Overview

HP 3PAR StoreServ 7000 Storage offers enterprise Tier 1 storage at a midrange price. Spend less time managing storage, get more features for less money, and do it all without sacrificing performance or future scalability. HP 3PAR StoreServ 7000 Storage provides high performance and guarantees to double your virtual machine density. With hardware assisted thin storage it is the only platform that guarantees a 50% reduction in capacity requirements. HP 3PAR StoreServ is also the first product family with a common architecture capable of six nines availability that meets SMB needs and spans to the largest global enterprise giving you access to the same features as the world's largest service providers. You can start small and grow without painful upgrades down the road.
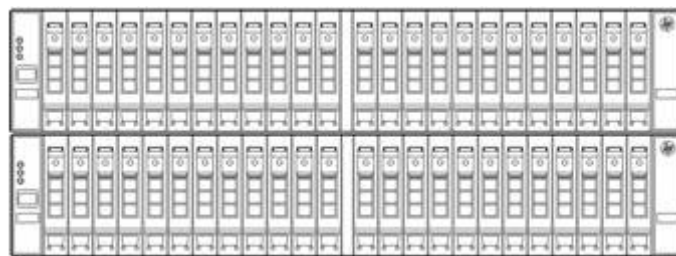
HP 3PAR StoreServ 7000 is storage made effortless.
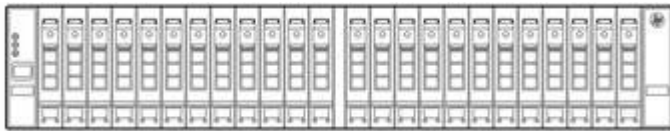
HP 3PAR StoreServ 7200c
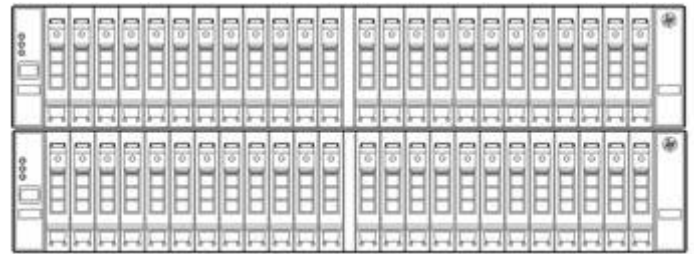
HP 3PAR StoreServ 7400c Storage

HP 3PAR StoreServ 7440c Storage

What's New

- New lower cost 3.84TB cMLC SSDs available
- New 1.92TB FIPS Encrypted cMLC SSD available
- New 1.2TB 10K, 2TB 7.2K SFF, 6TB 7.2K FIPS Encrypted HDD available
- HP 3PAR File Persona Software Suite for HP 3PAR StoreServ 7200c/7400c/7440c
- New HP 3PAR StoreServ 7440c Storage system with support for 960 drives
- HP 3PAR StoreServ 7200c All-Flash Starter Kit provides all-flash acceleration at entry-level price
- New HP 3PAR 2-port 16Gb/sec Fibre Channel Adapter
- New HP 3PAR 2-port 10Gb and 4-port 1Gb Ethernet Adapters
- New FIPS 140-2 compliant encryption with enterprise key management for high-availability data protection
- Support for Adaptive Flash Cache that helps reduce application response times for read intensive workloads
- Accelerate writes with HP 3PAR Express Writes
- HP 3PAR StoreServ 7200 and StoreServ 7400 Storage Systems are now ENERGY STAR certified

NOTE: The term "HP 3PAR StoreServ 7000 Storage" refers to the whole 7000 family, including both the new HP 3PAR StoreServ 7000 Storage Converged Controller models (7200c, 7400c, 7440c) as well as the legacy HP 3PAR StoreServ 7000 Storage models (7200 and 7400).

QuickSpecs

Overview

Summary	3PAR StoreServ 7200c	3PAR StoreServ 7400c	3PAR StoreServ 7440c	3PAR StoreServ File Controller v2
Number of Controller Nodes	2	2 or 4	2 or 4	Up to 8
HP 3PAR Gen4 ASICs	2	2 or 4	2 or 4	Not Applicable
Processors	2 six-core 1.8 GHz	2-4 six-core 1.8 GHz	2-4 eight-core 2.3 GHz	1-16 four-core 2.4 GHz
Total Cache	808 GiB	1596 GiB	3192 GiB	Not Applicable
Flash Cache (optional)	768 GiB	1500 GiB	3000 GiB	Not Applicable
On-Node Cache	40 GiB	96 GiB	192 GiB	None
Total Cache per controller node pair	808 GiB	816 GiB	1596 GiB	Not Applicable
Flash Cache per node pair	768 GiB	768 GiB	1500 GiB	Not Applicable
On-Node Cache per node pair	40 GiB	48 GiB	96 GiB	None
Maximum Host Ports	12 ports	24 ports	24 ports	4 – 128
8Gb/s Fibre Channel Host Ports	4 - 12 ports	4 - 24 ports	4 - 24 ports	Not Applicable
16Gb/s Fibre Channel Host Ports	0 - 4 ports	0 - 8 ports	0 - 8 ports	Not Applicable
10Gb/s iSCSI Host Ports	0 - 4 ports	0 - 8 ports	0 - 8 ports	Not Applicable
10Gb/s Ethernet Adapter	0 - 4 ports	0 - 8 ports	0 - 8 ports	Not Applicable
1Gb/s Ethernet Adapter	0 - 8 ports	0 - 16 ports	0 - 16 ports	Not Applicable
1GbE/10GbE Network Ports	Not Applicable	Not Applicable	Not Applicable	4 – 128
Maximum Initiators Supported	1024	1024 or 2048	1024 or 2048	Not Applicable
2U Controller Enclosure SAS Drive Capacity	24	24	24	Not Applicable
Number of Disk Drives	8 – 240	8 – 576	8 – 960	2 (per node)
Number of Solid State Drives	8 – 120	8 – 240	8 – 240	None
Max Raw Capacity (approx.)[1]	500 TiB	1600 TiB	2000 TiB	Not Applicable
Usable File Capacity	2 - 64TB[6]	2 - 128TB[6]	2-128TB[6]	Depends on the usable capacity from the 3PAR array

Capacity Details	3PAR StoreServ 7200c	3PAR StoreServ 7400c	3PAR StoreServ 7440c	3PAR StoreServ File Controller v2
RAID Levels	RAID 0, 1, 5, 6			RAID 0, 1, 5, 6[5]
RAID 5 Data to Parity Ratios	2:1 - 8:1			2:1 - 8:1[5]
RAID 6 Data to Parity Ratios	4:2, 6:2, 8:2, 10:2, 14:2			4:2, 6:2, 8:2, 10:2, 14:2[5]
Drive Capacities (approximate GB[2]) (RAID levels, parity ratios, and drive capacities all mixable within the same Storage System)	480 SSD[3], 920 SSD[3], 480GB cMLC SSD, 1.92TB cMLC SSD, 300 15K SAS, 450 10K SAS, 600 10K SAS, 600 15K SAS, 900 10K SAS, 1200 10K SAS, 1000 7.2K NL, 1800 10K SAS, 2000 7.2K NL[4], 3000 7.2K NL[4], 4000 7.2K NL[4], 6000 7.2K NL[4]			Not Applicable
Number of Add-on Drive Enclosures (Each Drive Enclosure holds up to 24 drives in 2U for small form factor drives and 4U for large form factor drives)	0 - 9 enclosures	0 - 22 enclosures	0 - 38 enclosures	Not Applicable

Overview

[1] Maximum raw capacity currently supported with any and all drive types. The minimum supported raw capacity is equal to 8
* Min drive size available.
[2] For storage capacity, 1 GB = 1,000,000,000 bytes and 1 TB = 1,000 GB.
[3] SSDs are Solid State Drives.
[4] NL drives are 7200 RPM Enterprise SAS drives.
[5] Applies to the array storage assigned to 3PAR StoreServ File Controller for file services
[6] Usable file capacity supported for HP 3PAR File Persona Software Suite.

NOTE: Specifications are subject to change without notice.

Host OS Support

Citrix® XenServer® | HP-UX® | IBM® AIX®

Microsoft® Windows® Server, including Microsoft® Hyper-V™

Open VMS | Oracle® Linux® (UEK and RHEL compatible kernels) | Oracle® Solaris

Red Hat® Enterprise Linux® | Red Hat® Enterprise Virtualization

SUSE® Linux Enterprise | Ubuntu | VMware vSphere™

For the latest information on supported operating systems refer to Single Point of Connectivity Knowledge for HP Storage Products (SPOCK): http://www.hp.com/storage/spock

Standard Features

Efficient

Get thin and stay thin - Thin technologies unique to the HP 3PAR StoreServ family can reduce capacity requirements by 50%. Purchase only what you need, as you need it so you can focus resources on growing your business, not maintaining your storage. Additionally, the HP 3PAR ASIC with Thin Built In features an efficient, silicon-based zero-detection mechanism. This unique hardware capability gives HP 3PAR StoreServ Storage the power to remove allocated but unused space without impacting performance.

Data center virtualization - Increase virtualization return on investment. Double virtual machine density on your physical servers, spend up to 90 percent less time managing your storage, and support your virtualization deployment with 50 percent less storage capacity. HP 3PAR StoreServ is built from the ground up to deliver performance that exceeds the demands of virtualized data centers along with transformative levels of simplicity, agility, and efficiency.

Service levels - With policy-based autonomic sub-LUN tiering, you can balance the cost of capacity and the cost of performance and put the right data on the right storage tier at the right time.

Do more with less - With HP 3PAR StoreServ Storage you can purchase up to 75 percent less capacity-meaning less equipment to house, fewer disks to power and cool, less hardware to retire after it has reached its end of life, and a reduced carbon footprint.

HP 3PAR Express Writes - HP 3PAR Express Writes is a write acceleration feature built in to HP 3PAR OS version 3.2.1 and later to optimize CPU utilization and, depending on workload, deliver greater throughput, up to 30 percent more IOPS, and 20 percent reduced latency[1]. All currently supported HP 3PAR StoreServ Storage HBAs and hosts also support the HP 3PAR Express Writes feature, and its benefits extend to both spinning drives and flash-based media.

[1]Based on a random, 100 percent write workload with an 8K block size.

The HP 3PAR StoreServ 7200 and StoreServ 7400 (2-node and 4-node) storage systems are US Environmental Protection Agency (EPA) ENERGY STAR certified. Details about the specific configurations that are certified are available at the US EPA web site at:

https://data.energystar.gov/Active-Specifications/ENERGY-STAR-Certified-Data-Center-Storage/gqtf-hp7x?

Autonomic

It's like breathing-you don't even have to think about it. Simplify, automate, and expedite storage management by handling storage provisioning, tiering, and change management autonomically-intelligently, at a sub-system level, and without administrator intervention.

SmartStart Software - software designed to get you off to a quick start with your new HP 3PAR StoreServ 7000 system.

Common architecture - Access the same features as the world's largest service providers with a common architecture that meets SMB needs and spans to the largest global enterprise.

Resilient

Secure multi-tenancy - Consolidate with confidence. Achieve higher service levels for more users and applications with less infrastructure. HP 3PAR StoreServ Storage is designed to support massive consolidation by supporting mixed workloads and secure administrative segregation of users, hosts, and application data. Deliver higher performance levels, six-nine availability, and next-generation functionality to multiple user groups and applications from a single storage system.

Standard Features

Scalable - HP 3PAR StoreServ 7000 provides affordable entry pricing and unique, non-disruptive scalability to four nodes.

High Availability - With the Get 6-Nines Guarantee, HP ensures 99.9999% data availability with all HP 3PAR StoreServ 7400 systems with four nodes giving you the peace of mind to expand deployment of mission critical applications to midrange storage. Intelligent data striping across all available enclosures provides HA Cage, the ability to maintain availability even when a whole drive enclosure fails. HP 3PAR Persistent Cache in four node configurations eliminates performance impacts that result from unplanned component failures, making it a must-have for maintaining service levels in the virtual data center-a feature that you can't get from any other midrange storage platform.

Storage federation - Meet the needs of today's data center with the ability to move data and workloads between arrays without impact to applications, users, or services. Simply and non-disruptively shift data between any model HP 3PAR StoreServ system without additional management layers or appliances. Storage federation on HP 3PAR StoreServ Storage can also help you improve availability in clustered VMware environments.

Mixed workload - Mixed workload support serves transactional and throughput-intensive workloads from a single device. The purpose-built HP 3PAR ASIC delivers mixed workload support to alleviate performance concerns and cut traditional array costs. Transaction- and throughput-intensive workloads run on the same storage resources without contention, thereby cutting array purchases in half.

Data at Rest Encryption - enables the encryption for all the data that is stored on the internal drives of the 3PAR StoreServ Storage. The 3PAR StoreServ Data Encryption solution encrypts and decrypts all data written to and read from the media automatically. The 3PAR StoreServ Data Encryption solution encrypts the data so that data cannot be read off a drive that is removed from the 3PAR Storage. In the event of a failure of the drive or the theft of a drive, the proper authentication key is required to be entered to gain access to the data stored within the drive. This method of encryption allows the user the comfort knowing all data contained on the drive is protected against internal and external risks.

HP 3PAR StoreServ 7200 All-Flash Starter Kit

HP 3PAR StoreServ 7200c All-Flash Starter Kit

HP 3PAR StoreServ 7200c All-Flash Starter Kit is an all-flash version of the HP 3PAR StoreServ 7200c that provides all-flash acceleration at entry-level price. The kit includes the HP 3PAR StoreServ 7200c Storage System Base equipped with 8 x 480GB SFF cMLC SSD drives and also includes the Reporting Suite and Virtual Copy software.

What's New
- HP 3PAR StoreServ 7200c All-Flash Starter Kit

HP 3PAR StoreServ 7200c All-Flash Starter Kit

The HP 3PAR StoreServ 7200c All-Flash Starter Kit is the solution for mid-range customers that need all-flash acceleration at an affordable price. The kit is an orderable part number that includes, in addition to the HP 3PAR StoreServ 7200c Storage System Base, cMLC SSD drives and Reporting Suite and Virtual Copy software.

The HP 3PAR StoreServ 7200c All-Flash Starter Kit has the same Drive LTUs cap and maximum number of SSDs as the HP 3PAR StoreServ 7200c. The Drive LTUs cap for HP 3PAR StoreServ 7200c All-Flash Starter Kit is 48. After reaching the cap, you do not need to purchase any more Drive LTUs for that title. The maximum number of SSDs is 120.

Model

HP 3PAR StoreServ 7200c All-Flash Starter Kit	K7W06A

The HP 3PAR StoreServ 7200c All-Flash Starter Kit is an orderable part number that includes the following individual parts.

Quantity	Component	
1	HP 3PAR StoreServ 7200c 2-node Field Integrated Storage Base	E7X67A
8	HP M6710 480GB 6G SAS 2.5in cMLC SSD	E7Y55A
1	HP 3PAR 7200 Operating System Software Suite Base LTU	BC745B
8	HP 3PAR 7200 Operating System Software Suite Drive LTU	BC746A
1	HP 3PAR 7200 Reporting Suite Base LTU	BC767B
1	HP 3PAR 7200 Virtual Copy Base LTU	BC753A
8	HP 3PAR 7200 Virtual Copy Drive LTU	BC754A

NOTE: Users can add more SSDs, drive enclosures (and any other 7000 accessory), and software to the HP 3PAR StoreServ 7200 All-Flash Starter Kit quote. Each of the nested components will appear as separate parts on the quote and will be priced accordingly

Service and Support, HP Care Pack, and Warranty Information

Warranty   3 Year, On-site Warranty Service for hardware components. 7x24 4-hour remote response with next business day on-site response

The warranty on the following HP 3PAR StoreServ 7000 SSD product numbers is 5 years, parts only:

HP 3PAR StoreServ M6710 480GB 6G SAS SFF(2.5in) MLC 5yr Wty Solid State Drive	E7W54B
HP 3PAR StoreServ M6720 480GB 6G SAS LFF(3.5in) MLC 5yr Wty Solid State Drive	E7W55B
HP 3PAR StoreServ M6710 920GB 6G SAS SFF(2.5in) MLC 5yr Wty Solid State Drive	E7W24B
HP 3PAR StoreServ M6720 920GB 6G SAS LFF(3.5in) MLC 5yr Wty Solid State Drive	E7W25B
HP 3PAR StoreServ M6710 920GB 6G SAS SFF(2.5in) FIPS Encrypted MLC Solid State Drive	E7Y52A
HP 3PAR StoreServ M6710 480GB 6G SAS SFF(2.5in) cMLC Solid State Drive	E7Y55A
HP 3PAR StoreServ M6720 480GB 6G SAS LFF(3.5in) cMLC Solid State Drive	E7Y56A
HP 3PAR StoreServ M6710 1.92TB 6G SAS SFF(2.5in) cMLC Solid State Drive	E7Y57A
HP 3PAR StoreServ M6720 1.92TB 6G SAS LFF(3.5in) cMLC Solid State Drive	E7Y58A
HP 3PAR StoreServ M6710 1.92TB 6G SAS SFF(2.5in) FIPS Encrypted cMLC Solid State Drive	K0F27A
HP 3PAR StoreServ M6710 3.84TB 6G SAS SFF(2.5in) cMLC Solid State Drive	K2Q91A

HP 3PAR StoreServ 7000 drive (SAS performance and Nearline and SSDs excluding the ones listed above) warranty is 3 years, parts only.HP warrants only that the Software media will be free of physical defects for a period of ninety (90) days from delivery

For more information about HP's Global Limited Warranty and Technical Support, visit: http://www.hp.com/products/storageworks/warranty

NOTE: SSDs have a limited number of writes that can occur before reaching the SSD's write endurance limit. This limit is generally high enough so wear out will not occur during the expected service life of an HP 3PAR StoreServ under the great majority of configurations, IO patterns, and workloads. HP 3PAR StoreServ tracks all writes to SSDs and can report the percent of the total write endurance limit that has been used. This allows any SSD approaching the write endurance limit to be proactively replaced before they are automatically spared out. An SSD has reached the maximum usage limit once it exceeds its write endurance limit. Following the product warranty period, SSDs that have exceeded the maximum usage limit will not be repaired or replaced under HP support contracts.

Service and Support   **Technology Services for increased uptime, productivity and ROI**
Trust HP storage technology experts for every level of service and support. Our integrated portfolio of services for storage help customers reduce costs, optimize data, streamline storage management, and improve backup and recovery. Capitalizing on HP Storage Systems' capabilities requires a service partner who understands your increasingly complex environment. Team with the people who know HP infrastructure hardware and software best-the experienced professionals at HP Services.

Protect your business beyond warranty
Warranty protects against manufacturer defects, however warranty uplifts, such as HP Care Pack Services protect the business-by reducing downtime risks and providing operational consistency for mission-critical and standard business computing.

What HP Storage Technology Services can do for you
HP Storage Technology Services can help you design, deploy, test, integrate, support, and

Service and Support, HP Care Pack, and Warranty Information

manage IT and infrastructure solutions. HP storage lifecycle support services offers a full spectrum of customer care-from technology support to complex migrations to complete managed services.

Choose the right level of support, deployment and integration services
HP support recommendations are designed to help you enhance technology operations and lower risk-and make it easier for you to seek the right balance between affordability and service-level commitments. Depending on your individual support needs, choose from three levels of care that cover the entire lifecycle to better address your needs-Optimized Care, Standard Care, and Basic Care. If none of our support recommendations meet your needs, we can tailor a service solution for your unique support requirements. Only HP brings together deep expertise, proactive and business critical support and a strong partner network-together with, a full set of infrastructure services designed to power a Converged Infrastructure

Optimized Care - delivers best performance and stability through deployment and proactive management practices

HP Proactive Care Advanced - This service builds and incorporates on Proactive Care Service and also gives customers personalized technical and operational advice from an assigned, local Account Support Manager for personalized technical collaboration, flexible access to specialist skills to help optimize business critical IT, and enhanced Critical Incident Management to help so the business is not affected if there is a system or device outage.

Additional Option:
3 Year (or) 1 Year HP Proactive Select Credits, HP Data Sanitization Tier 1 Service

Standard Care - maintains high level of uptime, along with expert help to cut the cost and complexity of implementation and support

HP Proactive Care 24x7 - for a higher return on your storage investment, Proactive Care delivers hardware and software support services designed specifically for your technology; rapid access to Advanced Solution Center Specialists plus, Firmware/Software management and best practice advice. Customers can optimize the return on their IT investment and realize the advantage of running their business critical applications on virtualized infrastructure. Plus, HP Proactive Select 20 credits per year, select from an extensive menu of consultancy and technical services, such as onsite firmware upgrades, health checks, assessments, and education.

Additional Option:
3 Year (or) 1 Year HP Proactive Select Credits, HP Data Sanitization Tier 1 Service

Basic Care - Minimum recommended support

HP Proactive Care 24x7 - for a higher return on your storage investment, Proactive Care delivers hardware and software support services designed specifically for your technology; rapid access to Advanced Solution Center Specialists plus, Firmware/Software management and best practice advice. Customers can optimize the return on their IT investment and realize the advantage of running their business critical applications on virtualized infrastructure. Plus, 10 credits per year, select from an extensive menu of consultancy and technical services, such as onsite firmware upgrades, health checks, assessments, and education.

Additional Option:
3 Year (or) 1 Year HP Proactive Select Credits, HP Data Sanitization Tier 1 Service

HP Proactive Select is a flexible way to purchase services to fit your particular environment or situation. Working with an HP Account Support Manager, you select a package of services in the form of services credits that include proactive services spanning many technologies and processes, such as on-site firmware upgrades, health checks, assessments, and education. You tailor the service delivery to improve time to production, optimize performance, or build in continuous improvements.

Implementation

Installation:
Whichever level of care you select, consider our Installation and Startup Services for a smooth implementation.

HP 3PAR StoreServ 7000 Storage Installation and Startup Service - For smooth startup, this service provides you with deployment of your HP 3PAR StoreServ 7000 Storage, ensuring proper

Service and Support, HP Care Pack, and Warranty Information

installation into your storage environment and helping you realize the maximum benefit from your storage investment.
http://h20195.www2.hp.com/V2/GetPDF.aspx/4AA4-2568ENW.pdf

Related Services

HP Storage Transformation Workshop - Explore data management transformation journey to business-aligned visions, aligning your specific situation and HP's experiences.
http://h20195.www2.hp.com/V2/GetPDF.aspx/4AA4-9541ENW.pdf

HP 3PAR StoreServ Data Migration - Proven expertise and tools help you migrate data across your data center or around the globe.
 HP 3PAR StoreServ Data Migration Service data sheet - US English (A4)

HP Storage Modernization Service - Modernize your storage to take better advantage of physical or virtualized server environments.. http://h20195.www2.hp.com/V2/GetPDF.aspx/4AA3-4620ENW.pdf

HP StoreServ Integration Service - Integrate your new HP 3PAR StoreServ system so that it is agile, performs effectively, and scales to rapid growth.
http://h20195.www2.hp.com/V2/GetPDF.aspx/4AA4-9254ENW.pdf

HP EVA to 3PAR Acceleration Service - The HP EVA to 3PAR Acceleration Service can help guide you or even execute data migration activities on your behalf that can not only optimize, but provide OPEX and CAPEX savings as a result of your journey from EVA to 3PAR. This service provides customers with an alternative DIY ("do-it-yourself") data migration option with guidance from TS Storage migration specialists. With the help of migration experts, this service allows customers to execute an EVA to 3PAR data migration at their own pace and lowered cost.
http://h20195.www2.hp.com/V2/GetPDF.aspx/4AA4-4234ENW.pdf

HP SAN Deployment Service - HP delivers complete design and implementation services for Fibre Channel, FCoE, FCIP, SAS, and iSCSI storage area network (SAN) connectivity components. This service includes three levels of support based on the type of environment, ranging from simple to more complex. A trained service specialist guides the implementation of the storage switches in the SAN environment according to HP quality standards.
http://h20195.www2.hp.com/V2/GetPDF.aspx/5981-8527EN.pdf

HP Data Replication Solution Service for 3PAR Virtual Copy - HP Data Replication Solution Service for HP 3PAR Virtual Copy Software helps create, manage and configure local replication data mirroring and snapshot capabilities of 3PAR storage systems. This service enables snapshots and mirroring to facilitate data restores, minimize downtime for backups, perform application testing, support data mining use with decision-support tools.
http://h20195.www2.hp.com/V2/GetPDF.aspx/4AA4-0217ENW.pdf

HP Data Replication Solution Service for 3PAR Remote Copy - HP Data Replication Solution Service for 3PAR Remote Copy Software configures real-time data mirroring between local and remote 3PAR storage systems to safeguard critical business information. Provides scalable deployment of HP Remote Copy Software real-time data mirroring between a local and a remote 3PAR storage system.
http://h20195.www2.hp.com/V2/GetPDF.aspx/4AA3-8627ENW.pdf
http://h20195.www2.hp.com/V2/GetPDF.aspx/4AA0-9431ENW.pdf

HP 3PAR 7000 Replication Software Suite Installation and Startup Service - Provides implementation of the HP 3PAR 7000 Replication Software Suite product. Replication Suite includes 3PAR Remote Copy, 3PAR Virtual Copy, and 3PAR Peer Persistence. The service is designed to help get HP 3PAR 7000 Replication Software Suite up and running quickly and to provide a demonstration of the product's key features using sample or test data only.
http://h20195.www2.hp.com/V2/GetPDF.aspx/4AA4-2570ENW.pdf

Service and Support, HP Care Pack, and Warranty Information

HP 3PAR Peer Persistence Software Installation and Startup Service - Provides implementation of the HP 3PAR Peer Persistence Software product. The service is designed to help get HP 3PAR Peer Persistence up and running quickly and to provide a demonstration of the product's key features using sample or test data only.
http://h20195.www2.hp.com/V2/GetPDF.aspx/4AA4-2772ENW.pdf

HP 3PAR Adaptive Optimization Policy Implementation Service - HP 3PAR Adaptive Optimization Policy Implementation Service provides analysis, recommendations, and implementation of HP 3PAR Adaptive Optimization policies to enable storage tiering using data collected from the HP 3PAR Storage system over time. With the assistance of a designated IT storage administrator, a service specialist works with the customer to implement Adaptive Optimization policies on the HP 3PAR Storage system to help deliver service level optimization for virtual and cloud data centers while reducing cost, increasing agility and minimizing risk.
http://h20195.www2.hp.com/V2/GetPDF.aspx/4AA2-3842ENW.pdf

HP Storage Virtual Volume Design and Implementation Service - When redeploying an HP StorageWorks Disk Array, the HP Virtual Volume Design and Implementation Service provides the necessary activities required to design and implement a new virtual volume configuration.
http://h20195.www2.hp.com/V2/GetPDF.aspx/4AA2-3764ENN.pdf

HP Thin Volume Conversion Service - Provides evaluation and execution of conversion from standard to thin provisioned virtual volumes for HP 3PAR Storage. A service specialist advises the customer on HP thin provisioning best practices, provides evaluation of potential disk capacity savings if target virtual volumes are converted, and plans and implements thin conversion processing. The service leverages 3PAR thin provisioning capabilities to help optimize storage capacity, reduce cost, increase agility and maintain performance.
http://h20195.www2.hp.com/V2/GetPDF.aspx/4AA2-3842ENW.pdf

HP Performance Analysis Service for HP Disk Arrays - The service provides data collection, detailed I/O analysis and enhancement recommendations for HP 3PAR StoreServ Storage disk arrays, HP EVA P6000 Storage disk arrays and HP XP P9000 Storage disk arrays. HP Performance Analysis Service for HP Storage Disk Arrays provides a single engagement concerning the performance of a single HP 3PAR StoreServ Storage disk array, HP EVA P6000 Storage disk array and HP XP P9000 Storage disk array
http://h20195.www2.hp.com/V2/GetPDF.aspx/5982-6668EN.pdf

HP 3PAR Health Check Service - The HP 3PAR Health Check service is delivered as a single engagement, providing data collection, analysis, report creation, and a briefing session concerning the performance of a single HP 3PAR StoreServ Storage System. This health check service is best for HP 3PAR StoreServ Storage Systems that have been installed and are in normal production mode. It can also be used to establish a baseline for future reference to improve the effective use of your storage system.
http://h20195.www2.hp.com/V2/GetPDF.aspx/4AA4-3225ENW.pdf

HP 3PAR Storage Rebalance Service - The HP 3PAR Rebalance Service helps balance data across your HP 3PAR StoreServ Storage to take advantage of the capabilities of the array architecture. The service provides analysis, planning, and implementation of data movement and/or physical movement of drive magazines within the array.
http://h20195.www2.hp.com/V2/GetPDF.aspx/4AA4-0280ENW.pdf

HP 3PAR Adaptive Optimization I&S - For Adaptive Optimization, design, creation, and implementation of Adaptive Optimization policies; policy design, creation, and implementation can be accommodated using the HP 3PAR Adaptive Optimization Policy Implementation Service, which is available via HP Proactive Select.
The Service has further been described in the HP 3PAR 7000 Software Installation and Startup Service Datasheet: http://h20195.www2.hp.com/V2/GetPDF.aspx/4AA4-2569ENW.pdf

Service and Support, HP Care Pack, and Warranty Information

HP 3PAR Dynamic Optimization I&S - For Dynamic Optimization, implementation by HP of tasks required to balance the HP 3PAR storage system; the service provides the Customer with a product overview, advice, and suggested strategies for use of Dynamic Optimization, and extended/ongoing analysis and/or implementation of Dynamic Optimization strategies can be accommodated at additional cost

The Service has further been described in the HP 3PAR 7000 Software Installation and Startup Service Datasheet: http://h20195.www2.hp.com/V2/GetPDF.aspx/4AA4-2569ENW.pdf

Get connected and get back to business

HP Storage Technology Services provide the path to get your HP Storage solutions and your business connected to HP. Once connected, our experts are able to scan your system and run health checks, then use that data to create personalized reports and recommendations for actions to take to prevent problems and downtime.

For more information   www.hp.com/services/storage

To learn more on HP Storage Services, please contact your HP sales representative or HP Authorized Channel Partner

HP Care Pack Services are sold by HP and HP Authorized Service Partners:

- Services for customers purchasing from HP or an enterprise reseller are quoted using HP order configuration tools.
- Customers purchasing from a commercial reseller can find HP Care Pack Services at: www.hp.com/go/lookuptool

Step 1 - Choose a Base configuration

HP 3PAR StoreServ 7000 configurations start with the selection of the Base. The Base includes controller nodes, bays for small form factor drives, and PCIe slots for host adapter cards. SAN Kits are also considered base configurations. The SAN Kits simplify ordering for SAN configurations with the array and extend the switch warranty to 3-years by including switches with an HP 3PAR StoreServ 7000 Storage Base.

HP 3PAR StoreServ 7000 Base Configurations

Factory Integrated in HP rack	HP 3PAR StoreServ 7200c 2-node Storage Base	QR511A
	HP 3PAR StoreServ 7400c 2-node Storage Base	QR512A
	HP 3PAR StoreServ 7400c 4-node Storage Base	QR513A
	HP 3PAR StoreServ 7440c 2-node Storage Base	E7X76A
	HP 3PAR StoreServ 7440c 4-node Storage Base	E7X81A
	HP 3PAR StoreServ 7200 2-node Storage Base	QR482A
	HP 3PAR StoreServ 7400 2-node Storage Base	QR483A
	HP 3PAR StoreServ 7400 4-node Storage Base	QR485A
Factory Integrated in HP rack in a Storage Centric Configuration	HP 3PAR StoreServ 7200c 2-node Storage Base for Storage Centric Rack	E7X65A
	HP 3PAR StoreServ 7400c 2-node Storage Base for Storage Centric Rack	E7X69A
	HP 3PAR StoreServ 7400c 4-node Storage Base for Storage Centric Rack	E7X73A
	HP 3PAR StoreServ 7440c 2-node Storage Base for Storage Centric Rack	E7X78A
	HP 3PAR StoreServ 7440c 4-node Storage Base for Storage Centric Rack	E7X84A
	HP 3PAR StoreServ 7200 2-node Storage Base for Storage Centric Rack	E7W49A
	HP 3PAR StoreServ 7400 2-node Storage Base for Storage Centric Rack	E7W50A
	HP 3PAR StoreServ 7400 4-node Storage Base for Storage Centric Rack	E7W51A
Field Integrated	HP 3PAR StoreServ 7200c 2-node Field Integrated Storage Base	E7X67A
	HP 3PAR StoreServ 7400c 2-node Field Integrated Storage Base	E7X71A
	HP 3PAR StoreServ 7400c 4-node Field Integrated Storage Base	E7X75A
	HP 3PAR StoreServ 7440c 2-node Field Integrated Storage Base	E7X80A
	HP 3PAR StoreServ 7440c 4-node Field Integrated Storage Base	E7X86A
	HP 3PAR StoreServ 7200 2-node Storage Base	QR482A
	HP 3PAR StoreServ 7400 2-node Storage Base	QR483A
	HP 3PAR StoreServ 7400 4-node Storage Base	QR485A
	HP 3PAR StoreServ 7200 Storage System Flash Starter Kit	K2Q09A
	HP 3PAR StoreServ 7200 8Gb H-series Base System SAN Kit	QR488A
	HP 3PAR StoreServ 7200 16Gb Virtualization Base System SAN Kit	QR489A
	HP 3PAR StoreServ 7400 16Gb Virtualization Base System SAN Kit	QR510A

- A minimum of one (1) configuration base must be ordered.
- The HP 3PAR StoreServ 7200c base configuration includes (2) controller nodes, 40 GB of cache, (24) small form factor drive bays, (4) built-in 8 Gb/sec FC ports, (4) 8Gb shortwave FC SFP, (2) PCIe adapter slots for host adapter cards - one slot per node, (4) 2m SAS cables, (1) mounting rail kit, and power cords.
- The HP 3PAR StoreServ 7400c 2N base configuration includes (2)

Configuration Information

controller nodes, 48 GB of cache, (24) small form factor drive bays, (4) built-in 8 Gb/sec FC ports, (4) 8Gb shortwave FC SFP, (2) PCIe adapter slots for host adapter cards - one slot per node, (4) 2m SAS cables, (2) 1U rack filler panels to reserve 2U of rack space above the 2-node Storage Base for a future upgrade to a 4-node configuration, (1) mounting rail kit, and power cords.

- The HP 3PAR StoreServ 7400c 4N base configuration includes (4) controller nodes, 96 GB of cache, (48) small form factor drive bays, (8) built-in 8 Gb/sec FC ports, (8) 8Gb shortwave FC SFP, (4) PCIe adapter slots for host adapter cards - one slot per node, (8) 2m SAS cables, (4) node link cables, (2) mounting rail kits, and power cords.

- The HP 3PAR StoreServ 7440c 2N base configuration includes (2) controller nodes, 96 GB of cache, (24) small form factor drive bays, (4) built-in 8 Gb/sec FC ports, (4) 8Gb shortwave FC SFP, (2) PCIe adapter slots for host adapter cards - one slot per node, (4) 2m SAS cables, (2) 1U rack filler panels to reserve 2U of rack space above the 2-node Storage Base for a future upgrade to a 4-node configuration, (1) mounting rail kit, and power cords.

- The HP 3PAR StoreServ 7440c 4N base configuration includes (4) controller nodes, 192 GB of cache, (48) small form factor drive bays, (8) built-in 8 Gb/sec FC ports, (8) 8Gb shortwave FC SFP, (4) PCIe adapter slots for host adapter cards - one slot per node, (8) 2m SAS cables, (4) node link cables, (2) mounting rail kits, and power cords.

- The HP 3PAR StoreServ 7200 base configuration includes (2) controller nodes, 24 GB of cache, (24) small form factor drive bays, (4) built-in 8 Gb/sec FC ports, (4) 8Gb shortwave FC SFP, (2) PCIe adapter slots for host adapter cards - one slot per node, (4) 2m SAS cables, (1) mounting rail kit, and power cords.

- The HP 3PAR StoreServ 7400 2-node base configuration includes (2) controller nodes, 32 GB of cache, (24) small form factor drive bays, (4) built-in 8 Gb/sec FC ports, (4) 8Gb shortwave FC SFP, (2) PCIe adapter slots for host adapter cards - one slot per node, (4) 2m SAS cables, (2) 1U rack filler panels to reserve 2U of rack space above the 2-node Storage Base for a future upgrade to a 4-node configuration, (1) mounting rail kit, and power cords.

- The HP 3PAR StoreServ 7400 4-node base configuration includes (4) controller nodes, 64 GB of cache, (48) small form factor drive bays, (8) built-in 8 Gb/sec FC ports, (8) 8Gb shortwave FC SFP, (4) PCIe adapter slots for host adapter cards - one slot per node, (8) 2m SAS cables, (4) node link cables, (2) mounting rail kits, and power cords.

- The HP 3PAR StoreServ 7200 8Gb H-Series Base System SAN Kit includes the QR482A HP 3PAR StoreServ 7200 2-node Storage Base, (2) BK780B HP SN6000 Stackable 8 Gb/s 8 Active Port Single Power Supply FC Switches and (4) TA821A 4-port FC Switch Upgrade LTUs. Each switch comes with serial cable, mounting rail kits, power cords, and SAN Connection Manager software entitlement. Also included is a 3 year warranty for the switches.
  NOTE: Requires optical transceivers and switch cabling which must be supplied separately.

- The HP 3PAR StoreServ 7200 16Gb Virtualization Base System SAN Kit includes the HP 3PAR StoreServ 7200 2-node Storage Base and (2) QK753B HP SN6000B 16 Gb/s 48-port/24-port Active FC Switches - dual power. Each switch comes with rack mount kit (including rails, mounting hardware, and plenum), RJ-45 serial cable with adaptor for RJ-45 to DB9, power cords, and SAN Network Advisor DVD. Also included is a 3 year warranty for the switches.
  NOTE: Requires optical transceivers and switch cabling which must be supplied separately.

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Configuration Information

- The HP 3PAR StoreServ 7400 16Gb Virtualization Base System SAN Kit includes the HP 3PAR StoreServ 7400 2-node Storage Base and (2) QK753B HP SN6000B 16 Gb/s 48-port/24-port Active FC Switches -dual power. Each switch comes with rack mount kit (including rails, mounting hardware, and plenum), RJ-45 serial cable with adaptor for RJ-45 to DB9, power cords, and SAN Network Advisor DVD. Also included is a 3 year warranty for the switches.
  NOTE: Requires optical transceivers and switch cabling which must be supplied separately.
- All base configurations include built-in Gigabit Ethernet ports for management and Remote Copy over IP.

*Storage Centric Configuration

- The Storage Centric rack versions of HP 3PAR StoreServ 7200 and 7400 are for CTO (factory Configure-To-Order) only. With a Storage Centric configuration, the storage system gets placed in the center of the rack so that future expansion of that storage system becomes easier.
- In Storage Centric configurations, non-3PAR components, with the exception of certain StoreFabric Storage Networking switches, if added to the same order, get placed in a separate rack.

The following diagrams show a HP 3PAR StoreServ 7400c 4N Storage System in Storage Centric and non-Storage Centric configurations

Configuration Information
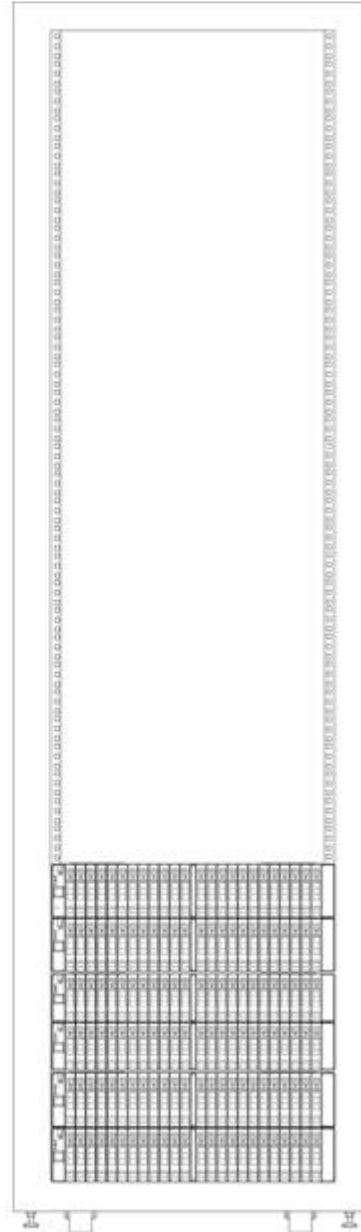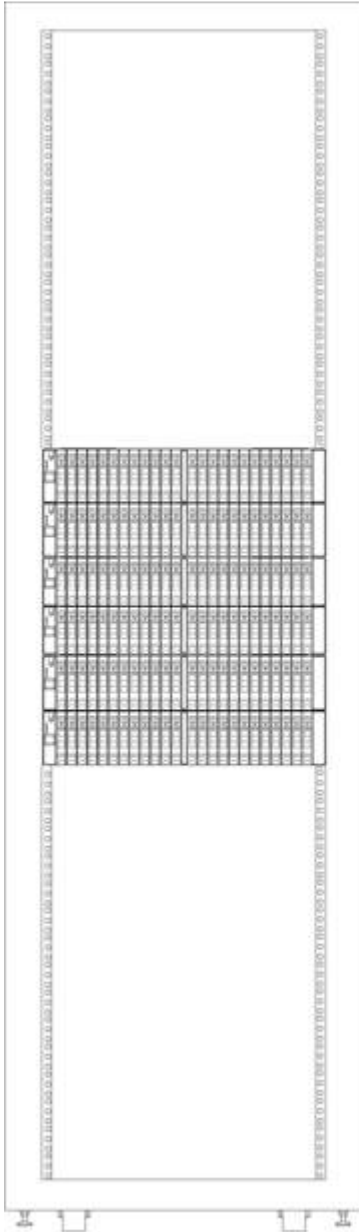
StoreServ 7400c 4N Storage system in a storage centric configuration in a HP Intelligent Series Rack

StoreServ 7400c 4N Storage system in a non-storage centric configuration in a HP Intelligent Series Rack

Configuration Information

HP 3PAR StoreServ 7000 Upgrade Controller Node Pair

Use the HP 3PAR StoreServ 7400c Upgrade Node Pair to convert an existing previously installed HP 3PAR StoreServ 7400c 2N Storage Base into a 4-node configuration.

HP 3PAR StoreServ 7400c Upgrade Node Pair   QR515A

- Used to upgrade the E7X71A HP 3PAR StoreServ 7400c 2N Storage Base to a 4-node configuration.
- One (1) pair of controller nodes beyond the base configuration is supported on the 3PAR StoreServ 7400c.
- The 3PAR StoreServ 7400c Upgrade Node Pair includes (2) controller nodes, 48 GB of cache, (24) small form factor drive bays, (4) built-in 8 Gb/sec FC ports, (4) 8Gb shortwave FC SFP, (2) PCIe adapter slots for host adapter cards - one slot per node, (4) 2m SAS cables, (4) node link cables, (1) mounting rail kit, and power cords
- The upgrade node pair includes built-in Gigabit Ethernet ports for management and Remote Copy over IP.

Use the HP 3PAR StoreServ 7440c Upgrade Node Pair to convert an existing previously installed HP 3PAR StoreServ 7440c 2N Storage Base into a 4-node configuration.

HP 3PAR StoreServ 7440c Upgrade Node Pair   E7X83A

- Used to upgrade the E7X80A HP 3PAR StoreServ 7440c 2N Storage Base to a 4-node configuration.
- One (1) pair of controller nodes beyond the base configuration is supported on the 3PAR StoreServ 7440c.
- The 3PAR StoreServ 7440c Upgrade Node Pair includes (2) controller nodes, 48 GB of cache, (24) small form factor drive bays, (4) built-in 8 Gb/sec FC ports, (4) 8Gb shortwave FC SFP, (2) PCIe adapter slots for host adapter cards - one slot per node, (4) 2m SAS cables, (4) node link cables, (1) mounting rail kit, and power cords
- The upgrade node pair includes built-in Gigabit Ethernet ports for management and Remote Copy over IP.

Use the HP 3PAR StoreServ 7400 Upgrade Node Pair to convert an existing previously installed HP 3PAR StoreServ 7400 2N Storage Base into a 4-node configuration.

HP 3PAR StoreServ 7400 Upgrade Node Pair   QR484A

- Used to upgrade the QR483A HP 3PAR StoreServ 7400 2N Storage Base to a 4-node configuration.
- One (1) pair of controller nodes beyond the base configuration is supported on the 3PAR StoreServ 7400.
- The 3PAR StoreServ 7400 Upgrade Node Pair includes (2) controller nodes, 32 GB of cache, (24) small form factor drive bays, (4) built-in 8 Gb/sec FC ports, (4) 8Gb shortwave FC SFP, (2) PCIe adapter slots for host adapter cards - one slot per node, (4) 2m SAS cables, (4) node link cables, (1) mounting rail kit, and power cords
- The upgrade node pair includes built-in Gigabit Ethernet ports for management and Remote Copy over IP.

Step 2 - Choose Host Adapter

Host adapters can be ordered separately to be installed in the field or they can be factory configured into controller nodes. Host adapter cards provide the array with additional FC ports or with 10Gb/sec iSCSI/FCoE ports. The additional FC ports can be used for connection to hosts or used to connect to other HP 3PAR StoreServ Storage systems in a Remote Copy relationship. The iSCSI/FCoE ports permit host connection in iSCSI and FCoE environments.
NOTE: Ethernet Adapters can be used only with the HP 3PAR File Persona Software Suite for File services connectivity.

Configuration Information

HP 3PAR StoreServ 7000 Host Adapters

HP 3PAR StoreServ 7000 4-port 8Gb/sec Fibre Channel Adapter	QR486A
HP 3PAR StoreServ 7000 2-port 10Gb/sec iSCSI/FCoE Adapter	QR487A
HP 3PAR StoreServ 7000 2-port 16Gb/s Fibre Channel Adapter	E7X47A
HP 3PAR StoreServ 7000 2-port 10Gb/s Ethernet Adapter	E7X96A
HP 3PAR StoreServ 7000 4-port 1Gb/s Ethernet Adapter	E7X97A

- Fibre Channel (QR486A, E7X47A) and iSCSI/FCoE Adapters (QR487A) are used in the Storage Base products (E7X67A, E7X71A, E7X75A, E7X80A, E7X86A, QR482A, QR483A, and QR485A) and the Upgrade Node Pair (QR515A, E7X83A, and QR484A).
- Ethernet Adapters (E7X96A, E7X97A) can be used exclusively with the HP 3PAR File Persona Software Suite on the HP 3PAR StoreServ 7200c, 7400c, and 7440c Storage Base products (E7X67A, E7X71A, E7X75A, E7X80A, E7X86A) and Upgrade Node Pair (QR515A, E7X83A).
- The 10Gb/s Ethernet Adapter (E7X96A) includes the the 10Gb/s SR SFP+
- Direct Attach Copper (DAC) is not supported with the 10Gb/s Ethernet Adapter (E7X96A)
- Because the Storage Base products and the Upgrade Node Pair include built-in FC ports, the host adapter cards are optional.
- QR486A and QR487A include one adapter card each. Adapters must be purchased in pairs.
- The QR486A includes (4) 8 Gb/s shortwave FC SFPs. The QR487A includes (2) 10 Gb/s SFPs. The E7X47A includes (2) 16 Gb/s shortwave FC SFPs.
- Each node in a node pair (a node pair is composed of the two controller nodes in a single 2U enclosure) must have the same number and type of adapters. FC, iSCSI/FCoE, and GbE adapters may not be intermixed in a node pair.
- The 4 ports of the FC adapter can be individually configured to connect to a host or to a remote array in an RC configuration.
- The two ports of the iSCSI/FCoE adapter can be individually configured by the user as iSCSI or FCoE.

Product	Nodes	Adapter Configurations permitted on all HP 3PAR StoreServ 7000 systems								
		A*	B*	C*	D	E	F*	G	H*	I*
E7X67A E7X71A E7X80A QR482A QR483A	Node 0	Empty	FC	iSCSI/FCoE						
	Node 1	Empty	FC	iSCSI/FCoE						
QR515A E7X83A QR484A	Node 2	Empty	FC	iSCSI/FCoE						
	Node 3	Empty	FC	iSCSI/FCoE						
E7X75A E7X86A QR485A	Node 0	Empty	FC	iSCSI/FCoE	Empty	Empty	FC	iSCSI/FCoE	FC	iSCSI/FCoE
	Node 1	Empty	FC	iSCSI/FCoE	Empty	Empty	FC	iSCSI/FCoE	FC	iSCSI/FCoE
	Node 2	Empty	Empty	Empty	FC	iSCSI/FCoE	iSCSI/FCoE	FC	FC	iSCSI/FCoE
	Node 3	Empty	Empty	Empty	FC	iSCSI/FCoE	iSCSI/FCoE	FC	FC	iSCSI/FCoE

* Factory default configurations for given quantities of adapters.

NOTE: If the configuration includes Remote Copy over Fibre Channel it is recommended that optional Fiber Channel HBAs are purchased as the built in ports will not offer sufficient connectivity.

Configuration Information

Product	Nodes	A*	B*	C	D	E	F*	G*	H*
E7X67A E7X71A E7X80A	Node 0 Node 1	Empty Empty	Eth Eth						
QR515A E7X83A	Node 2 Node 3	Empty Empty	Eth Eth						
E7X75A E7X86A	Node 0 Node 1 Node 2 Node 3	Empty Empty Empty Empty	Eth Eth Empty Empty	Empty Empty Eth Eth	Eth Eth FC FC	Eth Eth iSCSI/FCoE iSCSI/FCoE	FC FC Eth Eth	iSCSI/FCoE iSCSI/FCoE Eth Eth	Eth Eth Eth Eth

* Factory default configurations for given quantities of adapters.

NOTE: If the configuration includes Remote Copy over Fibre Channel it is recommended that optional Fiber Channel HBAs are purchased as the built in ports will not offer sufficient connectivity.

NOTE: Ethernet Adapters can be used only with the HP 3PAR File Persona Software Suite for File services connectivity available on HP 3PAR StoreServ 7200c, 7400c, 7440c

Step 3 - Choose Drive Enclosures

Add drive enclosures to expand the configuration and to add large form factor drives to the configuration. Drive enclosures can be ordered separately for installation in the field, or they can be factory configured in a rack. Drive enclosures are optional. Because the Storage Base products and the Upgrade Node Pair include small form factor drive bays, the minimum configuration does not require any additional drive enclosures. For larger configurations, attach drive enclosures. Each drive enclosure includes 24 drive bays. The HP 3PAR StoreServ 7200 and 7200c support up to nine (9) added drive enclosures. The HP 3PAR StoreServ 7400 supports up to eighteen (18) added drive enclosures. The HP 3PAR StoreServ 7400c supports up to twenty-two (22) added drive enclosures. The HP 3PAR StoreServ 7440c supports up to thirty-eight (38) added drive enclosures. The two drive enclosure types can be intermixed in a single array.

HP M6710 2.5 inch 2U SAS Drive Enclosure
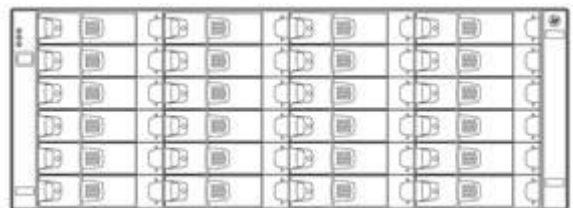
HP M6720 3.5 inch 4U SAS Drive Enclosure

Drive Enclosures

HP M6710 2.5 inch 2U SAS Drive Enclosure — QR490A

HP M6720 3.5 inch 4U SAS Drive Enclosure — QR491A

HP M6710 SFF(2.5in) SAS Field Integrated Drive Enclosure — E7X64A

HP M6720 LFF(3.5in) SAS Field Integrated Drive Enclosure — E7X66A

- Each drive enclosure includes 24 drive bays, (2) IO modules, (2) 1m SAS cables, (1) mounting rail kit, and power cables.
- The M6710 2U drive enclosure provides 24 SFF drive bays arranged in a single row.
- The M6720 4U drive enclosure provides 24 LFF drive bays, arranged in four (4) columns of six (6) slots each.
- Minimum of zero (0) drive enclosures, maximum of five (5) attached to QR482A.
- Minimum of zero (0) drive enclosures, maximum of nine (9) attached to QR483A.
- Minimum of zero (0) drive enclosures, maximum of (18) attached to

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QR485A.
- Drive enclosures are connected in daisy chains from the SAS ports of the controller nodes.
- The best practice is to balance the drive enclosures across the SAS ports, remembering that the controller node enclosures include (24) drives attached to the SAS port labeled DP-1.
- The best practice when including LFF and SFF drive enclosures in the same array is to arrange them in the rack so that all of the 2U enclosures that belong to one node pair are together and all of the 4U enclosures for that node pair are together. When connecting the backend SAS cables, intermix the M6710 and M6720 enclosures on each SAS port.
- With a four node configuration, the best practice is to attach the same number of drive enclosures to each node pair.
- To achieve highest availability in multi-enclosure configurations, configure a minimum of two (2) enclosures per node pair for RAID 1, a minimum of four (4) enclosures per node pair if RAID 5 is included, and a minimum of three (3) enclosures per node pair if RAID 6 is included. Include enclosures containing node pairs in the count with the M6710 enclosures.
- Drive bays that are not filled with a drive must be covered with a drive blank to preserve proper air flow.
- If future capacity upgrades are expected, include enough Drive Enclosures so that there are some empty bays in each enclosure after all drives are added.

Step 4 - Choose Drives

Drives are orderable at the time the array is purchased, or can be added in the future when additional capacity is required. Unlike other HP 3PAR StoreServ Storage systems where drives are sold in magazines of four, HP 3PAR StoreServ 7000 drives are sold as single drives. Note that these drives are only compatible with the M6710 and M6720 drive enclosures.

HP 3PAR StoreServ 7000 SAS Drives

HP 3PAR SSDs	HP 3PAR StoreServ M6710 480GB 6G SAS SFF(2.5in) MLC 5yr Wty Solid State Drive	E7W54B
	HP 3PAR StoreServ M6720 480GB 6G SAS LFF(3.5in) MLC 5yr Wty Solid State Drive	E7W55B
	HP 3PAR StoreServ M6710 480GB 6G SAS SFF(2.5in) cMLC Solid State Drive	E7Y55A
	HP 3PAR StoreServ M6720 480GB 6G SAS LFF(3.5in) cMLC Solid State Drive	E7Y56A
	HP 3PAR StoreServ M6710 920GB 6G SAS SFF(2.5in) MLC 5yr Wty Solid State Drive	E7W24B
	HP 3PAR StoreServ M6720 920GB 6G SAS LFF(3.5in) MLC 5yr Wty Solid State Drive	E7W25B
	HP 3PAR StoreServ M6710 1.92TB 6G SAS SFF(2.5in) cMLC Solid State Drive	E7Y57A
	HP 3PAR StoreServ M6720 1.92TB 6G SAS LFF(3.5in) cMLC Solid State Drive	E7Y58A
	HP 3PAR StoreServ M6710 3.84TB 6G SAS SFF(2.5in) cMLC Solid State Drive	K2Q91A
HP 3PAR SAS HDDs (Performance HDDs)	HP M6710 300GB 6G SAS 15K rpm SFF (2.5-inch) Hard Drive	QR492A
	HP M6710 450GB 6G SAS 10K rpm SFF (2.5-inch) Hard Drive	QR494A
	HP 3PAR StoreServ M6710 600GB 6Gb SAS 10K SFF(2.5-inch) HDD	C8R72A
	HP 3PAR StoreServ M6710 600GB 6G SAS 15K SFF(2.5in) Hard Drive	K0F23A
	HP M6710 900GB 6G SAS 10K rpm SFF (2.5-inch) Hard Drive	QR496A
	HP 3PAR StoreServ M6710 1.2TB 6G SAS 10K SFF(2.5in) Hard Drive	E7X49A

Configuration Information

	HP 3PAR StoreServ M6710 1.8TB 6G SAS 10K SFF(2.5in) Hard Drive	K0F26A
HP 3PAR NL SAS HDDs	HP 3PAR StoreServ M6710 1TB 6Gb SAS 7.2K SFF(2.5-inch) Nearline HDD	QR498A
	HP M6720 2TB 6G SAS 7.2K LFF (3.5-inch) Nearline Hard Drive	QR499A
	HP 3PAR StoreServ M6710 2TB 6G SAS 7.2K SFF(2.5in) Nearline HDD	M0S91A
	HP M6720 3TB 6G SAS 7.2K LFF (3.5-inch) Nearline Hard Drive	QR500A
	HP 3PAR StoreServ M6720 4TB 6G 7.2K LFF(3.5-in) SAS Nearline Hard Drive	H6Z87A
	HP 3PAR StoreServ M6720 6TB 6G SAS 7.2K LFF(3.5in) Nearline Hard Drive	K0F28A

- For each drive type installed in the array, the minimum recommended initial quantity is
    - SSD and SAS performance HDDs - eight (8) drives* per node pair
    - Nearline HDDs - twelve (12) drives per node pair
- Minimum upgrade quantity is 4 drives per node pair or 2 drives per enclosure, whichever is larger. Best practice is to run Autonomic Rebalance (also known as tunesys) after adding the drives.
- RAID 6 is strongly recommended for Nearline drives.
- All node enclosures must contain either zero (0) or an even number of drives. All drive enclosures must contain an even number of drives, with a minimum of two.
- Minimum raw capacity is 1.2TB per node pair.
- A best practice is to add equal numbers of drives to all enclosures compatible with the drive type being added.
- With a four node configuration, the best practice is to attach the same number and type of drives to each node pair.
- Small Form Factor (SFF)-specific configuration practices
    - SFF drives may be loaded into the Storage Base enclosures, the Upgrade Node Pair enclosure and the M6710 drive enclosure.
    - SFF drives must be loaded in pairs of identical drives, beginning with the leftmost slot, slot 0, and filling to the right, leaving no empty slots between drives.
- Large Form Factor (LFF)-specific configuration practices
    - LFF drives may be loaded into the M6720 drive enclosure.
    - LFF drives must be loaded in pairs of identical drives starting at the bottom of a column, leaving no empty slots between drives in the column. Columns of drives in the M6720 enclosure must be of the same type (SSD or NL) and, for HDDs, the same rotational speed. Drives of different types may not be mixed in a single column. It is permitted to have empty columns between columns containing drives. Different columns do not have to contain the same number of drives.
    - An all LFF drive configuration is permitted, leaving the Storage Base Enclosure empty.
- SSD specific configuration practices
    - SSD-only configurations are permitted.
    - Maximum of 120 SSDs per node pair.
    - The SFF and LFF SSDs allow the user to create SSD volumes that stripe across SFF and LFF enclosures.
- E7Y55A and E7Y56A (480GB cMLC SSD) don't support Adaptive Flash Cache
- * 8 drives support RAID 1 and RAID 5. For RAID 6 choose 12 drives.

HP 3PAR Encryption SSD/HDD/LTU	HP 3PAR StoreServ M6710 920GB 6G SAS SFF(2.5in) FIPS Encrypted MLC Solid State Drive	E7Y52A
	HP 3PAR StoreServ M6710 1.92TB 6G SAS SFF(2.5in) FIPS Encrypted cMLC Solid State Drive	K0F27A

Configuration Information

HP 3PAR StoreServ M6710 600GB 6G SAS 15K SFF(2.5in) FIPS Encrypted Hard Drive	K0F24A
HP 3PAR StoreServ M6710 450GB 6G SAS 10K SFF(2.5in) FIPS Encryption Hard Drive	C8R59B
HP 3PAR StoreServ M6710 900GB 6G SAS 10K SFF(2.5in) FIPS Encryption Hard Drive	C8R60B
HP 3PAR StoreServ M6710 1.2TB 6G SAS 10K SFF(2.5in) FIPS Encryption Hard Drive	K0F25A
HP 3PAR StoreServ M6710 1TB 6Gb SAS 7.2K SFF(2.5-inch) Nearline Encryption HDD	C8R58A
HP 3PAR StoreServ M6720 2TB 6G SAS 7.2K LFF(3.5in) Nearline FIPS Encryption HDD	H6Z84A
HP 3PAR StoreServ M6720 4TB 6G SAS 7.2K LFF(3.5in) Nearline FIPS Encryption HDD	H6Z86A
HP 3PAR StoreServ M6720 6TB 6G SAS 7.2K LFF(3.5in) Nearline FIPS Encryption HDD	K0F29A
HP 3PAR StoreServ 7200 Data at Rest Encryption LTU	BC983A
HP 3PAR StoreServ 7200 Data at Rest Encryption E-LTU	BC983AAE
HP 3PAR StoreServ 7400 Data at Rest Encryption LTU	BC984A
HP 3PAR StoreServ 7400 Data at Rest Encryption E-LTU	BC984AAE
HP 3PAR 7440c Data Encryption LTU	BD406A
HP 3PAR 7440c Data Encryption E-LTU	BD406AAE

Notes:

- All drives within a 3PAR StoreServ encrypted array must be self-encrypted devices. There cannot be a mixture of encrypted drives and non-encrypted drives within the same encrypted array.
- Customers have option to turn on encryption, non-disruptively, at any time; even after data has been written to the system.
- * FIPS 140-2 Validated Self-Encrypting Drives (SEDs) have been certified by the U.S. National Institute of Standards and Technology (NIST) and Canadian Communications Security Establishment (CSE) as meeting the Level 2 security requirements for cryptographic modules as defined in the Federal Information Processing Standards (FIPS) 140-2 Publication *
- Strengthen the DAR solution with an optional FIPS 140-2 Level-2 validated external key manager. Supports KMIP 1.1 for key management communications
- Supports HP Enterprise Secure Key Manager 4.0 and SafeNet KeySecure k460 and k150 centralized key management
- A data encryption license (LTU) is required to enable encryption on the array. One encryption license is required for each encrypted array.
- Once encryption is enabled on the HP 3PAR StoreServ Storage, it cannot be disabled.
- The local key manager is included in the HP 3PAR OS. There is not a separately orderable part number for the local key manager.
- The HP 3PAR 7200/7400 Data at Rest Encryption LTU are valid for both the HP 3PAR StoreServ 7200/7400 and HP 3PAR StoreServ 7200c/7400c Storage systems.
- The HP 3PAR 7440c Data at Rest Encryption LTU are valid only for the HP 3PAR StoreServ 7440c Storage system.

Step 5 - Choose Service Processor Implementation

Configuration Information

The HP 3PAR Service Processor remotely monitors the HP 3PAR StoreServ 7000 and enables remote servicing of the array. The key capabilities of the Service Processor are to:

- Enable rapid, proactive responses to issues
- Provide a secure communication channel between the customer's data center and HP 3PAR Central for:
  - Remote Online Software Upgrade --Upgrade software with no application disruption
  - o Remote Diagnostics --Maintain key diagnostic information centrally on a historical basis
  - Remote Serviceability--Provide fast predictive response and remediation

Each HP 3PAR StoreServ 7000 requires its own Service Processor. The Service Processor functions as the communication interface between a customer's IP network and HP 3PAR Central by managing all service-related communications. The Service Processor leverages the industry-standard HTTP over Secure Sockets Layer (HTTPS) protocol to secure and encrypt data communication.

The Service Processor can be deployed either as a virtual Service Processor (VSP) or a physical Service Processor. A virtual Service Processor is included free with the base HP 3PAR Operating System. The virtual Service Processor can be installed on a customer-provided VMware or Microsoft Hyper-V system that meets the following specifications:

- Virtualization operating system
  - VMware vSphere ESXi 4.1, 5.0, 5.1, 5.5
  - Microsoft Hyper-V Server 2008 R2, 2012 or 2012 R2
- Server features
  - 2 GB RAM (minimum for the VSP Virtual Machine)
  - 256 GB free disk space (minimum for the VSP Virtual Machine)
    NOTE: VSP storage must not reside on the array it is managing.
  - DVD ROM or DVD RW
  - 1 Gb Ethernet port
  - For VSP on VMware, the server must be listed in the VMware Compatibility Guide
  - For VSP on Hyper-V, the server must be listed on the Windows Server Catalog

If a physical Service Processor is desired, order the following product.

Physical Service Processor

HP 3PAR 7000 Service Processor   QR516B

The physical Service Processor is a dedicated storage appliance located within the storage rack providing close proximity to the HP 3PAR StoreServ 7000 Storage. The physical Service Processor is fully supported and maintained by HP Services. The physical Service Processor has serial port connectivity that provides maintenance access for trouble shooting capabilities. If a VMware server is not available to run the virtual Service Processor, the physical Service Processor is the alternative choice for remote monitoring and remote service.

HP 3PAR Policy Server

HP 3PAR Policy Server works to implement customer-configurable remote service access policies. Installed on a customer-provided host, Policy Server provides the customer with ultimate flexibility and control to allow or deny outbound communication or remote service connections to and from an HP 3PAR StoreServ Storage system. Policy Server also serves as the centralized point for collecting and storing audit logs of all diagnostic data transfers and authorized remote service connections to and from all configured HP 3PAR Storage systems. HP 3PAR Policy Server provides the

- The customer has complete control over policy administration.
- A centralized policy administration for all HP 3PAR Storage systems is provided.
- A centralized audit log to facilitate security audits is provided.
- Up to 100 3PAR systems can be managed with a single 3PAR Policy Server license
- Policy Server 6.1.5 can be run on a Virtual Machine. For the latest information on supported hypervisors, refer to Single Point of Connectivity Knowledge for HP Storage Products (SPOCK): http://www.hp.com/storage/spock

HP 3PAR Policy Manager Software LTU   TE400B

Configuration Information

Step 6 - Choose Cables for host connection and remote copy connection

The optical cables listed below support 8 Gb/s FC and 10 Gb/s iSCSI/FCoE for host connect (FC and iSCSI/FCoE) and for Remote Copy connections (FC only). The copper1GbE cables are used for Remote Copy over IP and for connection to the Management Port.

Cables

FC and 10GbE	HP 3PAR 4m 50/125 (LC-LC) Fiber Cable	QL281B
	HP 3PAR 6m 50/125 (LC-LC) Fiber Cable	QR631A
	HP 3PAR 10m 50/125 (LC-LC) Fiber Cable	QL266B
	HP 3PAR 25m 50/125 (LC-LC) Fiber Cable	QR593A
	HP 3PAR 50m 50/125 (LC-LC) Fiber Cable	QL267B
	HP 3PAR 100m 50/125 (LC-LC) Fiber Cable	QL268B
	HP Premier Flex LC/LC Multi-mode OM4 2 fiber 1m Cable	QK732A
	HP Premier Flex LC/LC Multi-mode OM4 2 fiber 2m Cable	QK733A
	HP Premier Flex LC/LC Multi-mode OM4 2 fiber 5m Cable	QK734A
	HP Premier Flex LC/LC Multi-mode OM4 2 fiber 15m Cable	QK735A
	HP Premier Flex LC/LC Multi-mode OM4 2 fiber 30m Cable	QK736A
	HP Premier Flex LC/LC Multi-mode OM4 2 fiber 50m Cable	QK737A
1GbE	HP 4.3m/14ft CAT5 RJ45 M/M Ethernet Cable	C7536A
	HP 7.6m/25ft CAT5 RJ45 M/M Ethernet Cable	C7537A
	HP 15.2m/50ft CAT5 RJ45 M/M Ethernet Cable	C7542A
Direct Attach Copper Cables*	**HP 3COM**	
	HP X240 10G SFP+ to SFP+ 0.65m Direct Attach Copper Cable	JD095C
	HP X240 10G SFP+ to SFP+ 1.2m Direct Attach Copper Cable	JD096C
	HP X240 10G SFP+ to SFP+ 3m Direct Attach Copper Cable	JD097C
	HP X240 10G SFP+ to SFP+ 5m Direct Attach Copper Cable	JG081C
	HP X240 10G SFP+ SFP+ 7m Direct Attach Copper Cable	JC784C
	HP ProCurve	
	HP X242 10G SFP+ to SFP+ 1m Direct Attach Copper Cable	J9281B
	HP X242 10G SFP+ to SFP+ 3m Direct Attach Copper Cable	J9283B
	HP X242 10G SFP+ to SFP+ 7m Direct Attach Copper Cable	J9285B
	HP X242 10G SFP+ to SFP+ 10m Direct Attach Copper Cable	J9286B
	HP X242 10G SFP+ to SFP+ 15m Direct Attach Copper Cable	J9287B
	Brocade	
	HP B-series SFP+ to SFP+ Active Copper 1.0m Direct Attach Cable	AP818A
	HP B-series SFP+ to SFP+ Active Copper 3.0m Direct Attach Cable	AP819A
	HP B-series SFP+ to SFP+ Active Copper 5.0m Direct Attach Cable	AP820A
	Cisco	
	HP C-series SFP+ to SFP+ Active Copper 7.0m Direct Attach Cable	QK701A
	NOTE: The Direct Attach Support is available only for iSCSI protocol and is available only with HP 3PAR OS version 3.1.3 and later	

Step 7 - Choose Racking Options

Configuration Information

The HP 3PAR StoreServ 7000 is compatible with most industry standard 4-post EIA 19 inch racks with square mounting holes, including the HP Intelligent Series Rack and the HP 10000 G2 Series Rack. The HP 3PAR StoreServ 7000 can be factory configured and shipped in a rack or shipped without a rack for field integration into an existing rack. The rack used for factory integration is the HP Intelligent Series Rack.

HP Rack and Rack Options

Factory Integration	Select a rack to house your HP 3PAR StoreServ 7000. **NOTE:** The HP Intelligent Series Rack is the only series supported for factory configuration.
Primary Configuration Rules	The HP 3PAR StoreServ 7000 will be configured into an HP Intelligent Series Rack with the appropriate power distribution units (PDUs). If other products such as servers or back-up products are included in the cab, a different PDU will be added (if required) or can be chosen from a list of appropriate offerings shown in the configuration tool. The HP Intelligent Series Rack must be purchased for factory configuration. Additional 3PAR StoreServ 7000 controller node enclosures and drive enclosures may be ordered for multiple subsystem integration at the factory. The 3PAR StoreServ 7000 is also supported in HP 10000 G2 Series racks for field installation. When calculating available U-space, assume that no space will be placed between the mounted components. For redundancy, order PDUs in quantities of two. Refer to the Configuration and User Guide in the Information Library at the Rack Solutions webpage.

HP Intelligent Series Racks **NOTE:** The number of components that will fit in a rack varies and is determined by the interior U-space of the rack.

HP 647 1075mm Shock Intelligent Rack	BW912A
HP 47U 1075mm Side Panel Kit	BW915A
HP 642 1075mm Shock Intelligent Rack	BW904A
HP 42U 1075mm Side Panel Kit	BW906A
HP 636 1075mm Shock Intelligent Rack	BW896A
HP 36U 1075mm Side Panel Kit	BW898A
HP 42U 642 1200mm Shock Intelligent Rack	BW908A
HP 42U 642 1200mm Shock Intelligent Network Rack	BW966A
HP 42U 842 1200mm Shock Intelligent Network Rack	BW968A

For more information on the HP rack offerings, please see the following URL: http://h18004.www1.hp.com/products/servers/platforms/rackandpower.html.
For more information on rack options, see: http://www.hp.com/products/rackoptions.
For more information on PDUs, see: http://h18004.www1.hp.com/products/servers/proliantstorage/power-protection/pdu.html.

HP PDU Pivot Kit	HP EVA PDU Pivot Kit	AG730A
	Used to reclaim 2U of space in an HP Intelligent Series Rack with HP 3PAR StoreServ 7000 configurations. This kit allows the PDUs to be placed in the back of the rack without requiring any rack U space.	
	NOTE: The use of the PDU Pivot Kit is strongly recommended and is the default option when orders are configured, as it will save 2U of valuable rack space.	
	NOTE: 0D1 will appear after this part number to indicate factory integration where appropriate.	
Performance Optimized Data Centers	HP 3PAR StoreServ 7000 Storage is qualified for use in HP Performance Optimized Data Centers. Go to www.hp.com/go/POD for more information.	
Non-HP rack and power requirements	The Storage Bases, the Upgrade Node Pair, and the Drive Enclosures include mounting rails that are compatible with industry standard 4-post EIA 19 inch racks with square mounting holes. For detailed information on determining compatibility of a non-HP rack, please review the information included in the HP 3PAR StoreServ 7000 StoreServ 7000 Site Planning Guide	

Expansion Options

HP provides a variety of SAS cable kits to allow expansion of the HP3PAR StoreServ 7000. Note that the Storage Base products, the Upgrade Node Pair and the Drive Enclosures all include SAS cables. Most configurations will not require a SAS expansion cable kit.

SAS expansion cable kit	HP 6 Meter Expansion Cable Kit	AP879A
	If an HP 3PAR StoreServ 7000 needs to be expanded into an adjacent rack, one 6 meter SAS expansion cable kit is required for every node pair that must access drive enclosures in the expansion rack. Each 6 meter SAS expansion cable kit contains four 6 meter SAS cables.	
	HP 2 Meter Expansion Cable Kit	AW566A
	If an HP 3PAR StoreServ 7000 needs to be expanded within the same rack, but the new drive enclosure must be located some distance from the nearest existing drive enclosure within the same rack, one or two 2 meter SAS expansion cable kits is needed, depending on configuration. Each 2 meter SAS expansion cable kit contains two 2 meter SAS cables.	
	HP 1 Meter SAS Expansion Cable Kit	QR514A
	The 1 meter SAS expansion cable kit is provided for cases where a shorter SAS cable is required. Each 1 meter SAS expansion cable kit contains two 1 meter SAS cables. **NOTE:** The 2-node Storage Bases and Upgrade Node Pair come with four 2 meter SAS cables each and the 4-node Storage Base comes with eight 2 meter SAS cables. The Drive Enclosures come with two 1 meter SAS cables each.	

Step 8 - Choose Software

HP provides an extensive selection of features for HP 3PAR StoreServ Storage. All of the features available on the HP 3PAR StoreServ 10000 Storage system are also available on the HP 3PAR StoreServ 7000 Storage system, the result of a common architecture that spans from small and medium businesses to the largest global enterprise. For convenient ordering, the 3PAR StoreServ 7000 provides the features in Suites.

Two types of software licensing methods are employed with the HP 3PAR StoreServ 7000. Some software titles are licensed per system; other titles are licensed by drive. With system-based licensing one license covers the whole array, independent of configuration or capacity. Drive-based licensing, in contrast, is licensed per installed drive. A software title with drive-based licensing includes two Licenses to Use (LTU), a Base LTU that enables the software feature for the system and a Drive LTU that licenses the use of one drive. For each software title, purchase one Base LTU per title per array, and one Drive LTU, up to a cap, for every drive, that is installed in the array, independent of drive type. For the HP 3PAR StoreServ 7200 the Drive LTUs cap at 48. For the HP 3PAR StoreServ 7400 the Drive LTUs cap at 168. For the HP 3PAR StoreServ 7440c the Drive LTUs cap at 320. After reaching the cap, you do not need to purchase any more Drive LTUs for that title.

NOTE: All the HP 3PAR 7200 Software LTU are valid for both the HP 3PAR StoreServ 7200 and HP 3PAR StoreServ 7200c Storage systems, all the HP 3PAR 7400 Software LTU are valid for both the HP 3PAR StoreServ 7400 and HP 3PAR StoreServ 7400c Storage systems. The HP 3PAR 7440c Software LTU are valid only for the HP 3PAR StoreServ 7440c Storage system.

For more information regarding HP 3PAR software see http://h18006.www1.hp.com/storage/solutions/3par/software.html.

HP 3PAR 7000 Operating System Software Suite (Required)

HP 3PAR OS SW Suite - 3PAR Operating System, System Setup, and Management Software	HP 3PAR 7000 Operating System Software Suite is the foundation software of HP 3PAR StoreServ 7000 Storage, combining advanced virtualization capabilities with simple storage management, high efficiency, and world class performance. The included comprehensive thin provisioning capabilities allow your storage to start thin, get thin and stay thin. System Tuner and Autonomic Rebalance help maintain high performance over time. Migrating your existing data from HP EVA, EMC CX4 or EMC VNX Storage and 3PAR systems to HP 3PAR StoreServ 7000 is easy with the included 180 day Online Import license. HP 3PAR SmartStart Software, included in the suite, guides you through the configuration of the

Configuration Information

service processor, HP 3PAR StoreServ Storage and the application hosts - making storage setup quick and easy. HP 3PAR 7000 Operating System Software Suite is a required purchase. It uses drive-based licensing. For more information see http://h18006.www1.hp.com/storage/software/3par7000/oss/index.html.

HP 3PAR 7200 Operating System Software Suite Base LTU	BC745B
HP 3PAR 7200 Operating System Software Suite Base E-LTU	BC745BAE
HP 3PAR 7200 Operating System Software Suite Drive LTU	BC746A
HP 3PAR 7200 Operating System Software Suite Drive E-LTU	BC746AAE
HP 3PAR 7400 Operating System Software Suite Base LTU	BC773B
HP 3PAR 7400 Operating System Software Suite Base E-LTU	BC773BAE
HP 3PAR 7400 Operating System Software Suite Drive LTU	BC774A
HP 3PAR 7400 Operating System Software Suite Drive E-LTU	BC774AAE
HP 3PAR 7440c Operating System Suite Base LTU	BD374A
HP 3PAR 7440c Operating System Suite Base E-LTU	BD374AAE
HP 3PAR 7440c Operating System Suite Drive LTU	BD381A
HP 3PAR 7440c Operating System Suite Drive E-LTU	BD381AAE

HP 3PAR 7000 Replication Software Suite

HP 3PAR 7000 Replication Software Suite - Local Replication, Remote Replication and Transparent Failover

The HP 3PAR Replication Software Suite offers automatic replication, transparent failover and Point-in-Time (PIT) copies enabling seamless disaster recovery for critical data. These features provide an agile, efficient and simple solution to protect against the unpredictable. This suite is ideal for virtualized data centers demanding data availability and business continuity 24x7. HP 3PAR 7000 Replication Software Suite consists of HP 3PAR Remote Copy Software, HP 3PAR Peer Persistence Software and HP 3PAR Virtual Copy Software, which are also available separately. Replication Software Suite uses drive-based licensing. For more information see http://h18006.www1.hp.com/storage/software/3par7000/drs/index.html.

NOTE: The Peer Persistence feature provides transparent failover in VMware cluster environments and requires the Remote Copy feature as a prerequisite.

HP 3PAR 7200 Replication Software Suite Base LTU	BC747A
HP 3PAR 7200 Replication Software Suite Base E-LTU	BC747AAE
HP 3PAR 7200 Replication Software Suite Drive LTU	BC748A
HP 3PAR 7200 Replication Software Suite Drive E-LTU	BC748AAE
HP 3PAR 7400 Replication Software Suite Base LTU	BC775A
HP 3PAR 7400 Replication Software Suite Base E-LTU	BC775AAE
HP 3PAR 7400 Replication Software Suite Drive LTU	BC776A
HP 3PAR 7400 Replication Software Suite Drive E-LTU	BC776AAE
HP 3PAR 7440c Replication Suite Base LTU	BD382A
HP 3PAR 7440c Replication Suite Base E-LTU	BD382AAE
HP 3PAR 7440c Replication Suite Drive LTU	BD383A
HP 3PAR 7440c Replication Suite Drive E-LTU	BD383AAE

NOTE: If the configuration includes Remote Copy over Fibre Channel it is recommended that optional Fiber Channel HBAs are purchased as the built in ports will not offer sufficient connectivity

HP 3PAR 7000 Security Software Suite

HP 3PAR 7000 Security Software Suite

HP 3PAR 7000 Security Software Suite provides secure administrative segregation of users and hosts, allowing individual user groups and applications to confidently share a 3PAR StoreServ 7000 system. It also allows you to secure volumes and copies so they cannot be deleted, even by a 3PAR StoreServ 7000 user with the highest level privileges. When coupled with reservation less, non-duplicative, read-only virtual copies (snapshots), the

Configuration Information

Virtual Lock feature enables you to retain frozen, point-in-time copies of your data to assist internal data retention and simplify compliance with internal governance procedures. HP 3PAR 7000 Security Software Suite consists of HP 3PAR Virtual Domains Software and HP 3PAR Virtual Lock Software, which are also available separately. Security Software Suite uses drive-based licensing. For more information see http://h18006.www1.hp.com/storage/software/3par7000/ss/index.html.

HP 3PAR 7200 Security Software Suite Base LTU	BC751A
HP 3PAR 7200 Security Software Suite Base E-LTU	BC751AAE
HP 3PAR 7200 Security Software Suite Drive LTU	BC752A
HP 3PAR 7200 Security Software Suite Drive E-LTU	BC752AAE
HP 3PAR 7400 Security Software Suite Base LTU	BC779A
HP 3PAR 7400 Security Software Suite Base E-LTU	BC779AAE
HP 3PAR 7400 Security Software Suite Drive LTU	BC780A
HP 3PAR 7400 Security Software Suite Drive E-LTU	BC780AAE
HP 3PAR 7440c Security Suite Base LTU	BD384A
HP 3PAR 7440c Security Suite Base E-LTU	BD384AAE
HP 3PAR 7440c Security Suite Drive LTU	BD385A
HP 3PAR 7440c Security Suite Drive E-LTU	BD385AAE

HP 3PAR 7000 Data Optimization Software Suite

Ensure Quality of Service with dynamic data mobility

The HP 3PAR Data Optimization Software Suite v2 combines capabilities that provide autonomic storage tiering and dynamic data mobility with assured quality of service. Adaptive Optimization provides highly reliable, non-disruptive, cost-optimized storage tiering at the sub-volume level to deliver the right QoS to the right data at the right time on a large scale and Dynamic Optimization delivers it at the volume level. Peer Motion software enables seamless technology refresh and cost-optimized asset lifecycle management, and lowers technology refresh capital expenditure. Priority Optimization software allows customers to ensure quality of service on HP 3PAR StoreServ Storage Systems. With Priority Optimization, customers can guarantee service levels in multi-tenant environments The Data Optimization Suite v2 bundles the following products:

- HP 3PAR Adaptive Optimization
- HP 3PAR Dynamic Optimization
- HP 3PAR Peer Motion
- HP 3PAR Priority Optimization

For more information see http://h18006.www1.hp.com/storage/software/3par7000/dos/index.html

HP 3PAR 7200 Data Optimization Software Suite V2 Base LTU	BD268A
HP 3PAR 7200 Data Optimization Software Suite V2 Base E-LTU	BD268AAE
HP 3PAR 7200 Data Optimization Software Suite V2 Drive LTU	BD269A
HP 3PAR 7200 Data Optimization Software Suite V2 Drive E-LTU	BD269AAE
HP 3PAR 7400 Data Optimization Software Suite V2 Base LTU	BD270A
HP 3PAR 7400 Data Optimization Software Suite V2 Base E-LTU	BD270AAE
HP 3PAR 7400 Data Optimization Software Suite V2 Drive LTU	BD271A
HP 3PAR 7400 Data Optimization Software Suite V2 Drive E-LTU	BD271AAE
HP 3PAR 7440c Data Optimization Suite v2 Base LTU	BD404A
HP 3PAR 7440c Data Optimization Suite v2 Base E-LTU	BD404AAE
HP 3PAR 7440c Data Optimization Suite v2 Drive LTU	BD405A
HP 3PAR 7440c Data Optimization Suite v2 Drive E-LTU	BD405AAE

Configuration Information

HP 3PAR File Persona Software Suite

HP 3PAR File Persona Software Suite – Converged Block, File and Object Access

The HP 3PAR File Persona Software Suite is a licensed feature of the 3PAR OS that enables a rich set of file protocols and core file data services on a 3PAR StoreServ system. As a feature of the 3PAR OS, the File Persona inherits the industry leading architecture and Block Persona benefits of 3PAR StoreServ. It extends the spectrum of primary storage workloads natively addressed by 3PAR StoreServ from virtualization, databases, and applications via the Block Persona to also include client workloads such as home directory consolidation, group/department shares, and corporate shares via the File Persona – all with truly Converged Controllers, truly agile capacity, and truly unified management.

The File Persona is supported on the 3PAR StoreServ 7200c, 7400c, and 7440c. It requires the installation of 1GbE (E7X97A) or 10GbE (E7X96A) network cards.
For more information see http:/www.hp.com/go/3PAR/FilePersona
NOTE: The File Persona feature requires HP 3PAR 7000 Operating System Software Suite as a prerequisite.

HP 3PAR 7200c File Persona Software Suite 1TB LTU	BD408A
HP 3PAR 7200c File Persona Software Suite 1TB E-LTU	BD408AAE
HP 3PAR 7400c File Persona Software Suite 1TB LTU	BD409A
HP 3PAR 7400c File Persona Software Suite 1TB E-LTU	BD409AAE
HP 3PAR 7440c File Persona Software Suite 1TB LTU	BD410A
HP 3PAR 7440c File Persona Software Suite 1TB E-LTU	BD410AAE

HP 3PAR Reporting Software Suite

HP 3PAR Reporting Software Suite - Historical Performance and Capacity Management Tool

The HP 3PAR Reporting Software Suite includes System Reporter, a historical performance and capacity management tool for storage reporting, monitoring, and troubleshooting. Also included is 3PARInfo, a command line tool that allows you to view HP 3PAR StoreServ Storage configuration information. Reporting Software Suite uses system-based licensing.
For more information see
http://h18006.www1.hp.com/storage/software/3par7000/rs/index.html.

HP 3PAR 7200 Reporting Suite LTU	BC767B
HP 3PAR 7200 Reporting Suite E-LTU	BC767BAE
HP 3PAR 7400 Reporting Suite LTU	BC795B
HP 3PAR 7400 Reporting Suite E-LTU	BC795BAE
HP 3PAR 7440c Reporting Suite LTU	BD375A
HP 3PAR 7440c Reporting Suite E-LTU	BD375AAE

HP 3PAR Application Software Suite for Oracle

HP 3PAR Application Software Suite for Oracle - Application Protection

The HP 3PAR Application Software Suite for Oracle provides everything you need for protecting Oracle databases, including Recovery Manager for Oracle and Oracle Space Reclamation capabilities. Recovery Manager for Oracle is an extension to 3PAR Virtual Copy that intelligently creates, manages, and presents time-consistent snapshot images of Oracle® databases for rapid application recovery, near-continuous data protection, data sharing, and non-disruptive backup. Application Software Suite for Oracle uses system-based licensing. For more information see
http://h18006.www1.hp.com/storage/software/3par7000/as-oracle/index.html.

NOTE: HP 3PAR Virtual Copy Software is a prerequisite, purchased independently or in the HP 3PAR Replication Software Suite.

HP 3PAR 7200 Application Suite for Oracle LTU	BC771B

Configuration Information

HP 3PAR 7200 Application Suite for Oracle E-LTU	BC771BAE
HP 3PAR 7400 Application Suite for Oracle LTU	BC799B
HP 3PAR 7400 Application Suite for Oracle E-LTU	BC799BAE
HP 3PAR 7440c Application Suite for Oracle LTU	BD379A
HP 3PAR 7440c Application Suite for Oracle E-LTU	BD379AAE

HP 3PAR Application Software Suite for SQL

HP 3PAR Application Software Suite for SQL - Application Protection

The HP 3PAR Application Software Suite for SQL protects Microsoft® SQL databases with Recovery Manager for Microsoft® SQL and the 3PAR VSS Provider software. 3PAR Recovery Manager for Microsoft® SQL Server is an extension to 3PAR Virtual Copy that eases costs and administration by providing rapid, affordable online recovery of Microsoft® SQL Server databases from multiple, highly granular point-in-time snapshots. Quickly recover a database to a known point in time, speeding up a variety of operations including rapid recovery of the production SQL server. Application Software Suite for SQL uses system-based licensing. For more information see http://h18006.www1.hp.com/storage/software/3par7000/as-sql/index.html.

NOTE: HP 3PAR Virtual Copy Software is a prerequisite, purchased independently or in the HP 3PAR Replication Software Suite.

HP 3PAR 7200 Application Suite for Microsoft SQL LTU	BC770B
HP 3PAR 7200 Application Suite for Microsoft SQL E-LTU	BC770BAE
HP 3PAR 7400 Application Suite for Microsoft SQL LTU	BC798B
HP 3PAR 7400 Application Suite for Microsoft SQL E-LTU	BC798BAE
HP 3PAR 7440c Application Suite for SQL LTU	BD378A
HP 3PAR 7440c Application Suite for SQL E-LTU	BD378AAE

HP 3PAR Application Software Suite for Exchange

HP 3PAR Application Software Suite for Exchange - Application Protection

The HP 3PAR Application Software Suite for Exchange provides you the essentials for protecting your Microsoft Exchange data, including Recovery Manager for Exchange and the VSS Provider software. Recovery Manager for Exchange is an extension to 3PAR Virtual Copy that intelligently creates and manages snapshots that can be used to quickly restore Exchange instances or databases (or non-disruptively back them up to tape) for near-continuous data protection. Application Software Suite for Exchange uses system-based licensing. For more information see http://h18006.www1.hp.com/storage/software/3par7000/as-exchange/index.html.

NOTE: HP 3PAR Virtual Copy Software is a prerequisite, purchased independently or in the HP 3PAR Replication Software Suite.

HP 3PAR 7200 Application Suite for Microsoft Exchange LTU	BC769B
HP 3PAR 7200 Application Suite for Microsoft Exchange E-LTU	BC769BAE
HP 3PAR 7400 Application Suite for Microsoft Exchange LTU	BC797B
HP 3PAR 7400 Application Suite for Microsoft Exchange E-LTU	BC797BAE
HP 3PAR 7440c Application Suite for Exchange LTU	BD377A
HP 3PAR 7440c Application Suite for Exchange E-LTU	BD377AAE

HP 3PAR Application Software Suite for Microsoft Hyper-V

HP 3PAR Application Software Suite for Hyper-V - Application Protection

The HP 3PAR Application Software Suite for Hyper-V provides you the essentials for protecting your Microsoft Hyper-V environment, including Recovery Manager for Hyper-V and the VSS Provider software. Recovery Manager for Hyper-V is an extension to 3PAR Virtual Copy that intelligently creates and manages snapshots that can be used to quickly restore Hyper-V VMs for near-continuous data protection. Application Software Suite for Hyper-V uses system-based licensing.

Configuration Information

NOTE: HP 3PAR Virtual Copy Software is a prerequisite, purchased independently or in the HP 3PAR Replication Software Suite.

HP 3PAR 7200 Application Suite for Microsoft Hyper-V LTU	BD178B
HP 3PAR 7400 Application Suite for Microsoft Hyper-V LTU	BD179B
HP 3PAR 7200 Application Suite for Microsoft Hyper-V E-LTU	BD178BAE
HP 3PAR 7400 Application Suite for Microsoft Hyper-V E-LTU	BD179BAE
HP 3PAR 7440c Application Suite for Hyper-V LTU	BD380A
HP 3PAR 7440c Application Suite for Hyper-V E-LTU	BD380AAE

HP 3PAR Application Software Suite for VMware

HP 3PAR Application Software Suite for VMware - Application Protection

The HP 3PAR Application Software Suite for VMware provides everything you need to make your VMware environment more agile and efficient-including Recovery Manager for VMware, Host Explorer for VMware, VASA support, and three essential plug-ins: the VMware Site Replication Manager (SRM) Adapter, the 3PAR VAAI plug-in, and the 3PAR management plug-in for VMware View. Application Software Suite for VMware uses system-based licensing. For more information see
http://h18006.www1.hp.com/storage/software/3par7000/as-vmware/index.html.

NOTE: HP 3PAR Virtual Copy Software is a prerequisite, purchased independently or in the HP 3PAR Replication Software Suite.

HP 3PAR 7200 Application Suite for VMware LTU	BC768B
HP 3PAR 7200 Application Suite for VMware E-LTU	BC768BAE
HP 3PAR 7400 Application Suite for VMware LTU	BC796B
HP 3PAR 7400 Application Suite for VMware E-LTU	BC796BAE
HP 3PAR 7440c Application Suite for VMware LTU	BD376A
HP 3PAR 7440c Application Suite for VMware E-LTU	BD376AAE

HP Cluster Extension Software

HP Cluster Extension Software- High Availability

HP Cluster Extension Software (CLX) offers protection against application downtime from fault, failure, or site disaster by extending a local cluster between data centers over metropolitan distance. CLX reinstates critical applications at a remote site within minutes or seconds after an adverse event. CLX integrates with the OS clustering software (such as MS Cluster Service in Windows) and the remote mirroring software on storage (such as HP Continuous Access software on P6000 EVA/P9000 and HP 3PAR Remote Copy Software on HP 3PAR systems) to automate failover and failback between sites. This dual integration enables the cluster service to verify the status of the storage as well as the server cluster; thus allowing the correct failover and failback decisions to be made which minimize downtime, and accelerates recovery without human intervention. Thus the Cluster Extension Software can help customers achieve 'zero' RPO and RTO in minutes or seconds. For more information, including how Cluster Extension Software is licensed, see
http://h18006.www1.hp.com/storage/software/ces/index.html.

Step 9 - Choose Options for Storage Networking

HP's comprehensive portfolio of Storage Area Network infrastructure products and solutions are designed to meet a range of storage networking needs from small and midsized businesses to the largest corporate enterprises. HP StoreFabric storage networking SAN Solutions deliver scalability, performance, and broad interoperability required for critical data and applications.

For additional details on SAN infrastructure components and options and storage compatibility information, please visit:
http://hp.com/go/san or select from the part numbers below.

Fibre Channel Host Bus Adapters	**Brocade Fibre Channel HBAs**	
	HP 81B 8Gb 1-port PCIe Fibre Channel Host Bus Adapter	AP769B

Configuration Information

	HP 82B 8Gb 2-port PCIe Fibre Channel Host Bus Adapter	AP770B
	Emulex Fibre Channel HBAs	
	HP 81E 8Gb 1-port PCIe Fibre Channel Host Bus Adapter	AJ762B
	HP 82E 8Gb 2-port PCIe Fibre Channel Host Bus Adapter	AJ763B
	QLogic Fibre Channel HBAs	
	HP 81Q 8Gb 1-port PCIe Fibre Channel Host Bus Adapter	AK344A
	HP 82Q 8Gb 2-port PCIe Fibre Channel Host Bus Adapter	AJ764A
Fibre Channel Switches	**HP B-series**	
	8 Gb Fibre Channel Switches	
	HP 8/8 Base (0) e-port SAN Switch	AM866B
	HP 8/8 (8) Full Fabric Ports Enabled SAN Switch	AM867B
	HP 8/24 Base (16) Full Fabric Ports Enabled SAN Switch	AM868B
	16 Gb Fibre Channel Switches	
	HP SN3000B 16Gb 24-port/12-port Active Fibre Channel Switch	QW937A
	HP SN3000B 16Gb 24-port/24-port Active Fibre Channel Switch	QW938A
	HP SN6000B 16Gb 48-port/24-port Active Fibre Channel Switch	QK753B
	HP SN6000B 16Gb 48-port/48-port Active Fibre Channel Switch	QR480B
	HP SN6000B 16Gb 48-port/24-port Active Power Pack+ Fibre Channel Switch	QK754B
	HP SN6000B 16Gb 48-port/48-port Active Power Pack+ Fibre Channel Switch	QR481B
	HP StoreFabric SN6500B 16Gb 96/96 Power Pack+ FC Switch	C8R42A
	HP StoreFabric SN6500B 16Gb 96/96 FC Switch	C8R43A
	HP StoreFabric SN6500B 16Gb 96/48 Power Pack+ FC Switch	C8R44A
	HP StoreFabric SN6500B 16Gb 96/48 FC Switch	C8R45A
	FCoE, Extension and Embedded Switches	
	HP 1606 FCIP 16-pt Enabled 8Gb FC 6-pt Enabled 1GbE Full Switch	AP863B
	HP 1606 FCIP 4-pt Enabled 8Gb FC 2-pt Enabled 1GbE Base Switch	AP862B
	HP 1606 FCIP 16-pt Enabled 8Gb FC 6-pt Enabled 1GbE Power Pack+ Switch	AP864B
	Brocade 16Gb/16 SAN Switch for BladeSystem c-Class	C8S45A
	Brocade 16Gb/28 SAN Switch for BladeSystem c-Class	C8S46A
	Brocade 16Gb/28 SAN Switch Power Pack+ for BladeSystem c-Class	C8S47A
	Brocade 8/12c SAN Switch for BladeSystem c-Class	AJ820B
	Brocade 8/24c SAN Switch for BladeSystem c-Class	AJ821B
	Brocade 8/24c Power Pack+ SAN Switch for BladeSystem c-Class	AJ822B
	HP H-series	
	HP 8/20q Fibre Channel 8-ports Active Switch **NOTE:** 8 device ports active, upgradeable to 20 device ports active	AQ233B
	HP 8Gb Simple SAN Connection Kit **NOTE:** 8 device ports active, upgradeable to 20 device ports active	AK241B
	HP 8/20q Fibre Channel Switch **NOTE:** 16 switch ports active, upgradeable to 20 device ports active	AK242B
	HP SN6000 Stackable 8Gb 24-port Single Power Fibre Channel Switch **NOTE:** 20 device ports active/4 stacking (ISL) ports active	AW575B
	HP SN6000 Stackable 8Gb 24-port Dual Power Fibre Channel Switch **NOTE:** 20 device ports active/4 stacking (ISL) ports active	AW576B

Configuration Information

	HP SN6000 Stackable 12-port Single Power FC Switch	BK780B
	NOTE: 8 device ports/4 stacking (ISL) ports active, upgradeable to 20 device ports active	
	HP C-series	
	HP SN6000C 8Gb 16-port Fibre Channel Switch	AW585A
	HP SN6000C 8Gb 32-port Fibre Channel Switch	AW586A
	Cisco MDS 8/12c Fabric Switch for HP BladeSystem c-Class	AW563A
	Cisco MDS 8/24c Fabric Switch for HP BladeSystem c-Class	AW564A
	Cisco MDS 9124 8-ports Active Fabric Switch	AG646A
	Cisco MDS 9124 16-ports Active Fabric Switch	AG647A
	Cisco MDS 9222i Multiservice with 0 SFP Transceiver Modular Fabric Switch	AG851B
HP Intelligent Infrastructure Analyzer Software (IIAS)	HP Intelligent Infrastructure Analyzer Software v2 LTU	TC472A
	HP Intelligent Infrastructure Analyzer Software v2 E-LTU	TC472AAE
	An online monitoring and diagnostic solution intended to manage the physical layer of a Storage Area Network (SAN) consisting of HP B-series and/or H-series Fibre Channel switches and directors. It uses industry-standard protocols (such as SNMP, SMI-S, Telnet) to monitor the physical layer across the SAN and to diagnose changes/events in Small Form-factor Pluggable (SFP) transceiver states/characteristics. It also presents the SAN topology, inventory and diagnostic information to the user in real-time.	
HP Virtual Connect	HP 3PAR StoreServ 7000 Storage supports direct attach with HP Virtual Connect FlexFabric. Please refer to SPOCK for HP Virtual Connect information. http://h20272.www2.hp.com/index.aspx	
PremierFlexOM4 cable options	HP Premier Flex LC/LC Multi-mode OM4 2 fiber 1m Cable	QK732A
	HP Premier Flex LC/LC Multi-mode OM4 2 fiber 2m Cable	QK733A
	HP Premier Flex LC/LC Multi-mode OM4 2 fiber 5m Cable	QK734A
	HP Premier Flex LC/LC Multi-mode OM4 2 fiber 15m Cable	QK735A
	HP Premier Flex LC/LC Multi-mode OM4 2 fiber 30m Cable	QK736A
	HP Premier Flex LC/LC Multi-mode OM4 2 fiber 50m Cable	QK737A
OM3 FC LC-LC cables options	HP LC to LC Multi-mode OM3 2-Fiber 0.5m 1-Pack Fiber Optic Cable	AJ833A
	HP LC to LC Multi-mode OM3 2-Fiber 1.0m 1-Pack Fiber Optic Cable	AJ834A
	HP LC to LC Multi-mode OM3 2-Fiber 2.0m 1-Pack Fiber Optic Cable	AJ835A
	HP LC to LC Multi-mode OM3 2-Fiber 5.0m 1-Pack Fiber Optic Cable	AJ836A
	HP LC to LC Multi-mode OM3 2-Fiber 15.0m 1-Pack Fiber Optic Cable	AJ837A
	HP LC to LC Multi-mode OM3 2-Fiber 30.0m 1-Pack Fiber Optic Cable	AJ838A
	HP LC to LC Multi-mode OM3 2-Fiber 50.0m 1-Pack Fiber Optic Cable	AJ839A

Configuration Information

Step 10 - Federation / Data Migration

HP provides several ways to migrate your data from older arrays. Peer Motion provides federation with other 3PAR arrays, which includes the ability to migrate data to HP 3PAR StoreServ 7000 Storage (Peer Motion is part of the HP 3PAR 7000 Data Optimization Software Suite). Peer Motion Software is also available as a standalone license.

HP 3PAR Peer Motion Software	HP 3PAR 7200 Peer Motion Software Base LTU	BC761A
	HP 3PAR 7200 Peer Motion Software Drive LTU	BC762A
	HP 3PAR 7400 Peer Motion Software Base LTU	BC789A
	HP 3PAR 7400 Peer Motion Software Drive LTU	BC790A
	HP 3PAR 7440c Peer Motion Base LTU	BD394A
	HP 3PAR 7440c Peer Motion Base E-LTU	BD394AAE
	HP 3PAR 7440c Peer Motion Drive LTU	BD395A
	HP 3PAR 7440c Peer Motion Drive E-LTU	BD395AAE

* Insert AE at the end of a part number for an electronic LTU (eg. XXXXBAE). E-Delivery should be ordered with any Standalone or Upgrade software order.

Online Import allows you to easily migrate data from HP EVA, EMC CX4 or EMC VNX Storage arrays to the HP 3PAR StoreServ 7000, a 180-day Online Import license is built into the HP 3PAR 7000 Operating System Software Suite. Additional licenses are available to order.

HP 3PAR Online Import Software	HP 3PAR 7200 Online Import Software 180 day LTU	BD191A
	HP 3PAR 7400 Online Import Software 180 day LTU	BD192A
	HP 3PAR 7440c Online Import 180-day LTU	BD407A
	HP 3PAR 7440c Online Import 180-day E-LTU	BD407AAE

* Insert AE at the end of a part number for an electronic LTU (eg. XXXXBAE). E-Delivery should be ordered with any Standalone or Upgrade software order.

In addition HP supports the MPX200.

HP MPX200 Multi-protocol and Heterogeneous Data Migration

The HP MPX200 Multiprotocol Router provides support for HP 3PAR StoreServ 7000 and 10000 as well as 3PAR F/T, including 1GbE iSCSI and 10GbE iSCSI and FCoE target support. MPX200 iSCSI provides an alternative option for HP 3PAR storage systems if you don't want to dedicate native iSCSI ports on your array. The MPX200 also facilitates the sharing of iSCSI/FCoE connectivity simultaneously for HP 3PAR storage systems from the same MPX200. For Data Migration the MPX200 provides high performance migration from P6000/EVA to HP 3PAR storage systems and simplifies Data Migration from third party storage such as IBM and EMC to HP 3PAR. The MPX200 is an ideal solution enabler for HP 3PAR customers. http://www.hp.com/go/mpx200

MPX200 Multifunction Router	HP MPX200 1GbE Base Multifunction Router	AP771B
	HP MPX200 Multifunction Router 1GbE Upgrade Blade	AP772B
	HP MPX200 10-1GbE Base Multifunction Router	AP773B
	HP MPX200 Multifunction Router 10-1GbE Upgrade Blade	AP774B
FCIP Software	HP MPX200 Half Chassis FCIP License	TA766A
	HP MPX200 Full Chassis FCIP License	TA767A
Data Migration Software	HP MPX200 1TB Full Chassis Data Migration License	TA762A
	HP MPX200 5TB Full Chassis Data Migration License	TA763A
	HP MPX200 Full Chassis 1 Array Data Migration License	TA764A

Configuration Information

Step 11- HP 3PAR StoreServ File Controller

With HP 3PAR StoreServ File Controller you get an efficient, bulletproof, and effortless way to provide file storage from HP 3PAR StoreServ Storage. 3PAR StoreServ File Controller saves you time and money by supporting hundreds to thousands of concurrent users and diverse file workloads .It also has non-intrusive data deduplication that provides an average 50-60% in space savings. It provides security through features such as built-in encryption, sophisticated access controls, online snapshots, and the ability to run endpoint protection and backup software onboard so that data is protected at rest and in flight.

HP 3PAR StoreServ File Controllers are clustered file gateway configurations with transparent failover and online rolling maintenance updates that deliver continuous availability of data to users, servers, and applications. With a straightforward and consistent management experience, it also provides robust capabilities for demanding 24 x 7 file storage environments.

See the HP 3PAR StoreServ File Controller QuickSpecs for more information on specifications and options at:
http://www8.hp.com/h20195/v2/GetHtml.aspx?docname=c04164476

Add a Power Cord

The HP 3Par StoreServ File Controller comes standard with at least one rack (IEC-IEC) PDU power cord. If you wish use wall outlet power instead, you can choose a country- or region-specific power cord.

3Par StoreServ File Controller	HP C13 - Nema 5-15P US/CA 110V 10Amp 1.83m Power Cord	AF556A
	HP C13 - GB-1002 CN 250V 10Amp 1.83m Power Cord	AF557A
	HP C13 - IRAM -2073 AR 250V 10A 2.5m Power Cord	AF558A
	HP C13 - Nema 5-15P TH/PH 250V 10Amp 1.83m Power Cord	AF559A
	HP C13 - KSC- 8305 KR 250V 10Amp 1.83m Power Cord	AF560A
	HP C13 - CNS-690 TW 110V 13Amp 1.83m Power Cord	AF561A
	HP C13 - IS-1293 IN 240V 6Amp LV 2.0m Power Cord	AF562A
	HP C13 - AS3112-3 AU 250V 10Amp 2.5m Power Cord	AF569A
	HP C13 - SEV 1011 CH 250V 10Amp 1.83m Power Cord	AF565A
	HP C13 - DK-2.5A DK 250V 10Amp 1.83m Power Cord	AF566A
	HP C13 - CEE-VII EU 250V 10Amp 1.83m Power Cord	AF568A
	HP C13 - SI-32 IL 250V 10Amp 1.83m Power Cord	AF564A
	HP C13 - CEI-23-50 IT/CL 250V 10Amp 1.83m Power Cord	AF571A
	HP C13 - JIS C8303 JP 100V 12Amp 2.0m Power Cord	AF572A
	HP C13 - BS-1363A UK/HK/SG 250V 10Amp 1.83m Power Cord	AF570A
	HP C13 - SABS-164 ZA 250V 10Amp 2.5m Power Cord	AF567A
	HP C13 - NBR-14136 BR 250V 10Amp 1.83m Power Cord	AF591A

Technical Specifications

HP 3PAR StoreServ 7000 Product Dimensions, and Weight

Physical Dimensions	Height in/mm/U	Width in/mm	Depth in/mm	Max Weight lb/kg
42U Intelligent Series Rack	79.0/2006.6	23.5/597.8	42.7/1125.2	243/110 (empty)
HP 3PAR StoreServ 7200c 2N Storage Base (no host adapters, no drives)	3.46/87.95/2	19/483	26.6/676.1*	47.7/21.6
HP 3PAR StoreServ 7200c 2N Storage Base (with two host adapters, no drives)	3.46/87.95/2	19/483	26.6/676.1*	48.7/22.1
HP 3PAR StoreServ 7400c 2N Storage Base (no host adapters, no drives)	3.46/87.95/2	19/483	26.6/676.1*	47.7/21.6
HP 3PAR StoreServ 7400c 2N Storage Base (with two host adapters, no drives)	3.46/87.95/2	19/483	26.6/676.1*	48.7/22.1
HP 3PAR StoreServ 7400c 4N Storage Base (no host adapters, no drives)	6.925/175.9/4	19/483	26.6/676.1*	97.8/44.4
HP 3PAR StoreServ 7400c 4N Storage Base (with four host adapters, no drives)	6.925/175.9/4	19/483	26.6/676.1*	99.8/45.3
HP 3PAR StoreServ 7440c 2Node Storage Base (no host adapters, no drives)	3.46/87.95/2	19/483	26.6/676.1*	47.7/21.6
HP 3PAR StoreServ 7440c 2Node Storage Base (with two host adapters, no drives)	3.46/87.95/2	19/483	26.6/676.1*	48.7/22.1
HP 3PAR StoreServ 7440c 4Node Storage Base (no host adapters, no drives)	6.925/175.9/4	19/483	26.6/676.1*	97.8/44.4
HP 3PAR StoreServ 7440c 4Node Storage Base (with four host adapters, no drives)	6.925/175.9/4	19/483	26.6/676.1*	99.8/45.3
HP M6710 2.5 inch 2U SAS Drive Enclosures (without drives)	3.46/87.95/2	19/483	24.8/630.7	33.5/15.2
HP M6720 3.5 inch 4U SAS Drive Enclosures (without drives)	6.89/175/4	19/483	24.9/631.4	42.9/19.5
SFF SAS drive with carrier	3.42/86.85**	0.78/19.9**	896/227.7	0.7/0.32 (varies by type)

Technical Specifications

| LFF SAS drive with carrier | 1.18/30.0** | 4.36/110.84** | 8.67/220.26 | 1.9/0.86 (varies by type) |

* includes length of ejector handles
** includes RFI clips

Power Requirements

| Input Voltage (VAC) | 100 - 240 VAC |
| Frequency (Hz) | 50 - 60 |

Component	Idle (watts / BTU/hr)	Transactional (watts / BTU/hr)
Node Pair (7200/7200c or 7400/7400c), no drives, no add-on host adapters	236 / 803	398 / 1357
Node Pair (7440c), no drives, no add-on host adapters	344 / 1173	363 / 1238
4-port 8Gb/s Fibre Channel Adapter	24 / 81.7	32.6 / 111
2-port 16Gb/s Fibre Channel Adapter	9.47 / 32.3	9.89 / 33.7
2-port 10Gb/s iSCSI/FCoE Adapter	34 / 115.8	40 / 136.4
2-port 10Gb/s Ethernet Adapter	5.69 / 19.4	5.71 / 19.5
4-port 1Gb/s Ethernet Adapter	1.97 / 6.7	1.97 / 6.7
HP M6710 2.5 inch 2U SAS Drive Enclosure, no drives	150 / 512 (average)	150 / 512 (average)
HP M6720 3.5 inch 4U SAS Drive Enclosure, no drives	164 / 559 (average)	164 / 559 (average)
300GB 15K Small Form Factor HDD	6.7 / 22.9	6.9 / 23.1
600GB 15K Small Form Factor HDD	7.0 / 24.0	7.3 / 25.1
450GB 10K Small Form Factor HDD	3.7 / 12.6	6.3 / 21.5
600 GB 10K Small Form Factor HDD	6.3 / 21.4	7.4 / 25.2
900GB 10K Small Form Factor HDD	4.8 / 16.4	6.2 / 21.1
1.2TB 10K Small Form Factor HDD	6.2 / 21.1	8.2 / 27.9
1.8TB 10K Small Form Factor HDD	7.3 / 24.8	7.5 / 25.6
1 TB 7.2k Small Form Factor NL HDD	2.95/ 10.1	3.84 / 13.1
2TB 7.2K Large Form Factor NL HDD	7.5 / 25.6	10.6 / 36.1
3TB 7.2K Large Form Factor NL NDD	8.5 / 28.9	11.8 / 40.2
4TB 7.2K Large Form Factor NL NDD	9.1 / 31.1	13.1 / 44.6
6TB 7.2K Large Form Factor NL NDD	11.9 / 40.7	14.3 / 48.74
480GB MLC SSD	2.2 / 7.5	5.5 / 18.7
920GB MLC SSD	2.2 / 7.5	5.5 / 18.7
480GB cMLC SSD	3.2 / 11	7.1 / 24.4
1920GB cMLC SSD	3.5 / 11.9	8.9 / 30.5
3840GB cMLC SSD	3.4 / 11.64	11.0 / 37.56

Technical Specifications

Environmental Specifications

Operating Temperature	41° to 104° F (5° to 40° C) - Reduce rating by 1° F for each 1000 ft altitude (1.8° C/1,000 m)
Shipping Temperature	32° to 140° F (0° to 60° C)
Altitude (ft/m) max.	10,000 ft / 3,048 m
Shipping Altitude (ft/m) max.	40,000ft/ 12,192 m
Humidity	10% to 90% non condensing
Shipping Humidity	10% to 90% non condensing
Operating Vibration	0.25 G, Sine, 5-500 Hz, 0.1 Grms, Random 10-100Hz
Non-operating Vibration	0.5 G, 5 - 500 Hz, Sine
Operating Shock	2 G, 11ms, half-sine
Non-operating Shock	10 G, 11ms, half-sine
Maximum Air Flow	Storage Base and Upgrade Node Pair - 109 CFM per enclosure M6710 Drive Enclosure - 105 CFM M6720 Drive Enclosure - 109 CFM
Electromagnetic Compatibility	CISPR 22:2008/ EN55022:2010 Class A CISPR 24:2010/ EN 55024:2010 IEC 61000-3-2:2005/ EN 61000-3-2:2006 +A1:2009 +A2:2009 IEC/ EN 61000-3-3:2008 AS/NZS CIPSR 22: 2009 Class A CNS 13438:2006 Class A 47 CFR Part 15 Subpart b Class A ICES-003 Issue 4 Class A V-3/2012.04 Class A RRA Notice No. 2011-24 (2011.12.23) Class A RRA Notice No. 2011-25 (2011.12.23)

Acoustics Sound pressure level measured per ISO 7779 specifications during normal operating fan conditions, from a minimum of 3,000 RPM to a maximum of 10,000 RPM	Fan Speed (RPM)	7200c/7400c 2N Storage Base	7400c 4N Storage Base	7440c 2N Storage Base	7440c 4N Storage Base	M6710 2.5" 2U SAS Drive Enclosure	M6720 3.5" 4U SAS Drive Enclosure
	Minimum	63.8	67.2	72	74	62.6	61.3
	Maximum	93.4	96.5	93	97	85.4	88

Safety	IEC 60950-1:2005 (2nd Edition) EN 60950-1:2006 +A11:2009 EN 62479:2010 CNS 14336-1 2nd Edition UL 60950-1 2nd Ed. CAN/CSA C22.2 No. 60950-1
Certifications / Markings	cTUVus Mark TUV T-mark (EN 60950) CE Mark FCC Class A IC Class A VCCI Class A BSMI Class A KCC GOST-R C-Tick WEEE China RoHS EU RoHS

NOTE: Specifications are subject to change without notice.

Appendix

This Appendix includes the technical specification of the HP 3PAR StoreServ 7200 and HP 3PAR StoreServ 7400 Storage.

Summary	3PAR StoreServ 7200	3PAR StoreServ 7400
Number of Controller Nodes	2	2 or 4
HP 3PAR Gen4 ASICs	2	2 or 4
Processors	2 four-core 1.8 GHz	2 - 4 six-core 1.8 GHz
Total Cache	792 GiB	1564 GiB
Flash Cache (optional)	768 GiB	1500 GiB
On-Node Cache	24 GiB	64 GiB
Total Cache per controller node pair	792 GiB	832 GiB
Flash Cache per node pair	768 GiB	768 GiB
On-Node Cache per node pair	24 GiB	64 GiB
Maximum Host Ports	12 ports	24 ports
8Gb/s Fibre Channel Host Ports	4 - 12 ports	4 - 24 ports
16Gb/s Fibre Channel Host Ports	0 - 4 ports	0 - 8 ports
10Gb/s iSCSI Host Ports	0 - 4 ports	0 - 8 ports
1GbE/10GbE Network Ports	Not Applicable	Not Applicable
Maximum Initiators Supported	1024	1024 or 2048
2U Controller Enclosure SAS Drive Capacity	24	24
Number of Disk Drives	8 - 240 drives	8 - 480 drives
Number of Solid State Drives	8[1] - 120	8[1] - 240
Raw Capacity (approx.)[2]	1.2 - 400 TiB[3]	1.2 - 1200 TiB[3]

Capacity Details	3PAR StoreServ 7200	3PAR StoreServ 7400
RAID Levels	RAID 0, 1, 5, 6	RAID 0, 1, 5, 6
RAID 5 Data to Parity Ratios	2:1 - 8:1	2:1 - 8:1
RAID 6 Data to Parity Ratios	4:2, 6:2, 8:2, 10:2, 14:2	4:2, 6:2, 8:2, 10:2, 14:2
Drive Capacities (approximate GB[3]) (RAID levels, parity ratios, and drive capacities all mixable within the same Storage System)	200 SSD[4], 480 SSD[4], 920 SSD[4], 480GB cMLC SSD, 1.92TB cMLC SSD, 300 15K SAS, 450 10K SAS, 600 10K SAS, 900 10K SAS, 1200 10K SAS, 1000 7.2K NL, 2000 7.2K NL[5], 3000 7.2K NL[5], 4000 7.2K NL[5]	200 SSD[4], 400 SSD[4], 480 SSD[4], 920 SSD[4], 480GB cMLC SSD, 1.92TB cMLC SSD, 300 15K SAS, 450 10K SAS, 600 10K SAS, 900 10K SAS, 1200 10K SAS, 1000 7.2K NL, 2000 7.2K NL[5], 3000 7.2K NL[5], 4000 7.2K NL[5]
Number of Add-on Drive Enclosures (Each Drive Enclosure holds up to 24 drives in 2U for small form factor drives and 4U for large form factor drives)	0 - 9 enclosures	0 - 18 enclosures

[1] The minimum drive quantity is permitted as long as the total raw capacity is at least 1.2 TB.
[2] Maximum raw capacity currently supported with any and all drive types.
[3] For storage capacity, 1 GB = 1,000,000,000 bytes and 1 TB = 1,000 GB.
[4] SSDs are Solid State Drives.
[5] NL drives are 7200 RPM Enterprise SAS drives.
NOTE: Specifications are subject to change without notice.

Appendix

HP 3PAR StoreServ 7200 All-Flash Starter Kit

HP 3PAR StoreServ 7200 All-Flash Starter Kit is an all-flash version of the HP 3PAR StoreServ 7200 providing mid-range customers with all-flash acceleration at entry-level price. The kit includes the HP 3PAR StoreServ 7200 Storage System Base equipped with 8 x 480GB SFF cMLC SSD drives, Reporting Suite and Virtual Copy software.

The HP 3PAR StoreServ 7200 All-Flash Starter Kit has the same Drive LTUs cap and maximum number of SSDs as the HP 3PAR StoreServ 7200. The Drive LTUs cap for HP 3PAR StoreServ 7200 All-Flash Starter Kit is 48. After reaching the cap, you do not need to purchase any more Drive LTUs for that title. The maximum number of SSDs is 120.

Model

HP 3PAR StoreServ 7200 All-Flash Starter Kit   K2Q09A

The HP 3PAR StoreServ 7200 All-Flash Starter Kit is an orderable part number that includes the following individual parts.

Quantity	Component	
1	HP 3PAR StoreServ 7200 Storage System Base	QR482A
8	HP M6710 480GB 6G SAS 2.5in cMLC SSD	E7Y55A
1	HP 3PAR 7200 Operating System Software Suite Base LTU	BC745B
8	HP 3PAR 7200 Operating System Software Suite Drive LTU	BC746A
1	HP 3PAR 7200 Reporting Suite Base LTU	BC767B
1	HP 3PAR 7200 Virtual Copy Base LTU	BC753A
8	HP 3PAR 7200 Virtual Copy Drive LTU	BC754A

NOTE: Users can add more SSDs, drive enclosures (and any other 7000 accessory), and software to the HP 3PAR StoreServ 7200 All-Flash Starter Kit quote. Each of the nested components will appear as separate parts on the quote and will be priced accordingly

HP 3PAR StoreServ 7000 Product Dimensions, and Weight

Physical Dimensions	Height in/mm/U	Width in/mm	Depth in/mm	Max Weight lb/kg
42U Intelligent Series Rack	79.0/2006.6	23.5/597.8	42.7/1125.2	243/110 (empty)
HP 3PAR StoreServ 7200 2-node Storage Base (no host adapters, no drives)	3.46/87.95/2	19/483	26.6/676.1*	47.7/21.6
HP 3PAR StoreServ 7200 2-node Storage Base (with two host adapters, no drives)	3.46/87.95/2	19/483	26.6/676.1*	48.7/22.1
HP 3PAR StoreServ 7400 2-node Storage Base (no host adapters, no drives)	3.46/87.95/2	19/483	26.6/676.1*	47.7/21.6
HP 3PAR StoreServ 7400 2-node Storage Base (with two host adapters, no drives)	3.46/87.95/2	19/483	26.6/676.1*	48.7/22.1

Appendix

HP 3PAR StoreServ 7400 4-node Storage Base (no host adapters, no drives)	6.925/175.9/4	19/483	26.6/676.1*	97.8/44.4
HP 3PAR StoreServ 7400 4-node Storage Base (with four host adapters, no drives)	6.925/175.9/4	19/483	26.6/676.1*	99.8/45.3
HP M6710 2.5 inch 2U SAS Drive Enclosures (without drives)	3.46/87.95/2	19/483	24.8/630.7	33.5/15.2
HP M6720 3.5 inch 4U SAS Drive Enclosures (without drives)	6.89/175/4	19/483	24.9/631.4	42.9/19.5
SFF SAS drive with carrier	3.42/86.85**	0.78/19.9**	896/227.7	0.7/0.32 (varies by type)
LFF SAS drive with carrier	1.18/30.0**	4.36/110.84**	8.67/220.26	1.9/0.86 (varies by type)

* includes length of ejector handles
** includes RFI clips

Environmental Specifications

Operating Temperature	41° to 104° F (5° to 40° C) - Reduce rating by 1° F for each 1000 ft altitude (1.8° C/1,000 m)
Shipping Temperature	32° to 140° F (0° to 60° C)
Altitude (ft/m) max.	10,000 ft / 3,048 m
Shipping Altitude (ft/m) max.	40,000ft/ 12,192 m
Humidity	10% to 90% non condensing
Shipping Humidity	10% to 90% non condensing
Operating Vibration	0.25 G, Sine, 5-500 Hz, 0.1 Grms, Random 10-100Hz
Non-operating Vibration	0.5 G, 5 - 500 Hz, Sine
Operating Shock	2 G, 11ms, half-sine
Non-operating Shock	10 G, 11ms, half-sine
Maximum Air Flow	Storage Base and Upgrade Node Pair - 109 CFM per enclosure M6710 Drive Enclosure - 105 CFM M6720 Drive Enclosure - 109 CFM
Electromagnetic Compatibility	CISPR 22:2008/ EN55022:2010 Class A CISPR 24:2010/ EN 55024:2010 IEC 61000-3-2:2005/ EN 61000-3-2:2006 +A1:2009 +A2:2009 IEC/ EN 61000-3-3:2008 AS/NZS CIPSR 22: 2009 Class A CNS 13438:2006 Class A 47 CFR Part 15 Subpart b Class A ICES-003 Issue 4 Class A V-3/2012.04 Class A RRA Notice No. 2011-24 (2011.12.23) Class A RRA Notice No. 2011-25 (2011.12.23)

Acoustics Sound pressure level measured per ISO 7779 specifications during normal operating fan conditions,	Fan Speed (RPM)	7200/7400 2 node Storage Base	7400 4 node Storage	M6710 2.5" 2U SAS Drive	M6720 3.5" 4U SAS Drive

Appendix

from a minimum of 3,000 RPM to a maximum of 10,000 RPM			Base	Enclosure	Enclosure
	Minimum	63.8	67.2	62.6	61.3
	Maximum	93.4	96.5	85.4	88

Safety	IEC 60950-1:2005 (2nd Edition) EN 60950-1:2006 +A11:2009 EN 62479:2010 CNS 14336-1 2nd Edition UL 60950-1 2nd Ed. CAN/CSA C22.2 No. 60950-1
Certifications / Markings	cTUVus Mark TUV T-mark (EN 60950) CE Mark FCC Class A IC Class A VCCI Class A BSMI Class A KCC GOST-R C-Tick WEEE China RoHS EU RoHS

NOTE: Specifications are subject to change without notice.

Summary of Changes

Date	Version History	Action	Description of Change:
05-Jun-2015	From Version 35 to 36	Changed	Changes made to the Configuration, Service and Support , Technical Specs, Appendix and Overview Sections
01-Jun-2015	From Version 34 to 35	Added	New lower cost 3.84TB cMLC SSDs available New 1.92TB FIPS Encrypted cMLC SSD available New 1.2TB 10K, 2TB 7.2K SFF, 6TB 7.2K FIPS Encrypted HDD available
		Changed	Changes made to the Configuration, Service and Support , Technical Specs and Overview Sections
		Deleted	Removed all the File Controller Section since it now has its own QS.
03-Apr-2015	From Version 33 to 34	Changed	Changes made to the Models Section.
30-Mar-2015	From Version 32 to 33	Changed	Changes made to the Service and Support, Configuration Information and Technical Specifications Sections.
09-Jan-2015	From Version 31 to 32	Changed	Changes made to the Overview and Technical Specifications Sections.
1-Dec-2014	From Version 30 to 31	Changed	Added section about HP 3PAR File Persona Software Suite
20-Nov-2014	From Version 31 to 30	Changed	The document was reverted to version 30 at BU request.
10-Nov-2014	From Version 30 to 31	Changed	Changes were made throughout the QuickSpecs.
29-Sep-2014	From Version 29 to 30	Changed	Changes were made throughout the QuickSpec.
22-Aug-2014	From Version 28 to 29	Changed	Removed this entire bullet: "Encrypted and non-encrypted drives can be mixed in a non-encrypted array"
20-Aug-2014	From Version 27 to 28	Changed	Changes made to the Overview section. Update some SKU descriptions.
18-Aug-2014	From Version 26 to 27	Changed	Changes were made throughout the QuickSpec.
18-Jul-2014	From Version 25 to 26	Changed	Configuration section – WSS2012 R2 Upgrade section added (D4T73A); Standard Features – Power Supply changed from 2x 460 W to 2 x 750 W;.
10-jun-2014	From Version 24 to 25	Changed	Overview table info, standard features resilient part; carepack information
05-Jun-2014	From Version 23 to 24	Changed	Change made in Overview
01-Jun-2014	From Version 22 to 23	Changed	Change made in step 5
11-apr-2014	From Version 21 to 22	Changed	Overview chart, Step 11 in Configuration, Models, and Technical Specifications chart were revised.
04-apr-2014	From Version 20 to 21	Changed	Corrected the images in the Configuration section.
31-mar-2014	From Version 19 to 20	Changed	Changes were made throughout.
24-mar-2014	From Version 18 to 19	Changed	Image correction.
17-Jan-2014	From Version 17 to 18	Changed	Maximum Initiators Supported was revised in the overview chart.

Summary of Changes

10-dec-2013	From Version 16 to 17	Added	Added the missing image to Step 1.
09-dec-2013	From Version 15 to 16	Changed	Overview and Configuration were revised.
30-sep-2013	From Version 14 to 15	Added	Proactive Select credits available for an additional price note was added to Service and Support, HP Care Pack and Warranty Information HP 3PAR StoreServ M6710 Midline 1TB 6Gb SAS 7.2K SFF Nearline HDD was added to Step 4 in Configuration Information
19-aug-2013	From Version 13 to 14	Changed	Fibre Channel Switches and HP Intelligent Infrastructure Analyzer Software (IIAS) were revised in Configuration Information HP M6710 and 6720 400GB 6G SAS MLC Solid State Devices were added to HP 3PAR SSDs in Configuration Information HP M6710 400GB 6G SAS SFF MLC Encrypted Solid State Device was added to HP 3PAR Encryption SSD/HDD/LTU in Configuration Information HP 622 1075mm Pallet Intelligent Series Rack (22U) was removed from HP Intelligent Series Racks in Configuration Information
19-jul-2013	From Version 12 to 13	Changed	Superscript was added to the Overview chart.
17-jul-2013	From Version 10 to 12	Changed/Removed	Superscripts were added to the Overview chart. Removed "600GB SAS 10K RPM Hard Disk Drive Encrypted (2.5 in)" from the What's New section.
02-jul-2013	From Version 9 to 10	Changed	Internal Storage for HP 3PAR StoreServ File Controller specifications was revised HP 622 1075mm Pallett Intelligent Series Rack (22U) was removed from HP Intelligent Series Racks
14-jun-2013	From Version 8 to 9	Changed	Changes were made to the Service and Support Section- Note updated
10-jun-2013	From Version 7 to 8	Changed	Changes were made throughout the entire QuickSpec. Added the entire new HP 3PAR StoreServ File Controller section.
13-may-2013	From Version 6 to 7	Changed	Changes were made in the following sections: Configuration Information: Step 5
21-dec-2012	From Version 4 to 5	Changed	Changes were made in the following sections: Configuration: in Step 7 updated part description in Expansion Options.
17-dec-2012	From Version 3 to 4	Changed	Changes were made in the following sections: Service and Support, HP Care Pack and Warranty Information: change made in Related Services section Configuration: change made in Step 8 section.
14-dec-2012	From Version 2 to 3	Changed	Changes were made in the following sections: Overview: in Summary changed text and changed "2013" to "a later release".

Summary of Changes

			Service and Support: added hyperlink and ordering information, in Related services added a new service item.
			Configuration: in Step 1 corrected title, in Step 5 & 7 changed 2013 to a later release, in Step 8 added new software items, in Step 9 deleted the row HP Rack and Rack Options and added HP Virtual Contact information. Added Step 10.
05-dec-2012	From Version 1 to 2	Added	Added the EMEA version.