

MODELS

MA8000/EMA12000

Fibre Channel storage solution with industry-leading storage area network (SAN) support in easy to configure building blocks. FC switched fabric and arbitrated loop (FC-AL) support; provides data protection, high availability, exceptional performance, and multi-vendor platform support for the most demanding storage requirements.

MA8000/EMA12000 Models

MA8000

175992-B21 (60Hz)

EMA12000 D14

175990-B21 (60Hz)

EMA12000 S10

175994-B21 (60Hz)

EMA12000 S14

175991-B21 (60Hz)

EMA12000 Blue

175993-B21 (60Hz)

See the options section for FC hubs, FC switches, platform software, host adapters, and disk options for complete solutions.

OVERVIEW

MA8000/EMA12000 is a family of fully integrated Fibre Channel storage solutions that support Compaq's universal drives in the *StorageWorks*™ enclosure Model 4200/4300 architecture. It is the outgrowth of years of *StorageWorks* experience, successfully delivering quality storage solutions for applications with mission-critical requirements. MA8000/EMA12000 transitions the RA8000/ESA12000 storage solutions to the new *StorageWorks* packaging, maintains the support of the HSG80 controller (and associated features) and adds the benefits of universal drive support, higher density of drives per enclosure, flexible configurations and higher capacity per cabinet. MA8000/EMA12000 is designed for the data center where there is a need to configure high-capacity systems having application specific demands for high performance. MA8000/EMA12000 components offer the flexibility to configure solutions to provide unlimited capacity and scalable performance in a small footprint. The solutions include built-in and optional features for multi-vendor operating environments, and stringent data center availability requirements. Configure-to-Order is available for the creation of customized solutions using the modular storage components. For data centers having continuously increasing capacity requirements, the highest performance demands, and ever increasing business continuance needs, MA8000/EMA12000 is the clear choice.

- Highest storage packaging density in the industry
- Scales from a few Gigabytes to multi Terabytes
- Requires no change to existing SAN infrastructure and controller hardware/software
- Supports Compaq Universal disk drives and cabinets

MA8000/EMA12000 Models are modular, scalable, no single point of failure solutions with disaster tolerance and business continuance support for storage consolidation on heterogeneous SANs

- MA8000 1 Controller enclosure, 3 Dual Bus 14 bay drive enclosures, 22U Modular Storage Cabinet (opal)
- EMA12000 D14 3 Controller enclosures, 9 Dual Bus 14 bay drive enclosures, 42U Modular Storage Cabinet (opal)
- EMA12000 S10 1 Controller enclosure, 6 Single Bus 10 bay drive enclosures, 42U Modular Storage Cabinet (opal)
- EMA12000 S14 1 Controller enclosure, 6 Single Bus 14 bay drive enclosures, 36U Modular Storage Cabinet (opal)
- EMA12000 Blue 1 Controller enclosure, 3 Dual Bus 14 bay drive enclosures, 41U Modular Storage Cabinet (blue)

Note: Controllers are not included in predefined models.

KEY FEATURES

- **Fibre Channel Technology**
MA8000/EMA12000 takes advantage of the benefits of Fibre Channel in distance, performance and connectivity. The use of optical fibre cabling allows distances between connected segments to be up to 500 meters using short wave multi-mode cable and up to 10 kilometers when using long wave cable. The rated speed is 100 MB per second on each FC path. MA8000/EMA12000 storage area networks (SANs) can be constructed using 8 or 16 port switches for fabric connectivity and 7 or 12 port hubs for arbitrated loop (FC-AL) connectivity.
- **MA8000/EMA12000 Product Packaging**
MA8000/EMA12000 solutions are built with the new *StorageWorks* Enclosure packaging. The packaging consists of a RAID controller enclosure (the Compaq *StorageWorks* Enclosure Model 2200 – for additional support material, visit <http://www.compaq.com/products/StorageWorks/raidstorage/enc2200quickspec.html>. Please note that this Web site is available in English only.) and the option of 14 or 10 bay drive enclosures (For additional support material for the Compaq *StorageWorks* Enclosure Model 4200 visit <http://www.compaq.com/products/StorageWorks/raidstorage/enc4200quickspec.html> and for the Model 4300 visit <http://www.compaq.com/products/StorageWorks/raidstorage/enc4300quickspec.html>. Please note that this Web site is available in English only.). The controller and drive enclosures are independent of each other to allow for a wide range of configuration options. The MA8000/EMA12000 models are designed to address medium to high capacity needs as well as high performance options. The models are available in opal or top gun blue Modular Storage Cabinets.
The Modular Storage Cabinets are also available under Configure-to-Order. The cabinets are completely assembled with side panels, redundant Power Distribution Units (with 16 outlets each) and power cables. The PDUs are 2U high.
- **Multi Vendor Platform**
Support for industry-leading platforms including: Windows NT, Windows 2000, Novell NetWare, Tru64 UNIX, OpenVMS, Sun Solaris, IBM AIX, HP-UX and SGI IRIX; visit <http://www.compaq.com/products/StorageWorks> for the latest platform support information and Operating System platform connection kit availability. Please note that this Web site is available in English only.

KEY FEATURES *(continued)*

- **No Single Point-of-Failure**
The MA8000/EMA12000 FC redundant architecture and value added software eliminates single points-of-failure from server to storage in clustered or single server configurations. For additional protection, Dual Host Bus Adapter (HBA) fail over software is available on many platforms.
- **Clustered Server and High Availability System Support**
Dual and multi-node cluster support for host level fault tolerance and high system availability. Microsoft Cluster Server (MSCS) support for Windows NT platforms, TruClusters support on Tru64 UNIX, and OpenVMS clusters. Multi-vendor HA support with HACMP, Veritas FirstWatch, and MC ServiceGuard. Visit <http://www.compaq.com/solutions/enterprise/ha-f500-matrix.html> for additional support information. Please note that this Web site is available in English only.
- **Multi-Server Shared Support for Storage Consolidation**
Heterogeneous and homogeneous host support provides the ability to share storage between multiple servers. The MA8000/EMA12000 provides storage access control assuring that a host cannot access data belonging to a different host.

PRODUCT HIGHLIGHTS

Capacity

The MA8000/EMA12000 provides the highest per-enclosure density in the industry. You may choose a 14 or a 10 bay drive enclosure. The 14 bay enclosure supports up to 14 – 1” drives for a maximum enclosure capacity of 504 GB, using 36-GB drives. The 10 bay enclosure supports up to 10 – 1” drives with 0.6” drive extenders or 10 – 1.6” drives for a maximum enclosure capacity of 720GB using 72-GB 1.6” drives. A fully configured storage system supports up to 60 drives installed in one cabinet for a maximum capacity of 4.4 TB, using 72.8-GB drives.

72.8-GB Drive Support

Current controller firmware (ACS 8.5) limits the maximum RAID set size to 512 GB (no more than 7 members per RAID set – up to 20 sets using RAID 5, up to 30 sets using RAID 5 + 1, and 45 sets using RAID 0, 1, 5) per controller pair for the single bus 10 bay drive enclosure (Model 4310) when using 72.8GB drives. This restriction will be relieved with the next release of ACS.

Fibre Channel Switch Support

Support for 8 and 16 port fibre channel switches allows the full benefits of a storage area network (SAN), providing exceptional connectivity while increasing the effective bandwidth of the network. Supported SAN features include zoning for communication isolation, switch to switch segments up to 10 km, and FC-AL connections into QuickLoop port handling.

Bandwidth

The MA8000/EMA12000 has two fibre channel ports per storage controller or redundant controller pair. Each controller-to-host interface provides up to 100 MB/sec of data throughput for a maximum of 200 MB/sec available capacity in each controller.

Easy Installation

MA8000/EMA12000 predefined models ship fully configured – inside the cabinet! CTO models (configured-to-order) also ship fully configured and shipped in the cabinet. The easiest installations ever, simply plug it in.

Fault Tolerance

Redundant power supplies, fans, controllers, cache battery backup, hot global spare drives and a multi-level RAID architecture (0, 1, 3/5, 1+0) ensure fault tolerance against system outages and data loss.

Fault Recovery – Remote Data Replication for Disaster Tolerance Applications

Optional software products provide remote mirroring using the fibre channel array controller. This allows a host system to copy critical data to a second storage system at a remote location through an optical fibre link.

High Availability

All MA8000/EMA12000 models provide redundant cooling, N+1 power redundancy and environmental monitoring. Drives and most solution components are hot swappable. Each solution can be configured with dual controllers that operate in dual redundant mode. Each controller has a pair of FC host ports. In the event of a path failure the controllers can automatically fail over to the remaining path.

Hot Pluggable Support

Hot Pluggable SCSI backplane allows drives to be added and removed without powering down the system.

PRODUCT HIGHLIGHTS *(continued)*

Integration

All MA8000/EMA12000 models support the same controller features and functions as the RA8000/ESA12000; thus the MA8000/EMA12000 and the RA8000/ESA12000 can co-exist on an existing SAN Infrastructure.

Manageability

StorageWorks Command Console (SWCC) provides a graphical user interface (GUI) to setup/configure, monitor, and troubleshoot storage subsystems.

Performance

Fibre Channel host connections provide up to 100 MB/s bandwidth for each path. Each controller has 2 FC host ports (4 ports in a dual redundant pair of controllers) assuring the availability of bandwidth for the most stringent applications. In addition, up to 1 GB of cache per controller pair ensures high performance. Mirrored cache write capability maintains optimal performance while assuring data integrity in the event of a failure.

Scalability

You may choose a 14 or 10 bay drive enclosure. The 14 bay enclosure supports up to 14 - 1" drives and the 10 bay enclosure supports up to 10 - 1.6" drives or 10 - 1" drives with 0.6" drive extenders. The EMA12000 S14 features nine 14 bay drive enclosures which house up to 72 drives (1" form factor). A single cabinet populated with 36-GB Ultra3 SCSI 10K rpm 1" drives gives you 2.5 TB of raw capacity. The EMA12000 S10 can support a maximum of 4.3TB (60 drives per controller pair). You may also install 36-GB Ultra3 SCSI 10K rpm 1" drives with 0.6" drive extenders for use in the 10 bay enclosure; thus, any number of configurations can be used in these storage systems. Unlimited capacity is achieved by adding more subsystems to the SAN.

Servers Supported – Single and Clustered

- *ProLiant* Servers
- Alpha Servers
- Multi-vendor SUN, HP, IBM, SGI platforms and Intel servers.

Check <http://www.compaq.com/products/StorageWorks> for up to date platform information for *ProLiant*, multi-vendor and specific operating system version support. Please note that this Web site is available in English only.

Software Supported

The MA8000/EMA12000 controller supports ACS V8.5F Controller FC-AL/FC-SW software, ACS V8.5S Controller FC-SW with Snapshot Software, or ACS V8.5P Controller FC-SW with DRM Software. The MA8000/EMA12000 includes the benefit of host-specific drive and management software. For host connections select the Solution Kit appropriate for your operating system: Windows NT/Windows 2000, Sun Solaris, SGI IRIX, IBM AIX, HP9000/800 HP-UX, Tru64 UNIX, OpenVMS, NetWare, and Linux. See Configuration Information section for part numbers.

Rack Density

MA8000/EMA12000 is available in four different cabinets – 22U Modular Storage Cabinet 50/60 Hz (Opal), 36U Modular Storage Cabinet 50/60 Hz (Opal), 42U Modular Storage Cabinet 50/60 Hz (Opal), and 41U Modular Storage Cabinet 50/60 Hz (blue).

Total Cost of Ownership

The new MA8000/EMA12000 architecture has the highest enclosure density in the industry. Higher enclosure capacity translates into a smaller floor-space footprint. Example: the EMA12000 D14 will house up to 4.5 TB in a single 42U cabinet using 36-GB drives.

PRODUCT HIGHLIGHTS *(continued)*

Service & Support, CarePAQ and Warranty Information

Software Product Services

- Standalone telephone support
- Rights to new license version
- Media and documentation updates

Hardware Product Services

- Installation services
- On-site Maintenance (includes warranty support)
- Response time upgrades during the warranty period
- Post-warranty coverage
- RAID setup and performance consulting via statement of work

For additional hardware installation and maintenance information please refer to the URL's listed below:

http://www.compaq.com/services/hardware/hw_installation.html

http://www.compaq.com/services/hardware/hw_maintenance.html

Please note that these Web sites are available in English only.

Warranty Upgrade Options

- Response - Upgrade on-site response from next business day to same day 4-hours
- Coverage - Extend hours of coverage from 9 hours x 5 days to 24 hours x 7 days
- Duration - Select duration of coverage for a period of 1, 3, or 5 years

CarePAQ Information

Sample part numbers:

- FM-**XHW-36, 3 year, uplift to 5x9, Next Day Response
- FM-**4HR-36, 3 year, uplift to 5x9, 4hr Response
- FM-**724-36, 3 year, uplift to 7x24, 4hr Response

** represents a two digit product specific code

- CarePAQ is defined as an upgrade to the product warranty attribute, available for a specific duration and hours of coverage.
- CarePAQ is not available for less than the products warranty duration.
- CarePAQ is available for sale anytime during the warranty period for most products, but the commencement date will be the same as the Warranty Start Date (delivery date to end user customer). Proof of purchase may be required.
- CarePAQ services are prepaid.

For additional CarePAQ (hardware & software) information, as well as, orderable part numbers please refer to the URL listed below:

<http://www.compaq.com/services/carepag/index.html>

Please note that this Web site is available in English only.

Components

The following brick level options/components do not have individual CarePAQ's. These items will be included in product CarePAQ's which they are installed into.

Disk Drives	Tape Drives	CD/DVD ROM	SCSI Hubs in SBBs	Adapters
Bus Converters	Backplane RAID Controllers	Power Supplies	Cabling	Fans

QUICKSPECS

FAMILY INFORMATION

	MA8000	EMA12000 D14	EMA12000 S10	EMA12000 S14	EMA12000 Blue
Announce Date	April 2000	April 2000	July 2000	April 2000	April 2000
Drive Interface	Wide-Ultra 2/3	Wide-Ultra 2/3	Wide-Ultra 2/3	Wide-Ultra 2/3	Wide-Ultra 2/3
Controller Software	ACS 8.5	ACS 8.5	ACS 8.5	ACS 8.5	ACS 8.5
Cache	256 – 512	256 – 512	256 – 512	256 – 512	256 – 512
RAID Support	0,1, 3/5	0,1, 3/5	0,1, 3/5	0,1, 3/5	0,1, 3/5
Channels	6	6	6	6	6
Maximum Drives per Model	42	126	60	72	42
Maximum Capacity per Model	1.5 TB	4.5 TB	4.3 TB	2.5 TB	1.5 TB
Redundant Controllers	Yes	Yes	Yes	Yes	Yes
Drive Capacities	9, 18, 36	9, 18, 36	72*	9, 18, 36	9, 18, 36

*Also supports 1" 9, 18, 36GB drives using 0.6" drive extenders.

PRODUCT SPECIFICATIONS

Model	MA8000/EMA12000
Controller Model	HSG80
Controller Cache	256 MB per controller standard, 512 MB optional
Battery Backup for Cache	YES
Array Controller Software (ACS)	FC-AL support ACS 8.5G, FC-AL or FC-Switch support ACS V8.5F, FC switch support ACS 8.5F or ACS 8.5P
Host Interface	Arbitrated Loop (FC-AL) or Fibre Channel Switched Fabric
Host Ports per Controller	2, Multi-bus with Transparent Fail over
Drive Interface	SE Ultra-wide SCSI, 6 channels
RAID Levels	0, 1, 0+1, 3/5 and Partitioning
Max. Disks Supported	72 per Controller or Controller Pair
Non-RAID JBOD Support	YES
Fibre Channel Switches	16 Port Optical, 8 Port Optical
Fibre Channel Hubs	7 Port Optical, 12 Port Optical
Disks	Compaq Universal Drives
O/S Support	Windows NT, Windows 2000, NetWare, Tru64 UNIX, OpenVMS, Sun Solaris, SGI IRIX, HP-UX, IBM AIX, Linux
Sustained I/O Rate	Over 24K IOPS per Controller Pair
Redundant Fans	Yes
Environmental Monitoring Unit	Yes. Monitors Power and Temperature
Regulatory approvals	UL, CSA, TUV, FCC, CE MARK, CTICK, BCIQ
Management Software	<i>StorageWorks</i> Command Console (SWCC)

QUICKSPECS

PRODUCT SPECIFICATIONS *(continued)*

Power requirements (Domestic/Japan)

AC plug type	3 wire NEMA No. L6-30(208-240V 60Hz 30A)
Number of phases	Single
Rated current	30A
BTU rating	5,113 per hour
Nominal airflow	400 cubic ft/minute
Wattage	1,800 Watts maximum (input)
Nominal Line Voltage	208 or 230V
Range Line Voltage	202-240V
Line Frequency	60Hz
Typical Input Current	8.9A

Operating environment

Temperature	50° to 95°F/10° to 35°C – Reduce rating by 1°F for each 1000 ft altitude (1.8°C/1,000 m)
Shipping Temperature	-40°F/ 40°C to 151°F/66°C
Humidity	10% to 90% at maximum wet bulb temp of 90°F/32°C and minimum dew point of 36°F/2°C
Shipping Humidity	Up to 95% relative humidity
Altitude	Up to 8,000 ft /2,400 m
Air Quality	Not to exceed 500,000 particles per cubic foot of air at a size of 0.5 micron or larger

Regulatory approvals

UL, CSA, TUV, FCC, CE MARK, C TICK, BCIO

Physical dimensions MA8000

	Unpacked	Shipping
Height	43 in/1,092 mm	52.25 in/1,327.15 mm
Width	23.7 in/602 mm	32 in/813 mm
Depth	35.8 in/909 mm	48 in/1,220 mm
Weight (maximum)	510 lbs/231.33 kg	613 lbs/278.05 kg
Required Front Clearance	21.3 in/542 mm	
Required Rear Clearance	22.8 in/580 mm	

Physical dimensions EMA12000 D14

	Unpacked	Shipping
Height	78.75 in/2,000 mm	83.38 in/2,118 mm
Width	23.7 in/602 mm	32 in/813 mm
Depth	35.8 in/909 mm	48 in/1220 mm
Weight (maximum)	1,073 lbs/486.70 kg	1,190 lbs/539.77 kg
Required Front Clearance	21.3 in/542 mm	
Required Rear Clearance	22.8 in/580 mm	

QUICKSPECS

PRODUCT SPECIFICATIONS *(continued)*

Physical dimensions	Unpacked	Shipping
EMA12000 S10		
Height	78.75 in/2,000 mm	83.38 in/2,118 mm
Width	23.7 in/602 mm	32 in/813 mm
Depth	35.8 in/909 mm	48 in/1,220 mm
Weight (maximum)	798 lbs/361.96 kg	915 lbs/415.03 kg
Required Front Clearance	21.3 in/542 mm	
Required Rear Clearance	22.8 in/580 mm	

Physical dimensions	Unpacked	Shipping
EMA12000 S14		
Height	68.6 in/1,743 mm	75.25 in/1,911.35 mm
Width	23.7 in/602 mm	32 in/813 mm
Depth	35.8 in/909 mm	48 in/1,220 mm
Weight (maximum)	755 lbs/342.46 kg	867 lbs/393.26 kg
Required Front Clearance	21.3 in/542 mm	
Required Rear Clearance	22.8 in/580 mm	

Physical dimensions	Unpacked	Shipping
EMA12000 Blue		
Height	78.75 in/2,000 mm	85 in/2,159 mm
Width	23.62 in/600 mm	36 in/915 mm
Depth	36.1 in/917 mm	48 in/1,220 mm
Weight (maximum)	604 lbs/273.96 kg	707 lbs/320.68 kg
Required Front Clearance	21.3 in/542 mm	
Required Rear Clearance	22.8 in/580 mm	

Physical dimensions	Unpacked	Shipping
42U Modular Storage Cabinet		
Height	78.75 in/2,000 mm	85 in/2,159 mm
Width	23.7 in/602 mm	32 in/813 mm
Depth	35.8 in/910 mm	48 in/1,220 mm
Weight (maximum)	433 lbs/196.47 kg	550 lbs/249.47 kg
Required Front Clearance	21.3 in/542 mm	
Required Rear Clearance	22.8 in/580 mm	

Physical dimensions	Unpacked	Shipping
36U Modular Storage Cabinet		
Height	68.6 in/1,743 mm	75.25 in/1,911.35 mm
Width	23.7 in/602 mm	32 in/813 mm
Depth	35.8 in/910 mm	48 in/1,220 mm
Weight (maximum)	390 lbs/176.90 kg	501 lbs/227.24 kg
Required Front Clearance	21.3 in/542 mm	
Required Rear Clearance	22.8 in/580 mm	

QUICKSPECS

PRODUCT SPECIFICATIONS *(continued)*

Physical dimensions	Unpacked	Shipping
22U Modular Storage Cabinet		
Height	43 in/1092 mm	52.25 in/1,327.15 mm
Width	23.7 in/602 mm	32 in/813 mm
Depth	35.8 in/909 mm	48 in/1220 mm
Weight (maximum)	291 lbs/131.99 kg	394 lbs/178.71 kg
Required Front Clearance	21.3 in/542 mm	
Required Rear Clearance	22.8 in/580 mm	

Physical dimensions	Unpacked	Shipping
41U Modular Storage Cabinet		
Height	78.75 in/2,000 mm	85 in/2,159 mm
Width	23.7 in/602 mm	36 in/915 mm
Depth	35.8 in/909 mm	48 in/1,220 mm
Weight (maximum)	385 lbs/174.63 kg	488 lbs/221.35 kg
Required Front Clearance	21.3 in/542 mm	
Required Rear Clearance	22.8 in/580 mm	

<u>Pre-configured Model</u>	<u>UPC Code</u>
MA8000 60Hz	720591397487
EMA12000D14 60Hz	720591397036
EMA12000 S10 60Hz	720591307609
EMA12000S14 60Hz	720591397333
EMA12000Blue 60Hz	720591397548

<u>Modular Storage Cabinets (for CTO)</u>	<u>UPC Code</u>
42U Modular Storage Cabinet 60Hz (opal)	720591398378
36U Modular Storage Cabinet 60Hz (opal)	720591398606
22U Modular Storage Cabinet 60Hz (opal)	720591398651
41U Modular Storage Cabinet 60Hz (blue)	720591398880

PRODUCT SPECIFICATIONS *(continued)*

Product Service Options

CarePaq (service & support)

Software Product Services (recommended for all installations)

- Telephone support
- New version update services, including license and media/documentation subscription services

Hardware Product Services

- Installation services
- On-site Maintenance (includes warranty support)
- Response time upgrades during the warranty period
- Post-warranty coverage
- RAID setup and performance consulting via statement of work

Warranty

Standard Warranty and any enhanced warranty options available

Products	Warranty Service	Response Time
External Storage Systems and Tape Libraries	3 years parts exchange 1 year carry-in and on-site labor	Next business day

CONFIGURATION INFORMATION

The MA8000/EMA12000 is a scalable, no singular point of failure, modular solution with disaster tolerance and business cotinuanance for storage consolidation on heterogeneous SANs.

STEP 1—MODULAR SOLUTIONS—BASE CONFIGURATION

Select one:

<u>Pre-configured Model</u>	<u>Part #</u>	<u>Model Description:</u>
MA8000 60Hz	175992-B21	1 Controller enclosure, 3 Dual Bus 14 bay drive enclosures, 22U Modular Storage Cabinet (opal)
EMA12000D14 60Hz	175990-B21	3 Controller enclosures, 9 Dual Bus 14 bay drive enclosures, 42U Modular Storage Cabinet (opal)
EMA12000 S10 60Hz	175994-B21	1 Controller enclosure, 6 Single Bus 10 bay drive enclosures, 42U Modular Storage Cabinet (opal)
EMA12000S14 60Hz	175991-B21	1 Controller enclosure, 6 Single Bus 14 bay drive enclosures, 36U Modular Storage Cabinet (opal)
EMA12000Blue 60Hz	175993-B21	1 Controller enclosure, 3 Dual Bus 14 bay drive enclosures, 41U Modular Storage Cabinet (blue)

CONFIGURATION INFORMATION *(continued)*

STEP 2 – REQUIRED OPTIONS (FOR PRE-DEFINED MODELS)

<u>Controller Model</u>	<u>Part #</u>
(two required for redundancy)	
HSG80	176622-B21
HSG80 Cache Bulkhead upgrade kit	176623-B21
Note: required only if the controller is being re-deployed from an RA8000/ESA12000	
256 Cache (optional)	380674-B21
External Cache Battery	135823-B21

<u>Controller Firmware</u>	<u>Part #</u>
(One ACS version required per controller: redundant controllers must use the same version of ACS.)	
ACS V8.5F Controller FC-AL/FC-SW software	128697-B21
ACS V8.5F Controller FC-AL	380577-001
ACS V8.5S Controller FC-SW and Snapshot Software	160091-B21
ACS V8.5P Controller FC-SW and DRM Software	128698-B21

<u>Operating System Solution Kits</u>	<u>Part #</u>
(one kit required per operating system type)	
Windows NT/2000	380551-001
Windows NT/Alpha 4.0	380552-001
Tru64 UNIX 4.0F	380553-001
Sun Solaris 2.6, 7.0	380554-001
OpenVMS 7.2	380555-001
SGI IRIX, 6.5.3	380556-001
HP-UX 10.2, 11.01	380557-001
IBM AIX 4.2.1, 4.3	380558-001
Novell NetWare 4.2, 5.0	380559-001
Linux/ <i>ProLiant</i>	160087-B21
Linux/Alpha	160088-B21

<u>StorageWorks Drives</u>	<u>Part #</u>
72.8-GB Ultra3 SCSI 10K rpm 1.6" drive	176494-B21
36.4-GB Ultra3 SCSI 10K rpm 1" drive	176496-B22
18.2-GB Ultra3 SCSI 15K rpm 1" drive	188122-B22
18.2-GB Ultra3 SCSI 10K rpm 1" drive	142673-B22
9.1-GB Ultra3 SCSI 15K rpm 1" drive	188120-B22
9.1-GB Ultra3 SCSI 10K rpm 1" drive	142671-B22
0.6" Drive Extenders (package of 4)	148649-B21

Note: drive extenders are attached to 1" drives so they can be used in 1.6" drive bays.

<u>Legacy Drives Supported</u>	<u>Part #</u>
18.2-GB Ultra2 SCSI 10K rpm 1" drive	128418-B22
18.2-GB Ultra2 SCSI 7.2K RPM 1" drive	388144-B22
9.1-GB Ultra2 SCSI 10K RPM 1" drive	328939-B22
9.1-GB Ultra2 SCSI 7.2K RPM 1" drive	123065-B22

<u>SCSI Cable Options</u>	<u>Part #</u>	(For use w/Model 2200 Controller Enclosure)
1M SCSI cable	168256-B21	
2M SCSI cable	168257-B21	
3M SCSI cable	189505-B21	
5M SCSI cable	400983-005	
10M SCSI cable	400985-010	

CONFIGURATION INFORMATION *(continued)*

STEP 3 – CONFIGURE-TO-ORDER

Configure-to-Order (for customized solutions: full details for creating Configure-to-Order solution can be found in the Configuration Guide at URL: <http://www.compaq.com/products/StorageWorks/modulararray/index.html>) –requires cabinet, Model 2200, Model 4200 or 4300, and required options as noted for predefined models.

Configure-To-Order

Part

Indicates that parts on the order are to be assembled at the factory 118102-888

Note: Each order represents one customized solution.

Cabinets

Part

Description with parts shipped

42U Modular Storage Cabinet 60Hz (opal)	180311-B21	MODULAR STORAGE CAB,60HZ PDU, 208-240V, OPAL, REDUNDANT PDU
36U Modular Storage Cabinet 60Hz (opal)	180313-B21	MODULAR STORAGE CAB,60HZ PDU, 208-240V, OPAL, REDUNDANT PDU
22U Modular Storage Cabinet 60Hz (opal)	180315-B21	MODULAR STORAGE CAB,60HZ PDU, 208-240V, OPAL, REDUNDANT PDU
41U Modular Storage Cabinet 60Hz (blue)	180317-B21	MODULAR STORAGE CAB,60HZ PDU, 208-240V, BLUE, REDUNDANT PDU

Controller Enclosure

Part

Model 2200 135820-B21

Drive Enclosures

Part

Description

Model 4214R	103381-001	Single bus 14 bay drive enclosure
Model 4254R	138151-001	Dual bus 14 bay drive enclosure
Model 4314R	190209-001	Single bus 14 bay drive enclosure
Model 4354R	190211-001	Dual bus 14 bay drive enclosure
Model 4310R	174631-B21	Single bus 10 bay drive
Model 4350R	174630-B21	Dual bus 10 bay drive

Drive Enclosure Options

Part

Description

4200 power supply	119826-B21	4214 Redundant power supply, single IEC-320-C13 Plug X NEMA
Ultra2 Dual Bus I/O Module	119829-B21	
Ultra3 Single Bus I/O Module	190212-B21	
Ultra3 Dual Bus I/O Module	190213-B21	

CONFIGURATION INFORMATION *(continued)*

STEP 4 – ADDITIONAL OPTIONS

SAN COMPONENTS

<u>Optional Software</u>	<u>Part #</u>
<i>SANworks</i> Management Appliance	189715-001
<i>SANworks</i> Storage Allocation Reporter License for 32 Switch Ports	191755-B21
<i>SANworks</i> Storage Allocation Reporter License for 64 Switch Ports	191880-B21
<i>SANworks</i> Storage Allocation Reporter License for 128 Switch Ports	191881-B21
<i>SANworks</i> Storage Allocation Reporter License for 256 Switch Ports	191882-B21
<i>SANworks</i> Storage Allocation Reporter License for 512 Switch Ports	191883-B21
<i>SANworks</i> Secure Path V3.0 multi-path for NT	165989-B21
<i>SANworks</i> Secure Path V2.0 for Sun (Switch and Loop)	165991-B21
<i>SANworks</i> Enterprise Volume Manager for NT	160094-B21

<u>Host Bus Adapters</u>	<u>Part #</u>
FC PCI HBA for NT, Tru64, OVMS	380574-001
FC PCI LC HBA for Novell	223180-B21
FC SBUS HBA/64 for Sun	123503-001
FC PCI HBA for Sun	380576-001
FC PCI HBA for IBM	149841-B21
FC SBUS HBA /32 for Sun	380757-001
FC PCI HBA for Tru64 & OVMS	168794-B21
FC PCI HBA for WinNT/X86	176479-B21
FC PCI HBA for Linux	167432-001

<u>Fibre Channel Switches</u>	<u>Part#</u>
FC SAN Switch, 16 port	158223-B21
FC SAN Switch, 8 port	158222-B21
FC SAN Switch 8-EL	176219-B21
FC SAN Switch Redundant Power option	160407-B21

<u>Fibre Channel Hubs</u>	<u>Part #</u>
Fibre Channel Hub 12 (includes universal mounting for 41U/42U cabinets)	295573-B22
Fibre Channel Hub 7	234453-001
Hub 7 Mounting Kit (Universal kit for 41U/42U)	136127-B21

<u>GBICS for Hubs/Switches</u>	<u>Part #</u>
FC Short wave GBIC	380561-B21
FC Long Wave GBIC	127508-B21
FC Connection Kit 3 SW GBICS, 2 Cables	380579-B21
FC Connection Kit 2 SW GBICS, 2 Cables	380596-B21
FC Switch Rackmount Kit for Brocade 8 & 16 Port Switch	167365-B21

CONFIGURATION INFORMATION *(continued)*

SAN COMPONENTS *(continued)*

<u>Fibre Channel Cables</u>	<u>Part #</u>
FC Short Wave 2-Meter Cable	234457-B21
FC Short Wave 5-Meter Cable	234457-B22
FC Short Wave 15-Meter Cable	234457-B23
FC Short Wave 30-Meter Cable	234457-B24
FC Short Wave 50-Meter Cable	234457-B25