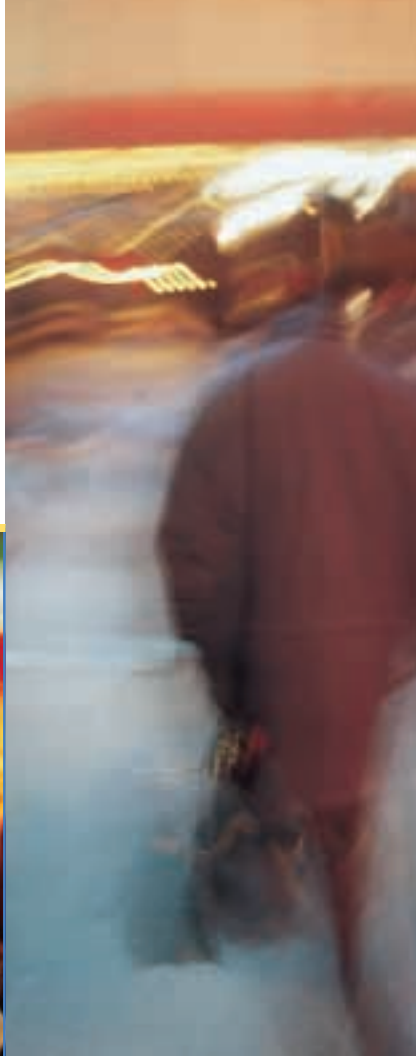
Universal drives and drive carriers across Compaq's entire Ultra2 and Ultra3 product line allow the same drives to be used in servers and external storage.

→ **High availability**

Hot-pluggable fans, power supplies and hard drives, plus redundant fans and optional redundant power supply,\*\* provide the kind of storage needed for demanding e-commerce applications.

\*\*\* Redundant power supplies are standard on model 4354R.

ideal for users who want a low-cost drive enclosure to expand current storage capacity



investment protection

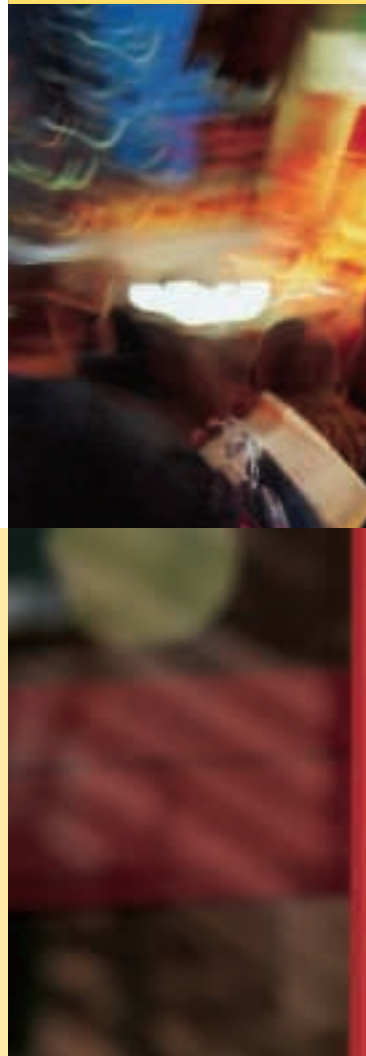
### Specs at a glance

- Ultra3 (LVD) support delivers data transfer rates up to 160 MB/s.
- Ultra3 single- and dual-bus I/O upgrade modules are available for *StorageWorks* Enclosure 4200 family products.
- Supports up to 14 (1-inch) Universal hard disk drives in a 3U form factor.
- Mix-and-match Ultra3 and Ultra3 drives on the same SCSI bus; maximum data bandwidth = 160 MB/s.
- Provides storage capacity of up to 509.6 GB per enclosure (using 36.4 GB 1-inch HDD).

capacity, availability &

outstanding

it makes transitions smoother and less costly as you grow



## Have a *StorageWorks* Enclosure 4200? Upgrade to Ultra3 in an instant.

# 1.

Stop all I/O operations to the enclosure to ensure no data is lost, but keep the power running — the I/O module is warm-pluggable.

# 2.

Swap out the I/O module on the back of the unit.



for more  
information



For more information  
on the *StorageWorks*  
Smart Array 5300  
Controller series,  
*StorageWorks* Enclosure  
4300 family or other  
Smart Array products  
from Compaq, visit

[www.compaq.com/smartarray](http://www.compaq.com/smartarray)

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