QuickSpecs

Overview

HPE 3PAR StoreServ File Controller v3 System

The HPE 3PAR StoreServ File Controller provides an efficient, bulletproof, and effortless way to provide file services from any model of HPE 3PAR StoreServ Storage.

With one or two nodes per 2U chassis, 3PAR StoreServ File Controllers serve thousands of concurrent users and multiple diverse workloads using block capacity. With autonomic space reclamation, non-intrusive sub file deduplication, and support for storage federation services such as Peer Motion, customers can maximize capacity usability and extend their storage investment. A range of encryption options, sophisticated data access controls for Microsoft Active Directory-based IT environments, and the ability to run endpoint protection and backup software onboard protects your data and your organization. This bulletproof protection is further enhanced by clustering up to eight 3PAR StoreServ File Controllers for transparent failover, and to enable online rolling maintenance updates so that users can always access their data.

What's New

- New SKU available for 3PAR File Controller v3 Single Node with Windows Storage Server 2016 Standard OS edition
  - Q0F54A – HPE 3PAR File Controller WSS2016 v3 Single Node
- New SKU available to upgrade installed 3PAR File Controller v3 Gateway system with a single node to dual node
  - Q0F69A – HPE 3PAR StoreServ 3PAR File Controller v3 Windows Storage Server 2016 Single Node Upgrade
- New hardware SKU available for 3PAR File Controller v3 Windows Storage Server 2016 Single node optional performance kits
  - Q0F56A – HPE 3PAR StoreServ 3PAR File Controller E5-2609v4 10Gb Performance kit
- New software sku available to upgrade either from Windows Storage Server 2012 or Windows Storage Server 2012 R2 to Windows Storage 2016
  - Q0F57A – HPE WSS2016 Standard Edition Upgrade Kit

HPE 3PAR StoreServ File Controller v3 System

The HPE 3PAR StoreServ File Controller v3 System sets the standard for performance and expandability in gateway services for your 3PAR array. The 3PAR StoreServ File Controller v3 System consists of the 3PAR StoreServ File Controller v3 System 2U chassis and one or two 3PAR StoreServ File Controller v3 Single Nodes. The nodes can be WSS2016 or WSS2012 R2-based. A 3PAR StoreServ File Controller v3 System with two nodes provides high availability by clustering the nodes together. Up to four 3PAR StoreServ File Controller v3 Systems can be configured together as an 8 node cluster.

Models

HPE 3PAR StoreServ File Controller v3 System	K2R66A

NOTE: You cannot mix WSS2012 R2 based nodes (K2R67A or P9M57A) with WSS2016 based nodes (Q0F57A or Q0F69A) within a single HP 3PAR StoreServ File Controller v3 System chassis. As a best practice it is recommended to configure all nodes in a high availability cluster with the same type and quantity of hardware components and operating systems.

HPE WSS2016 Standard Edition Upgrade Kit	Q0F57A

NOTE: HPE WSS2016 Standard Edition Upgrade Kit (Q0F57A) can only be ordered and shipped within a 3PAR StoreServ File Controller v3 System chassis.

NOTE: An HPE 3PAR StoreServ File Controller v3 System (K2R66A) shipped from the factory with only one 3PAR StoreServ File Controller v3 WSS2016 Single Node (Q0F57A) can only be upgraded in the field to two nodes by ordering Q0F69A - HPE 3PAR StoreServ File Controller v3 WSS2016 Single Node Upgrade.
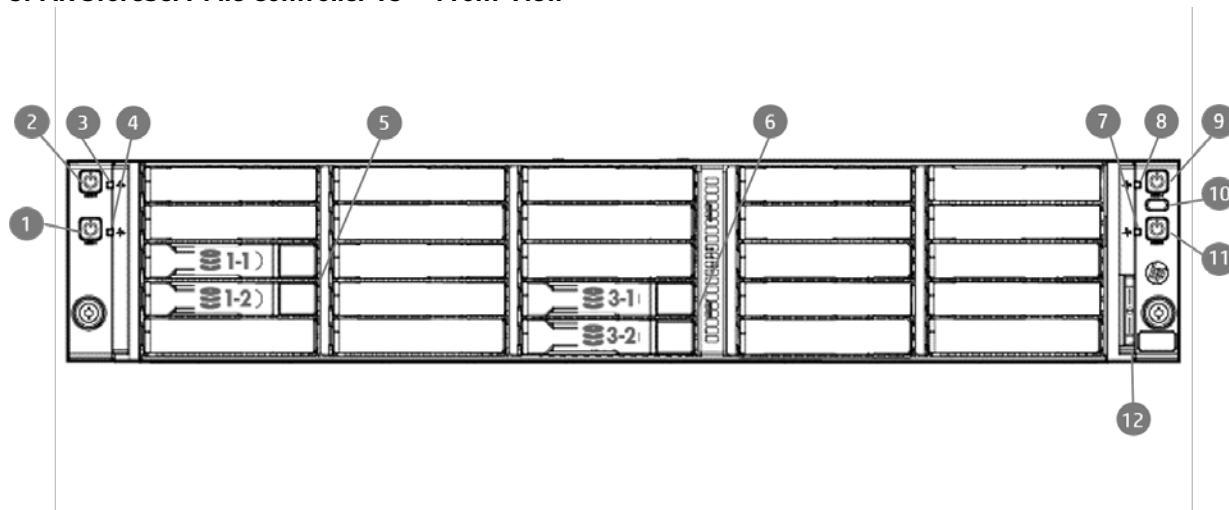
HPE 3PAR StoreServ File Controller v3 Single Node	K2R67A

Hewlett Packard Enterprise

Overview

NOTE: HPE 3PAR StoreServ File Controller v3 Single Node (K2R67A) can only be ordered and shipped within a 3PAR StoreServ File Controller v3 System chassis.

NOTE: An HPE 3PAR StoreServ File Controller v3 System (K2R66A) shipped from the factory with only one 3PAR StoreServ File Controller v3 Single Node (K2R67A) can only be upgraded in the field to two nodes by ordering P9M57A - HPE 3PAR StoreServ File Controller v3 Single Node Upgrade.
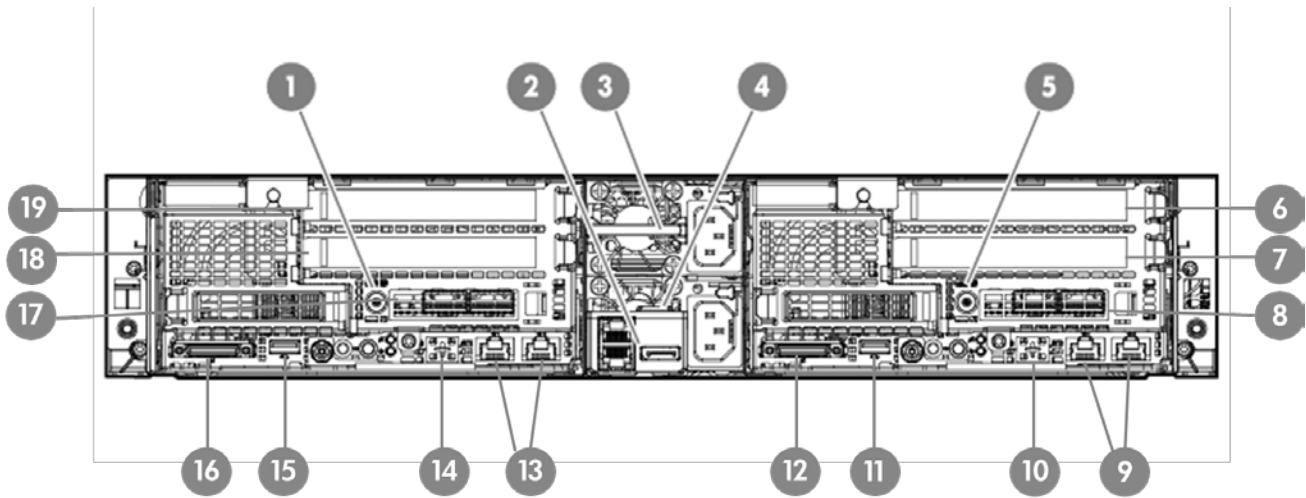
3PAR StoreServ File Controller v3 – Front View

Item	Description
1	Power On/Standby button and system power LED (Node 1)
2	Power On/Standby button and system power LED (Node 2) – not active
3	Health LED (Node 2) – not active
4	Health LED (Node 1)
5	SSDs (Node 1)
6	SSDs (Node 3)
7	Health LED (Node 3)
8	Health LED (Node 4) – not active
9	Power On/Standby button and system power LED (Node 4) – not active
10	UID button/LED
11	Power On/Standby button and system power LED (Node3)
12	Chassis serial label pull tab

3PAR StoreServ File Controller v3 - Rear view showing 2 nodes installed

Overview

Item   Description
1   File Controller node (configured as Node 3)
2   RCM module
3   Power Supply 2
4   Power Supply 1
5   File Controller node (configured as Node 1)
6   PCIe slot 1 (Node 1)
7   PCIe slot 2 (Node 1)
8   FlexibleLOM (Node 1)
9   2 x 1GbE NIC connectors (Node 1)
10   Dedicated iLO port (Node 1)
11   USB 3.0 connector (Node 1)
12   SUV connector (Node 1)
13   2 x 1GbE NIC connectors (Node 3)
14   Dedicated iLO port (Node 3)
15   USB 3.0 connector (Node 3)
16   SUV connector (Node 3)
17   FlexibleLOM (Node 3)
18   PCIe slot 2 (Node 3)
19   PCIe slot 1 (Node 3)

Maximize your Primary Storage Efficiency   Support thousands of users and devices concurrently accessing their files and consolidate multiple diverse workloads via a broad range of file protocols.

Save an average of 50 to 60% capacity with sub-file deduplication and compression, and with autonomic space reclamation. Systems running Windows Storage Server 2016 benefit from an enhanced engine that supports performant deduplication of large files (1TB) and large volumes.

Built-in file sync and share enables employees, mobile workers and distributed teams to access their

Overview

work files from any Internet-connected desktop, smartphone, or tablet. Organizations can apply policies

Use advanced data management to automatically improve use of resources, comply with data retention policies, and enhance protection of sensitive files. Reduce your branch office WAN usage with Hosted BranchCache, which automatically caches frequently accessed corporate data center files locally.

Accelerate copying files by up to 6.5 times with Offloaded Data Transfer (ODX) over the SMB protocol.

Deploy Your File Shares with Confidence

Deliver continuity of data access with online file system healing and, when clustered, with rolling maintenance updates, transparent failover, and automatic disaster recovery across local and remote HPE 3PAR StoreServ Storage arrays.

Protect data while at rest with file system encryption and data drive encryption, and while in flight with SMB encryption and SMB signing.

File Classification Infrastructure can dynamically identify files based on sensitivity and implement sophisticated access controls based on your organization's requirements using Active Directory Rights Management Services.

Reduce cost and complexity by installing antivirus scanning software and data protection agents onboard. Microsoft Azure support allows you to seamlessly store backups of file shares and data in the cloud, using your Azure subscription, for protection against disasters and catastrophic failures.

Simplify your Storage Provisioning and Administration

Provision storage from raw block capacity to use for file shares using the SMI-S Provider integrated File Controller Server Manager.

Repurpose capacity easily and dynamically between file shares and block volumes on HPE 3PAR StoreServ Storage arrays. Leverage capacity-optimized HDDs for file shares and reserve flash SSDs for performance-intensive workloads.

The familiar Windows-based storage OS makes management straightforward, even for limited IT resources or IT generalists, so your admins can spend more time on core projects.

Standard Features

Operating System   Microsoft Windows Storage Server 2016 or 2012 R2 (depends on model), Standard Edition with HPE enhanced value and unique features

- HPE enhanced Initial Configuration Tasks Wizard: Installation and network configuration wizards simplify installation and prevent network configuration errors for faster deployment.
- HPE 3PAR File Controller Dashboard consolidates all key status information such as capacity utilization, performance, and health in a single interface and reduces the need to navigate multiple tools and interfaces for system monitoring. Low capacity warning email alerts now available to minimize disruption.
- HPE 3PAR StoreServ File Controller Tools menu within Windows Server manager to access the most commonly accessed tools and tasks that an administrator uses for day-to-day management. The 3PAR StoreServ File Controller Tools menu provides management of storage pools, snapshots, emails and alerts, enclosure settings, and firmware updates. It also includes access to the Deduplication Evaluation tool, storage viewer and the initial configuration task wizard.
- Windows Storage Server 2016 includes a set of new and enhanced features, in addition to all of the existing WSS2012 R2 features around advanced security and data services. StoreEasy 3850 system based on WSS 2016 has an improved deduplication engine that supports files up to 1TB and file systems up to 64TB. Additionally, new security and encryption technologies provide stronger protection against man-in-the-middle attacks.
- Windows Storage Server 2012 R2 (WSS2012 R2) includes a robust range of file serving and storage capabilities. It addresses heterogeneous environments and it enables more efficient storage utilization. WSS2012 R2 delivers a similar level of performance and reliability comparable to more expensive storage solutions and it offers support for both file SMB/CIFs and NFS protocols, allows for a flexible mix of configurations and includes advanced data management tools.
- WSS2016 or WSS2012 R2 leverages your Windows Server management skill sets and tools including Active Directory, PowerShell and System Center.
- Extensive file access protocols support: SMB (2.0, 2.1, 3.0, 3.02 and 3.1.1), NFS (v2, v3, v4.1), WebDAV, HTTP/HTTPS, FTP/FTPS, ISCSI. **NOTE:** SMB 3.1.1 protocol only supported in WSS2016.
    - SMB 3.X.X protocol: Leverage high performance continually available file shares to deliver feature-rich storage for business-critical applications and virtual servers using advanced new functionality.
    - SMB 3.1.1 protocol: Enhances security between SMB clients and StoreEasy. When both a client and StoreEasy connect over SMB 3.1.1, SMB signing and encryption protects against an attacker tampering with or eavesdropping on any network packets. SMB 3.1.1 with AES-128-GCM, the latest fixed cryptographic algorithm,   showed a 2x performance improvement compared with SMB 3.0 using AES-128-CCM in certain scenarios such as copying large files over an encrypted SMB connection.
    - SMB 3.X.X Multi-channel: Enable aggregation of network bandwidth and network fault tolerance when multiple paths are available between SMB clients and file servers.
    - SMB 3.1.1. Multichannel and Multi-NIC Cluster Networks: Allows the use of multiple NICs on the same cluster network subnet and automatically enables SMB Multichannel. This allows customers to maximize throughput of SMB 3.1.1 network traffic.
    - NFS v4.1: Server for NFS has been updated to support continuous availability. These improvements make it possible to reliably store and run VMware ESX on a virtual machine that is running Windows Server by using the NFS v4.1 protocol to share files. Additional improvements in failover clustering take advantage of better resilience to hardware and software outages that may afflict individual cluster nodes. At the same time, failover clustering isolates VMware ESX hypervisor hosts from intermittent glitches during failovers.

- File Server Resource Manager (FSRM): File Server Resource Manager is a set of features within the WSS2016 and WSS2012 R2 OS versions that allows you to manage and classify data that is stored on

Standard Features

file servers. File Server Resource Manager includes the following features:

- Storage Quotas: Quotas allow you to limit the space that is allowed for a volume or folder, and they can be automatically applied to new folders that are created on a volume. You can also define quota templates that can be applied to new volumes or folders.
- File screening: File screens help you control the types of files that user can store on a file server. You can limit the extension that can be stored on your shared files. For example, you can create a file screen that does not allow files with an MP3 extension to be stored in personal shared folders on a file server.
- File Classification Infrastructure: File Classification Infrastructure provides insight into your data by automating classification processes so that you can manage your data more effectively. You can classify files and apply policies based on this classification. Example policies include dynamic access control for restricting access to files, file encryption, and file expiration. Files can be classified automatically by using file classification rules or manually by modifying the properties of a selected file or folder.
- File Management Tasks: File Management Tasks enables you to apply a conditional policy or action to files based on their classification. The conditions of a file management task include the file location, the classification properties, the date the file was created, the last modified date of the file, or the last time the file was accessed. The actions that a file management task can take include the ability to expire files, encrypt files, or run a custom command.
- Storage reports: Storage reports are used to help you identify trends in disk usage and how your data is classified. You can also monitor a selected group of users for attempts to save unauthorized files.
- Storage Quality of Service (QOS) within WSS 2016: WSS 2016 provides a way to centrally monitor and manage storage performance for virtual machines using Hyper-V and the Scale-Out File Server roles.
- Data Deduplication:
  - Data deduplication enables WSS2016 and WSS2012 R2 to store more data in less physical space for greater storage efficiency. Data deduplication uses variable size chunking and compression, which deliver optimization ratios of 2:1 for general file servers and up to 20:1 for virtualization data. Evaluate your deduplication savings with the included deduplication evaluation tool which allows you to determine the expected savings that you would get if deduplication is enabled on a particular volume. The Deduplication evaluation tool supports local drives and mapped or unmapped remote shares.
  - Data deduplication within Windows Storage Server 2016 has specific improvements for deduping large volumes and large files - up to 64 TB and 1TB respectively. In WSS 2012 R2, it was recommended to run deduplication on volumes under 10TB in size. WSS 2016's deduplication engine will run multiple threads in parallel using multiple I/0 queues on a single volume and thereby improve the performance for deduping large volumes.
  -
- Work Folders: With Work Folders users can store and access work files on personal computers and devices, often referred to as bring-your-own device (BYOD), in addition to corporate PCs. Users gain a convenient location to store work files, and they can access them from anywhere. Organizations maintain control over corporate data by storing the files on centrally managed file servers, and optionally specifying user device policies such as encryption and lock-screen passwords. Work Folders can be deployed with existing deployments of Folder Redirection, Offline Files, and home folders. Work Folders stores user files in a folder on the server called a sync share. You can specify a folder that already contains user data, which enables you to adopt Work Folders without migrating servers and data or immediately phasing out your existing solution. Work folders in support on Windows 10, Windows 8.1, Windows 8, Windows 7, Apple iOS and Android.
- Hosted Branch Cache: Using client/server architecture, Windows 7/8.X/10 client computers can cache content on the local network via the Hosted Cache running on the 3PAR StoreServ File Controller. Other clients who need the same content retrieve it directly from the Hosted Cache.
- Volume Shadow Copy Service: Creates point-in-time copies (snapshots) of files and folders at predetermined time intervals that can then be accessed from client computers.
- VSS for Remote SMB File Shares: Leverage proven Volume Shadow Copy Service (VSS) to offload snapshot and backup operations to remote storage from VSS hardware providers within Hyper-V virtual

Standard Features

machines.

- DFS Namespaces: Enables you to group shared folders that are located on different servers into one or more logically structured namespaces. Each namespace appears to users as a single shared folder with a series of subfolders. However, the underlying structure of the namespace can consist of numerous file shares that are located on different servers and in multiple sites.
- Distributed File System Replication (DFS-R): Enables you to efficiently replicate folders (including those referred to by a DFS namespace path) across multiple servers and sites. DFS Replication uses a compression algorithm known as remote differential compression (RDC). RDC detects changes to the data in a file, and it enables DFS Replication to replicate only the changed file blocks instead of the entire file.
- New VHDX Standard: Deploy larger capacity virtual storage that can grow to 64 terabytes, is more resilient against corruption, and provides more efficient usage of new 4 KB sector hard disks with the new VHDX virtual storage standard.
- Live Storage Migration: Maintain maximized service-level availability even while moving virtual machine storage between host servers independent of the actual virtual machine.
- Unlimited Client Access Licenses (CALs) included

 NOTE: Windows Server 2016 and Windows Storage Server 2016 are built on the same code base. Windows Server 2012 R2 and Windows Storage Server 2012 R2 are built on the same code base. Applications certified for Windows Server are expected to have the same application compatibility profile on Windows Storage Server. Windows Server and Windows Storage Server have the same application frameworks, services and plumbing to support running the full breadth of Window-compatible applications. Applications that rely upon certain roles that are removed from Windows Storage Server 2016 and 2012 R2, such as fax server, active directory domain controller or terminal services will not be able to leverage those roles. Independent Software Vendors (ISVs) ultimately decide what versions and editions of Windows Server or Windows Storage Server are supported by their products and users should review ISV compatibility and support information before purchasing. HPE StoreEasy customers should review the End User License Agreement (EULA) to see the types of applications that are permitted for installation. All versions of Windows Storage Server can join Active Directory domains, but cannot be a domain controller.

- More Information on Windows Storage Server 2016 can be found here: **https://blogs.technet.microsoft.com/storageserver/2016/10/14/announcing-windows-storage-server-2016/**
- More information on Windows Storage Server 2012 R2 can be found here: **http://technet.microsoft.com/en-us/library/jj643303.aspx**

NOTE: The following specifications are for a HPE 3PAR StoreServ File Controller v3 Single Node or File Controller WSS2016 v3 Single Node unless otherwise indicated.

Processor / Cache Memory	Intel Xeon E5-2609v3 (1.9GHz/6-core/15MB/85W) Processor (SKU K2R67A) Intel Xeon E5-2609v4 (1.7GHz/8-core/15MB/85W) Processor (SKU Q0F57A)		

Memory	Type	DDR4 Registered (RDIMM) standard	
	Standard	32GB (4 x 8GB)	
	DIMM Sockets	16	

Network Controller	NIC Ports	2 x 1GbE	

Expansion Slots	Expansion Slot #	Technology	Bus Width*	Source	Connector Width	Form Factor

Standard Features

1	PCIe 3.0	x16	CPU1	X16	Low profile
2	PCIe 3.0	X16	CPU1	x16	FHFLDW
FlexibleLOM	PCIe 3.0	x8	CPU1	x16	FlexibleLOM

Storage Controller	**NOTE:** HPE 3PAR StoreServ File Controller v3 nodes include a storage controller designed for internal SATA drives only, including the OS drivers. An HBA is typically used to address external SAN or array storage for user storage	
	Controller(s)	HPE Dynamic Smart Array B140i Controller
	RAID	0, 1, 1+0, and 5
Storage	Hard Drives	
	Internal	24 x 2.5" (Small Form Factor) hot-plug bays in the 3PAR StoreServ File Controller v3 System chassis **NOTE:** Only four bays occupied standard – each 3PAR StoreServ File Controller v3 Single Node will use two bays for its two operating system SSDs • 2 x 6G SATA Solid State Drives containing factory installed OS. Configured as RAID 1 mirrored pair
	External	Designed for attach to Fibre Channel (HBA required), SAS (HBA required), or iSCSI (iSCSI initiator included) arrays
Power Supply	2 x 800W Platinum Hot Plug Power Supply (located in 3PAR StoreServ File Controller v3 System chassis)	
Power Cords	**NOTE:** The HPE 3PAR StoreServ File Controller v3 Systems are primarily connected to PDU's in data center racks and ship standard with a PDU 6-foot C-14 to C13 power cord (142258-001).	
System Fans	8 (4+4 redundancy) non hot-plug in 3PAR StoreServ File Controller v3 System chassis	
Form Factor	3PAR StoreServ File Controller v3 System - 2U rack mount chassis 3PAR StoreServ File Controller v3 Single Node - 2U single slot tray (one or two nodes per chassis) 3PAR StoreServ File Controller WSS2016 v3 Single Node - 2U single slot tray (one or two nodes per chassis)	

Optional Software

Double-Take Availability Protect your critical HPE 3PAR StoreServ File Controller data with Double-Take Availability's real-time byte-level replication. In the event of a failure, recover the data—with a minimum of loss—from the replicated data repository. For more information read the **Technical White Paper**.

iCAS software by iTernity Get open, flexible, and expandable long-term archiving with iTernity Compliant Archive Solution (iCAS). Together, HPE 3PAR StoreServ File Controller and iCAS are your key to legally compliant data archiving. For more information on iTernity iCAS go to: **http://www.iternity.com/HPE-icas_en.html**

SAN / Array Compatibility

Host Bus Adapter (HBA) Support

HPE 3PAR StoreServ File Controller products are designed to be connected to a SAN or storage array by adding a recommended Fibre Channel or SAS HBA, or by using an iSCSI initiator.

HBA selection is left as your choice based on existing infrastructure and/or desired array support. Please see compatible HBAs listed in the 'Options' section below.
NOTE: See the following URL for additional information about Fibre Channel HBAs:
https://www.hpe.com/us/en/product-catalog/storage/storage-adapters.html

HPE SAN / Array Support

HPE 3PAR StoreServ   **https://www.hpe.com/us/en/storage/3par.html**

Models (Pre-configured)

	Part Number
HPE 3PAR StoreServ File Controller v3 System (chassis)	K2R66A

NOTE: Add either one or two Q0F54A nodes or one or two K2R67A nodes to the K2R66A chassis. Q0F54A and K2R67A nodes cannot be mixed within a K2R66A chassis.

HPE 3PAR StoreServ File Controller v3 WSS2016 Single Node	QOF54A

NOTE: An HPE 3PAR StoreServ File Controller v3 WSS2016 Single Node (Q0F54A) can only be ordered and shipped within a 3PAR StoreServ File Controller v3 System chassis.
NOTE: One or two 3PAR StoreServ File Controller v3 WSS2016 Single Nodes (Q0F54A) can be added to a 3PAR StoreServ File Controller v3 System (sku K2R66A)
NOTE: An HPE 3PAR StoreServ File Controller v3 System (K2R66A) shipped from the factory with only one 3PAR StoreServ File Controller WSS2016 v3 Single Node (Q0F54A) can only be upgraded in the field to two nodes by ordering Q0F69A - HPE 3PAR StoreServ File Controller WSS2016 v3 Single Node Upgrade.

Specifications- per node	Operating System	Microsoft Windows Storage Server 2016, Standard
	Processor	Intel Xeon E5-2609v4 (1.7GHz/8-core/15MB/85W) Processor
	Memory	32 GB (4 x 8GB Single Rank x4 DDR4-2400 CAS-15-15-15 Registered Memory)
	Network Ports	2 x 1GbE ports; FlexLOM Adapter (optional)
	Expansion Slots	2 x PCIe
	Storage Controller	HPE Dynamic Smart Array B140i Controller with 10 internal SATA connectors
	Internal Storage	2 x 6G SATA SFF SSDs for Operating System (connected to B140i and configured as RAID 1 mirrored pair)
	External Storage	Connected via HBA or iSCSI initiator

HPE 3PAR StoreServ File Controller v3 Single Node	K2R67A

NOTE: An HPE 3PAR StoreServ File Controller v3 Single Node (K2R67A) can only be ordered and shipped within a 3PAR StoreServ File Controller v3 System chassis.
NOTE: One or two 3PAR StoreServ File Controller v3 Single Nodes (K2R67A) can be added to a 3PAR StoreServ File Controller v3 System (sku K2R66A)
NOTE: An HPE 3PAR StoreServ File Controller v3 System (K2R66A) shipped from the factory with only one 3PAR StoreServ File Controller v3 Single Node (K2R67A) can only be upgraded in the field to two nodes by ordering P9M57A - HPE 3PAR StoreServ File Controller v3 Single Node Upgrade.

Specifications- per node	Operating System	Microsoft Windows Storage Server 2012 R2, Standard
	Processor	Intel Xeon E5-2609v3 (1.9GHz/6-core/15MB/85W) Processor
	Memory	32 GB (4 x 8GB Single Rank x4 DDR4-2133 CAS-15-15-15 Registered Memory)
	Network Ports	2 x 1GbE ports; FlexLOM Adapter (optional)

Models (Pre-configured)

Expansion Slots	2 x PCIe
Storage Controller	HPE Dynamic Smart Array B140i Controller with 10 internal SATA connectors
Internal Storage	2 x 6G SATA SFF SSDs for Operating System (connected to B140i and configured as RAID 1 mirrored pair)
External Storage	Connected via HBA or iSCSI initiator

Step 2 – Add a Networking Adapter

NOTE: For two node systems the Networking Adapter must be the same for each node
NOTE: Total slots per node available for PCIe is 2, total slots per node available for FlexLOM is 1.

HPE Networking	**Ethernet Options**	
	HPE Ethernet 1Gb 2-port 332T Adapter	615732-B21
	HPE Ethernet 1Gb 4-port 331T Adapter	647594-B21
	HPE Ethernet 1Gb 2-port 361T Adapter	652497-B21
	HPE Ethernet 10Gb 2-port 530SFP Adapter	652503-B21
	HPE Ethernet 10Gb 2-port 530T Adapter	656596-B21
	HPE Ethernet 10Gb 2-port 560SFP+ Adapter	665249-B21
	HPE Ethernet 10Gb 2-port 561T Adapter	716591-B21
	HPE Ethernet 10Gb 2-port 562SFP+ Adapter	727055-B21
	HPE Ethernet 10Gb 2-port 546SFP+ Adapter	779793-B21
	HPE Ethernet 1Gb 4-port 366T Adapter	811546-B21
	HPE Ethernet 10/25Gb 2-port 640SFP28 Adapter	817753-B21
	FlexibleLOM Adapters	
	HPE Ethernet 10Gb 2-port 562FLR-SFP+ Adapter	727054-B21
	HPE FlexFabric 10Gb 4-port 536FLR-T Adapter	764302-B21
	HPE Ethernet 1Gb 4-port 331FLR Adapter	629135-B22
	HPE Ethernet 1Gb 4-port 366FLR Adapter	665240-B21
	HPE Ethernet 10Gb 2-port 560FLR-SFP+ Adapter	665243-B21
	HPE FlexFabric 10Gb 2-port 534FLR-SFP+ Adapter	700751-B21
	HPE FlexFabric 10Gb 2-port 533FLR-T Adapter	700759-B21
	HPE FlexFabric 10Gb 2-port 556FLR-SFP+ Adapter	727060-B21
	HPE Ethernet 10Gb 2-port 546FLR-SFP+ Adapter	779799-B21
	HPE Ethernet 10Gb 2-port 561FLR-T Adapter	700699-B21
	HPE Ethernet 10/25Gb 2-port 640FLR-SFP28 Adapter	817749-B21
	Converged Network Adapters	
	HPE StoreFabric CN1200E 10GBASE-T Dual Port Converged Network Adapter	N3U51A
	HPE StoreFabric CN1100R 10GBASE-T Dual Port Converged Network Adapter	N3U52A
	InfiniBand Options	
	HPE InfiniBand FDR/Ethernet 10Gb/40Gb 2-port 544+QSFP Adapter	764284-B21
	HPE InfiniBand FDR/Ethernet 10Gb/40Gb 2-port 544+FLR-QSFP Adapter	764285-B21
	HPE InfiniBand QDR/Ethernet 10Gb 2-port 544+FLR-QSFP Adapter	764286-B21

NOTE: Please see the QuickSpecs for Technical Specifications and additional information:
https://www.hpe.com/us/en/product-catalog/servers/server-adapters.html

Models (Pre-configured)

Step 3 - Add an optional second processor

HPE XL1x0r Gen9 Intel Xeon E5-2609v4 (1.7GHz/8-core/20MB/85W) Processor   850288-B21
Kit
NOTE: For use with SKUs Q0F54A and Q0F69A only.

HPE XL1x0r Gen9 Intel Xeon E5-2609v3 (1.9GHz/6-core/15MB/85W) Processor   793014-B21
Kit
NOTE: For use with SKUs K2R67A and P9M57A only.

Step 4 – Add optional Memory

NOTE: Hewlett Packard Enterprise recommends that you add the same type memory to the product that is shipped standard with the product.
NOTE: For two node systems the amount of memory must be the same for each node

Registered DIMMs (RDIMMs)

HP 8GB (1x8GB) Single Rank x8 DDR4-2400 CAS-17-17-17 Registered Memory   805347-B21
Kit

HPE 16GB (1x16GB) Dual Rank x4 DDR4-2400 CAS-17-17-17 Registered   836220-B21
Memory Kit

HP 32GB (1x32GB) Dual Rank x4 DDR4-2400 CAS-17-17-17 Registered Memory   805351-B21
Kit

HP 8GB (1x8GB) Single Rank x4 DDR4-2133 CAS-15-15-15 Registered Memory   726718-B21
Kit

HP 16GB (1x16GB) Dual Rank x4 DDR4-2133 CAS-15-15-15 Registered Memory   726719-B21
Kit

HP 32GB (1x32GB) Dual Rank x4 DDR4-2133 CAS-15-15-15 Registered Memory   728629-B21
Kit

NOTE: The HPE 3PAR StoreServ File Controller v3 Single Node and 3PAR StoreServ File Controller WSS2016 v3 Single Node comes standard with 32GB (4 x 8GB) of memory factory installed. For some installations, a customer may want to replace the 32GB memory that ships standard. The 16GB and 32GB Memory SKUs listed can be ordered as an option for field installation only.
NOTE: HPE memory from previous generation servers (DDR3) is not compatible with this server. HPE SmartMemory is required to realize the memory performance improvements and enhanced functionality listed in this document for Gen9. For additional information, please see the HPE SmartMemory QuickSpecs at:
http://www.hpe.com/h20195/v2/GetHTML.aspx?docname=c04111535

Step 5 – In place of Step 2, 3 or 4 you can add an optional Performance Kit

NOTE: A performance kit bundles an Intel Xeon E5-2609 v4 or v3 processor, 32 GB memory (4 x 8GB Single Rank x4 DDR4-2400 or DDR-2133) and one HPE 10GbE 560SFP+ 2-port Adapter (K2R68A) or one HPE 10GbE 561T 2-port Adapter (Q0F56A).

Models (Pre-configured)

NOTE: For two node systems, two performance kits must be ordered – one for each node

HPE 3PAR StoreServ File Controller E5-2609v4 10Gb Performance Kit	Q0F56A
HPE 3PAR StoreServ File Controller v3 10Gb Performance Kit	K2R68A

Step 6 – Add an optional Host Bus Adapter

NOTE: HPE 3PAR StoreServ File Controller v3 products are designed and optimized for connection to SAN storage arrays using HBAs.

Fibre Channel	**Emulex Fibre Channel HBA**	
	HPE 82E 8Gb 2 port PCIe Fibre Channel Host Bus Adapter	AJ763B
	HP StoreFabric SN1100E 16Gb Single Port Fibre Channel Host Bus Adapter	C8R38A
	HPE StoreFabric SN1100E 16Gb Dual Port Fibre Channel Host Bus Adapter	C8R39A
	QLogic Fibre Channel HBAs	
	HP 82Q 8Gb 2-port PCIe Fibre Channel Host Bus Adapter	AJ764A
	HPE StoreFabric SN1000Q 16GB 1-port PCIe Fibre Channel Host Bus Adapter	QW971A
	HPE StoreFabric SN1000Q 16GB 2-port PCIe Fibre Channel Host Bus Adapter	QW972A

Step 6 – Add a System Recovery DVD

3PAR StoreServ File Controller System Recovery DVD	HPE 3PAR File Controller v3 Recovery Software Media Kit	P4A93A
	HPE 3PAR Storeserv File Controller v3 WSS2016 Recovery Software Media Kit	Q0F59A

The 3PAR StoreServ File Controller v3 Recovery Software Media Kit contains a System Recovery DVD that is used to re-install the factory operating system image. Booting the system from the System Recovery DVD will restore the operating system image and logical drive to the factory default state. This enables recovery of the system if all other means to boot the system fail. Refer to the File Controller v3 Administrator Guide for more information on performing a System Recovery.
NOTE: If desired, the 3PAR StoreServ File Controller v3 Recovery Software can be downloaded from HPE's Software Depot at no charge, so that the user can create their own System Recovery DVD or System Recovery USB. The Recovery Software is available here: **https://www.hpe.com/us/en/support.html**

NOTE: For more information on how to perform a system recovery on a File Controller v3 Single Node refer to the File Controller v3 Administrator's Guide. The guide can be downloaded from **https://www.hpe.com/us/en/support.html** . Search for the 3PAR StoreServ File Controller v3 product model in the drivers and download section.
NOTE: All data on the original operating system logical drive is erased during the System Recovery process. Back up any data on the operating system drives before performing the System Recovery if possible.
NOTE: While the System Recovery process makes every attempt to preserve the existing data volumes, you should have a backup of your data before recovering the system.

Models (Pre-configured)

Step 7 – Add security hardware

HPE Security	HPE Trusted Platform Module Option	488069-B21
	HPE Trusted Platform Module 2.0 Kit	745823-B21

Upgrades

3PAR StoreServ File Controller v3 Single Node Upgrade	HPE 3PAR StoreServ File Controller v3 Single Node Upgrade	P9M57A

NOTE: An HPE 3PAR StoreServ File Controller v3 System (K2R66A) shipped from the factory with only one 3PAR StoreServ File Controller v3 Single node (K2R67A) can only be upgraded to two nodes by ordering P9M57A.
NOTE: Technical specifications of sku P9M57A are the same as sku K2R67A as shown above.

3PAR StoreServ File Controller v3 WSS 2016 Single Node Upgrade	HPE 3PAR StoreServ File Controller v3 Windows Storage Server 2016 Single Node Upgrade	Q0F69A

NOTE:NOTE: An HPE 3PAR StoreServ File Controller v3 System (K2R66A) shipped from the factory with only one 3PAR StoreServ File Controller v3 WSS2016 Single node (Q0F54A) can only be upgraded to two nodes by ordering Q0F69A.
NOTE:NOTE: Technical specifications of sku Q0F69A are the same as sku Q0F54A as shown above.

3PAR File Controller OS Upgrade Kit	HP StoreEasy WSS2012 R2 Standard Edition Upgrade Kit	D4T73A
	HPE WSS2016 Standard Edition Upgrade Kit	Q0F57A

HPE 3PAR StoreServ File Controller models running either Windows Storage Server 2012 or Windows Storage Server 2012 R2 Standard Edition Operating System can be upgraded to the Windows Storage Server 2016 Standard Edition Operating System by purchasing Q0F57A upgrade kit.

HPE 3PAR StoreServ File Controller v2 models running the Windows Storage Server 2012, Standard Edition Operating System can be upgraded to the Windows Storage Server 2012 R2, Standard Edition Operating System by purchasing D4T73A upgrade kit.

These upgrade kit contains the physical media containing the new WSS2016 or WSS2012 R2 OS image and a new Microsoft Certificate of Authenticity (COA) label that must be affixed to the 3PAR StoreServ File Controller chassis once the OS upgrade is complete. The new WSS2016 or WSS2012 R2 COA label is required to provide legal proof or purchase of the new OS.

NOTE: Because of the requirement to affix a new COA label to the product after upgrade the OS upgrade image cannot be provided as a software download.

NOTE: Also because of the requirement to affix a new COA label to the product after upgrade one upgrade kit per one 3PAR StoreServ File Controller v3 Single Node or 3PAR StoreServ File Controller WSS2016 v3 Single Node is required. i.e. one 3PAR File Controller WSS2016 v3 Single Node needs one upgrade kit (one COA label), two 3PAR File Controller WSS2016 v3 Single Nodes need two upgrade kits (two COA labels), etc.

Service and Support

Warranty

HPE 3PAR StoreServ File Controller products come with a standard 3 Year, On-site Warranty Service for hardware components and 7x24 4-hour remote response with next business day on-site response. Software media is warranted to be free of physical defect for a period of 90 days from delivery.

NOTE: Hard drives have either a one year or three year warranty; refer to the specific hard drive QuickSpecs for details.

Services Included with the Product	One year of HPE Software Support, standard 9x5 business hours (software advisory and remedial software telephone support, and media and documentation distribution service).
Service and Support	**Services to accelerate time to results**
	HPE Storage Services bring you a rich portfolio of consulting and support services designed to add value to our core storage products and solutions. We have the know-how and experience to put storage technology to work for you. We work closely with you as your strategic partner, leveraging our full services portfolio to make sure that everything works to optimize your enterprise.
	Choose from services aligned to our storage product offerings and lifecycle. From mission-critical onsite services to innovative web-based remote support, you choose the precise level of attention and support your business demands.
Discover, plan, and design	Choose from a rich portfolio of services to make the most of HPE 3PAR StoreServ File Controller, so you can efficiently and affordably consolidate, manage, and extract value from unstructured data.
	HPE Services can help you discover needs and create a plan for simplifying the environment, reducing risk, and maximizing your storage investments
	HPE Backup Recovery Efficiency Analysis - Assessment of how efficiently backup components are being used as the amount of data to be backed up continues to grow exponentially via analysis intelligence and a snapshot of your current backup environment. **https://www.hpe.com/h20195/v2/GetPDF.aspx/4AA3-8490ENW.pdf**
	HPE Backup Recovery Impact Analysis - Focus placed on service requirements and design as the key to success for gaining a clear understanding of the role of increasingly diverse data protection strategies. **https://www.hpe.com/h20195/V2/GetPDF.aspx/4AA4-1175ENW.pdf**
	HPE Backup Recovery Modernization - Initial discovery, interviews, reference architecture design, proposal content development, vendor grading, and final recommendations carried out so as to require minimal resources and locations on your part. **https://www.hpe.com/h20195/V2/GetPDF.aspx/4AA4-1199ENW.pdf**
	HPE Storage Cloud Design Service - Build a scalable, low-cost enterprise storage environment with inherent cloud benefits to meet big data needs.
Deploy and integrate	**We can help you configure, set up, and efficiently use your HPE 3PAR StoreServ File Controller, as well as help migrate data, improve capacity utilization, and establish information management standards used across backup, replication, and archiving needs.**
	HPE 3PAR StoreServ File Controller Installation and Startup Service -Expert system installation and setup by an HPE technical specialist designed to reduce implementation time and cost, with your basic questions about the service answered during the included orientation session. This service is offered under the name of StoreEasy 1000/3000 Installation and Startup Service. **http://h20195.www2.hp.com/v2/GetDocument.aspx?cc=us&doclang=EN_US&docname=**

Service and Support

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HPE Storage Data Migration Services - End-to-end data migration service providing seamless discovery, assessment, planning, and design, completely customizable to your organization's storage area network or network attached storage environment and using innovative software to help you migrate to HPE storage quickly and efficiently.
https://www.hpe.com/h20195/V2/GetPDF.aspx/4AA3-0774ENW.pdf

HPE Storage and Data Consultant Residency Service - Strategic augmentation of your current environment with Hewlett Packard Enterprise resources who become your trusted advisor to provide answers that are right for your storage and backup environment.
https://www.hpe.com/h20195/V2/GetPDF.aspx/4AA3-9481ENW.pdf

HPE Proactive Select - A flexible way to purchase services to fit your environment with an extensive menu of HPE Proactive Select event and technical services, such as onsite firmware upgrades, health checks, assessments, and education.
https://www.hpe.com/h20195/V2/GetPDF.aspx/4AA2-3842ENW.pdf

Operate and support	**Choose the right support to maximize uptime, free up your resources, and achieve improved value-as you get the most out of the existing IT assets while accelerating time-to-revenue.** **HPE Proactive Care 24x7** - Hardware and software support services designed specifically for your technology with rapid access to Advanced Solution Center Specialists plus firmware and software management and best practice advice **https://www.hpe.com/h20195/v2/GetPDF.aspx/4AA3-8855ENW.pdf** **HPE Proactive Care Personalized Support** - An option-if you have HPE Proactive Care- to bring 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. **https://www.hpe.com/h20195/V2/GetPDF.aspx/4AA4-3446ENW.pdf** **HPE Support Plus 24** - Support for environments where proactive help from Hewlett Packard Enterprise is not required, with 24x7 hardware and software support onsite that includes third-party support with a maximum four-hour onsite response. **https://www.hpe.com/h20195/V2/GetPDF.aspx/5981-6638EN.pdf** **HPE Education Services** - Comprehensive training for new, as well as experienced, storage administrators designed to expand your skills and keep you up to speed with the latest storage and virtualization technology from HPE Storage. **http://education.hp.com/curr-storsan.htm**
Optimized Care - Delivers the highest levels of performance and stability through deployment and proactive management practices	Choose from three levels of operate and support care HPE Proactive Care 24x7-Plus, 20 credits per year **Additional options** - HPE Proactive Care Personalized Support (once per Proactive Care support new environment), an additional day of HPE Personalized Support, and 10 additional HPE Proactive Select credits per year
Standard Care-maintains high level of uptime, along with expert help to cut the cost and complexity of implementation and	HPE Proactive Care 24x7-Plus, 10 credits per year **Additional options** - HPE Proactive Care Personalized Support (once per Proactive Care support new environment), an additional day of HPE Personalized Support, and 10 additional HPE Proactive Select credits per year

Service and Support

support

Basic Care-Minimum recommended support	Support Plus 24- Plus, 10 credits per year **Additional options** - 10 HPE Proactive Select credits per year
Remote Support Automation	HPE Insight Remote Support-Available at no additional cost to all warranty, HPE Care Pack Service and service agreement customers, uses proven technology to deliver secure, reliable 24x7 remote monitoring, diagnosis and problem resolution. **https://www.hpe.com/h20195/V2/GetPDF.aspx/4AA2-4676ENW.pdf** **http://h18004.www1.hp.com/products/servers/management/insight-remote-support/overview.html**
For more information	**http://www.hp.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 HPE order configuration tools. • Customers purchasing from a commercial reseller can find HPE Pointnext operational services at: **http://www.hp.com/go/lookuptool**

Technical Specifications

3PAR StoreServ File Controller v3 System	**Dimensions**	Height	3.44 in (8.73 cm)
		Width	17.64 in (44.81 cm)
		Depth	32.4 in (82.27 cm)
	Shipping Dimensions	Height	11.5 in (29.2 cm)
		Width	23 in (58.4 cm)
		Depth	37.12 in (94.3 cm)
	Chassis Weight	Empty	21.74 lb (9.86 kg)
	Max Enclosure Weight	Approximate	51.69 lb (23.45 kg)
	Temperature Range	Operating	50° to 95° F (10° to 35° C)
		Non-Operating	-22° to 140° F (-30° to 60° C)
	Relative Humidity	Operating	10 to 90% relative humidity (Rh), 28°C (82.4°F) maximum wet bulb temperature, non-condensing.
		Non-Operating	5 to 95% relative humidity (Rh), 38.7°C (101.7°F) maximum wet bulb temperature, non-condensing.

NOTE: Operating temperature has an altitude derating of 1.8° F (1° C) per 1,000 ft (304.8 m). No direct sunlight. Upper operating limit is 10,000 ft (3,048 m) or 70Kpa/10.1 psia. Upper non-operating limit is 30,000 ft (9,144 m) or 30.3 KPa/4.4 psia. Storage maximum humidity of 95% is based on a maximum temperature of 113° F (45° C). Altitude maximum for storage is 70 KPa.

Acoustic Noise (No data so far)	Listed are the declared A-Weighted sound power levels (LWAd) and declared average bystander position A-Weighted sound pressure levels (LpAm) when the product is operating in a 23°C ambient environment. Noise emissions were measured in accordance with ISO 7779 (ECMA 74) and declared in accordance with ISO 9296 (ECMA 109).	
	Idle	
	LWAd	7.1 Bels
	LpAm	54 dBA
	Operating	
	LWAd	7.2 Bels
	LpAm	54 dBA

System Unit	**Server Dimensions** (L x W x D)		3.30 x 7.07 x 27.23 in (8.36 x 17.95 x 69.15 cm)
	Weight (approximate)	Maximum (four hard drives and two processors installed)	14.27 lb (6.47 kg)
	System Inlet Temperature	Standard Operating Support	10° to 35°C (50° to 95°F) at sea level with an altitude derating of 1.0°C per every 305 m (1.8°F per every 1000 ft) above sea level to a maximum of 3050 m (10,000 ft), no direct sustained sunlight. Maximum rate of change is 20°C/hr (36°F/hr). The upper limit and rate of change may be limited by the type and number of options installed.

Technical Specifications

	Extended Ambient Operating Support	System performance during standard operating support may be reduced if operating with a fan fault or above 30°C (86°F). For approved hardware configurations, the supported system inlet range is extended to be: 5° to 10°C (41° to 50°F) and 35° to 40°C (95° to 104°F) at sea level with an altitude derating of 1.0°C per every 175 m (1.8°F per every 574 ft) above 900 m (2953 ft) to a maximum of 3050 m (10,000 ft). The approved hardware configurations for this system are listed at the URL: **http://www.hpe.com/servers/ASHRAE** For approved hardware configurations, the supported system inlet range is extended to be: 40° to 45°C (104° to 113°F) at sea level with an altitude derating of 1.0°C per every 125 m (1.8°F per every 410 ft) above 900 m (2953 ft) to a maximum of 3050 m (10,000 ft). The approved hardware configurations for this system are listed at the URL: **http://www.hpe.com/servers/ASHRAE** System performance may be reduced if operating in the extended ambient operating range or with a fan fault.
	Non-operating	-30° to 60°C (-22° to 140°F). Maximum rate of change is 20°C/hr (36°F/hr).
Relative Humidity (non-condensing)	Operating	Minimum to be the higher (more moisture) of -12°C (10.4°F) dew point or 8% relative humidity. Maximum to be the lower (less moisture) of 24°C (75.2°F) dew point or 90% relative humidity.
	Non-operating	5 to 95% relative humidity (Rh), 38.7°C (101.7°F) maximum wet bulb temperature, non-condensing.
Altitude	Operating	3050 m (10,000 ft). This value may be limited by the type and number of options installed. Maximum allowable altitude change rate is 457 m/min (1500 ft/min).

Acoustic Noise   Listed are the declared A-Weighted sound power levels (LWAd) and measured average bystander position A-Weighted sound pressure levels (LpAm) when the product is operating in a 23°C ambient environment. Noise emissions were measured in accordance with ISO 7779 (ECMA 74) and declared in accordance with ISO 9296 (ECMA 109). The listed sound levels apply to standard shipping configurations. Additional options may result in increased sound levels.

Configuration SKU	Entry	Base	Performance
Idle			
LWAd	6.9 B	6.9 B	6.9 B
LpAm	51 dBA	51 dBA	51 dBA
Operating			
LWAd	8.0 B	8.3 B	8.7 B
LpAm	62 dBA	66 dBA	72 dBA

Emissions Classification (EMC)	FCC Rating	Class A
	Normative Standards	CISPR 22; EN55022; EN55024; FCC CFR 47, Pt 15; ICES-003; CNS13438; GB9254; K22;K24; EN 61000-

Technical Specifications

3-2; EN 61000-3-3; EN 60950-1; IEC 60950-1

NOTE: Product conformance to cited product specifications is based on sample (type) testing, evaluation, or assessment. This product or family of products is eligible to bear the appropriate compliance logos and statements.

Environment-friendly Products and Approach	**End-of-life Management and Recycling**	Hewlett Packard Enterprise offers end-of-life Hewlett Packard Enterprise product return, trade-in, and recycling programs in many geographic areas. For trade-in information, please go to: **https://www.hpe.com/us/en/about/environment/product-recycling.html** To recycle your product, please go to: **https://www.hpe.com/us/en/about/environment/product-recycling.html** or contact your nearest Hewlett Packard Enterprise sales office. Products returned to Hewlett Packard Enterprise will be recycled, recovered or disposed of in a responsible manner. The EU WEEE directive (2002/95/EC) requires manufacturers to provide treatment information for each product type for use by treatment facilities. This information (product disassembly instructions) is posted on the Hewlett Packard Enterprise web site at: **https://www.hpe.com/us/en/about/environment/product-recycling.html**. These instructions may be used by recyclers and other WEEE treatment facilities as well as Hewlett Packard Enterprise OEM customers who integrate and re-sell Hewlett Packard Enterprise equipment.

3PAR StoreServ File Controller v3 Single Node	**Server Dimensions** (L x W x D)		3.30 x 7.07 x 27.23 in (8.36 x 17.95 x 69.15 cm)
	Weight (approximate)	Maximum (four hard drives and two processors installed)	14.27 lb (6.47 kg)
	System Inlet Temperature	Standard Operating Support	10° to 35°C (50° to 95°F) at sea level with an altitude derating of 1.0°C per every 305 m (1.8°F per every 1000 ft) above sea level to a maximum of 3050 m (10,000 ft), no direct sustained sunlight. Maximum rate of change is 20°C/hr (36°F/hr). The upper limit and rate of change may be limited by the type and number of options installed.
		Extended Ambient Operating Support	System performance during standard operating support may be reduced if operating with a fan fault or above 30°C (86°F). For approved hardware configurations, the supported system inlet range is extended to be: 5° to 10°C (41° to 50°F) and 35° to 40°C (95° to 104°F) at sea level with an altitude derating of 1.0°C per every 175 m (1.8°F per every 574 ft) above 900 m (2953 ft) to a maximum of 3050 m (10,000 ft). The approved hardware configurations for this system are listed at the URL: **http://www.hpe.com/servers/ASHRAE** For approved hardware configurations, the supported system inlet range is extended to be: 40° to 45°C

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		(104° to 113°F) at sea level with an altitude derating of 1.0°C per every 125 m (1.8°F per every 410 ft) above 900 m (2953 ft) to a maximum of 3050 m (10,000 ft). The approved hardware configurations for this system are listed at the URL: **http://www.hpe.com/servers/ASHRAE** System performance may be reduced if operating in the extended ambient operating range or with a fan fault.
	Non-operating	-30° to 60°C (-22° to 140°F). Maximum rate of change is 20°C/hr (36°F/hr).
Relative Humidity (non-condensing)	Operating	Minimum to be the higher (more moisture) of -12°C (10.4°F) dew point or 8% relative humidity. Maximum to be the lower (less moisture) of 24°C (75.2°F) dew point or 90% relative humidity.
	Non-operating	5 to 95% relative humidity (Rh), 38.7°C (101.7°F) maximum wet bulb temperature, non-condensing.
Altitude	Operating	3050 m (10,000 ft). This value may be limited by the type and number of options installed. Maximum allowable altitude change rate is 457 m/min (1500 ft/min).
Acoustic Noise		Listed are the declared A-Weighted sound power levels (LWAd) and measured average bystander position A-Weighted sound pressure levels (LpAm) when the product is operating in a 23°C ambient environment. Noise emissions were measured in accordance with ISO 7779 (ECMA 74) and declared in accordance with ISO 9296 (ECMA 109). The listed sound levels apply to standard shipping configurations. Additional options may result in increased sound levels.

Configuration SKU	Entry	Base	Performance
Idle			
LWAd	6.9 B	6.9 B	6.9 B
LpAm	51 dBA	51 dBA	51 dBA
Operating			
LWAd	8.0 B	8.3 B	8.7 B
LpAm	62 dBA	66 dBA	72 dBA

Emissions Classification (EMC)	FCC Rating	Class A
	Normative Standards	CISPR 22; EN55022; EN55024; FCC CFR 47, Pt 15; ICES-003; CNS13438; GB9254; K22;K24; EN 61000-3-2; EN 61000-3-3; EN 60950-1; IEC 60950-1
	NOTE: Product conformance to cited product specifications is based on sample (type) testing, evaluation, or assessment. This product or family of products is eligible to bear the appropriate compliance logos and statements.	

Environment-friendly Products and Approach	**End-of-life Management and Recycling**	Hewlett Packard Enterprise offers end-of-life Hewlett Packard Enterprise product return, trade-in, and recycling programs in many geographic areas. For trade-in information, please go to: **https://www.hpe.com/us/en/about/environment/product-recycling.html**. To recycle your product, please go to: **https://www.hpe.com/us/en/about/environment/product-recycling.html** or contact your nearest Hewlett Packard Enterprise sales

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office. Products returned to Hewlett Packard Enterprise will be recycled, recovered or disposed of in a responsible manner.

The EU WEEE directive (2002/95/EC) requires manufacturers to provide treatment information for each product type for use by treatment facilities. This information (product disassembly instructions) is posted on the Hewlett Packard Enterprise web site at: **https://www.hpe.com/us/en/about/environment/product-recycling.html** These instructions may be used by recyclers and other WEEE treatment facilities as well as Hewlett Packard Enterprise OEM customers who integrate and re-sell Hewlett Packard Enterprise equipment.

Summary of Changes

Date	Version History	Action	Description of Change
05-Feb-2018	From Version 8 to 9	Changed	Models Pre-configured section was revised.
23-Oct-2017	From version 7 to 8	Changed	Care Pack naming and Service and Support- Parts and Materials updated.
14-Aug-2017	From version 6 to 7	Changed	Changes made to the Models Sections.
03-Apr-2017	From Version 5 to 6	Changed	Changes made to the Models and Standard Features Sections.
28-Nov-2016	From Version 4 to 5	Changed	Changes made to the entire document.
15-Aug-2016	From Version 3 to 4	Changed	Changes made to the Models Section.
11-Mar-2016	From version 2 to 3	Deleted	Deleted the File Controller v2.
28-Sept-2015	From Version 1 to 2	Changed	Changes made to the What´s New and Models Sections.
	Version 1	Created	Document created.

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