

Overview

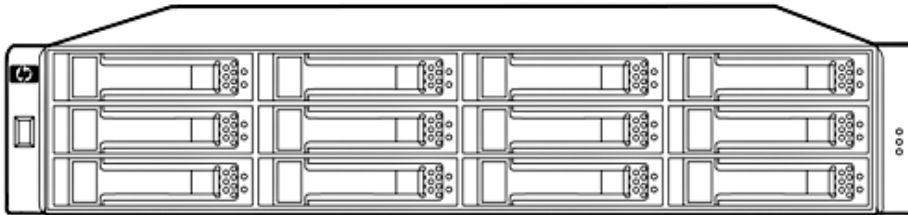
The HP 2000i Modular Smart Array (MSA2000i) represents the iSCSI model of the MSA2000 family (which includes the MSA2000fc Fibre Channel models), a new generation of HP storage arrays specifically designed for entry-level customers featuring the very latest in functionality and technology at highly affordable price points.

The MSA2000i is an iSCSI GbE connected 2U storage area network (SAN) solution designed for small to medium size deployments or remote locations. It comes in two models - a basic single controller model for low initial cost with the ability to upgrade later; and a model with dual controllers standard for maximum performance. Each model comes standard with twelve drive bays able to simultaneously accommodate 3.5-inch enterprise-class SAS drives and archival-class SATA drives. Additional capacity can easily be added when needed by attaching up to three MSA2000 12 bay drive enclosures. Maximum raw capacity ranges from 5.4TB SAS or 12TB SATA in the base cabinet, to over 21.6TB SAS or 48TB SATA with the addition of the maximum number of drive enclosures.

NOTE: there are no additional hidden charges, licenses or fees as you add enclosures or hosts and users. It has been fully tested up to 16 hosts.

The MSA2000 offers many distinct features such as the ability to mix SAS and SATA RAID sets (volumes) within the same enclosure greatly increases the flexibility and economy of assigning mission-critical data and archival data to the proper drive type. The wide variety of RAID levels supported assures the user of just the right level of performance and protection demanded by his application. The capability of implementing controller-based snapshots and clones affordably brings enterprise-class functionality into smaller departments, remote locations, and small but growing companies.

The MSA2000i is a member of HP Modular Smart Array offerings, delivering simple and affordable storage technology to meet today's demanding and growing IT needs. These storage solutions offer excellent price/performance and availability features for direct attach environments, small clusters, workgroups and entry-level SAN environments. Each solution is designed to be easy to deploy, secure, with low management costs, while driving rapid return on investment.



MSA2000i

Models

| | | |
|---------------------------------|---|--------|
| HP MSA2000i Modular Smart Array | HP 2012i Single Controller Modular Smart Array | AJ746A |
| | HP 2012i Dual Controller Modular Smart Array | AJ747A |
| | HP 2000i Modular Smart Array Controller | AJ748A |
| | HP MSA2000 Single I/O 3.5 in 12 Drive Enclosure (w/ two .6m SAS cables) | AJ749A |
| | HP MSA2000 Dual I/O 3.5 inch 12 Drive Enclosure (w/ two .6m SAS cables) | AJ750A |
| | HP MSA2000 Drive Enclosure I/O Module | AJ751A |



Overview

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|---|---|--------|
| HP MSA2012i Modular Smart Array Americas Bundle | HP MSA2012i Dual Controller w/(12) MSA2 750GB 3.5-in. SATA HDDs & 8-Snapshot iSCSI Solution | AJ925A |
| NOTE: available in USA & Canada only | HP MSA2012i Dual Controller w/(12) MSA2 300GB 3.5-in. SAS HDDs & 8-Snapshot iSCSI Solution | AJ926A |
| | HP Procurve iSCSI Just-Add-Drives MSA2012i Storage Solution | AJ927A |
| | HP MSA2012i Dual Controller w/(2) DL380G5 x64 SAN Storage Servers & 8-Snapshot Solution | AJ932A |



Features and Benefits

| Key Features | |
|--|--|
| Highly efficient consolidation and sharing of storage | <ul style="list-style-type: none">● Geared to departmental and small to medium business requirements● Grows as the storage demands increase - up to 48 drives and 21.6TB SAS or 48TB SATA● Supports up to 16 hosts with iSCSI GbE along with support for 256 LUNs and LUN sizes up to 16TB● Optional controller-based snapshot and clone capability for increased data protection |
| Flexibility in drives (MSA2000 family-specific drives) | <ul style="list-style-type: none">● Enterprise-class SAS or archival-class SATA drives as the need and budget dictate● Dual-ported SAS drives for enterprise needs● Large capacity SATA drives for inexpensive archival storage● Able to mix SAS and SATA drives within the same drive enclosure |
| Cost efficient plus high-availability choices | <ul style="list-style-type: none">● Choose either single (future upgradeable) or dual controller array models● Choice of low cost single I/O or high-availability dual I/O drive enclosure models. |

Customer Benefits

- The HP 2000 Modular Smart Array family manages growing storage requirements across multiple HP ProLiant servers for customers who need a centralized dedicated storage solution for applications. SANs allow for controlled, cost-effective growth and increased protection of data.
- Its ease of management allows a department or small company to effectively handle growing storage requirements with a minimum of complexity.
- The MSA2000i extends the benefits of shared storage resources (e.g. SAN) to first time implementers on a tight budget
- The modular design allows the user to start relatively small but supports future growth to hundreds of users and up to 21.6TB of SAS or 48TB of SATA storage
- The optional controller-based snapshot and clone capability as part of the MSA2000 family allows the smaller departmental user or company to implement functionality once only available to much larger firms with expensive arrays.

HP MSA2000i Models At a Glance:

- High performance Modular Smart Array controller with two 1GbE ports per controller
- Single and dual controller models
- MSA2012i models utilize Celeron 566MHz processor(s)
- 1 GB transportable cache per controller - battery-free cache backup with super capacitors and compact flash
- 256 LUNs with 16TB LUNs supported
- 2U rack mount chassis combining both the controller and disk shelf
- Twelve 3.5-inch dual-ported SAS or SATA MSA2000-specific drives (supports mixing of drive types in a single shelf)
- Support expansion to 3 additional enclosures & total of 48 disks
- Redundant power supplies and fans are standard
- RAID levels 0, 1, 3, 5, 6, 10, 50
- Non-disruptive on-line controller code upgrade
- Heterogeneous support for 32-bit and 64-bit Windows, Red Hat and SuSE
- Qualified and certified for Windows and Linux clustering
- Optional controller-based snapshot and clone functionality



Family Information

| | MSA2000i | MSA2000fc | MSA2000sa | EVA4400 |
|---|---|---|---|---|
| Capacity (raw) Minimum / with maximum additional drive enclosures | 5.4TB SAS or 12TB SATA w/ 3 enclosures: 21.6TB SAS or 48TB SATA | 5.4TB SAS or 12TB SATA w/ 3 enclosures: 21.6TB SAS or 48TB SATA | 5.4TB SAS or 12TB SATA w/ 3 enclosures: 21.6TB SAS or 48TB SATA | 5.4TB FC or 12TB FATA w/ 8 enclosures 43TB FC or 96 TB FATA |
| Controller Cache | 1 GB per controller | 1 GB per controller | 1 GB per controller | 2 GB per controller |
| Host connect MSA2000 has 1 or 2 controllers, EVA has 2 controllers standard | Two 1GbE iSCSI ports per controller | Two 4Gb Fibre Channel ports per controller | Two 3Gb SAS ports per controller | Two 4Gb Fibre Channel ports per controller |
| Maximum Drives | 48 | 48 | 48 | 96 |
| Maximum host supported | 16 | 64 | 4 | 512 |
| Snapshot, remote replication | Snapshot, clone | Snapshot, clone | Snapshot, clone | Snapshot, clone, remote data replication |
| Use for Storage | Primary Storage with SAS Secondary with SATA | Primary Storage with SAS, Secondary with SATA | Primary Storage with SAS, Secondary with SATA | Primary Storage with FC Secondary with FATA |

* maximum available storage capacity depends on the RAID level being implemented, and is based on maximum number of LUNs and LUN size

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|-----------------------------------|-------|--|
| Product Technology | iSCSI | Two 1GbE host ports per controller |
| Modular Chassis | | 2U, 12 Large Form Factor drive bays, accommodating MSA2 SAS and SATA hard drives (MSA2000-specific). Comes standard with one or two controllers. |
| Drives available | | Serial Attached SCSI (SAS) enterprise-class drives designed for high volume, 24x7 usage. Serial-ATA (SATA) are usually reserved for archival of data as they are both relatively inexpensive and are available in very large capacities. The MSA2000 family of arrays can accommodate both SAS and SATA drives within the same enclosure making it ideal to have both business-critical, high activity files on SAS drives while using snapshot or clone capability to keep back-up data on the less expensive drives. SAS drive performance can be approximately 30% greater than SATA performance on sequential host IO. SAS performance excels in sequential lower latency response time and random IO per second transaction performance due to higher rpm disk speeds yielding lower seek times. NOTE: MSA2 3.5" Large Form Factor (LFF) drives are for use only in the MSA2000 family. |
| Scalability | | Up to 5.4TB SAS or 12TB SATA, expandable to 21.6TB SAS or 48TB SATA with the addition of a maximum of three MSA2000 3.5" Disk Enclosures. |
| LUNs | | The MSA2000 family of arrays supports 256 LUNs and LUN sizes up to 16TB. The arrays support LUN expansion and deletion of any LUN. |
| RAID 0, 1, 3, 5, 6, 10, 50 | | In addition to the usual RAID levels, the MSA2000 family features several important additional levels. RAID 6 is the highest level of RAID protection. It allocates two sets of parity data across drives and allows simultaneous write operations. It can withstand two simultaneous drive failures without downtime or data loss. RAID 10 is mirroring and striping without parity. It is the most |



Family Information

Performance

popular of the multiple RAID levels, allowing large arrays with high performance in most cases and superior fault tolerance. RAID 50 combines the block striping and parity of RAID 5 with the straight block striping of RAID 0, yielding higher performance than RAID 5 through the addition of RAID 0, particularly during writes.

Performance numbers are a guideline as established by tests in a lab environment. Forty-eight 300GB 15K SAS drives were used in dual controller configurations of four vDisks with 12 physical drives per vDisk. Each vDisk presented a single volume of maximum capacity according to RAID level. Number and type of applications, number of hosts will affect overall performance.

Performance test comparison of MSA2000i to MSA2000fc models:

| Workload | MSA2000i | MSA2012fc | MSA2212fc |
|--|----------|-----------|-----------|
| MSA2000 RAID 10 Performance Results (rounded down) | | | |
| Random Reads IOPs | 8,200 | 10,600 | 11,200 |
| Random Writes IOPs | 4,500 | 5,000 | 7,800 |
| Random Mix IOPs 60/40 read/write | 6,100 | 6,700 | 8,900 |
| Sequential Reads MB | 300 | 650 | 1,000 |
| Sequential Writes MBs | 260 | 330 | 470 |
| MSA2000 RAID 5 Performance Results (rounded down) | | | |
| Random Reads IOPs | 7,800 | 10,200 | 10,700 |
| Random Writes IOPs | 1,600 | 1,700 | 2,400 |
| Sequential Reads MBs | 300 | 670 | 1,000 |
| Sequential Writes MBs | 270 | 380 | 580 |
| Random Mix IOPs 60/40 read/write | 3,200 | 3,500 | 5,700 |

Configuration and Management Tools

HP MSA Storage Management Utility (SMU) , Management access, out-of-band: WEB GUI, CLI. Interface Types: Mini DB9 RS232, 10/100 Ethernet Protocols Supported SNMP, SSL, SSH, SMTP, HTTP, Telnet

Hot Plug Expansion and Replacement Support

The MSA2000i supports hot plug expansion and replacement of redundant controllers, fans, power supplies, and I/O modules for simple, fast installation and maintenance.

Snapshot and Clone

Optional controller based functionality. Offers higher levels of data protection, enabling an almost instant recovery from data failure or corruption. Offers alternative development testing of 'offline' production data and the ability to backup snapped/cloned data



Family Information

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| Overview | <p>The MSA2000i comes integrated with web browser based software for storage and RAID management, setup, configuration and troubleshooting. This reduces the cost of ownership by reducing the training and technical expertise necessary to install and maintain your HP storage solution.</p> |
| Server Compatibility | <p>Supports most HP ProLiant servers including</p> <ul style="list-style-type: none"> ● HP ProLiant DL, ML ● HP ProLiant c-Class Blade Servers <p>NOTE: BL20p G1 servers are not supported</p> |
| Industry Standard X86 servers support | <ul style="list-style-type: none"> ● Supports most multi-vendor industry standard 32-bit Intel and AMD based (x86) servers. HP requires the Third-Party Server to be logo'd and listed on the Microsoft Windows Server Catalog. ● Refer to the Microsoft website: http://www.microsoft.com/windows/catalog/server/ ● HP Storage Division recommends that the Third-Party Server Vendor is an active member of TSANet. Refer to the TSANet website for details: www.tsanet.com |
| OS Support | <ul style="list-style-type: none"> ● Microsoft Windows 2003 and 2003 R2 ● Microsoft Windows 2003 X64 ● Red Hat Linux 4 & 5 (32/64) ● SuSE SLES 9 & 10 (32/64) (SLES 9 requires Qlogic adapter only) ● VMware ESX 3.01, 3.02, 3.5 (32/64) ● Integrated Citrix XenServer HP Enterprise. Citrix Xen Enterprise 4.1.0-7846 ● RedHat Enterprise Linux Virtualization Fibre Channel Connectivity (RHEL 5 U2 /64) |
| Oracle | <ul style="list-style-type: none"> ● Supported with Oracle RAC, single instance and cluster configurations for Oracle 10g, 11g ● RHEL5 Kernel Versions Including Oracle Enterprise Linux, OEL <p>NOTE: No snapshot or Volume Copy functionality is not supported with ASM.</p> |
| Interconnects | <ul style="list-style-type: none"> ● The MSA2000i is supported only in a Gigabit Ethernet environment. ● The MSA2000i supports industry standard gigabit Ethernet components from various manufacturers that conform to IEEE 802.3ab (1000base-T). ● For details on standard gigabit Ethernet components (including Gigabit Ethernet switches, Network Interface cards and Ethernet cables) from HP: http://welcome.hp.com/country/us/en/prodsvr/networking.html |
| Web Browser support | <ul style="list-style-type: none"> ● MSA2000i supports target based management, and requires a web browser for management. Only Microsoft Internet Explorer V6.X and Mozilla Firefox 1.0.7 or later are supported |



Optional Software

MSA2000 Snapshot and Volume Copy Software **Product Features** **Data Protection**

- Snapshots create up to 64 point-in-time pictures of data
- Volume Copies create up to 128 point-in-time copies of data
- Recovery is instant – revert data from any previous Snapshot or Volume Copy
- Backup ‘snapped’ data to disk, virtual tape, or physical tape without a backup window

Data Testing

- Snap or clone data to test the performance of a software application on ‘offline’ production data
- Snap or clone data to test how a software patch or enhancement will function on ‘offline; production data

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| HP 2000 Modular Smart Array Snapshot 64 Software LTU | T5512A |
| HP 2000 Modular Smart Array Snapshot 8 Software LTU | T5513A |
| HP 2000 Modular Smart Array Snapshot 8 to 64 Upgrade Software LTU | T5515A |
| HP 2000 Modular Smart Array Volume Copy Software LTU | T5514A |

Path failover (MPIO)

MPIO Basic Failover for Windows provides a single multi-path solution for HP MSA2000i Modular Smart Array on HP ProLiant servers by providing basic path failover. Supports Windows 2003, Windows 2003 R2, and Windows 2003 X64 operating systems.

Failover support for Linux is with Device Mapper 4.0.

NOTE: For more information visit

<http://h18006.www1.hp.com/products/sanworks/multipathoptions/index.html>

Linux Clustering

LifeKeeper for Linux Version v6 Update 2 (See LifeKeeper Release Notes v6.2 for additional information at: http://licensing.steeleye.com/Linux_6_2/LKRelNotes.pdf)

HP Storage Mirroring

HP Storage Mirroring Software provides host-based, continuous replication for customers seeking a low-cost alternative to fabric or array-based replication. Patented replication and failover technology continuously captures byte-level data changes as they happen and replicates those changes to one or more target servers at any location without geographic limitations. By replicating only the bytes that change, Storage Mirroring Software uses the absolute minimum bandwidth on your existing LAN or WAN to replicate your data. Storage Mirroring also provides server failover where a production server can automatically be ‘replaced’ by the storage mirroring server in the event of failure. Couple Storage Mirroring with MSA2000 Snapshots and/or Volume Copy to achieve an Enterprise class data protection strategy creating different data recovery points using continuous data protection with Storage Mirroring and point-in-time data protection with Snapshots and/or Volume Copy.

Storage Mirroring Software supports:

- Any DAS, NAS, and SAN storage device.
- Any Windows ProLiant server including all ML, DL, and BL platforms
- Many Windows platforms including Windows Server 2000, Windows Server 2003, Windows Server 2003 R2, Windows Storage Server 2003, Windows Storage Server 2003 R2, 64-bit Windows, and Windows on Itanium

For more information visit <http://h18006.www1.hp.com/products/storage/software/sm/index.html>



Optional Software

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|---|--------|
| HP Storage Mirroring Software Windows Server Edition 1 LTU | T4441A |
| HP Storage Mirroring Software Windows Enterprise Server Edition 1 LTU | T4443A |
| HP Storage Mirroring Software Windows NAS Edition 1 LTU | T4445A |
| HP Storage Mirroring Software for AiO Edition 1 LTU | T5321A |
| HP Storage Mirroring Software for 5 Virtual Machines 1 LTU | T4447A |
| HP XP24000 Power Control I/F MF Kit | AE133A |

HP ProLiant Storage Server gateways: Add more value to your MSA array

Stretch your MSA2000 array investment by adding file & print services and management hosting with a ProLiant Storage Server gateway platform. HP ProLiant Storage Servers are optimized file and print server solutions that are built on industry-standard HP ProLiant servers and come with either Microsoft Windows Storage Server 2003 R2 or Windows Unified Data Storage Server 2003 operating system pre-installed. Since they're Windows-based, network integration is easy, your tools and data protection applications run right on the box, and management has a familiar look and feel. Like many Network Attached Storage (NAS) devices, they support heterogeneous file serving environments and are pre-configured to install in minutes.

A DL380 G5 Base Storage Server is a gateway that adds file services and the ability to host Windows tools to your iSCSI array or SAN. It enhances your MSA investment with file and print services and helps create a high-performance unified data solution for your small or medium IT environment. All of your important client and server data can be managed, scaled, and protected on a single MSA2000i array.

For more information:

<http://www.hp.com/go/storageservers>

<http://www.hp.com/go/nas>

HP ProLiant DL380 G5 Base Storage Server AG815A

NOTE: Microsoft Windows Storage Server 2003 R2 Standard x64 Edition O/S; Microsoft iSCSI Software Target is optional and clustering is not supported.

HP ProLiant DL380 G5 x64 SAN Storage Server AG771A

NOTE: Microsoft Windows Unified Data Storage Server 2003 Enterprise x64 Edition O/S; Includes Microsoft iSCSI Software Target and a cluster license.



Service and Support, HP Care Pack, and Warranty Information

Warranty

- Three-year limited warranty
- Three years parts exchange
- Next Business day delivery

Enclosures, Hard drives, and Options for the MSA2000i carry their own warranty. Refer to HP's Limited Warranty Statement for more information.

The MSA2000i has been designed with customer self-repairable parts to minimize repair time and provide greater flexibility in performing defective parts replacement. Please refer to HP's limited warranty Statement and parts replacement instructions for further details.

<http://h18006.www1.hp.com/products/storageworks/warranty.html>

Products included in various Kits carry their own individual warranties.

NOTE: The warranty of the hard drive options purchased with the MSA2000i product is different for SAS hard drives versus SATA hard drives. SAS hard drive options have a three-year warranty and SATA hard drive options have a one-year warranty.

Warranty Upgrade Options

- Response - Upgrade on-site response from next business day to same day 4-hour response or 6 Hour Call To Repair
- Coverage - Extend hours of coverage from next business day to 9 hours x 5 days to 24 hours x 7 days
- Duration Select duration of coverage for a period of 1, 3, 4 or 5 years

HP Care Pack Information

- HP Care Pack is defined as an upgrade to the product warranty attribute, available for a specific duration and hours of coverage.
- HP Care Pack is not available for less than the product's warranty duration.
- HP Care Pack 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.
- HP Care Pack services are prepaid.

For additional information on Product Services and HP Care Pack, as well as orderable part numbers, please refer to the URL: <http://www.hp.com/hps/carepack/>.

If you have specific questions about availability or how to obtain services contact your local HP representative. Contact information for your local area can be found at:

http://welcome.hp.com/country/us/en/contact_us.html

Software Product Services

Product support provides the customer access to HP's experienced technical support resources, as well as access to HP's Information Services database for support on a variety of multi-vendor/multiplatform software products. Product support includes escalation and problem coordination with the appropriate engineering group. HP Services offer a variety of options to allow you to tailor your product service to meet the needs of your organization. Basic warranty on products can be uplifted from day one to ensure you receive the service you need when you need it.



Service and Support, HP Care Pack, and Warranty Information

Warranty and Support HP warrants only that the software media will be free of physical defects for a period of ninety (90) days from delivery.

The following services are offered as HP Care Pack Services at the time of software product order:

- Software Technical Support 24 x 7 (1, 3, 4, and 5 years) is available 24 hours per day, Monday through Sunday, including holidays (includes phone-in software technical support 24 x 7 and software product and documentation updates).
- HP Care Pack services must be ordered with the product and are prepaid.
- For tailored support contracts based on personalized statement of work contact your local support center via <http://www.hp.com/support>.

For additional software product services information for HP Care Pack services, as well as orderable part numbers, please refer to the URLs listed below:

All storage services: <http://www.hp.com/hps/storage/>.

All HP Care Pack Services: http://www.hp.com/hps/carepack/storage/cp_networked.html.

Software Support HP Care Pack Services: http://www.hp.com/hps/carepack/software/cp_storage.html.

Installation and Startup Services: http://www.hp.com/hps/storage/ns_implementation.html.

If you have specific service questions contact your local HP representative. Contact information for your local area can be found at: http://welcome.hp.com/country/us/en/contact_us.html

Maintenance releases, bug fixes and software patches are available at:

<http://welcome.hp.com/country/us/en/support.html>.

Hardware Product Services

- Installation services that include basic installation and Array Installation and Startup
- On-site maintenance (includes warranty support)
- Response time upgrades during the warranty period
- Post-warranty coverage or warranty extension
- RAID setup and performance consulting via statement of work
- Migration service consulting via statement of work
- Environmental, Mission Critical Services

For product services information for HP Care Pack services, as well as orderable part numbers, please refer to the URLs listed below:

All storage services: <http://www.hp.com/hps/storage/>.

All HP Care Pack Services: http://www.hp.com/hps/carepack/storage/cp_networked.html.

Installation and Startup Services: http://www.hp.com/hps/storage/ns_implementation.html.

If you have specific service questions contact your local HP representative. Contact information for your local area can be found at: http://welcome.hp.com/country/us/en/contact_us.html

Array Installation and Startup Services

The HP installation and startup for HP Disk Arrays service package provides installation and configuration of HP Disk Array products. Service highlights include:

- Service planning
- Installation and Startup provides installation, and configuration of the MSA2000i. This includes:
 - Service planning
 - Service deployment
 - Installation Verification Testing (IVT) required for this service
 - Customer orientation session
- Please contact your local HP sales organization for further details

Installation & Startup Care Packs: Flex - HA114A1 #5J0; Fixed: UA868E



Service and Support, HP Care Pack, and Warranty Information

Support Services via HP Authorized Commercial Resellers - Flex Care Packs

Array SKUs: AJ746A, AJ747A

Support Description

Care Pack

Support - 1 Yr Next Day Hardware

HA101A1#9CJ

Support - 3 Yr Next Day Hardware

HA101A3#9CJ

Support - 4 Yr Next Day Hardware

HA101A4#9CJ

Support - 5 Yr, Next Day Hardware

HA101A5#9CJ

Support - 1 Yr 4 hr 13x5 Hardware

HA103A1#9CJ

Support - 3 Yr, 4 hr 13x5 Hardware

HA103A3#9CJ

Support - 4 Yr, 4 hr 13x5 Hardware

HA103A4#9CJ

Support - 5 Yr, 4 hr 13x5 Hardware

HA103A5#9CJ

Support - 1 Yr, 4 hr 24x7 Hardware

HA104A1#9CJ

Support - 3 Yr, 4 hr 24x7 Hardware

HA104A3#9CJ

Support - 4 Yr, 4 hr 24x7 Hardware

HA104A4#9CJ

Support - 5 Yr, 4 hr 24x7 Hardware

HA104A5#9CJ

Support - 1 Yr, 6 hr, CTR

HA105A1#9CJ

Support - 3 Yr, 6 hr, CTR

HA105A3#9CJ

Support - 4 Yr, 6 hr, CTR

HA105A4#9CJ

Support - 5 Yr, 6 hr, CTR

HA105A5#9CJ

Support - 1 Yr, Support Plus

HA109A1#9CJ

Support - 3 Yr, Support Plus

HA109A3#9CJ

Support - 4 Yr, Support Plus

HA109A4#9CJ

Support - 5 Yr Support Plus

HA109A5#9CJ

Support - 1 Yr, Support Plus 24

HA110A1#9CJ

Support - 3 Yr, Support Plus 24

HA110A3#9CJ

Support - 4 Yr, Support Plus 24

HA110A4#9CJ

Support - 5 Yr, Support Plus 24

HA110A5#9CJ

Support - 1 Yr, Proactive 24 Service

HA111A1#9CJ

Support - 3 Yr, Proactive 24 Service

HA111A3#9CJ

Support - 4 Yr, Proactive 24 Service

HA111A4#9CJ

Support - 5 Yr, Proactive 24 Service

HA111A5#9CJ

Support - 1 Yr, Critical Service

HA112A1#9CJ

Support - 3 Yr, Critical Service

HA112A3#9CJ

Support - 4 Yr, Critical Service

HA112A4#9CJ

Support - 5 Yr, Critical Service

HA112A5#9CJ



Service and Support, HP Care Pack, and Warranty Information

Support Services via HP Authorized Commercial Resellers - Flex Care Packs Drive Enclosure SKUs: AJ749A, AJ750A

| Support Description | Care Pack |
|--------------------------------------|-------------|
| Support - 1 Yr Next Day Hardware | HA101A1#9CL |
| Support - 3 Yr Next Day Hardware | HA101A3#9CL |
| Support - 4 Yr Next Day Hardware | HA101A4#9CL |
| Support - 5 Yr, Next Day Hardware | HA101A5#9CL |
| Support - 1 Yr 4 hr 13x5 Hardware | HA103A1#9CL |
| Support - 3 Yr, 4 hr 13x5 Hardware | HA103A3#9CL |
| Support - 4 Yr, 4 hr 13x5 Hardware | HA103A4#9CL |
| Support - 5 Yr, 4 hr 13x5 Hardware | HA103A5#9CL |
| Support - 1 Yr, 4 hr 24x7 Hardware | HA104A1#9CL |
| Support - 3 Yr, 4 hr 24x7 Hardware | HA104A3#9CL |
| Support - 4 Yr, 4 hr 24x7 Hardware | HA104A4#9CL |
| Support - 5 Yr, 4 hr 24x7 Hardware | HA104A5#9CL |
| Support - 1 Yr, 6 hr, CTR | HA105A1#9CL |
| Support - 3 Yr, 6 hr, CTR | HA105A3#9CL |
| Support - 4 Yr, 6 hr, CTR | HA105A4#9CL |
| Support - 5 Yr, 6 hr, CTR | HA105A5#9CL |
| Support - 1 Yr, Support Plus | HA109A1#9CL |
| Support - 3 Yr, Support Plus | HA109A3#9CL |
| Support - 4 Yr, Support Plus | HA109A4#9CL |
| Support - 5 Yr Support Plus | HA109A5#9CL |
| Support - 1 Yr, Support Plus 24 | HA110A1#9CL |
| Support - 3 Yr, Support Plus 24 | HA110A3#9CL |
| Support - 4 Yr, Support Plus 24 | HA110A4#9CL |
| Support - 5 Yr, Support Plus 24 | HA110A5#9CL |
| Support - 1 Yr, Proactive 24 Service | HA111A1#9CL |
| Support - 3 Yr, Proactive 24 Service | HA111A3#9CL |
| Support - 4 Yr, Proactive 24 Service | HA111A4#9CL |
| Support - 5 Yr, Proactive 24 Service | HA111A5#9CL |
| Support - 1 Yr, Critical Service | HA112A1#9CL |
| Support - 3 Yr, Critical Service | HA112A3#9CL |
| Support - 4 Yr, Critical Service | HA112A4#9CL |
| Support - 5 Yr, Critical Service | HA112A5#9CL |



Service and Support, HP Care Pack, and Warranty Information

Support Services via HP Authorized Commercial Resellers - Flex Care Packs Software SKUs:

| Support Description | T5512A Care Pack | T5513A Care Pack | T5514A Care Pack | T5515A Care Pack |
|--|---------------------|---------------------|---------------------|---------------------|
| Support - 1 Yr, 9X5, Software Technical Support | HA106A1#9CM | HA106A1#9CN | HA106A1#9CQ | HA106A1#9CP |
| Support - 3 Yr, 9X5, Software Technical Support | HA106A3#9CM | HA106A3#9CN | HA106A3#9CQ | HA106A3#9CP |
| Support - 4 Yr, 9X5, Software Technical Support | HA106A4#9CM | HA106A4#9CN | HA106A4#9CQ | HA106A4#9CP |
| Support - 5 Yr, 9X5, Software Technical Support | HA106A5#9CM | HA106A5#9CN | HA106A5#9CQ | HA106A5#9CP |
| Support - 1 Yr, 24x7, Software Technical Support | HA107A1#9CM | HA107A1#9CN | HA107A1#9CQ | HA107A1#9CP |
| Support - 3 Yr, 24x7, Software Technical Support | HA107A3#9CM | HA107A3#9CN | HA107A3#9CQ | HA107A3#9CP |
| Support - 4 Yr, 24x7, Software Technical Support | HA107A4#9CM | HA107A4#9CN | HA107A4#9CQ | HA107A4#9CP |
| Support - 5 Yr, 24x7, Software Technical Support | HA107A5#9CM | HA107A5#9CN | HA107A5#9CQ | HA107A5#9CP |
| Support - 1 Yr, Support Plus | HA109A1#9CM | HA109A1#9CN | HA109A1#9CQ | HA109A1#9CP |
| Support - 3 Yr, Support Plus | HA109A3#9CM | HA109A3#9CN | HA109A3#9CQ | HA109A3#9CP |
| Support - 4 Yr, Support Plus | HA109A4#9CM | HA109A4#9CN | HA109A4#9CQ | HA109A4#9CP |
| Support - 5 Yr, Support Plus | HA109A5#9CM | HA109A5#9CN | HA109A5#9CQ | HA109A5#9CP |
| Support - 1 Yr, Support Plus 24 | HA110A1#9CM | HA110A1#9CN | HA110A1#9CQ | HA110A1#9CP |
| Support - 3 Yr, Support Plus 24 | HA110A3#9CM | HA110A3#9CN | HA110A3#9CQ | HA110A3#9CP |
| Support - 4 Yr, Support Plus 24 | HA110A4#9CM | HA110A4#9CN | HA110A4#9CQ | HA110A4#9CP |
| Support - 5 Yr, Support Plus 24 | HA110A5#9CM | HA110A5#9CN | HA110A5#9CQ | HA110A5#9CP |
| Support - 1 Yr, Proactive 24 | HA111A1#9CM | HA111A1#9CN | HA111A1#9CQ | HA111A1#9CP |
| Support - 3 Yr, Proactive 24 | HA111A3#9CM | HA111A3#9CN | HA111A3#9CQ | HA111A3#9CP |
| Support - 4 Yr, Proactive 24 | HA111A4#9CM | HA111A4#9CN | HA111A4#9CQ | HA111A4#9CP |
| Support - 5 Yr, Proactive 24 | HA111A5#9CM | HA111A5#9CN | HA111A5#9CQ | HA111A5#9CP |
| Support - 1 Yr, Critical Services | HA112A1#9CM | HA112A1#9CN | HA112A1#9CQ | HA112A1#9CP |
| Support - 3 Yr, Critical Services | HA112A3#9CM | HA112A3#9CN | HA112A3#9CQ | HA112A3#9CP |
| Support - 4 Yr, Critical Services | HA112A4#9CM | HA112A4#9CN | HA112A4#9CQ | HA112A4#9CP |
| Support - 5 Yr, Critical Services | HA112A5#9CM | HA112A5#9CN | HA112A5#9CQ | HA112A5#9CP |



Service and Support, HP Care Pack, and Warranty Information

Support Services via HP Authorized Commercial Resellers - Fixed Care Packs Array SKUs: AJ746A, AJ747A

| Support Description | Fixed Care Pack Part Number |
|--|-----------------------------|
| HP 1y NBD 9x5 MSA2000 Array HWSupp | UJ669E |
| HP 1y 4h 13x5 MSA2000 Array HWSupp | UJ670E |
| HP 1y 4h 24x7 MSA2000 Array HWSupp | UJ671E |
| HP 1y 6h CTR MSA2000 Array HWSupp | UJ672E |
| HP 3y NBD 9x5 MSA2000 Array HWSupp | UJ673E |
| HP 3y 4h 13x5 MSA2000 Array HWSupp | UJ674E |
| HP 3y 4h 24x7 MSA2000 Array HWSupp | UJ675E |
| HP 3y 6h CTR MSA2000 Array HWSupp | UJ676E |
| HP 3y 4h 13x5 w/DMR MSA2000 Array HWSupp | UJ677E |
| HP 3y 4h 24x7 w/DMR MSA2000 Array HWSupp | UJ678E |
| HP 3y 6h CTR w/DMR MSA2000 Array HWSupp | UJ679E |
| HP 4y NBD 9x5 MSA2000 Array HWSupp | UJ680E |
| HP 4y 4h 13x5 MSA2000 Array HWSupp | UJ681E |
| HP 4y 4h 24x7 MSA2000 Array HWSupp | UJ682E |
| HP 4y 6h CTR MSA2000 Array HWSupp | UJ683E |
| HP 5y NBD 9x5 MSA2000 Array HWSupp | UJ684E |
| HP 5y 4h 13x5 MSA2000 Array HWSupp | UJ685E |
| HP 5y 4h 24x7 MSA2000 Array HWSupp | UJ686E |
| HP 5y 6h CTR MSA2000 Array HWSupp | UJ687E |
| HP 5y 4h 13x5 w/DMR MSA2000 Array HWSupp | UJ688E |
| HP 5y 4h 24x7 w/DMR MSA2000 Array HWSupp | UJ689E |
| HP 5y 6h CTR w/DMR MSA2000 Array HWSupp | UJ690E |
| HP 1Y PW NBD MSA2000 Array HWSupp | UK193PE |
| HP 1Y PW 4H 13x5 MSA2000 Array HWSupp | UK194PE |
| HP 1Y PW 4H 24x7 MSA2000 Array HWSupp | UK195PE |
| HP 1Y PW 6H CTR MSA2000 Array HWSupp | UK196PE |



Service and Support, HP Care Pack, and Warranty Information

Support Services via HP Authorized Commercial Resellers - Fixed Care Packs Drive Enclosure SKUs: AJ749A, AJ750A

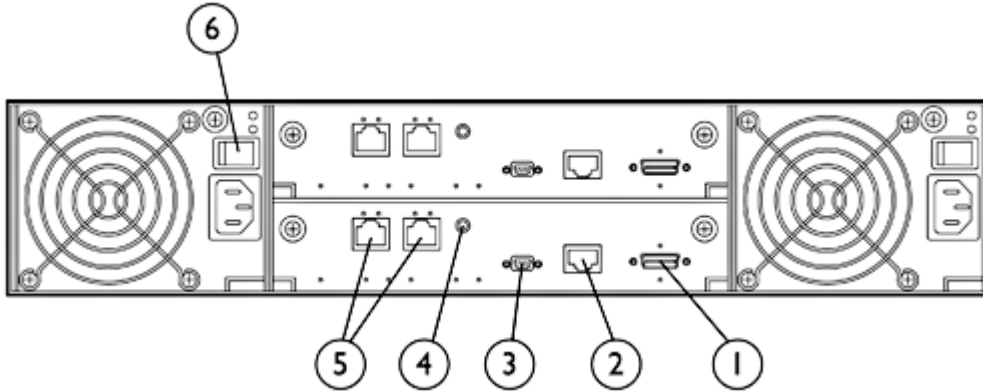
| Support Description | Fixed Care Pack Part Number |
|--|-----------------------------|
| HP 1y NBD 9x5 MSA2000 Enclosure HWSupp | UK223E |
| HP 1y 4h 13x5 MSA2000 Enclosure HWSupp | UK224E |
| HP 1y 4h 24x7 MSA2000 Enclosure HWSupp | UK225E |
| HP 1y 6h CTR MSA2000 Enclosure HWSupp | UK226E |
| HP 3y NBD 9x5 MSA2000 Enclosure HWSupp | UK227E |
| HP 3y 4h 13x5 MSA2000 Enclosure HWSupp | UK228E |
| HP 3y 4h 24x7 MSA2000 Enclosure HWSupp | UK229E |
| HP 3y 6h CTR MSA2000 Enclosure HWSupp | UK230E |
| HP 3y 4h 13x5 w/DMR MSA2000 Encl HWSupp | UK231E |
| HP 3y 4h 24x7 w/DMR MSA2000 Encl HWSupp | UK232E |
| HP 3y 6h CTR w/DMR MSA2000 Encl HWSupp | UK233E |
| HP 4y NBD 9x5 MSA2000 Enclosure HWSupp | UK234E |
| HP 4y 4h 13x5 MSA2000 Enclosure HWSupp | UK235E |
| HP 4y 4h 24x7 MSA2000 Enclosure HWSupp | UK236E |
| HP 4y 6h CTR MSA2000 Enclosure HWSupp | UK237E |
| HP 5y NBD 9x5 MSA2000 Enclosure HWSupp | UK238E |
| HP 5y 4h 13x5 MSA2000 Enclosure HWSupp | UK239E |
| HP 5y 4h 24x7 MSA2000 Enclosure HWSupp | UK240E |
| HP 5y 6h CTR MSA2000 Enclosure HWSupp | UK241E |
| HP 5y 4h 13x5 w/DMR MSA2000 Enclosure HWSupp | UK242E |
| HP 5y 4h 24x7 w/DMR MSA2000 Encl HWSupp | UK243E |
| HP 5y 6h CTR w/DMR MSA2000 Encl HWSupp | UK244E |
| HP 1Y PW NBD MSA2000 Enclosure HWSupp | UK245PE |
| HP 1Y PW 4H 13x5 MSA2000 Encl HWSupp | UK246PE |
| HP 1Y PW 4H 24x7 MSA2000 Encl HWSupp | UK247PE |
| HP 1Y PW 6H CTR MSA2000 Encl HWSupp | UK248PE |

Support Services via HP Authorized Commercial Resellers - Fixed Care Packs Software SKUs: T5512A, T5513A, T5514A, T5515A

| Support Description | Fixed Care Pack Part Number |
|---------------------------------------|-----------------------------|
| HP 3y 24x7 MSA2000 Snpst64 SW Support | UK249E |
| HP 3y 24x7 MSA2000 Snpst8 SW Support | UK250E |
| HP 3y 24x7 MSA2000 Snpst8-64 SW Supp | UK251E |
| HP 3y 24x7 MSA2000 Vol Cpy SW Supp | UK252E |

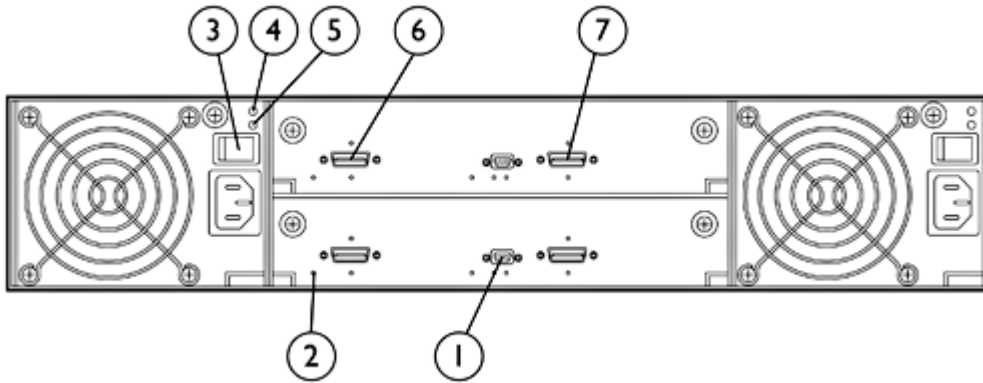


Configuration Information



Dual Controller MSA2000i

- | | |
|-------------------|-----------------|
| 1. Expansion Port | 4. Service Port |
| 2. Ethernet Port | 5. iSCSI Ports |
| 3. CU Port | 6. Power Switch |



MSA2000 Dual I/O 3.5" 12 Drive Enclosure

- | | |
|---------------------------|------------------|
| 1. Service Port | 5. AC Power Good |
| 2. Unit Locator | 6. SAS In Port |
| 3. Power Switch | 7. SAS Out Port |
| 4. DC Voltage / Fan Fault | |

Configuration Information

Configure to Order Program Information -

HP introduces the new Configure to Order program for the MSA2000 family. The MSA2000 models and options may or may not be factory installed in a rack with add-on controllers, switches, hubs, MSA2000 disk enclosures and hard drives. The MSA2000 arrays may be integrated with ProLiant servers or as standalone storage.

| | |
|--|------------|
| HP 2012i Single Controller Modular Smart Array | AJ746A#0D1 |
| HP 2012i Dual Controller Modular Smart Array | AJ747A#0D1 |
| HP 2000i Modular Smart Array Controller | AJ748A#0D1 |
| HP MSA2000 3.5-inch Single I/O 12 Drive Encl | AJ749A#0D1 |
| HP MSA2000 3.5-inch Dual I/O 12 Drive Encl | AJ750A#0D1 |
| HP MSA2000 Drive Enclosure I/O Module | AJ751A#0D1 |
| HP MSA2 146GB 3G 15K 3.5-inch SAS HDD | AJ735A#0D1 |
| HP MSA2 300GB 15K 3.5-inch SAS HDD | AJ736A#0D1 |
| HP MSA2 450GB 3G 15K 3.5-inch SAS HDD | AJ737A#0D1 |
| HP MSA2 500GB 7.2K 3.5-inch SATA HDD | AJ738A#0D1 |
| HP MSA2 750GB 7.2K 3.5-inch SATA HDD | AJ739A#0D1 |
| HP MSA2 1TB 7.2K 3.5-inch SATA HDD | AJ740A#0D1 |

Step 1 - MSA2000i - Base Configuration

Select one:

| Model Name | Model Description: | Part Number |
|---|---|---|
| MSA2012i | HP 2012i Dual Controller Modular Smart Array | AJ747A |
| MSA2012i | HP 2012i Single Controller Modular Smart Array | AJ746A |
| MSA2012i Americas Bundles | | |
| NOTE: available in USA & Canada only | | |
| MSA2012i Americas Bundle | HP MSA2012i Dual Controller w/(12) MSA2 750GB 3.5-in. SATA HDDs & 8-Snapshot iSCSI Solution | AJ925A |
| | What's In The Box | (1) HP MSA2012i with Dual Controller; (12) HP MSA2 750GB 3.5" HDD; (1) HP MSA2000 Snapshot 8 Software LTU |
| MSA2012i Americas Bundle | HP MSA2012i Dual Controller w/(12) MSA2 300GB 3.5-in. SAS HDDs & 8-Snapshot iSCSI Solution | AJ926A |
| | What's In The Box | (1) HP MSA2012i with Dual Controller; (12) HP MSA2 300GB SAS 15K 3.5: HDD; (1) HP MSA2000 Snapshot 8 Software LTU |
| MSA2012i Americas Bundle | HP Procurve iSCSI Just-Add-Drives MSA2012i Storage Solution | AJ927A |
| | What's In The Box | (1) HP MSA2012i with Dual Controller; (1) ProCurve Switch 1400-8G ; (4) CAT 5e cable, RJ45 to RJ45, M/M 4.3M; (1) HP MSA2000 Snapshot 8 Software LTU |



Configuration Information

| | | |
|--------------------------|---|---|
| MSA2012i Americas Bundle | HP MSA2012i Dual Controller w/(2) DL380G5 x64 SAN Storage Servers & 8-Snapshot Solution | AJ932A |
| | What's In The Box | (1) HP MSA2012i with Dual Controller; (2) HP ProLiant DL380 G5 X64 SAN Storage Server; (1) HP MSA2000 Snapshot 8 Software LTU |

Step 2 - Options

Select each option with quantities specified.

NOTE: SATA drives are designed for archival or reference data. They should not be used in a heavy or intense I/O environment. Those situations require the use of enterprise-class SAS drives. MSA2 3.5" drives are for use only with MSA2000 products.

Step 2a - Options

| Description with Parts Shipped: | Quantity | Part Number |
|---|----------|-------------|
| The base controller chassis with one or two controllers has twelve drive bays for both SAS and/or SATA drives. For additional twelve additional drive bays purchase an MSA2000 3.5" Disk Enclosure. You may attach a total of three Drive Enclosures for a total of forty-eight drive bays. Single controller arrays support Single I/O Disk Enclosures, dual controller arrays support Dual I/O Disk Enclosures. | | |

Step 2b - MSA2 SAS and SATA Drive Options

NOTE: MSA2000 3.5" drives are for use only with MSA2000 products.

| | |
|---|--------|
| HP MSA2 146GB 3G 15K 3.5 inch Dual-port SAS HDD | AJ735A |
| HP MSA2 300GB 3G 15K 3.5 inch Dual-port SAS HDD | AJ736A |
| HP MSA2 450GB 3G 15K 3.5 inch Dual-port SAS HDD | AJ737A |
| HP MSA2 500GB 7.2K 3.5 inch SATA HDD | AJ738A |
| HP MSA2 750GB 7.2K 3.5 inch SATA HDD | AJ739A |
| HP MSA2 1TB 7.2K rpm 3.5 inch SATA HDD | AJ740A |

Step 2c - Drive Enclosure Options

The array itself has twelve drive bays. Should you require a drive enclosure, the model you choose depends to which array model it will be attached. If it is a single controller array, then choose the JBOD designated as "Single I/O". If it is attaching to a dual controller array then choose the "Dual I/O" JBOD

| | |
|---|--------|
| HP MSA2000 Single I/O 3.5 in 12 Drive Enclosure | AJ749A |
| HP MSA2000 Dual I/O 3.5 inch 12 Drive Enclosure | AJ750A |

SAS Cables (as needed for additional Drive Enclosures)

| | |
|---------------------|------------|
| HP Ext SAS 1m Cable | 389665-B21 |
| HP Ext SAS 2m Cable | 389668-B21 |
| HP Ext SAS 4m Cable | 389671-B21 |



Configuration Information

Step 3 - Other MSA2000i Options

| Description | Part Number |
|--|--|
| HP 2000i Modular Smart Array Controller (for future upgrading of a single controller MSA2000i iSCSI array to a dual controller model) | AJ748A |
| HP MSA2000 Drive Enclosure I/O Module (for future upgrading of a single I/O 3.5" Disk Enclosure to a dual controller model) | AJ751A |
| NOTE: Shipped standard with all units. | |
| Power Cord, 220/240 VAC | Quantity: 2 Part Number: 227099-001 |

Step 4 - Choose Supported Options For iSCSI Infrastructure

Select each required option with quantities specified.

The MSA2000i supports industry standard Gigabit Ethernet components from various manufacturers that conform to IEEE 802.3ab (1000base-T). The MSA2000i is supported only in a Gigabit Ethernet environment

| Description with Parts Shipped: | Part Number |
|---|-------------|
| For details on standard Gigabit Ethernet components (including Gigabit Ethernet switches, Network Interface cards and Ethernet cables) from HP http://welcome.hp.com/country/us/en/prodserv/networking.html NOTE: The list below is a partial list of supported HP ProCurve Switches and Gigabit NICs. | |
| Gigabit Ethernet NIC | |
| HP NC110T PCI Express Gigabit Server Adapter | 434905-B21 |
| HP NC360T PCI Express Gigabit Server Adapter | 412648-B21 |
| HP NC364T PCI Express Gigabit Server Adapter | 435508-B21 |
| HP NC373T PCI Express Gigabit Server Adapter | 394791-B21 |
| HP NC380T PCI Express Gigabit Server Adapter | 394795-B21 |
| HP NC7170 Dual Port PCI-X 1000T Gigabit Server Adapter | 313881-B21 |
| HP NC7771 PCI-X Gigabit Server Adapter | 290563-B21 |
| HP ProCurve Gigabit Ethernet switches | |
| HP ProCurve 2708 Switch | J4898A |
| HP ProCurve 2724 Switch | J4897A |
| HP ProCurve 2512 Switch | J4812A |
| HP ProCurve 2524 Switch | J4813A |
| HP ProCurve 2848 Switch | J4904A |
| HP ProCurve 2824 Switch | J4903A |
| HP ProCurve 3400cl-24G Switch | J4905A |
| HP ProCurve 3400cl-48G Switch | J4906A |
| HP ProCurve 6108 Switch | J4902A |
| CAT 5e cables | |
| CAT 5e cable, RJ45 to RJ45, M/M 1.2m (4ft) | C7533A |
| CAT 5e cable, RJ45 to RJ45, M/M 2.1m (7ft) | C7535A |
| CAT 5e cable, RJ45 to RJ45, M/M 4.3m (14ft) | C7536A |
| CAT 5e cable, RJ45 to RJ45, M/M 7.6m (25ft) | C7537A |
| CAT 5e cable, RJ45 to RJ45, M/M 15.2m (50ft) | C7542A |
| CAT 5e cable kit, 10 of C7636A | C7543A |



Step 5 - Choose Rack Options

Select each required option with quantities specified.

Rack Cabinet, Customer Assembled

5642 – 5000 Series rack 358254-B21

14U rack

HP S10614 Rack with Shock Pallet 292302-B22

Rack Cabinets 10622 G2

10622 G2 Universal Rack w/Shock Pallet AF022A

10622 G2 Universal Rack w/Standard Pallet AF021A

Rack Cabinets under 10636 G2

10636 G2 (36U) Rack Cabinet - Pallet AF011A

10636 G2 (36U) Rack Cabinet - Shock Pallet AF012A

10636 G2 (36U) Rack Cabinet - Crated AF013A

10636 G2 (36U) Rack Cabinet, with Extension - Shock Pallet AF014A

Rack Cabinets 10642 G2

10642 G2 (42U) Rack Cabinet - Pallet AF001A

10642 G2 (42U) Rack Cabinet - Shock Pallet AF002A

10642 G2 (42U) Rack Cabinet - Crated AF003A

10642 G2 (42U) Rack Cabinet, with Extension - Shock Pallet AF004A

Modular Cooling System G2 (MCS G2) AF025A

MCS G2 10642 G2 Expansion Rack AF026A

Rack Cabinets 10842 G2

10842 G2 Universal Rack w/Shock Pallet AF042A

10842 G2 Universal Rack w/Standard Pallet AF041A

Rack Cabinets 10647 G2

10647 Rack G2 Pallet AF031A



Technical Specifications

| | | |
|----------------|--|---|
| MSA2000i | POWER REQUIREMENTS | |
| | Input Power Requirements | 100-240VAC, 50/60 Hz, 4.5-1.9A |
| | Max Input Power | 475W maximum continuous |
| | Heat Dissipation | 1622 BTU/hour |
| | TEMPERATURE AND HUMIDITY RANGES | |
| | Operating Temperature | 41° F to 104° F (5°C to 40°C) |
| | Shipping Temperature | -40° F to 158° F (-40° C to 70° C) NOTE: Derate 2°C for every km, up to 3000 meters |
| | Operating Humidity | 10% to 90% RH @ 104° F (40° C), non-condensing |
| | Non-Operating Humidity | Up to 93% RH @ 104° F (40° C), non-condensing |
| | DECLARED ACOUSTIC NOISE LEVELS | |
| | Sound Power | <6.03B Sound Power |
| | Sound Pressure | <55dBA Sound Pressure |
| | SHOCK AND VIBRATION | |
| | Shock, Operational | 5.0G, 10ms, half sine |
| | Shock, Non-Operational | 15G 11 ms, half sine |
| | Vibration, Operational | 0.21Grms Random 5Hz to 500Hz flat spectrum/feed forward |
| | Vibration, Non-Operational | 0.5G 1 octave/minute 5Hz to 500Hz to 5 Hz sine sweep 0.5Grms Random 20Hz to-1000Hz flat spectrum |
| | PHYSICAL | |
| | Height | 3.5 in (8.9 cm) |
| | Depth (excluding cables) | 23.7 ins (60.2 cm) |
| Width | 17.6 in (44.7 cm) | |
| Chassis Weight | 44 lbs (19.96 kg) | |

| | | |
|---------------------------------------|--|--|
| Modular SAN Array 2000i Controller | User Interface | -Status and activity provided via management interfaces Status Indicators on front of Controller |
| | Electrical Interface | Ethernet – 1Gbps |
| | Protocol Support | iSCSI |
| | RAID Support | 0, 1, 3, 5, 6, 10, 50 |
| | Cache Memory | 1GB Read/Write. |
| | Cache Backup | ECC protection with back up to flash memory (indefinite backup) |
| | Upgradeable Firmware | - yes - partner firmware update (PFU) |
| | Disk Drive and Enclosure Protocol Support | 3Gb SAS - Serial Attached SCSI / 3 Gb SATA=II |
| | Expansion Port | One 4X SAS connector (SFF8470) Expand up to 3 more disk enclosures |



Technical Specifications

| | | |
|-------------------|--------------------------------------|--|
| Regulatory | Safety | UL 60950-1:2003 (USA) |
| | | CAN/CSA-C22.2 No.60950-1-03 (Canada) |
| | | EN 60950-1 :2001 + A11 (European Union) |
| | | IEC 60950-1 :2001 (International) |
| | Electromagnetic Compatibility | CFR 47 Part 15 Subpart B (U.S.A., Class A) |
| | | ICES-003 Issue 4 (Canada, Class A) |
| | | EN 55022 :98 +A1 +A2 (European Union, Class A) |
| | | EN61000-3-2:2000+A1,+A2,+A14 (Harmonics) |
| | | EN 61000-3-3 :2001 (Flicker) |
| | | EN 55024 :1998 +A1 (European Union, Immunity) |
| | | CISPR 22 :2005 (International, Class A) |
| | | CISPR 24 :97 (International, Immunity) |
| | RoHS and WEEE | RoHS-5 Compliance , China RoHS, WEEE |
| | Country Approvals | Australia/New Zealand, Canada, China (PRC), European Union, Germany (GS Mark), Japan, South Korea, Taiwan, United States |

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