

MODEL

Integrated Smart Array Controller Option Kit
128293-B21

Key Product Features

- Better performance and ease of use than software-based RAID
- Available only on ProLiant ML370, DL380, ML570, and DL580 servers
- Embedded hardware RAID controller
- Wide Ultra2 SCSI
- 32-bit architecture
- Fault tolerant RAID supported for all internal hard disk drives

Overview

The new Integrated Smart Array Controller is an intelligent array controller for entry-level, hardware-based fault tolerance with support for all Ultra2 SCSI internal hard drives. The Integrated Smart Array controller provides one of the most cost effective alternatives to software-based RAID in the market today. Designed and integrated with Compaq ProLiant ML370, DL380, ML570, and DL580 servers, the Integrated Smart Array controller provides worry-free data protection for all server internal storage needs.

Target Environments

The Integrated Smart Array Controller offers excellent investment protection in the following environments:

- **Non-RAID:** Current storage operations where, until now, there has not been a perceived need for data protection, security, or performance gains
- **Software RAID:** Current storage operations using software RAID where growing data storage requirements demand the robustness, efficiency, and performance increases available with entry-level hardware RAID

The Smart Array Advantage

Compaq's innovative design and integration work for the Smart Array family of products creates customer value that is unmatched in the industry. Use of Smart Array products across multiple applications results in a much lower Total Cost of Ownership (TCO) than any other server storage RAID products. The Compaq Smart Array family brings an unparalleled return on investment through:

Upgradability. Data Compatibility between all models of Smart Array controllers allows simple and easy upgrades any time needs for higher performance, capacity, and availability increase. Even successive generations of Smart Array controllers understand the data format of other Smart Array Controllers. Certain restrictions and exclusions apply. Consult the Compaq Customer Support Center at 1-800-345-1518 for details.

Consistent Configuration and Management Tools. All Smart Array products utilize a standard set of management and utility software. These tools help minimize Total Cost of Ownership by reducing training requirements and technical expertise necessary to install and maintain the Compaq server storage. Configuration, management and diagnostic software tools include: Array Configuration Utility (ACU); Array Diagnostic Utility (ADU); Compaq Insight Manager (CIM); and Compaq SmartStart.

Snapshots and Storage Pools. Compaq delivers the next step towards the Enterprise 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 CIM not only reports when a drive is going to fail but allows replacement of failing drives prior to actual failure. Pre-Failure Warranty is available on Compaq ProLiant servers using Compaq Insight Manager 2.1 or later and covers Pentium® Pro processors, ECC memory and server hard drives using Compaq Smart Array Controllers. Certain restrictions and exclusions apply. Consult the Compaq Customer Support Center for details.

PRODUCT PERFORMANCE

Availability

- **Online RAID Level Migration** - Allows online post-configuration change to RAID level without destroying data or volume information.
- **Pre-Failure Warranty** - Drives attached to the Integrated Smart Array Controller and monitored under Compaq Insight Manager are supported by a Pre-Failure (replacement) warranty.
- **Online Capacity Expansion** - Increases in logical drive capacity can be made without taking production systems offline and powering down to install new storage drives.

Note: When upgrading from a Smart-2SL Array Controller, which didn't offer Online Capacity Expansion and Online RAID Level Migration, the user must perform a backup of the existing data, power down the system, and recreate each logical drive in order to use these features. This step must be taken because these features utilize a small portion of disk space to perform the operations and this disk space can only be created by following the above procedure.

PRODUCT PERFORMANCE *(continued)*

Fault Prevention

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

- **S.M.A.R.T.:** Self Monitoring And Reporting Technology first developed at Compaq detects possible hard disk failures before they occur, allowing Compaq to replace the failing component before the actual failure occurs.
- **Drive Parameter Tracking:** Drive Parameter Tracking monitors over 15 drive operational parameters, predicting failures, and notifying administrator of possible failures.
- **Dynamic Sector Repairing:** Dynamic Sector Repairing scans hard drives and automatically re-maps bad sectors, ensuring data integrity in the background during server idle time.
- **Environment Parameter Tracking:** Environment Parameter Tracking monitors fan and cabinet temperature of ProLiant Storage System/U family of products.
- **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 Recovery

Minimizes downtime, reconstructs data, and facilitates a quick recovery from drive failure.

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

Fault Tolerance

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

- **Distributed Data Guarding (RAID 5):** Distributed Data Guarding (RAID 5) allocates parity data across multiple drives and allows simultaneous write operations. For configuration - see "Smart Array Controller Technology: RAID 5 Configuration Recommendations" white paper.
- **Drive Mirroring (RAID 1, 0+1):** 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.

Hot-Pluggable Drive Support

Hard disk drives can be removed or added without powering down the server.

SOFTWARE COMPONENTS

Array Configuration Utility

- 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
- Optional BIOS based configuration setup

Array Diagnostic Utility

- Powerful diagnostic utility for all Smart Array controllers
- 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

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.

SmartStart

- Simple to use server/storage installation tools

SPECIFICATIONS

Architecture

Protocol	Wide Ultra2 SCSI
Processor	32-bit RISC
XOR engine	Hardware RAID
Electrical interface	Low Voltage Differential (LVD)
Peak transfer rate	80 MB/s (internal)
Memory	8 MB read only cache (on server board)

Capacity

- All internal hard disk drives
- Up to 32 logical drives

Compatibility

The Integrated Smart Array is compatible with the following:

- **Servers** – Compaq ProLiant ML370 (optional upgrade kit) and Compaq ProLiant DL380, ML570, and DL580 (standard)
- **Operating Systems** – Microsoft Windows NT 4.0, SCO UnixWare 2.X and 7.X, Novell NetWare 3.2, 4.2, and 5.0, SCO OpenServer 5.0.4 and 5.0.5, IBM OS/2 WARP Server Family, Banyan VINES 7.x and later versions, Windows 2000, and Linux
(Not all Operating Systems are supported on the day of announcement.)
- **Hard Disk Drives** – All LVD (Low Voltage Differential) Wide-Ultra SCSI-3 and Wide Ultra2 non-plug and hot plug drives

Option Kit Contents (for ProLiant ML370 server)

- Field installable memory board (installs on server board)
- Support software CD
- User guide
- Warranty card

Warranty

- **Maximum:** The remaining warranty of the Compaq ProLiant server in which it is installed (to a maximum three-year, limited warranty)
- **Minimum:** One-year, on-site limited warranty