

### Overview

#### HPE 3PAR StoreServ 10000 Storage

HPE 3PAR StoreServ 10000 Storage is the platinum standard for Tier 1 storage to meet the need of hybrid and private cloud and ITaaS environments delivering autonomic, efficient, multi-tenant, and federated storage. Achieve six nines availability with the same trusted and proven architecture chosen by 3 out of 4 of the world's largest managed service providers (MSPs). Double VM density on your physical servers through a flash-optimized architecture designed to deliver the necessary I/O performance and workload agility to remove storage as a bottleneck in virtualized environments. Deliver uncompromising QoS for even the most demanding workloads. Use of unique thin technologies reduces acquisition and operational costs by up to 50% while autonomic management features improve administrative efficiency by up to tenfold.

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HPE 3PAR StoreServ 10000 Storage

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## Overview

Summary	Block Storage			File Storage
	10400 (Old)	10400 (New)	10800	HPE StoreServ File Controller <sup>v213</sup>
Number of Controller Nodes	2 or 4	2 or 4	2, 4, 6, or 8	Up to 8
HPE 3PAR Gen4 ASICs	4 or 8	4 or 8	4, 8, 12 or 16	Not Applicable
Management Processors	4 - 8 Quad-Core 2.83 GHz	4 - 8 Quad-Core 2.83 GHz	4 - 16 Quad-Core 2.83 GHz	1 - 16 four-core 2.4 GHz
Total Cache	1.51 - 3.2 TiB	2.2 - 4.4 TiB	2.2 - 8.8 TiB	None
Total Flash Cache (optional)	1.5 - 3 TiB	2 - 4 TiB	2 - 8 TiB	None
Total On-Node Cache	96 - 192 GiB	192 - 384 GiB	192 - 768 GiB	None
Maximum Host Ports	96 ports	96 ports	192 ports	4 - 128
8Gb/s Fibre Channel Host Ports <sup>1</sup>	0 - 96 ports	0 - 96 ports	0 - 192 ports	Not Applicable
16Gb/s Fibre Channel Host Ports <sup>1</sup>	0 - 48 ports	0 - 48 ports	0 - 96 ports	Not Applicable
10Gb/s iSCSI Host Ports <sup>10</sup>	0 - 16 ports	0 - 16 ports	0 - 32 ports	Not Applicable
10Gb/s FCoE Host Ports <sup>11</sup>	0 - 48 ports	0 - 48 ports	0 - 96 ports	Not Applicable
1GbE/10GbE Network Ports	Not Applicable	Not Applicable	Not Applicable	4 - 128
Built-in Remote Copy (RCIP) Ports <sup>14</sup>	2 - 4 ports	2 - 4 ports	2 - 8 ports	None
Number of Drives	16 <sup>2</sup> - 960 drives	16 <sup>2</sup> - 960 drives	16 <sup>2</sup> - 1,920 drives	2
Raw Capacity (approx.) <sup>3</sup>	4.84 - 1600 TiB <sup>4</sup>	4.84 - 1600 TiB <sup>4</sup>	4.84 - 3200 TiB <sup>4</sup>	2x450GB for O/S mirror

Capacity Details		
RAID Levels	RAID 0, 1, 5, MP <sup>5</sup>	RAID 0, 1, 5, 6 <sup>12</sup>
RAID 5 Data to Parity Ratios	2:1 - 8:1	2:1 - 8:1 <sup>12</sup>
RAID 6 Data to Parity Ratios	4:2, 6:2, 8:2, 10:2, 12:2, 14:2	4:2, 6:2, 8:2, 10:2, 12:2, 14:2:12
Drive Capacities (approximate GB4) (RAID levels, parity ratios, and drive capacities all mixable within the same Storage System)	480 SSD <sup>6</sup> , 920 SSD <sup>6</sup> , 1920 SSD <sup>6</sup> 300 15K FC, 600 15K FC, 300 15K SAS <sup>7</sup> , 600 15K SAS <sup>7</sup> , 450 10K SAS <sup>7</sup> , 600 10K SAS <sup>7</sup> , 900 10K SAS <sup>7</sup> , 1200 10K SAS <sup>7</sup> , 1800 10K SAS <sup>7</sup> , 2000 7.2K SAS NL <sup>8</sup> , 4000 7.2K SAS NL <sup>8</sup> , 6000 7.2K SAS NL <sup>8</sup>	Not Applicable
Number of Drive Chassis (Each Drive Chassis holds up to 40 drives in 4U)	2 <sup>9</sup> - 24 chassis	2 <sup>9</sup> - 48 chassis

## Overview

**NOTE:** Support for SAS drives on HPE 3PAR StoreServ 10000 Storage is currently available with HPE 3PAR OS version 3.1.2 and later versions.

**NOTE:** Native FCoE support is available only for limited host configurations. Please check with your regional manager for more details

**NOTE:** A dedicated CNA is required for FCoE host connectivity

**NOTE:** The 1600TB and 3200 TB maximum raw capacity limits for the HPE 3PAR StoreServ 10400 and 10800 Storage respectively are applicable only to systems running HPE 3PAR OS version 3.1.3 or later

**NOTE:** Specifications are subject to change without notice

<sup>1</sup> Each port is full bandwidth 8 Gbit/s or 16 Gbit/s Fibre Channel capable as applicable<sup>2</sup> Recommended minimum is 32 drives which results in a 9.6 TB minimum raw capacity.

<sup>3</sup> Maximum raw capacity currently supported with any and all drive types

<sup>4</sup> For storage capacity, 1 GiB = 2<sup>30</sup>bytes and 1 TiB = 1,024 GiB

<sup>5</sup> RAID MP is HPE 3PAR Fast RAID 6 Technology

<sup>6</sup> SSDs are Solid State Drives

<sup>7</sup> SAS drives are Serial Access SCSI Drives

<sup>8</sup> NL drives are Nearline (7.2k) disks

<sup>9</sup> Recommended minimum is 4 drive chassis per pair of controller nodes

<sup>10</sup> Each port is full bandwidth 10 Gbit/s iSCSI capable

<sup>11</sup> Each port is full bandwidth 10 Gbit/s FCoE capable

<sup>12</sup> Applies to the array storage assigned to 3PAR StoreServ File Controller for file services

<sup>13</sup> For details, please refer to the 3PAR StoreServ File Controller v2 section in this document

<sup>14</sup> Two built-in 1-GbE RCIP ports per node pair; maximum of 8 usable; RCFC works out of the FC Host ports

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### Host OS Support

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

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

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

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

SUSE® Linux® Enterprise | Ubuntu | VMware vSphere™

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

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## Features

### Get Thin and Stay Thin

The revolutionary, zero-detect capable HPE 3PAR Gen4 ASIC is a hyper-efficient storage optimization engine designed to power "fat-to-thin" volume conversions in silicon while preserving superior performance levels. Fat-to-thin volume conversions boost capacity utilization by removing allocated but unused space from traditional, "fat" storage volumes.

With the HPE 3PAR Gen4 ASIC's built-in, hardware-based zero-detection capabilities, migration of "fat" volumes from other storage platforms to new "thin" volumes on HPE 3PAR StoreServ Storage is achieved with the greatest speed possible and without the application disruption of software-based implementations. The HPE 3PAR Gen4 ASIC's enables the automatic migration of data from sparsely used pages to enable 128MB regions to be reclaimed for re-use by other volumes. With conversions taking place at the hardware level, more parallel memory transactions are possible and system performance is not impacted like it is with software-based approaches to volume optimization. Thin Built In capabilities within HPE 3PAR StoreServ 10000 Storage also power the ongoing, automated optimization of thin provisioned volumes on HPE 3PAR StoreServ Storage, so thin volumes stay thin.

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### Building Block for Cloud Computing

Building a converged infrastructure to support cloud and self-service computing models requires a high degree of virtualization that places new demands on storage. With their distinct architectural advantages, thin hardware capabilities, and superior performance, HPE 3PAR StoreServ 10000 Storage is purpose-built to meet the demands of highly virtualized environments. HPE 3PAR StoreServ 10000 Storage gives enterprises and service providers the agility to respond quickly to changing business needs while maintaining the resiliency that "always-on" businesses demand.

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## Software

### **Start Thin. HPE 3PAR Thin Provisioning Software**

HPE 3PAR Thin Provisioning Software improves storage system efficiency and optimizes capacity utilization system-wide. It does this by addressing the problem of capacity over-allocation through eliminating the need to dedicate storage capacity on a per-application basis. Since its introduction, HPE 3PAR Thin Provisioning Software has given HPE 3PAR StoreServ Storage clients the ability to meet Green IT targets and reduce capacity purchases. Thin Provisioning makes this possible by cutting SAN costs, floor space requirements, and energy expenses by up to 75% and decreasing administration time by up to 90%. It does this by allowing organizations to purchase only the disk capacity they actually need, only as they actually need it through eliminating the need for up-front capacity allocation and dedicating resources to individual applications. This prevents clients from paying to power, house, and cool disks that they may not need for months or years to come, or may never actually need.

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### **Get Thin. HPE 3PAR Thin Conversion Software**

With HPE 3PAR Thin Conversion Software, a technology refresh no longer requires a terabyte-for-terabyte replacement, but instead offers the opportunity to eliminate 70-80% of the legacy capacity in a client's storage environment, simply and rapidly. Leveraging the zero-detection capability built into the HPE 3PAR ASIC, the new Gen4 ASIC combined with HPE 3PAR Thin Conversion Software, still effectively and rapidly "thin" a heterogeneous data center to one-quarter of its original size or less while preserving service levels, and without impacting production workloads. The new ASIC enables the automatic migration of data from sparsely used pages to enable 128MB regions to be reclaimed for re-use by other volumes, driving efficient use of space beyond what was available with the Gen3 ASIC. This solution not only makes a technology refresh more affordable, but it reduces up-front capital costs as well as ongoing operational and environmental costs associated with powering, cooling, and housing storage equipment. It also provides space and power consumption relief for data centers approaching maximum density.

In an ideal world, all storage volumes would start thin using HPE 3PAR Thin Provisioning Software. But in some cases, starting thin has not been an option, particularly when it comes to data stored on legacy arrays from traditional storage vendors. HPE 3PAR Thin Conversion Software uses a virtualization mapping engine for space reclamation called the HPE 3PAR Thin Engine, together with the unique hardware capabilities of the HPE 3PAR Gen4 ASIC to extend the benefits of thin provisioning to existing storage volumes. In tandem with the HPE 3PAR Gen4 ASIC, Thin Conversion enables inline, wire speed "fat-to-thin" conversions compatible with any host volume. HPE 3PAR Utility Storage is the only storage platform to offer this built-in, hardware-accelerated, fat-to-thin conversion capability. With HPE 3PAR Thin Conversion Software, clients can rapidly and non-disruptively shrink storage footprint, reduce storage TCO, and meet Green IT targets.

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### **Stay Thin. HPE 3PAR Thin Persistence Software and Thin Copy Reclamation**

To realize the ultimate efficiency and cost-saving benefits of starting thin or getting thin, storage also needs to stay thin. An industry first, HPE 3PAR Thin Persistence Software ensures that thin volumes on the array stay as lean and efficient as possible. Thin Persistence Software accomplishes this by using the HPE 3PAR Thin Engine with the system's built-in zero-detect capability to reclaim unused space associated with deleted data. With Thin Persistence, space reclamation on HPE 3PAR arrays takes place simply, quickly, and without disruption to production workloads.

Thin Copy Reclamation is an HPE 3PAR Operating System Software feature that performs a similar function to HPE 3PAR Thin Persistence Software, but uses the HPE 3PAR Thin Engine to reclaim unused space from thin copies (virtual copy snapshots and remote copies) rather than thin volumes.

On average, HPE 3PAR StoreServ Storage clients already purchase 60% less capacity than with traditional storage arrays. With HPE 3PAR Thin Persistence and Thin Copy Reclamation, customers can improve this average capacity savings by another 10% for a total savings of up to 70%. Volumes and snapshots can now stay thin to help sustain Green IT targets, defer the cost of purchasing raw capacity to handle new data growth, and keep costs down without the need to purchase special host-based software or retaining professional services.

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## Software

### HPE 3PAR Peer Motion Software

HPE 3PAR Peer Motion Software is a non-disruptive, do-it-yourself data migration tool for enterprise Storage Area Networks. With Peer Motion, HPE 3PAR StoreServ Storage customers can load balance I/O workloads across systems at will, perform technology refresh seamlessly, cost-optimize asset lifecycle management, and lower technology refresh capital expenditure. Unlike traditional block migration approaches, Peer Motion enables customers to migrate storage volumes between any HPE 3PAR StoreServ Storage online, non-disruptively, and without complex planning or dependency on extra tools. Peer Motion leverages HPE 3PAR Thin Built In™ technology to power the simple and rapid conversion of inefficient, "fat" volumes on source arrays to more efficient, higher-utilization "thin" volumes on the destination HPE 3PAR StoreServ Storage. To ensure a simple and fool-proof data migration and data mobility for workload balancing experience, orchestration of all stages of data mobility is available via either 3PAR Management Console or 3PAR Peer Motion CLI, which is an easy to use, scriptable command line interface tool.

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### HPE 3PAR Online Import Software

HPE 3PAR Online Import Software is the first do-it-yourself data migration tool for enterprise Storage Area Networks. Unlike traditional block migration approaches, Online Import Software enables customers to migrate storage volumes from either HPE EVA Storage, EMC CX4 or EMC VNX Storage to HPE 3PAR StoreServ Storage systems online and without complex planning or dependency on extra tools.

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### HPE 3PAR Express Writes

HPE 3PAR Express Writes is a write acceleration feature built in to HPE 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<sup>1</sup>. All currently supported HPE 3PAR StoreServ Storage HBAs and hosts also support the HPE 3PAR Express Writes feature, and its benefits extend to both spinning drives and flash-based media.

<sup>1</sup>Based on a random, 100 percent write workload with an 8K block size.

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### HPE 3PAR StoreServ Data Encryption

The HPE 3PAR StoreServ Data 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 StoreServ 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

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### HPE Storage Management Pack for Microsoft System Center

The HPE Management Pack for Systems Center Operations Manager provides seamless integration with Microsoft Systems Center Operations Manager and now System Center Essentials by integrating predefined discovery and state monitoring policies, event processing rules and tasks, and diagram and topology views for the storage system.

For more information:

<https://www.hpe.com/h20195/v2/GetHTML.aspx?docname=c04154363>

HPE Storage Management Pack can be downloaded free from the following website

<https://h20392.www2.hpe.com/portal/swdepot/displayProductInfo.do?productNumber=SCOM>

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### HPE StoreFront Remote SaaS Portal

The HPE StoreFront Remote SaaS Portal provides proactive tools and integrated data collection from the HPE 3PAR StoreServ Storage arrays that call home to deliver unique insights and analytics all in one dashboard. Identify capacity and performance issues early through intuitive capacity and performance trend analysis and forecasting. These valuable analytics help maximize asset utilization and optimize the datacenter with recommendations and remedial actions when issues arise. Users can log into <http://www.storefrontremote.com> to claim their arrays and get access for free.

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## Service and Support and Warranty Information

### Warranty

3 Year, On-site Warranty Service. 7x24 4-hour remote response with next business day on-site response  
The warranty on the following HPE 3PAR StoreServ 10000 Solid State Drives is 5 years, parts only:

HPE 3PAR StoreServ 10000 4x480GB 6G SAS MLC Solid State Drive Magazine	E7W56A
HPE 3PAR StoreServ 10000 4x920GB 6G SAS MLC Solid State Drive Magazine	E7W26A
HPE 3PAR StoreServ 10000 4x1.92TB 6G SAS SFF(2.5in) cMLC Solid State Drive Magazine	E7Y61A
HPE 3PAR StoreServ 10000 4x1.92TB 6G SAS SFF(2.5in) cMLC Solid State Drive Magazine	K0F38A
HPE 3PAR StoreServ 10000 4x920GB 6G SAS FIPS Encrypted MLC Solid State Drive Magazine	E7Y53A
HPE 3PAR StoreServ 10000 4x480GB 6G SAS MLC SSD Upgrade Magazine	E7W57A
HPE 3PAR StoreServ 10000 4x920GB 6G SAS MLC SSD Upgrade Magazine	E7W27A
HPE 3PAR StoreServ 10000 4x1.92TB 6G SAS SFF(2.5in) cMLC Solid State Drive Upgrade Magazine	E7Y62A
HPE 3PAR StoreServ 10000 4x1.92TB 6G SAS SFF(2.5in) cMLC Solid State Drive Upgrade Magazine	K0F39A
HPE 3PAR StoreServ 10000 4x920GB 6G SAS FIPS Encrypted MLC Solid State Drive Upgrade Magazine	E7Y54A
HPE 3PAR StoreServ 10000 4x400GB SAS SFF(2.5in) Solid State Drive Upgrade Magazine	P9B43A

The warranty on all other HPE 3PAR StoreServ 10000 drives (FC, SAS, SSD and NL SAS) is 3 years, parts only.  
HPE 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

<https://ssc.hpe.com/portal/site/ssc/>

**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 HPE 3PAR StoreServ under the great majority of configurations, IO patterns, and workloads. HPE 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 SSD warranty period, SSDs that have exceeded the maximum usage limit will not be repaired or replaced under Hewlett Packard Enterprise support contracts.

## Service and Support and Warranty Information

### Service and Support

#### Protect your business beyond warranty with HPE Support Services

HPE Technology Services delivers confidence, reduces risk and helps customers realize agility and stability. Our integrated portfolio of Services for storage help customers reduce costs, optimize data, streamline storage management, and improve backup and recovery. HPE Support Services enable you to choose the right service level, length of coverage and response time as you purchase your new storage solution, giving you full entitlement for the support for need for your IT and business.

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#### Connect your devices

Unlock all of the benefits of your technology investment by connecting your products to Hewlett Packard Enterprise. Achieve up to 77%<sup>1</sup> reduction in down time, near 100%<sup>2</sup> diagnostic accuracy and a single consolidated view of your environment. By connecting, you will receive 24x7 monitoring, pre-failure alerts, automatic call logging, and automatic parts dispatch. HPE Proactive Care Service and HPE Datacenter Care Service customers will also benefit from proactive activities to help prevent issues and increase optimization. All of these benefits are already available to you with your server storage and networking products, securely connected to HPE support.

1- IDC

2 – HP CSC reports 2014 – 2015

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#### Optimized Care

##### HPE Proactive Care Advanced\* - 24x7 coverage, three year Support Service

This services helps achieve a higher return on your product investment with personalized support from a local assigned Account Support Manager who will share best practice advice and personalized recommendations designed to help improve availability and performance to increase stability and reduce unplanned downtime. Leverage your system's ability to connect to HPE for pre-failure alerts, automatic call logging and parts dispatch. For business critical incidents, this service offers critical event management to reduce mean time to resolution. This recommendation provides 24x7 coverage with four-hour response for hardware and collaborative support that offers two-hour callback for supported software issues. Collaborative software management is included with independent software vendors unless you have your software support from HPE where we own all cases from start through to resolution.

<https://www.hpe.com/h20195/V2/GetDocument.aspx?docname=4AA5-3259ENW&cc=us&lc=en>

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#### Standard Care

##### HPE Proactive Care\* with 24x7 coverage, three year Support Service + 20 services credits for 1<sup>st</sup> year

HPE Proactive Care gives customers an enhanced call experience plus helps preventing problems and maintains IT stability by utilizing personalized proactive reports with recommendations and advice when your products are connected to HPE. This Service combines three years' proactive reporting and advice with our 24x7 coverage, four hour hardware response time when there is a problem

<https://www.hpe.com/h20195/v2/GetPDF.aspx/4AA3-8855ENW.pdf>

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#### Basic Care

##### HPE Proactive Care\* with 24x7 coverage, three year Support Service + 10 services credits per year

HPE Proactive Care gives customers an enhanced call experience plus helps preventing problems and maintains IT stability by utilizing personalized proactive reports with recommendations and advice when your products are connected to HPE. This Service combines three years' proactive reporting and advice with our 24x7 coverage, four hour hardware response time when there is a problem

<https://www.hpe.com/h20195/v2/GetPDF.aspx/4AA3-8855ENW.pdf>



## Service and Support and Warranty Information

### HPE Services Support Credits

Services Support Credits offer flexible services and technical skills to meet your changing IT demands. With a menu of service that is tailored to suit your needs, you get additional resources and specialist skills to help you maintain peak performance of your IT. Offered as annual credits, you can plan your budgets while proactively responding to your dynamic business.

\*HPE Proactive Care and HPE Proactive Care Advanced require that the customer connect their devices to make the most of these services and receive all the deliverables.

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### Implement right from the start Whichever level of care you select, it includes:

**HPE 3PAR StoreServ Storage Installation and Startup Service** - Hewlett Packard Enterprise installs and tests your hardware and software onsite, including configuration. We deliver a custom tailored storage deployment, properly integrated into your environment

<http://h20195.www2.hpe.com/v2/GetPDF.aspx/4AA3-2345ENW.pdf>

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### 3PAR Remote Support Tools

**Support Recommendations include fully integrated remote supported** - core design and fabric of 3PAR industry benchmark remote support systems. Site-specific data used both proactively and reactively with real-time monitoring and information extraction tools.

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### Additional services to meet your needs

**HPE Storage Transformation Workshop** - Explore data management transformation journey to business-aligned visions, aligning your specific situation and Hewlett Packard Enterprise's experiences.

<http://h20195.www2.hpe.com/V2/GetPDF.aspx/4AA4-9541ENW.pdf>

**HPE 3PAR StoreServ Data Migration** - Proven expertise and tools help you migrate data across your data center or around the globe.

**HPE Storage Modernization Service** - Modernize your storage to take better advantage of physical or virtualized server environments

**HPE StoreServ Integration Service** - Integrate your new HPE 3PAR StoreServ system so that it is agile, performs effectively, and scales to rapid growth.

<http://h20195.www2.hpe.com/V2/GetPDF.aspx/4AA4-9254ENW.pdf>

**HPE EVA to 3PAR Acceleration Service** - The HPE 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.

**HPE SAN Deployment Service** - Hewlett Packard Enterprise delivers complete design and implementation services for Fibre Channel, FCoE, FCIP, SAS, and iSCSI SAN connectivity components. <http://h20195.www2.hpe.com/V2/GetPDF.aspx/5981-8527EN.pdf>

**HPE Data Replication Solution Service for 3PAR Virtual Copy** - This service enables snapshots and mirroring to facilitate data restores, minimize downtime for backups, perform application testing and support data mining use with decision-support tools.

<http://h20195.www2.hpe.com/v2/GetPDF.aspx/4AA3-8107ENW.pdf>

**HPE Data Replication Solution Service for 3PAR Remote Copy** - HPE 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

<http://h20195.www2.hpe.com/V2/GetPDF.aspx/4AA3-8627ENW.pdf>

## Service and Support and Warranty Information

**HPE 3PAR Peer Persistence Software Installation and Startup Service** - Provides implementation of the HPE 3PAR Peer Persistence Software product. The service is designed to help get HPE 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.hpe.com/V2/GetPDF.aspx/4AA4-2772ENW.pdf>

**HPE 3PAR Adaptive Optimization Policy Implementation Service** - Provides analysis, recommendations, and implementation of HPE 3PAR Adaptive Optimization policies to enable storage tiering using data collected from the HPE 3PAR Storage system over time.

<https://h20195.www2.hpe.com/V2/GetPDF.aspx/4AA4-3393ENW.pdf>

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

**HPE Thin Volume Conversion Service** - Provides evaluation and execution of conversion from standard to thin provisioned virtual volumes for HPE 3PAR Storage. A service specialist advises the customer on Hewlett Packard Enterprise 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.

<https://h20195.www2.hpe.com/V2/GetPDF.aspx/4AA4-3393ENW.pdf>

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

**HPE 3PAR Performance and Capacity Trending Service** - HPE 3PAR Performance and Capacity Trending Service provides data collection, analysis, and reports with key performance and capacity metrics for your HPE 3PAR StoreServ array. Through this service, you will receive a specified number of reports describing long-term trends in performance and capacity usage, and have the option to purchase additional reports. You will also receive briefing sessions highlighting HPE's findings and recommendations. <http://h20195.www2.hpe.com/V2/GetPDF.aspx/4AA5-8792ENW.pdf>

**HPE 3PAR Health Check Service** - The HPE 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 HPE 3PAR StoreServ Storage System. This health check service is best for HPE 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.

**HPE 3PAR Storage Rebalance Service** - The HPE 3PAR Rebalance Service helps balance data across your HPE 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.hpe.com/V2/GetPDF.aspx/4AA4-0280ENW.pdf>

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## Service and Support and Warranty Information

### For more information

<http://www.hpe.com/services/storage>

To learn more on HPE Storage Services, please contact your Hewlett Packard Enterprise sales representative or Hewlett Packard Enterprise Authorized Channel Partner

HPE Pointnext operational services are sold by Hewlett Packard Enterprise and Hewlett Packard Enterprise Authorized Service Partners:

- Services for customers purchasing from Hewlett Packard Enterprise or an enterprise reseller are quoted using Hewlett Packard Enterprise order configuration tools.
  - Customers purchasing from a commercial reseller can find HPE Pointnext operational services at <https://ssc.hpe.com/portal/site/ssc/>
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### Parts and Materials

Hewlett Packard Enterprise will provide HPE-supported replacement parts and materials necessary to maintain the covered hardware product in operating condition, including parts and materials for available and recommended engineering improvements.

Parts and components that have reached their maximum supported lifetime and/or the maximum usage limitations as set forth in the manufacturer's operating manual, product quick-specs, or the technical product data sheet will not be provided, repaired, or replaced as part of these services.

The defective media retention service feature option applies only to Disk or eligible SSD/Flash Drives replaced by Hewlett Packard Enterprise due to malfunction.

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## Configuration

### HPE 3PAR StoreServ 10000 Base Configurations

HPE 3PAR StoreServ 10400 32GB Control/64GB Data Cache Rack Configuration Base	E7W33A
HPE 3PAR StoreServ 10400 32GB Control/64GB Data Cache Rackmount Config Base	E7W48A
HPE 3PAR StoreServ 10800 32GB Control/64GB Data Cache Rack Configuration Base	QW979A

- A minimum of one (1) configuration base must be ordered
- The base configuration includes two Controller Nodes, one 2-meter Cabinet, service processor
- The Rackmount Configuration Base (E7W48A) includes two Controller Nodes, rackmount kit (for backplane, controllers and service processor), service processor. A rackmount kit must be ordered separately for each drive chassis (see Drive section below). These rackmount kits are strictly for new installations into non-HPE 3PAR racks.
- The 10400 and 10800 base configurations include total cache: 64GB control / 128GB data
- The base configuration and node configurations, shown in the section below, have built-in Gigabit Ethernet ports for management and Remote Copy over IP
- The base configurations do not include adapters (beyond embedded ports), drive chassis, drives, cables or expansion cabinets. These are to be ordered separately
- The base configuration and expansion rack PDUs are selected based on the Country and three phase selection option.
- PDUs can be NEMA which stands for the National Electrical Manufacturers Association or IEC which stands for the International Electrotechnical Commission
  - NEMA and IEC PDUs differ from each other based on Ampere ratings and the plug types used. Generally, NEMA based PDUs are used in North America and IEC based PDUs are used everywhere else. There are exceptions, e.g., NEMA based PDUs are used in Japan, Taiwan and Philippines.
  - The NEMA PDU SKUs used are P9Q39A for single phase and P9Q60A for three phase
  - The IEC PDU SKUs used are P9Q43A for single phase and P9Q63A for three phase
  - Refer to <https://h20195.www2.hpe.com/v2/getpdf.aspx/c04123329.pdf> for detailed specifications regarding these PDUs

### HPE 3PAR StoreServ 10000 Controller Node Configurations

HP 3PAR StoreServ 10400 2.8GHz 32GB Control/64GB Data Cache Controller Node	E7W34A
HPE 3PAR StoreServ 10800 2.8-GHz 32GB Control/64GB Data Cache Controller Node	QR638C
HPE 3PAR StoreServ 10400 2.8-GHz 16GB Control/32GB Data Cache Upg Controller Node	QR603C
HPE 3PAR StoreServ 10400 2.8GHz 32GB Control/64GB Data Cache Upgr Controller Node	E7W35A
HPE 3PAR StoreServ 10800 3PAR 2.8-GHz 32GB Control/64GB Data Upg Controller Node	QR640C

- One (1) pair of Controller Nodes beyond the base configuration is supported on the 10400
- One (1), two (2) and three (3) pairs of Controller Nodes beyond the base configuration is supported on the 10800
- There are two 10400 Controller Nodes available - one that includes total cache: 32GB control / 64GB data and another that includes total cache: 64GB control / 128GB data.
- The 10800 Controller Nodes includes total cache: 64GB control / 128GB data
- The node configurations and base configuration, shown in the section above, have built-in Gigabit Ethernet ports for management and Remote Copy over IP

**NOTE:** The two different controller nodes cannot be mixed within a 10400 system. Care must be taken to ensure the appropriate upgrade node is purchased while performing a node field upgrade for an existing 10400 system. The following table indicates the 10400 base configuration SKUs that correspond to each of the controller nodes available:

#### 10400 Base Configuration SKU

HPE 3PAR StoreServ 10400 2.8-GHz 16GB Control/32GB Data Cache Upg Controller Node	QR603C
HPE 3PAR StoreServ 10400 2.8GHz 32GB Control/64GB Data Cache Upgr Controller Node	E7W35A

## Configuration

### HPE 3PAR StoreServ 10000 Disk Adapters

HPE 3PAR 10000 4-port 8Gb Fibre Channel Adapter	QR591A
HPE 3PAR 10000 4-port 8Gb Fibre Channel Upgrade Adapter	QR608A
<ul style="list-style-type: none"> <li>Two (2) required per node or four (4) per node pair</li> <li>Disk Adapters must be ordered in addition to the base configurations and controller node configurations</li> </ul>	

### HPE 3PAR StoreServ 10000 Host Adapters

HPE 3PAR 10000 4-port 8Gb Fibre Channel Adapter	QR591A
HPE 3PAR 10000 4-port 8Gb Fibre Channel Upgrade Adapter	QR608A
HPE 3PAR StoreServ 10000 2-port 16Gb Fiber Channel Upgrade Adapter	E7Y67A
HPE P10000 3PAR 2-port 10Gb Converged Network Adapter Card	QR630A
HPE P10000 3PAR 2-port 10Gb Upgrade Converged Network Adapter Card	QR610A
<ul style="list-style-type: none"> <li>QR630A and QR610A enable 10Gb/s iSCSI through a CNA</li> </ul>	

### HPE 3PAR StoreServ 10000 Drive Chassis

HPE 3PAR StoreServ 10000 40-disk Drive Chassis	QR592C
HPE 3PAR StoreServ 10000 40-disk Upgrade Drive Chassis	QR609C
HPE 3PAR 10000 40-disk Drive Chassis Rack-mount Kit	QR598A
<ul style="list-style-type: none"> <li>When ordering E7W48A, one QR598A must be ordered for each QR592C ordered</li> </ul>	
When adding Drive Chassis to a system with QR633C or E7W48A, one QR598A must be ordered for each QR609C ordered	

### HPE 3PAR StoreServ 10000 Drives

#### HPE 3PAR SAS HDDs (Performance HDDs)

HPE 3PAR StoreServ 10000 4x600GB 6G SAS 15K SFF(2.5in) Drive Upgrade Magazine	K0F31A
HPE 3PAR StoreServ 10000 4x1.2TB 6G SAS 10K Drive Upgrade Magazine	E7X51A

#### HPE 3PAR SSDs

HPE 3PAR StoreServ 10000 4x1.92TB 6G SAS SFF(2.5in) cMLC Solid State Drive Upgrade Magazine	E7Y62A
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#### HPE 3PAR NL HDDs

HPE 3PAR StoreServ 10000 4x4TB 6G SAS 7.2K Nearline Drive Upgrade Magazine	E7W13A
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#### HPE 3PAR FIPS 140-2 Encryption HDDs & SSDs

HPE 3PAR StoreServ 10000 4x600GB 6G SAS 15K SFF(2.5in) FIPS Encrypted Drive Upgrade Magazine	K0F33A
HPE 3PAR StoreServ 10000 4x6TB 6G SAS 7.2K Nearline LFF(3.5in) FIPS Encryption Upgrade Magazine	K0F43A
HPE 3PAR 10000 4x1.2TB 6G SAS 10K SFF (2.5in) FIPS Encrypted Drive Upgrade Magazine	K0F35A
HPE 3PAR StoreServ 10000 4x1.92TB 6G SAS SFF(2.5in) cMLC Solid State Drive Upgrade Magazine	K0F39A

## Configuration

### HPE 3PAR Encryption License

HPE 3PAR StoreServ 10400 Data at Rest Encryption LTU	BC981A
HPE 3PAR StoreServ 10400 Data at Rest Encryption E-LTU	BC981AAE
HPE 3PAR StoreServ 10800 Data at Rest Encryption LTU	BC982A
HPE 3PAR StoreServ 10800 Data at Rest Encryption E-LTU	BC982AAE

#### 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 HPE 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 HPE 3PAR StoreServ Storage, it cannot be disabled.
- The local key manager is included in the HPE 3PAR OS. There is not a separately orderable part number for the local key manager.

### HPE 3PAR Cables

#### OM4 Cables

HPE Premier Flex LC/LC LSZH 50/125u OM4 MM 1.6mm Zipcord Short-boot 4M Cable	H6Z34A
HPE Premier Flex LC/LC LSZH 50/125u OM4 MM 1.6mm Zipcord Short-boot 6M Cable	H6Z35A
HPE Premier Flex LC/LC LSZH 50/125u OM4 MM 1.6mm Zipcord Short-boot 10M Cable	H6Z36A
HPE Premier Flex LC/LC LSZH 50/125u OM4 MM 1.6mm Zipcord Short-boot 25M Cable	H6Z38A
HPE Premier Flex LC/LC LSZH 50/125u OM4 MM 1.6mm Zipcord Short-boot 50M Cable	H6Z40A
HPE Premier Flex LC/LC LSZH 50/125u OM4 MM 1.6mm Zipcord Short-boot 100M Cable	H6Z41A

**NOTE:** OM3 cables have been discontinued on HPE 3PAR StoreServ 10000 Storage. All host and backend connections should be configured with OM4 cables

### Direct Attach Copper Cables

#### HPE 3COM

HPE FlexNetwork X240 10G SFP+ to SFP+ 0.65m Direct Attach Copper Cable	JD095C
HPE FlexNetwork X240 10G SFP+ to SFP+ 1.2m Direct Attach Copper Cable	JD096C
HPE FlexNetwork X240 10G SFP+ to SFP+ 3m Direct Attach Copper Cable	JD097C
HPE FlexNetwork X240 10G SFP+ to SFP+ 5m Direct Attach Copper Cable	JG081C
HPE FlexNetwork X240 10G SFP+ SFP+ 7m Direct Attach Copper Cable	JC784C
HPE FlexNetwork X240 40G QSFP+ to 4x10G SFP+ 1m Direct Attach Copper Splitter Cable	JG329A
HPE FlexNetwork X240 40G QSFP+ to 4x10G SFP+ 3m Direct Attach Copper Splitter Cable	JG330A
HPE FlexNetwork X240 40G QSFP+ to 4x10G SFP+ 5m Direct Attach Copper Splitter Cable	JG331A

## Configuration

### Brocade

HPE B-series SFP+ to SFP+ Active Copper 1.0m Direct Attach Cable	AP818A
HPE B-series SFP+ to SFP+ Active Copper 3.0m Direct Attach Cable	AP819A
HPE B-series SFP+ to SFP+ Active Copper 5.0m Direct Attach Cable	AP820A

### Cisco

HPE StoreFabric C-series 3M Passive Copper SFP+ Cable	K2Q21A
HPE StoreFabric C-series 5M Passive Copper SFP+ Cable	K2Q22A
HPE C-series SFP+ to SFP+ Active Copper 7.0m Direct Attach Cable	QK701A

**NOTE:** DAC cable support for 3PAR 10000 platforms requires HPE 3PAR OS version 3.1.3 or higher. JG329A, JG330A, JG331A, K2Q21A, K2Q22A requires HPE 3PAR OS version 3.2.2 MU3 or higher.

**NOTE:** DAC cables support iSCSI and FcoE protocols with HPE 3PAR OS version 3.1.3 or higher, and File protocol with HPE 3PAR OS version 3.2.2 MU3 or higher.

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### HPE 3PAR StoreServ 10000 optional Cabinets

HPE 3PAR StoreServ 10000 2-Meter Expansion Rack	QW982A
HPE 3PAR 10400 Standalone Rackmount kit	QR678A

#### NOTES:

- QR678A can only be ordered as an upgrade part to a system containing QW978A only
- The strict use of QR678A is for relocating either QW978A to a non-HPE 3PAR rack.
- When ordering QR678A, one QR598A must be ordered for each QR592C ordered
- When adding Drive Chassis to a system with QR678A, one QR598A must be ordered for each QR609C ordered

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### HPE 3PAR StoreServ File Controller

With HPE 3PAR StoreServ File Controller you get an efficient, bulletproof, and effortless way to provide file storage from HPE 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.

HPE 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 HPE 3PAR StoreServ File Controller QuickSpecs for more information on specifications and options at:

<https://h20195.www2.hpe.com/v2/GetPDF.aspx/c04637524.pdf>

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### Power Cords

HPE C13 - Nema 5-15P US/CA 110V 10Amp 1.83m Power Cord	AF556A
HPE C13 - GB-1002 CN 250V 10Amp 1.83m Power Cord	AF557A
HPE C13 - IRAM -2073 AR 250V 10A 2.5m Power Cord	AF558A
HPE C13 - Nema 5-15P TH/PH 250V 10Amp 1.83m Power Cord	AF559A
HPE C13 - KSC- 8305 KR 250V 10Amp 1.83m Power Cord	AF560A
HPE C13 - CNS-690 TW 110V 13Amp 1.83m Power Cord	AF561A
HPE C13 - IS-1293 IN 240V 6Amp LV 2.0m Power Cord	AF562A
HPE C13 - AS3112-3 AU 250V 10Amp 2.5m Power Cord	AF569A
HPE C13 - SEV 1011 CH 250V 10Amp 1.83m Power Cord	AF565A

## Configuration

HPE C13 - DK-2.5A DK 250V 10Amp 1.83m Power Cord	AF566A
HPE C13 - CEE-VII EU 250V 10Amp 1.83m Power Cord	AF568A
HPE C13 - SI-32 IL 250V 10Amp 1.83m Power Cord	AF564A
HPE C13 - CEI-23-50 IT/CL 250V 10Amp 1.83m Power Cord	AF571A
HPE C13 - JIS C8303 JP 100V 12Amp 2.0m Power Cord	AF572A
HPE C13 - BS-1363A UK/HK/SG 250V 10Amp 1.83m Power Cord	AF570A
HPE C13 - SABS-164 ZA 250V 10Amp 2.5m Power Cord	AF567A
HPE C13 - NBR-14136 BR 250V 10Amp 1.83m Power Cord	AF591A

### Storage Networking Options

#### Fibre Channel Host Bus Adapters

##### Emulex Fibre Channel HBAs

HPE 81E 8Gb 1-port PCIe Fibre Channel Host Bus Adapter	AJ762B
HPE 82E 8Gb 2-port PCIe Fibre Channel Host Bus Adapter	AJ763B

##### QLogic Fibre Channel HBAs

HPE 81Q 8Gb 1-port PCIe Fibre Channel Host Bus Adapter	AK344A
HPE 82Q 8Gb 2-port PCIe Fibre Channel Host Bus Adapter	AJ764A

#### Fibre Channel Switches

##### HPE B-series

##### 16 Gb Fibre Channel Switches

HPE SN3000B 16Gb 24-port/12-port Active Fibre Channel Switch	QW937A
HPE SN3000B 16Gb 24-port/24-port Active Fibre Channel Switch	QW938A
HPE SN6000B 16Gb 48-port/24-port Active Fibre Channel Switch	QK753B
HPE SN6000B 16Gb 48-port/48-port Active Fibre Channel Switch	QR480B
HPE SN6000B 16Gb 48-port/24-port Active Power Pack+ Fibre Channel Switch	QK754B
HPE SN6000B 16Gb 48-port/48-port Active Power Pack+ Fibre Channel Switch	QR481B
HPE StoreFabric SN6500B 16Gb 96/96 Power Pack+ FC Switch	C8R42A
HPE StoreFabric SN6500B 16Gb 96/96 FC Switch	C8R43A
HPE StoreFabric SN6500B 16Gb 96/48 Power Pack+ FC Switch	C8R44A
HPE StoreFabric SN6500B 16Gb 96/48 FC Switch	C8R45A

##### Extension and Embedded Switches

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

For additional details on SAN infrastructure components and options and storage compatibility information



## Technical Specifications

### Physical Specifications

#### 2-Meter Cabinet

Dimensions (width x height x depth)	23.6 x 76.5 x 36 in	60 x 194.3 x 91.3 cm
Service Clearance (front and back)	Front/Rear: 36 in / 30 in	Front/Rear: 91.4 cm / 76.2 cm
Weight (not populated)	472.1 lb	214.1 kg
Maximum Weight (fully populated)	1,919.8 lb	870.8 kg
Maximum Weight per Leveling Foot	480 lb	217.7 kg
Maximum Load per Leveling Foot	200 lb/sq in	14 kg/sq cm

#### Component Weights

10400 Base Configuration <sup>1</sup>	693.9 lb	314.7 kg
10800 Base Configuration <sup>1</sup>	786.9 lb	356.9 kg
2 Controller Nodes (fully populated)	133 lb	60.4 kg
Drive Chassis (fully populated)	180 lb	81.6 kg
Service Processor	20.8 lb	9.4 kg

#### Supported Host FC Connections

FC Connector Type from Storage System to Host Port	LC to LC
FC Cable Core Diameter	OM3 / OM4
Connector Boot Length	standard

### Power and Heat

#### Single Phase Power Supply Requirements

Input Voltage (VAC)	220 (200 - 240)
Frequency (Hz)	50 - 60
Circuit Breaker Maximum	30 A per PDU <sup>6</sup> (de-rated to 24 A)
Power Connectors for 2-Meter Cabinet	(4) L6-30P with 1+1 redundant or (4) IEC 60309-32A (332P6S) with 1+1 redundant
Power Receptacles	(4) L6-30R with 1+1 redundant or (4) IEC 60309 with 1+1 redundant

#### Three Phase Power Supply Requirements

##### NEMA (North America, Taiwan, Philippines & Japan)

Input Voltage (VAC)	200 - 240 p-p
Frequency (Hz)	50 - 60
Circuit Breaker Maximum	48 A per PDU (de-rated to 27.71 A per phase)
Power Connectors for 2-Meter Cabinet	(2) IEC 309, 3-pole, 4-wire, BLUE, gnd clocked to 3:00 with 1+1 redundant
Power Receptacles	(2) Hubbell HBL460C9W or equivalent

##### IEC (International)

Input Voltage (VAC)	200 - 240 p-n; 380 - 415p-p
Frequency (Hz)	50 - 60
Circuit Breaker Maximum	32 A per phase per PDU
Power Connectors for 2-Meter Cabinet	(2) IEC 309, 4-pole, 5-wire, RED, gnd clocked to 6:00 with 1+1 redundant
Power Receptacles	(2) Hubbell C532C6S or equivalent

#### Maximum Potential Power Draw per 2-Meter Cabinet

Watts per Cabinet	9,984 watts / 34,075 BTU/h
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## Technical Specifications

### Actual Power Draw / Heat Dissipation

Service Processor	350 watts / 1,193 BTU/h	
Drive Chassis (without Drive Magazines)	200 watts / 683 BTU/h	
	<b>Transactional<sup>3</sup></b>	<b>Idle</b>
	<b>(watts / BTU/h)</b>	<b>(watts / BTU/h)</b>
4 x 1920-GB SSD / Encryption Drive Magazine	32.4 / 110.55	8.8 / 30
4 x 300-GB 15K SFF SAS Drive Magazine	39 / 132	34 / 117
4 x 600-GB 15K SFF SAS / Encryption Drive Magazine	29.2 / 100.4	28 / 96
4 x 600-GB 10K SFF SAS Drive Magazine	29.6 / 100.8	25.2 / 84.4
4 x 1.2-TB 10K SFF SAS Drive Magazine	32.8 / 111.6	26 / 88.7
4 x 1.8-TB 10K SFF SAS Drive Magazine	30 / 102.4	29.2 / 99.2
4 x 2-TB LFF SAS Drive Magazine	46.4 / 158	26.4 / 89.6
4 x 4-TB LFF SAS Drive Magazine	52.4 / 178.4	36.4 / 124.4
4 x 6-TB LFF SAS Encryption Drive Magazine	57.2 / 195	47.6 / 162.8
Controller Node Pair	1,315 / 4,487	990 / 3,378
Example Full Cabinet Configuration (4-Node 10400; 4 Drive Chassis, 160 600-GB drives, 1 service processor)	6,787 / 23,184	5,697 / 20,400

### Environmental Specifications

Temperature (°F/°C), 0 - 3,000 ft / 0 - 914.4 m	50 - 104°F / 10 - 40°C
Temperature (°F/°C), 3,000 - 10,000 ft / 914.4 m - 3,048 m	50 - 95°F / 10 - 35°C
Altitude (ft/m) max.	10,000 ft / 3,048 m
Humidity (%), Non-condensing	20 - 80%
Raised Floor	Recommended
Emissions / RFI / EMI	FCC Class A, EN55022 Class A, EN55024: 1998, VCCI Class A
Safety	CE Mark, C-TUVus Mark, TUV GS Mark, CB Scheme with all country deviations
Energy Consumption Efficiency <sup>5</sup> (Japan Green Law)	0.011
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

**NOTE:** Specifications are subject to change without notice.

<sup>1</sup> Includes 2-meter rack and two controller nodes (fully populated)

<sup>2</sup> Maximum, Up to 10 drive magazines (40 drives) of any combination of SAS, FC or NL and up to 8 SSD magazines (32 SSD drives) per Drive Chassis

<sup>3</sup> Under maximum load

<sup>4</sup> Includes power and heat dissipation specifications for the Service Processor as follows: 317 Watts, 1082 BTU/hr, 100 - 240 VAC Input Voltage, 50 - 60 Hz Frequency, and (1) IEC-320 Power Receptacle

<sup>5</sup> Japan Green Law statement of compliance: The energy consumption efficiency value has been calculated per requirements for Category-N Magnetic Disk Drive Units by dividing the power consumption, measured according to the definition in the Law Concerning the Rational Use of Energy, by the storage capacity defined in the Energy Conservation Law. The efficiency value is based on a host-maximized 10800 configuration using 600GB drives.

<sup>6</sup> Power Distribution Unit

## Summary of Changes

Date	Version History	Action	Description of Change
04-Feb-2019	Version 47	Changed	Configuration section was updated
01-Oct-2018	Version 46	Changed	Service and Support section was updated Obsolete SKUs were deleted Updated Informational Links
02-Apr-2018	Version 45	Changed	Remove What is New.
		Removed	Obsolete SKUs were removed.
08-Jan-2018	Version 44	Added	Added 10K Speed HDD FE Drive Magazine.
		Removed	Removed EOL HDD Drive Magazines.
23-Oct-2017	Version 43	Changed	Care Pack naming and Service and Support- Parts and Materials updated.
04-Sep-2017	Version 42	Changed	Update HPE 3PAR StoreServ 10000 Drive List and Actual Power Draw List
17-Jul-2017	Version 41	Changed	Update HPE 3PAR StoreServ 10000 Drive List, SSD Drive Warranty List, and Actual Power Draw List
15-Aug-2016	Version 40	Changed	Added new DAC cables supported with 3.2.2 MU3
15-Apr-2016	Version 39	Changed	Removed all references to cMCL
31-Mar-2016	Version 38	Changed	Changes made to the Overview, Service and Support, Configuration and Technical Specifications Sections.
01-Dec-2015	Version 37	Changed	Changes made throughout the QuickSpecs.
02-Oct-2015	Version 36	Added	Added the HPE StoreFront Remote SaaS Portal
26-Jun-2015	Version 35	Changed	Changes made to the Overview Section
05-Jun-2015	Version 34	Changed	Changes made to the What's New and Technical Specifications Sections.
01-Jun-2015	Version 33	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	Version 32	Deleted	Remove QR633C SKU
30-Mar-2015	Version 31	Changed	Changes made to the Warranty and Configuration Sections.
		Added	1.92TB and 600GB 15K SAS FIPS added
09-Feb-2015	Version 30	Changed	Changes made on the Service and Support and Technical Specifications Sections
01-Dec-2014	Version 29	Changed	Changes made throughout the QuickSpecs.
29-Sep-2014	Version 28	Changed	Changes made throughout the QuickSpecs.
22-Aug-2014	Version 27	Changed	Removed this entire bullet: "Encrypted and non-encrypted drives can be mixed in a non-encrypted array"
20-Aug -2014	Version 26	Changed	Changes made to the Overview section.
18-Aug-2014	Version 25	Changed	Configuration and Technical Specifications were revised
10-Jun-2014	Version 24	Changed	Updated the Overview section , table and Configuration section
01-May-2014	Version 23	Changed	Updated some main specification summary table footnote numbers, and updated Configuration as well.
23-Apr-2014	Version 22	Changed	Formatting correction made.
11-Apr-2014	Version 21	Changed	Overview image, Warranty, and Configuration were revised.
31-Mar-2014	Version 20	Changed	Warranty, HPE 3PAR StoreServ 10000 Drives, HPE 3PAR Cables, and Power and Heat were revised.
17-Jan-2014	Version 19	Changed	Part numbers for the HPE 3PAR SSDs were revised in Configuration.
11-Dec-2013	Version 18	Changed	Changes made in the Overview chart only.
09-Dec-2013	Version 17	Changed	Configuration and Technical Specifications were revised.
19-Aug-2013	Version 16	Changed	Model descriptions were revised in HPE 3PAR StoreServ 10000 Host Adapters, HPE 3PAR Cables, and Fibre Channel Switches in Configuration Brocade 16Gb/16 and 16Gb/28 SAN Switches for HPE BladeSystem c-Class and Brocade 16Gb/28 SAN Switch Pwr Pk+ for HPE BladeSystem c-Class were added to Fibre Channel Switches in Configuration HPE 8/40 Base and Power Pack+ (24) Full Fabric Ports Enabled SAN Switches were removed from Fibre Channel Switches in Configuration
10-Jun-2013	Version 15	Changed	Service and Support: Updated note in The Service and Support section.

## Summary of Changes

			Technical Specifications: Updated Actual Power Draw/Heat Dissipation and NOTES section.
		Added	Overview: Added HPE StoreServ File Controller information. Software: Added HPE 3PAR StoreServ Data Encryption section. Configuration: Added C8R67A and C8R68A to the HPE 2PAR SSDs, HPE 3PAR Encryption HDDS and HPE 3PAR Encryption License sections.
08-Mar-2013	Version 14	Added	Configuration: Added Storage Networking Options
		Changed	Overview: Updated What's New section with- Increase in maximum raw capacity supported in the HPE 3PAR StoreServ 10000 Storage: 1.1 PB on HPE 3PAR StoreServ 10400, 2.2 PB on HPE 3PAR StoreServ 10800 and Updated Summary section.
19-Feb-2013	Version 13	Changed	Changes made throughout the Configuration and Technical Specifications sections to add the new design cabinets that support HPE Standard single phase and three phase PDUs.
01-Feb-2013	Version 12	Changed	Matching version update
17-Dec-2012	Version 11	Changed	Changes made throughout the QuickSpecs. Note that the title has changed.
24-Aug-2012	Version 10	Changed	Changes made to link in Software section.
05-Jun-2012	Version 9	Changed	Matching version update
04-Jun-2012	Version 8	Changed	Changes made throughout the QuickSpecs to reflect the new title change.
14-May-2012	Version 7	Changed	Changes made within the Configuration section only.
06-Apr-2012	Version 6	Changed	URL was revised for HPE Storage Management Pack.
26-Mar-2012	Version 5	Changed	Changes made throughout the QuickSpecs.
09-Mar-2012	Version 4	Changed	Matching version with document
13-Feb-2012	Version 3	Changed	Changes made within the Summary and Configuration sections.
14-Nov-2011	Version 2	Changed	HPE P10000 3PAR Base Configurations, HPE P10000 3PAR Host Adapters and HPE P10000 3PAR Drive Chassis were revised in Configuration Total Cache and 10Gb/s iSCSI Host Ports were added to the Overview chart NetApp Data ONTAP was removed from Host OS Support
30-Aug-2011	Version 1	New	New QuickSpecs

## Summary of Changes



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

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