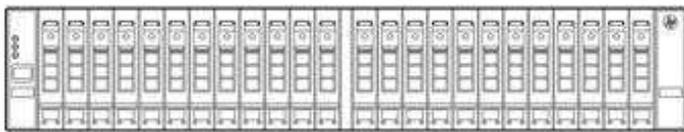


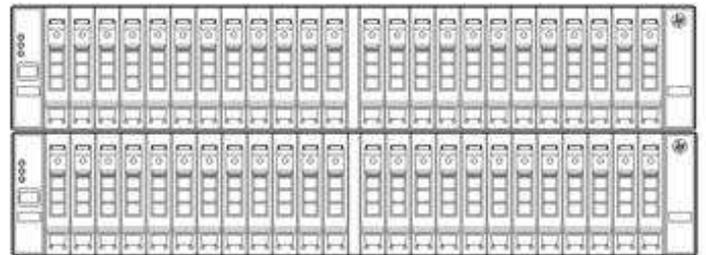
Overview

HP 3PAR StoreServ 7000 Storage extends the innovative HP 3PAR StoreServ product line to the midrange with industry leading performance and features at the price you need. 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 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 7200 Storage



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
Cache	24 GB	32 - 64 GB
Maximum Host Ports	12 ports	24 ports
Fibre Channel Host Ports	4 - 12 ports	4 - 24 ports
10Gb/s iSCSI Host Ports ⁶	0 - 4 ports	0 - 8 ports
Maximum Initiators Supported	512	512 or 1024
2U Controller Enclosure SAS Drive Capacity	24	24
Number of Disk Drives	8 ¹ - 144 drives	8 ¹ - 480 drives
Number of Solid State Drives	8 ¹ - 120	8 ¹ - 240
Raw Capacity (approx.) ²	1.2 - 250 TB ³	1.2 - 864 TB 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)	100 SSD ⁴ , 200 SSD ⁴ , 300 SAS, 450 SAS, 900 SAS, 2000 NL ⁵ , 3000 NL ⁵	100 SSD ⁴ , 200 SSD ⁴ , 300 SAS, 450 SAS, 900 SAS, 2000 NL ⁵ , 3000 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 - 5 enclosures	0 - 18 enclosures

¹ The minimum drive quantity is permitted as long as the total raw capacity is at least 1.2 TB.

Overview

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.

⁶ Ports are FCoE ready. FCoE support will be available in a later release.

NOTE: Specifications are subject to change without notice.

Host OS Support

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

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

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

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

SUSE® Linux Enterprise | 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>

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.

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, greater availability, and next-generation functionality to multiple user groups and applications from a single storage system.

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

High Availability - Featuring the same mesh-active architecture as all HP 3PAR StoreServ products, HP 3PAR StoreServ 7000 offers the highest levels of data availability and protection for the midrange. 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

Features

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.

Service and Support, HP Care Pack, and Warranty Information

Warranty

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

HP 3PAR StoreServ 7000 drive (SSD, SAS performance and Nearline) 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>

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 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 Critical Service - This service delivers 24x7 monitoring of your environment, making it the right choice when uninterrupted uptime is essential. We implement improvement projects to mitigate risks and reduce incidents to maximize uptime. If outages do occur, they will be addressed immediately through access to our dedicated critical support escalation resources, with a six-hour call-to-repair commitment from our mission-critical call center.

Additional Option:

10 Proactive Select credits per year per array - 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.

Standard Care -

HP Proactive Care 24x7- for a higher return on your storage investment, Proactive Care delivers



Service and Support, HP Care Pack, and Warranty Information

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

HP Proactive Care Personalized Support - The HP Proactive Care Personalized Support option allows for an increased personalization of the Proactive Care support experience through the assignment of an Account Service Manager (ASM) who provides IT best practice advice to help address IT issues and projects. The ASM will develop an annual support plan, provide four days of operational and technical advice, and conduct semi-annual support reviews to ensure the Proactive Care service deliverables address the customer's priorities. This option is only available for Proactive Care customers and may be purchased once per environment.

HP Personalized Support Additional Day - Customers who require more time than is provided by the Personalized Support option can elect to purchase additional days through the Personalized Support Additional Day option. The time may be used to provide extra support reviews and/or more operational & technical advice.

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:

HP Proactive Care Personalized Support - The HP Proactive Care Personalized Support option allows for an increased personalization of the Proactive Care support experience through the assignment of an Account Service Manager (ASM) who provides IT best practice advice to help address IT issues and projects. The ASM will develop an annual support plan, provide four days of operational and technical advice, and conduct semi-annual support reviews to ensure the Proactive Care service deliverables address the customer's IT priorities. This option is only available for Proactive Care customers and may be purchased once per environment.

HP Personalized Support Additional Day - Customers who require more time than is provided by the Personalized Support option can elect to purchase additional days through the Personalized Support Additional Day option. The time may be used to provide extra support reviews and/or more operational & technical advice.

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 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 Data Migration Service- HP expertise and tools help you migrate data across your data center or around the globe. Take the burden of migration off your shoulders and put it in the capable hands of expert HP storage migration consultants. Our proven approach helps

Service and Support, HP Care Pack, and Warranty Information

orchestrate the complete data migration and consolidation process while maintaining consistent data availability during the transfer process.

<http://h20195.www2.hp.com/V2/GetPDF.aspx/4AA3-0774ENW.pdf>

HP Enhanced Implementation Service for SANs - 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>

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

Service and Support, HP Care Pack, and Warranty Information

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 Assessment Service- The HP 3PAR Assessment Service is delivered remotely for a single HP 3PAR StoreServ Storage System and does not include performance analysis, testing, or modeling. The service requires that remote monitoring be enabled on the HP 3PAR StoreServ Storage System being assessed. The assessment findings are compared to HP best practices and a summary report is provided that includes recommendations intended to improve availability and ongoing management of your HP 3PAR StoreServ Storage System.
<http://h20195.www2.hp.com/v2/GetPDF.aspx/4AA3-2346ENW.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 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 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>

HP 3PAR Dynamic Optimization I&S - For Dynamic Optimization, implementation by HP of task 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>

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

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

Service and Support, HP Care Pack, and Warranty Information

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

Configuration

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

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 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 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.
- 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

Configuration

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.

HP 3PAR StoreServ 7400 Upgrade Controller Node Pair

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

HP 3PAR StoreServ 7400 Upgrade Node Pair

QR484A

- Used to upgrade the QR483A HP 3PAR StoreServ 7400 2-node 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: FCoE functionality will be enabled in a later release.

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

- Used in the Storage Base products (QR482A, QR483A, and QR485A) and the Upgrade Node Pair (QR484A).
- 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 and the QR487A includes (2) 10 Gb/s 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 and iSCSI/FCoE 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 (**NOTE:** FCoE functionality will be enabled in a later release).

Configuration

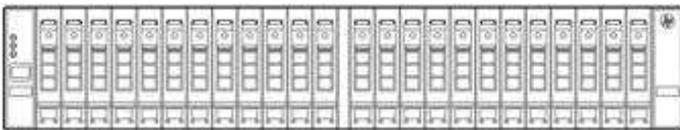
Permitted Adapter Configurations										
Product	Nodes	A*	B*	C*	D	E	F*	G	H*	I*
QR482A	Node 0	Empty	FC	iSCSI/FCoE						
	Node 1	Empty	FC	iSCSI/FCoE						
QR483A	Node 0	Empty	FC	iSCSI/FCoE						
	Node 1	Empty	FC	iSCSI/FCoE						
QR484A	Node 2	Empty	FC	iSCSI/FCoE						
	Node 3	Empty	FC	iSCSI/FCoE						
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.

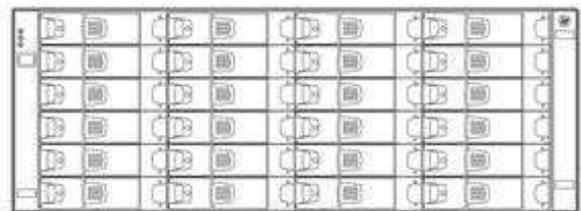
NOTE: If the configuration includes Remote Copy over Fibre Channel it is recommended that optional Fiber Channel HBAs are purchased as the built in ports will not offer sufficient connectivity.

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 supports up to five (5) added drive enclosures. The HP 3PAR StoreServ 7400 supports up to nine (9) added drive enclosures per node pair. 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

- 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 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

Configuration

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 M6710 100GB 6G SAS 2.5in SLC SSD (small form factor)	QR502A
	HP M6710 200GB 6G SAS 2.5in SLC SSD (small form factor)	QR503A
	HP M6720 100GB 6G SAS 3.5in SLC SSD (large form factor)	QR506A
	HP M6720 200GB 6G SAS 3.5in SLC SSD (large form factor)	QR507A

HP 3PAR SAS HDDs (Performance HDDs)	HP M6710 300GB 6G SAS 15K 2.5in HDD	QR492A
	HP M6710 450GB 6G SAS 10K 2.5in HDD	QR494A
	HP M6710 900GB 6G SAS 10K 2.5in HDD	QR496A

HP 3PAR NL SAS HDDs	HP M6720 2TB 6G SAS 7.2K 3.5in NL HDD	QR499A
	HP M6720 3TB 6G SAS 7.2K 3.5in NL HDD	QR500A

- 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.
 -

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- 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.
- * 8 drives support RAID 1 and RAID 5. For RAID 6 choose 12 drives.

Step 5 - Choose Service Processor Implementation

The HP 3PAR Service Processor monitors the HP 3PAR StoreServ 7000 and enables remote monitoring and remote servicing of the array. A virtual Service Processor is included free with the 3PAR Base Operating System. Each HP 3PAR StoreServ 7000 requires its own Service Processor. The Service Processor can be installed on a VMware system (or Hyper-V system in a later release), provided by the customer, meeting the following specifications.

- VMware vSphere 4.1, 5.0, or 5.1
- Server listed in VMware Compatibility Guide and with the following features
 - 2GB RAM (minimum)
 - 320GB free disk space (**NOTE: Virtual SP storage must not reside on the array it is managing.**)
 - DVD ROM or DVD RW
 - 1Gb Ethernet port

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

Service Processor

HP 3PAR 7000 Service Processor

QR516A

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 copper 1GbE 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 P10000 V-Class 3PAR 6m 50/125 (LC-LC) Fiber Cable	QR631A
	HP 3PAR 10m 50/125 (LC-LC) Fiber Cable	QL266B
	HP P10000 V-Class 3PAR 25m 50/125 (LC-LC) Fiber Cable	QR593A
	HP 3PAR 50m 50/125 (LC-LC) Fiber Cable	QL267B

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	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 5 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 Ethernet 4.3m (14 ft) CAT5e RJ45 M/M Cable	C7536A
	HP Ethernet 7.6m (25 ft) CAT5e RJ45 M/M Cable	C7537A
	HP Ethernet 15.2m (50 ft) CAT5e RJ45 M/M Cable	C7542A

Step 7 - Choose Racking Options

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 Series Rack | BW912A |
| HP 47U 1075mm Side Panel Kit | BW915A |
| HP 642 1075mm Shock Intelligent Series Rack | BW904A |
| HP 42U 1075mm Side Panel Kit | BW906A |
| HP 636 1075mm Shock Intelligent Series Rack | BW896A |
| HP 36U 1075mm Side Panel Kit | BW898A |
| HP 622 1075mm Pallet Intelligent Series Rack (22U) (available in a later release) | BW893A |

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>.

Configuration

For more information on PDUs, see:
<http://h18004.www1.hp.com/products/servers/proliantstorage/power-protection/pdu.html>.

HP PDU Pivot Kit	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.	AG730A
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 User 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	6 meter SAS expansion cable kit 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.	AP879A
	HP 2m Expansion Cable Kit 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.	AW566A
	1 meter SAS expansion cable kit 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.	QR514A

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

Configuration

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. After reaching the cap, you do not need to purchase any more Drive LTUs for that title.

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 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 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 OS Suite Base LTU	BC745A
HP 3PAR 7200 OS Suite Base E-LTU	BC745AAE
HP 3PAR 7200 OS Suite Drive LTU	BC746A
HP 3PAR 7200 OS Suite Drive E-LTU	BC746AAE
HP 3PAR 7400 OS Suite Base LTU	BC773A
HP 3PAR 7400 OS Suite Base E-LTU	BC773AAE
HP 3PAR 7400 OS Suite Drive LTU	BC774A
HP 3PAR 7400 OS Suite Drive E-LTU	BC774AAE

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 Suite Base LTU	BC747A
HP 3PAR 7200 Replication Suite Base E-LTU	BC747AAE
HP 3PAR 7200 Replication Suite Drive LTU	BC748A
HP 3PAR 7200 Replication Suite Drive E-LTU	BC748AAE
HP 3PAR 7400 Replication Suite Base LTU	BC775A
HP 3PAR 7400 Replication Suite Base E-LTU	BC775AAE
HP 3PAR 7400 Replication Suite Drive LTU	BC776A
HP 3PAR 7400 Replication Suite Drive E-LTU	BC776AAE

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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 reservationless, non-duplicative, read-only virtual copies (snapshots), the 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 Suite Base LTU	BC751A
HP 3PAR 7200 Security Suite Base E-LTU	BC751AAE
HP 3PAR 7200 Security Suite Drive LTU	BC752A
HP 3PAR 7200 Security Suite Drive E-LTU	BC752AAE
HP 3PAR 7400 Security Suite Base LTU	BC779A
HP 3PAR 7400 Security Suite Base E-LTU	BC779AAE
HP 3PAR 7400 Security Suite Drive LTU	BC780A
HP 3PAR 7400 Security Suite Drive E-LTU	BC780AAE

HP 3PAR 7000 Data Optimization Software Suite

HP 3PAR 7000 Data Optimization Software Suite - Rebalance, Redistribute, and Refresh The HP 3PAR 7000 Data Optimization Software Suite makes sure that data is on the right storage asset at the right time. This suite rebalances, redistributes and refreshes storage non-disruptively with features that provide autonomic storage tiering and dynamic data mobility, reducing cost and increasing agility. HP 3PAR 7000 Data Optimization Software Suite consists of HP 3PAR Dynamic Optimization Software, HP 3PAR Adaptive Optimization Software and HP 3PAR Peer Motion Software (providing federation capability for data mobility), which are also available separately. Data Optimization Software Suite uses drive-based licensing. For more information see

<http://h18006.www1.hp.com/storage/software/3par7000/dos/index.html>.

NOTE: The Adaptive Optimization feature requires HP 3PAR Reporting Software Suite as a prerequisite.

HP 3PAR 7200 Data Opt Suite Base LTU	BC749A
HP 3PAR 7200 Data Opt Suite Base E-LTU	BC749AAE
HP 3PAR 7200 Data Opt Suite Drive LTU	BC750A
HP 3PAR 7200 Data Opt Suite Drive E-LTU	BC750AAE
HP 3PAR 7400 Data Opt Suite Base LTU	BC777A
HP 3PAR 7400 Data Opt Suite Base E-LTU	BC777AAE
HP 3PAR 7400 Data Opt Suite Drive LTU	BC778A
HP 3PAR 7400 Data Opt Suite Drive E-LTU	BC778AAE

HP 3PAR Reporting Software Suite



Configuration

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	BC767A
	HP 3PAR 7200 Reporting Suite E-LTU	BC767AAE
	HP 3PAR 7400 Reporting Suite LTU	BC795A
	HP 3PAR 7400 Reporting Suite E-LTU	BC795AAE

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 App Suite for Oracle LTU	BC771A
	HP 3PAR 7200 App Suite for Oracle E-LTU	BC771AAE
	HP 3PAR 7400 App Suite for Oracle LTU	BC799A
	HP 3PAR 7400 App Suite for Oracle E-LTU	BC799AAE

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 App Suite for SQL LTU	BC770A
	HP 3PAR 7200 App Suite for SQL E-LTU	BC770AAE
	HP 3PAR 7400 App Suite for SQL LTU	BC798A
	HP 3PAR 7400 App Suite for SQL E-LTU	BC798AAE

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	
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Configuration

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 App Suite for Exchange LTU	BC769A
HP 3PAR 7200 App Suite for Exchange E-LTU	BC769AAE
HP 3PAR 7400 App Suite for Exchange LTU	BC797A
HP 3PAR 7400 App Suite for Exchange E-LTU	BC797AAE

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 App Suite for VMware LTU	BC768A
HP 3PAR 7200 App Suite for VMware E-LTU	BC768AAE
HP 3PAR 7400 App Suite for VMware LTU	BC796A
HP 3PAR 7400 App Suite for VMware E-LTU	BC796AAE

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 mid-sized 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 **Brocade Fibre Channel HBAs**

Configuration

Host Bus Adapters

HP 81B 8Gb 1-port PCIe Fibre Channel Host Bus Adapter	AP769B
HP 82B 8Gb 2-port PCIe Fibre Channel Host Bus Adapter	AP770B
HP 41B 4Gb 1-port PCIe Fibre Channel Host Bus Adapter	AP767B
HP 42B 4Gb 2-port PCIe Fibre Channel Host Bus Adapter	AP768B

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
HP FC2142SR 4Gb 1-port PCIe Fibre Channel Host Bus Adapter	A8002B
HP FC2242SR 4Gb 2-port PCIe Fibre Channel Host Bus Adapter	A8003B

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
HP FC1142SR 4Gb 1-port PCIe Fibre Channel Host Bus Adapter	AE311A
HP FC1242SR 4Gb 2-port PCIe Fibre Channel Host Bus Adapter	AE312A

Fibre Channel Switches

HP B-series

8 Gb Fibre Channel Switches

HP 8/8 Base SAN Switch	AM866B
HP 8/8 SAN Switch	AM867B
HP 8/24 SAN Switch	AM868B
HP 8/40 SAN Switch	AM869B
HP 8/40 Power Pack SAN Switch	AM870B
HP 8/80 SAN Switch	AM871B
HP 8/80 Power Pack SAN Switch	AM872B

16 Gb Fibre Channel Switches

HP SN3000B 16Gb 24/12 FC Switch	QW937A
HP SN3000B 16Gb 24/24 FC Switch	QW938A
HP SN6000B 16Gb 48/24 FC Switch	QK753B
HP SN6000B 16Gb 48/48 FC Switch	QR480B
HP SN6000B 16Gb 48/24 Power Pack+ FC Switch	QK754B
HP SN6000B 16 Gb 48/48 Power Pack+ FC SWitch	QR481B

8 Gb and 16 Gb Director Switches

HP SN8000B 8-Slot Power Pack+ SAN Backbone Director	QK710B
HP SN8000B 4-slot Power Pack+SAN Director	QK711B
HP SN8000B 4-slot SAN Director	QK712B
HP DC SAN Backbone Director Power Pack+	AK857C
HP DC04 SAN Director	AR478B
HP DC04 SAN Director, Power Pack+	AR479B

FCoE, Extension and Embedded Switches

HP 1606 Extension SAN Base Switch	AP862B, AP863E
HP 1606 Extension SAN Power Pack+ Switch	AP864B
HP 2408 FCoE Converged Network Switch	AP801B
HP 2408 Power Pack+ Converged Network Switch	AP802B
Brocade 8/12c SAN Switch for HP BladeSystem c-Class	AJ820B
Brocade 8/24c SAN Switch for HP BladeSystem c-Class	AJ821B
Brocade 8/24c SAN Switch for HP BladeSystem c-Class Power Pack+	AJ822B

HP H-series

Configuration

HP 8/20q Fibre Channel 8-ports Active Switch	AQ233B
NOTE: 8 device ports active, upgradeable to 20 device ports active	
HP 8Gb Simple SAN Connection Kit	AK241B
NOTE: 8 device ports active, upgradeable to 20 device ports active	
HP 8/20q Fibre Channel Switch	AK242B
NOTE: 16 switch ports active, upgradeable to 20 device ports active	
HP SN6000 Stackable 8Gb 24-port single power Fibre Channel Switch	AW575B
NOTE: 20 device ports active/4 stacking (ISL) ports active	
HP SN6000 Stackable 8Gb 24-port dual power Fibre Channel Switch	AW576B
NOTE: 20 device ports active/4 stacking (ISL) ports active	
HP SN6000 Stackable 8 Gb 12-port Single Power Fibre Channel Switch	BK780B
NOTE: 8 device ports/4 stacking (ISL) ports active, upgradeable to 20 device ports active	

HP C-series

HP SN8000C 13-Slot Supervisor 2A Fabric 3 Director Switch	QW927A
HP SN8000C 6-Slot Supervisor 2A Director Switch - MDS 9506	AE388C
HP SN8000C 9-Slot Supervisor 2A Director Switch - MDS 9509	AE389C
HP SN6000C Fibre Channel Switch - MDS 9148	AW585A,AW586A
Cisco MDS 8Gb Fabric Switch for HP BladeSystem c-Class	AW563A,AW564A
Cisco MDS 9124 8-Ports Active Fabric Switch	AG646A
Cisco MDS9124 16-Ports Active Fabric Switch	AG647A
Cisco MDS 9222i Multiservice Fabric Switch	AG851B

HP Intelligent Infrastructure Analyzer Software (IIAS)

HP Intelligent Infrastructure Analyzer Software LTU	TC400A
HP Intelligent Infrastructure Analyzer Software E-LTU	TC400AAE

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 5 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

Step 10 - 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. Online Import allows you to easily migrate data from EVA arrays to the HP 3PAR StoreServ 7000. 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 Multifunction Router 1 GbE Base Chassis	AP771B
	HP MPX200 Multifunction Router 1 GbE Upgrade Blade	AP772B
	HP MPX200 Multifunction Router 10GbE - 1 GbE Base Chassis	AP773B
	HP MPX200 Multifunction Router 10GbE - 1 GbE Upgrade Blade	AP774B
	HP 42B 4Gb Dual-Port PCI-e FC HBA	AP768B
FCIP Software	HP MPX200 Half Chassis or single blade FCIP License	TA766A
	HP MPX200 Full Chassis or dual blades 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

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 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
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

Technical Specifications

Power Requirements

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

Component	Idle (watts / BTU/hr)	Transactional (watts / BTU/hr)
Node Pair (7200 or 7400), no drives, no add-on host adapters	236 / 803	398 / 1357
4-port 8Gb/sec Fibre Channel Adapter	24 / 81.7	32.6 / 111
2-port 10Gb/sec iSCSI/FCoE Adapter	34 / 115.8	40 / 136.4
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	6.2 / 21.1	8.0 / 27.3
450GB 10K Small Form Factor HDD	3.7 / 12.6	6.3 / 21.5
900GB 10K Small Form Factor HDD	4.8 / 16.4	6.2 / 21.1
2TB 7.2K Large Form Factor NL HDD	7.5 / 25.6	10.6 / 36.1
3TB 7.2K Large Form Factor NL HDD	8.5 / 28.9	11.8 / 40.2
100GB SLC SSD	1.4 / 4.8	3.9 / 13.3
200GB SLC SSD	1.4 / 4.8	3.9 / 13.3

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)

Technical Specifications

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.

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For drives, 1 TB = 1 trillion bytes. Actual formatted capacity is less.