

### Overview

#### HP StoreVirtual 4000 Storage



**StoreVirtual 4330**



**StoreVirtual 4730**

HP StoreVirtual Storage provides a virtualized pool of storage resources to deliver enterprise –level storage functionality that enhances virtual environments, simplifies management, and reduces costs. Easy to deploy, grow and maintain, HP StoreVirtual Storage ensures that critical business data remain available. The innovative approach to storage provides a unique data protection level across the entire array, reducing vulnerability without driving up costs the way traditional SANs can.

#### Product Overview

You need affordable storage designed for a virtualized infrastructure that's easy to manage, supports continuous data growth, and keeps your business up and running.

HP StoreVirtual 4000 Storage, based on the LeftHand operating system, is a scale-out storage platform that is designed to meet the dynamic needs of virtualized environments. Intuitive, common management and storage federation provide for simplicity and flexibility in today's virtual datacenters. StoreVirtual enables data mobility across tiers, locations, and between physical and virtual storage. With an all-inclusive enterprise feature set, HP StoreVirtual is the most versatile storage platform on the market today. Its software-defined storage VSA software, and ProLiant rack and BladeSystem-based hardware models provide options to fit any infrastructure and budget. Enterprise-class storage software functionality and leading virtualization software integration are built-in. This makes StoreVirtual the ideal platform for supporting virtualization growth at all stages.

#### What's New

- LeftHand OS v12.0 software (formerly SAN/iQ): VMware multi-pathing, Space reclamation, REST API, Adaptive Optimization (VSA & 4335), SMI-S support for Microsoft SCVMM, Optimized snapshot manager, Online Upgrade enhancements, StoreVirtual VSA for HP Helion OpenStack.
- Enhanced Integration for Windows environments with Active Directory and StoreVirtual Recovery Manager. SAN administrator logins will be authenticated against Active Directory. New StoreVirtual Recovery Manager simplifies recovery of Windows files and folders, automates snapshot mounting for fast and easy recovery of data, and enables quick searching of data within snapshots.
- Significant improvements in Online Upgrades (OU) functionality. Enables selective downloads (no longer downloads unnecessary older versions), allows use of proxy server for downloads, customer notifications downloaded via OU, patch severity classes & release notes now included and more components upgradable via OU (such as drive f/w)
- Storage Replication Adaptor for VMware Site Recovery Manager 5.1: Integration streamlines/automates disaster recovery with StoreVirtual and ESX/ESXi.
- Perfect match for server virtualization, client virtualization, Windows, and Linux environments.

### Overview

#### HP StoreVirtual Storage Models At a Glance:

- Portfolio of highly scalable, easy to use SAN solutions with superior HA and DR capabilities
- All StoreVirtual arrays are 2.04 RoHS compliant.
- StoreVirtual 4530 model now offers 4TB MDL SAS drives with 48TB raw capacity per node
- StoreVirtual VSA Software has new licensing options based on capacity 4TB, 10TB and 50TB available in 3 year or 5 year term licenses easily upgrade 4TB, and 10TB licenses on the fly for more capacity. All licenses include matching support contract and subscription rights to new software upgrades
- Support for 10GigE iSCSI and 8Gbit FC front-end host connectivity to the StoreVirtual product line.
- StoreVirtual product family based on Gen8 ProLiant technology. Completely backward compatible with earlier G2/G1 LeftHand P4000 products.
- Significant performance boost with dual-core HP StoreVirtual VSA support
- Rack mount and blade form factor for StoreVirtual Storage
- Addition of 8Gbit FC host connectivity on select models
- Intel® Xeon® E5-2600 Family CPU
- SSD, SAS and MDL SAS drives available
- All-inclusive LeftHand OS features include:
  - Storage Clustering for disruption free growth
  - Network RAID 0, 5, 6, 10, 10+1, and 10+2 (Synchronous Replication)
  - Thin Provisioning and Space Reclamation
  - Application Integrated Snapshots
  - Remote Copy (Asynchronous Replication with Bandwidth Throttling)
  - Multi-Site HA/DR Solution (Synchronous Replication across several locations)
  - Online Volume Migration and automated Software Upgrades
  - Self-Healing Storage: Proactive disk / volume scrubbing with automatic bad block repair
  - Adaptive Optimization (VSA and 4335)
- Storage Controllers: Recommended minimum of 2 per cluster, a cluster of 3 Storage systems provides triple redundancy
- Network RAID Levels (per volume) 0, 5, 6, 10, 10+1, and 10+2 protect against double disk, controller, storage node, power, network, rack or site failure
- Hardware RAID Levels 5, 6, 10 (4530 3TB and 4TB supports hardware RAID 6 and 10 only)
- Hardware Availability features
  - Hot-plug hard drives
  - Redundant power supplies
  - Integrated storage controller w/ battery-backed cache
  - Hyper-redundant clustered storage (achieved in combination with the LeftHand OS storage software)
- HP StoreVirtual VSA Software for VMware vSphere and Microsoft Hyper-V transforms server-based storage or external legacy arrays into a virtual iSCSI array
- HP ProLiant Integrated Lights-Out 4 Remote Management
- HP Insight Remote Support delivers 24x7 secure remote support
- 750W 48V DC power supplies supported for StoreVirtual nodes

	<b>4130 600GB SAS Storage</b>	<b>4330 450GB SAS Storage</b>	<b>4330 900GB SAS Storage</b>	<b>4330 1TB MDL SAS Storage</b>	<b>4330 FC 900GB SAS Storage</b>
<b>StoreVirtual Scalability<sup>1</sup></b>	1 - 32 nodes	1 - 32 nodes	1 - 32 nodes	1 - 32 nodes	1 - 32 nodes <sup>2</sup>
<b>Number of drives</b>	4	8	8	8	8

### Overview

<b>Capacity</b>	600GB 10K SAS	450GB 10K SAS	900GB 10K SAS	1TB 7.2K MDL SAS	900GB 10K SAS
<b>CPUs</b>	1 (6 core)	1 (6 core)	1 (6 core)	1 (6 core)	1 (6 core)
<b>CPU Cache</b>	15MB	15MB	15MB	15MB	15MB
<b>RAID Controllers</b>	1	1	1	1	1
<b>Memory</b>	8GB	32GB	32GB	32GB	32GB
<b>Controller Cache</b>	2GB	2GB	2GB	2GB	2GB
<b>Storage Ports (1GbE)</b>	4	4	4	4	4
<b>Storage Ports (10GbE)</b>	NA	2 <sup>7</sup> (optional)	2 <sup>7</sup> (optional)	2 <sup>7</sup> (optional)	2 <sup>7</sup> (included)
<b>Bandwidth (1GbE)</b>	4 Gbit/sec	4 Gbit/sec	4 Gbit/sec	4 Gbit/sec	4 Gbit/sec
<b>Bandwidth (10 GbE)</b>	NA	20 Gbit/sec	20 Gbit/sec	20 Gbit/sec	20 Gbit/sec
<b>LeftHand OS software features</b>	Storage Clustering, Network RAID 5/6/10, Thin Provisioning, Space Reclamation, Application Integrated Snapshots, SmartClone, Remote Copy				
<b>Storage Protocol Support</b>	8Gb FC <sup>3</sup> / 10GbE iSCSI <sup>4</sup> / CIFS (SMB 2.0) <sup>5</sup> / NFS <sup>5</sup> / HTTP <sup>5</sup> / FTP <sup>5</sup>				
<b>Customer Self Installable</b>	Yes				
<b>Application Integration Solution Pack</b>	Included				
<b>StoreVirtual Replication for Remote Offices Licenses<sup>5</sup></b>	Optional via VSA licenses				
<b>Multi-Site HA/DR Solution</b>	Included				
<b>Supported Languages / Locales</b>	English (United States), Chinese (China), Japanese, Korean, Spanish				
<b>Software Support, 9x5 NBD</b>	3 years				
<b>Maintenance On-Site, NBD</b>	3 years				

	<b>4530 450GB SAS Storage</b>	<b>4530 600GB SAS Storage</b>	<b>4530 2TB MDL SAS Storage</b>	<b>4530 3TB MDL SAS Storage</b>	<b>4530 4TB MDL SAS Storage</b>
<b>StoreVirtual Scalability<sup>1</sup></b>	1 - 32 nodes	1 - 32 nodes	1 - 32 nodes	1 - 32 nodes	1 - 32 nodes
<b>Number of drives</b>	12	12	12	12	12
<b>Capacity</b>	450GB 15K SAS	600GB 15K SAS	2TB 7.2K MDL SAS	3TB 7.2K MDL SAS	4TB 7.2K MDL SAS
<b>CPUs</b>	1 (6 core)	1 (6 core)	1 (6 core)	1 (6 core)	1 (6 core)
<b>CPU Cache</b>	15MB	15MB	15MB	15MB	15MB
<b>RAID Controllers</b>	1	1	1	1	1

### Overview

<b>Memory</b>	64GB	64GB	64GB	64GB	64GB
<b>Controller Cache</b>	2GB	2GB	2GB	2GB	2GB
<b>Storage Ports (1GbE)</b>	4	4	4	4	4
<b>Storage Ports (10GbE)</b>	2 <sup>7</sup> (included)	2 <sup>7</sup> (included)	2 <sup>7</sup> (included)	2 <sup>7</sup> (included)	2 <sup>7</sup> (included)
<b>Bandwidth (1GbE)</b>	4 Gbit/sec	4 Gbit/sec	4 Gbit/sec	4 Gbit/sec	4 Gbit/sec
<b>Bandwidth (10 GbE)</b>	20 Gbit/sec	20 Gbit/sec	20 Gbit/sec	20 Gbit/sec	20 Gbit/sec
<b>LeftHand OS software features</b>	Storage Clustering, Network RAID 5/6/10, Thin Provisioning, Space Reclamation, Application Integrated Snapshots, SmartClone, Remote Copy				
<b>Storage Protocol Support</b>	8Gb FC <sup>3</sup> / 10GbE iSCSI <sup>4</sup> / CIFS (SMB 2.0) <sup>5</sup> / NFS <sup>5</sup> / HTTP <sup>5</sup> / FTP <sup>5</sup>				
<b>Customer Self Installable</b>	Yes				
<b>Application Integration Solution Pack</b>	Included				
<b>StoreVirtual Replication for Remote Offices Licenses<sup>5</sup></b>	Optional via VSA licenses				
<b>Multi-Site HA/DR Solution</b>	Included				
<b>Supported Languages / Locales</b>	English (United States), Chinese (China), Japanese, Korean, Spanish				
<b>Software Support, 9x5 NBD</b>	3 years				
<b>Maintenance On-Site, NBD</b>	3 years				

	<b>4730 600GB SAS Storage</b>	<b>4730 900GB SAS Storage</b>	<b>4730 FC 900GB SAS Storage<sup>2</sup></b>	<b>4630 900GB SAS Storage</b>	<b>4335 Hybrid Storage</b>
<b>StoreVirtual Scalability<sup>1</sup></b>	1 - 32 nodes	1 - 32 nodes	1 - 32 nodes	1 - 32 nodes	1 - 32 nodes
<b>Number of drives</b>	25	25	25	25	10
<b>Capacity</b>	600GB 10K SAS	900GB 10K SAS	900GB 10K SAS	900GB 10K SAS	400GB SSD 900GB 10K SAS
<b>CPUs</b>	1 (6 core)	1 (6 core)	1 (6 core)	2 (6 core ea)	1 (8 core)
<b>CPU Cache</b>	15MB	15MB	15MB	15MB	20MB
<b>RAID Controllers</b>	1	1	1	1	1
<b>Memory</b>	64GB	64GB	64GB	64GB	32GB
<b>Controller Cache</b>	2GB	2GB	2GB	2GB	2GB

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<b>Storage Ports (1GbE)</b>	4	4	4	NA	4
<b>Storage Ports (10GbE)</b>	2 <sup>7</sup> (included)	2 <sup>7</sup> (included)	2 <sup>7</sup> (included)	2 <sup>7</sup> (Virtual Connect)	2 <sup>7</sup> (included)
<b>Bandwidth (1GbE)</b>	4 Gbit/sec	4 Gbit/sec	4 Gbit/sec	NA	4 Gbit/s
<b>Bandwidth (10 GbE)</b>	20 Gbit/sec	20 Gbit/sec	20 Gbit/sec	20 Gbit/sec	20 Gbit/sec
<b>LeftHand OS software features</b>	Storage Clustering, Network RAID 5/6/10, Thin Provisioning, Space Reclamation, Application Integrated Snapshots, SmartClone, Remote Copy				
<b>Storage Protocol Support</b>	8Gb FC <sup>3</sup> / 10GbE iSCSI <sup>4</sup> / CIFS (SMB 2.0) <sup>5</sup> / NFS <sup>5</sup> / HTTP <sup>5</sup> / FTP <sup>5</sup>				
<b>Customer Self Installable</b>	Yes				
<b>Application Integration Solution Pack</b>	Included				
<b>StoreVirtual Replication for Remote Offices Licenses<sup>5</sup></b>	Optional via VSA licenses				
<b>Multi-Site HA/DR Solution</b>	Included				
<b>Supported Languages / Locales</b>	English (United States), Chinese (China), Japanese, Korean, Spanish				
<b>Software Support, 9x5 NBD</b>	3 years				
<b>Maintenance On-Site, NBD</b>	3 years				

† Two physical 10Gb ports show in the CMC as four 10Gb ports; however the combined bandwidth across all four logical ports is the sum of the two 10Gb ports.

<sup>1</sup>It is highly recommended to have a minimum of two nodes per cluster for availability.

<sup>2</sup>Enabling FC protocol requires a minimum of two Fibre Channel enabled nodes in the management group for availability

<sup>3</sup>FC connectivity requires 10Gb connectivity on all nodes in the cluster hosting the FC volume.

<sup>4</sup>10Gb upgrade is not available for the 4130

<sup>5</sup>CIFS (SMB3.1), NFS, HTTP & FTP support available on all StoreVirtual arrays with addition of HP StoreEasy 3830 Gateway Storage.

<sup>6</sup>More information available about StoreVirtual VSA in the Software section.

<sup>7</sup>Cables, Connectors, and SFPs are not included. See the "Options" section for more information

### Features and Benefits

#### All inclusive feature set enables enterprise functionality at an affordable price

- **Storage Clustering simplifies scalability**  
Storage Clustering allows a customer to consolidate multiple storage nodes into pools of storage. All available capacity and performance is aggregated and available to every volume in the cluster. As storage needs increase the HP StoreVirtual can scale performance and capacity on-line.
- **Network RAID delivers new levels of data availability**  
Network RAID stripes and protects multiple copies of data across a cluster of storage nodes, eliminating any single point of failure in the HP StoreVirtual array. Applications have continuous data availability in the event of a disk, controller, storage node, power, network, or site failure. Choose the right Network RAID level for each volume in the cluster based on capacity and performance needs.
- **Thin Provisioning and Space reclamation reduces costs by increasing storage efficiency**  
Thin Provisioning allocates space only as data is actually written without requiring pre-allocation of storage. This raises the overall utilization and efficiency of the HP StoreVirtual Storage, reduces costs and ultimately increases the ROI.
- **Application Integrated Snapshots for VMware and Windows simplify data protection**  
Snapshots create thinly provisioned, instant point-in-time copies of data on a per-volume basis. Administrators access snapshots to recover individual files from the volume, or rollback an entire volume. Built-in application integration provides automated quiescing for VMware and Hyper-V VMs and Microsoft VSS applications.
- **Remote Copy reduces costs for disaster recovery**  
Remote Copy replicates snapshots between StoreVirtual arrays at primary/remote locations. Copies are thinly provisioned with no space reservation required. Remote Copy enables centralized backup and disaster recovery on a per-volume basis and leverages application integrated snapshots for faster recovery.
- **Adaptive Optimization provides SSD performance without SSD cost (VSA and 4335 only)**  
With new auto-tiering technologies for HP StoreVirtual Storage come opportunities to optimize the cost and performance of StoreVirtual storage clusters. By utilizing Adaptive Optimization technology to migrate data between storage tiers within individual storage systems, StoreVirtual products provide a unique method for balancing performance versus capacity within a storage pool and lowering overall cost.
- **REST API streamlines scripting and automation**  
enables management and storage provisioning on StoreVirtual via a programmable interface that is ideal for scripting and automation. The REST interface also enables OpenStack Cinder based solutions to provide management and orchestration of cloud infrastructures using HP StoreVirtual Storage.

#### Superior availability and disaster recovery

- **Integrated replication for disaster recovery**  
HP StoreVirtual Storage includes integrated replication at no additional cost that simplifies management with simple failover and failback.
- **Change configurations without incurring downtime**  
Administrators can add capacity, increase performance, grow and migrate volumes between HP StoreVirtual clusters on the fly with no application downtime.

#### Scalable Performance

- **Purchase only what you need today**  
Avoid up-front cost and the potential performance constraints. Purchase only what's needed today, then grow the

### Features and Benefits

performance, capacity, and redundancy of your StoreVirtual array online as storage requirements evolve. Buying storage only when needed simplifies planning and relieves budget pressures.

- **Scale performance and capacity simultaneously**

Each time a storage node is added to the StoreVirtual cluster, the capacity, performance, and redundancy of the entire storage solution increases.

- **Avoid disruptive upgrades**

Add resources to the StoreVirtual cluster non-disruptively as capacity and performance requirements increase.

Applications remain online during maintenance events (adding nodes, updating software or firmware) for best in class availability.

- 10GbE upgrade available for 4330 platform

### Easy to manage SANs for virtualized environments

- **Centralized Management Console**

Multiple data centers and sites can be managed from an all-inclusive "single pane-of-glass." All of the StoreVirtual storage features are managed from the Centralized Management Console (CMC) for simple, easy-to-manage storage.

- **Business continuity with integrated HA and DR**

Every StoreVirtual array includes integrated synchronous and asynchronous replication at no additional cost. This reduces costs and simplifies management of high availability/fault tolerant and disaster recovery storage solutions.

- **Industry leading VMware integration**

vStorage / VAAI array offload integration, HP OneView for vCenter, VMware vMSC Metro Storage Cluster certification, Native ESX MPIO / PSA support, VMware SRM (Site Recovery Manager) Storage replication Adapter, and the only SVA certified Virtual Storage Appliance [www.hp.com/go/vsa](http://www.hp.com/go/vsa)

- **Best practice analyzer**

Ensuring best-in-class operation with built-in best-practice analyzer which automatically recommends storage best practices and how to implement those.

- **StoreVirtual VSA Software**

Turn any Microsoft or VMware virtualized server's internal and/or external storage into a virtual array, without the expense of added storage hardware.

- **HP StoreEasy 3830 Gateway Storage**

Boosts the value of StoreVirtual Storage by adding Windows-powered IP-based gateway services. Fully featured NAS gateway includes support for multiple file protocols (CIFS, NFS, etc.), deduplication, print services and high availability through Microsoft Clustering.

### Family Information

HP StoreVirtual Storage, representing a virtualized pool of storage resources, delivers enterprise-level virtualized SAN functionality that enhances virtual environments, simplifies management, and reduces costs. Easy to deploy, scale and maintain, HP StoreVirtual Storage ensures that critical business data remain available. The innovative approach to storage provides a unique data protection level across the entire array, reducing vulnerability without driving up costs the way traditional SANs can. Each StoreVirtual array includes hardware, software, and 3 years support to get you up and running in one swift motion.

All StoreVirtual products come with the following:

#### StoreVirtual Storage System Software:

- StoreVirtual Storage Clustering
- StoreVirtual Network RAID
- StoreVirtual Thin Provisioning and Space Reclamation
- StoreVirtual Snapshots
- StoreVirtual Adaptive Optimization
- StoreVirtual Remote Copy/DR Solution (asynchronous replication)
- StoreVirtual Adaptive Optimization (VSA and 4335 only)
- StoreVirtual Multi-Site/vMSC (synchronous replication)
- StoreVirtual Application Integration Solution Pack
- StoreVirtual FC Connectivity

#### StoreVirtual Services:

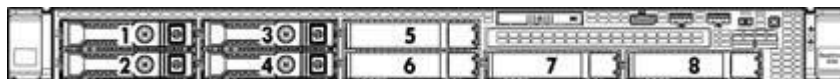
- StoreVirtual Storage include services resulting in 3yrs, 9x5, NBD for HW&SW support
- Factory warranty for all StoreVirtual Storage is 3yrs, 9x5, NBD for Hardware
- Installation & Startup services are available from HP & HP resellers. Installation and startup can be performed by customers

#### Customer Training:

- A two day training course for StoreVirtual Storage is available and recommended. Refer to the HP Education tab to select the Education Care Pack for Storage Training.

## Models

### HP StoreVirtual 4130 Storage



#### HP StoreVirtual 4130 600GB SAS Storage

HP StoreVirtual 4130 600GB SAS Storage  
4130 Storage System Hardware:

B7E16A

- 4 SFF SAS drives, 600GB, 6G SAS 10,000 RPM
- Single CPU - Intel Xeon E5-2620 at 2.0 GHz
- 8 GB RAM
- Redundant hot swap power supplies (460W CS Platinum Plus Hot Plug)
- 2GB Flash backed write cache
- Support for RAID 5



### Family Information

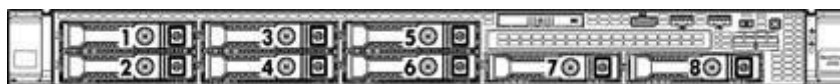
- Quad port 1Gbit NIC
- iLO4 Management - iLO Advanced Pack
- Smart Array Advanced Pack 2.0

#### What's in the Box:

- Each sku contains the following major components:
  - One 4130 Storage System with four 600GB SFF SAS drives

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### HP StoreVirtual 4330 Storage



#### HP StoreVirtual 4330 450GB SAS Storage

HP StoreVirtual 4330 450GB SAS Storage  
4330 Storage System Hardware:

B7E17A

- 8 SFF SAS drives, 450GB, 6G SAS 10,000 RPM
- Single CPU - Intel Xeon E5-2620 at 2.0 GHz
- 32GB RAM
- Redundant hot swap power supplies (460W CS Platinum Plus Hot Plug)
- 2GB Flash backed write cache
- Support for RAID 5, 6, 10
- Quad port 1Gbit NIC
- iLO4 Management - iLO Advanced Pack
- Smart Array Advanced Pack 2.0

#### What's in the Box:

- Each sku contains the following major components:
  - One 4330 Storage System with eight 450 GB SFF SAS drives

#### HP StoreVirtual 4330 900GB SAS Storage

HP StoreVirtual 4330 900GB SAS Storage  
4330 Storage System Hardware:

B7E18A

- 8 SFF SAS drives, 900GB, 6G SAS 10,000 RPM
- Single CPU - Intel Xeon E5-2620 at 2.0 GHz
- 32GB RAM
- Redundant hot swap power supplies (460W CS Platinum Plus Hot Plug)
- 2GB Flash backed write cache
- Support for RAID 5, 6, 10
- Quad port 1Gbit NIC
- iLO4 Management - iLO Advanced Pack
- Smart Array Advanced Pack 2.0

### Family Information

#### What's in the Box:

- Each sku contains the following major components:
  - One 4330 Storage System eight 900 GB SFF SAS drive

#### **HP StoreVirtual 4330 1TB MDL SAS Storage**

HP StoreVirtual 4330 1TB MDL SAS Storage  
4330 Storage System Hardware:

B7E19A

- 8 SFF MDL SAS drives, 1TB, 6G SAS 7,200RPM
- Single CPU - Intel Xeon E5-2620 at 2.0 GHz
- 32GB RAM
- Redundant hot swap power supplies (460W CS Platinum Plus Hot Plug)
- 2GB Flash backed write cache
- Support for RAID 5, 6, 10
- Quad port 1Gbit NIC
- iLO4 Management - iLO Advanced Pack
- Smart Array Advanced Pack 2.0

#### What's in the Box:

- Each sku contains the following major components:
  - One 4330 Storage System with eight 1TB SFF MDL SAS drives

#### **HP StoreVirtual 4330 FC 900GB SAS Storage**

HP StoreVirtual 4330 FC 900GB SAS Storage  
4330 Storage System Hardware:

B7E20A

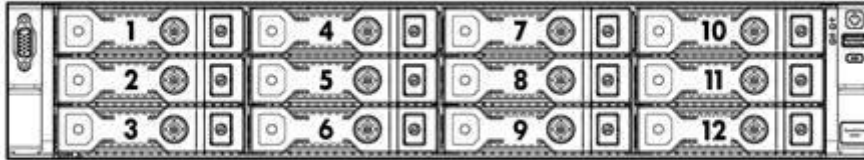
- 8 SFF SAS drives, 900GB, 6G SAS 10,000 RPM
- Single CPU - Intel Xeon E5-2620 at 2.0 GHz
- 32GB RAM
- HP 82E 8Gb Dual-port PCI-e FC HBA
- Redundant hot swap power supplies (460W CS Platinum Plus Hot Plug)
- 2GB Flash backed write cache
- Support for RAID 5, 6, 10
- Quad port 1Gbit NIC
- Dual port 10Gbit NIC (NC552SFP 10GbE 2P Svr Adapter)
- iLO4 Management - iLO Advanced Pack
- Smart Array Advanced Pack 2.0

#### What's in the Box:

- Each sku contains the following major components:
  - One 4330 Storage System with eight 900 GB SFF SAS drives

### Family Information

#### HP StoreVirtual 4530 Storage



#### HP StoreVirtual 4530 450GB SAS Storage

HP StoreVirtual 4530 450GB SAS Storage  
4530 Storage System Hardware:

B7E25B

- 12 SFF SAS drives in LFF converter, 450GB, 6G SAS 15,000 RPM
- Single CPU - Intel Xeon E5-2620 at 2.0 GHz
- 64GB RAM
- Redundant hot swap power supplies (750W CS Platinum Plus Hot Plug)
- 2GB Flash backed write cache
- Support for RAID 5, 6, 10
- Quad port 1Gbit NIC
- Dual port 10Gbit NIC (NC552SFP 10GbE 2P Svr Adapter)
- iLO4 Management - iLO Advanced Pack
- Smart Array Advanced Pack 2.0

#### What's in the Box:

- Each sku contains the following major components:
  - One 4530 Storage System with twelve 450 GB LFF SAS drives

#### HP StoreVirtual 4530 600GB SAS Storage

HP StoreVirtual 4530 600GB SAS Storage  
4530 Storage System Hardware:

B7E26B

- 12 SFF SAS drives in LFF converter, 600GB, 6G SAS 15,000 RPM
- Single CPU - Intel Xeon E5-2620 at 2.0 GHz
- 64GB RAM
- Redundant hot swap power supplies (750W CS Platinum Plus Hot Plug)
- 2GB Flash backed write cache
- Support for RAID 5, 6, 10
- Quad port 1Gbit NIC
- Dual port 10Gbit NIC (NC552SFP 10GbE 2P Svr Adapter)
- iLO4 Management - iLO Advanced Pack
- Smart Array Advanced Pack 2.0

#### What's in the Box:

- Each sku contains the following major components:

### Family Information

- One 4530 Storage System with twelve 600 GB LFF SAS drive

**HP StoreVirtual 4530 2TB MDL SAS Storage** HP StoreVirtual 4530 2TB MDL SAS Storage B7E23A  
**MDL SAS Storage** 4530 Storage System Hardware:

- 12 LFF SAS drives, 2TB, 6G SAS 7200 RPM
- Single CPU - Intel Xeon E5-2620 at 2.0 GHz
- 64GB RAM
- Redundant hot swap power supplies (750W CS Platinum Plus Hot Plug)
- 2GB Flash backed write cache
- Support for RAID 5,6,10
- Quad port 1Gbit NIC
- Dual port 10Gbit NIC (NC552SFP 10GbE 2P Svr Adapter)
- iLO4 Management - iLO Advanced Pack
- Smart Array Advanced Pack 2.0

#### What's in the Box:

- Each sku contains the following major components:
  - One 4530 Storage System with twelve 2TB LFF MDL SAS drives

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**HP StoreVirtual 4530 3TB MDL SAS Storage** HP StoreVirtual 4530 3TB MDL SAS Storage B7E24A  
**MDL SAS Storage** 4530 Storage System Hardware:

- 12 LFF SAS drives, 3TB, 6G SAS 7200 RPM
- Single CPU - Intel Xeon E5-2620 at 2.0 GHz
- 64GB RAM
- Redundant hot swap power supplies (750W CS Platinum Plus Hot Plug)
- 2GB Flash backed write cache
- Support for RAID 6,10
- Quad port 1Gbit NIC
- Dual port 10Gbit NIC (NC552SFP 10GbE 2P Svr Adapter)
- iLO4 Management - iLO Advanced Pack
- Smart Array Advanced Pack 2.0

#### What's in the Box:

- Each sku contains the following major components:
  - One 4530 Storage System with twelve 3TB LFF MDL SAS drives

**HP StoreVirtual 4530 4TB MDL SAS Storage** HP StoreVirtual 4530 4TB MDL SAS Storage F3J69A  
**MDL SAS Storage** 4530 Storage System Hardware:

- 12 LFF SAS drives, 4TB, 6G SAS 7200 RPM

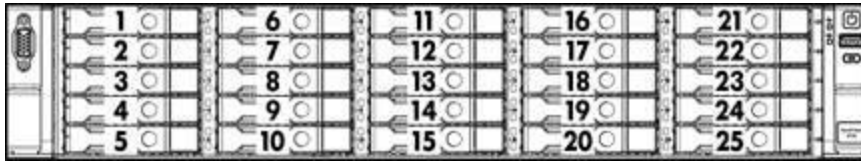
### Family Information

- Single CPU - Intel Xeon E5-2620 at 2.0 GHz
- 64GB RAM
- Redundant hot swap power supplies (750W CS Platinum Plus Hot Plug)
- 2GB Flash backed write cache
- Support for RAID 6,10
- Quad port 1Gbit NIC
- Dual port 10Gbit NIC (NC552SFP 10GbE 2P Adapter)
- iLO4 Management - iLO Advanced Pack
- Smart Array Advanced Pack 2.0

#### What's in the Box:

- Each sku contains the following major components:
  - One 4530 Storage System with twelve 4TB LFF MDL SAS drives

### HP StoreVirtual 4730 Storage



#### HP StoreVirtual 4730 600GB SAS Storage

HP StoreVirtual 4730 600GB SAS Storage

B7E27A

#### 4730 Storage System Hardware:

- 25 SFF SAS drives, 600GB, 6G SAS 10,000 RPM
- Single CPU - Intel Xeon E5-2620 at 2.0 GHz
- 64GB RAM
- Redundant hot swap power supplies (750W CS Platinum Plus Hot Plug)
- 2GB Flash backed write cache
- Support for RAID 5, 6, 10
- Quad port 1Gbit NIC
- Dual port 10Gbit NIC (NC552SFP 10GbE 2P Svr Adapter)
- iLO4 Management - iLO Advanced Pack
- Smart Array Advanced Pack 2.0

#### What's in the Box:

- Each sku contains the following major components:
  - One 4730 Storage System with 25 600 GB SFF SAS drives

#### HP StoreVirtual 4730 900GB SAS Storage

HP StoreVirtual 4730 900GB SAS Storage

B7E28A

#### 4730 Storage System Hardware:

- 25 SFF SAS drives, 900GB, 6G SAS 10,000 RPM
- Single CPU - Intel Xeon E5-2620 at 2.0 GHz

### Family Information

- 64GB RAM
- Redundant hot swap power supplies (750W CS Platinum Plus Hot Plug)
- 2GB Flash backed write cache
- Support for RAID 5, 6, 10
- Quad port 1Gbit NIC
- Dual port 10Gbit NIC (NC552SFP 10GbE 2P Svr Adapter)
- iLO4 Management - iLO Advanced Pack
- Smart Array Advanced Pack 2.0

#### What's in the Box:

- Each sku contains the following major components:
  - One 4730 Storage System with 25 900 GB SFF SAS drives

### HP StoreVirtual 4730 FC 900GB SAS Storage

HP StoreVirtual 4730 FC 900GB SAS Storage  
4730 Storage System Hardware:

B7E29A

- 25 SFF SAS drives, 900GB, 6G SAS 10,000 RPM
- Single CPU - Intel Xeon E5-2620 at 2.0 GHz
- 64GB RAM (4x 16GB 2Rx4 PC3L-10600R)
- Redundant hot swap power supplies (750W CS Platinum Plus Hot Plug)
- 2GB Flash backed write cache
- Support for RAID 5, 6, 10
- HP 82E 8Gb Dual port PCI-e FC HBA
- Quad port 1Gbit NIC
- Dual port 10Gbit NIC (NC552SFP 10GbE 2P Svr Adapter)
- iLO4 Management - iLO Advanced Pack
- Smart Array Advanced Pack 2.0

#### What's in the Box:

- Each sku contains the following major components:
  - One 4730 FC Storage System with 25 900 GB SFF SAS drives

### HP StoreVirtual 4630 900GB SAS Storage



HP StoreVirtual 4630

HP StoreVirtual 4630 900GB SAS Storage

B7E30A

### Family Information

#### 900GB SAS Storage

4630 Storage System Hardware:

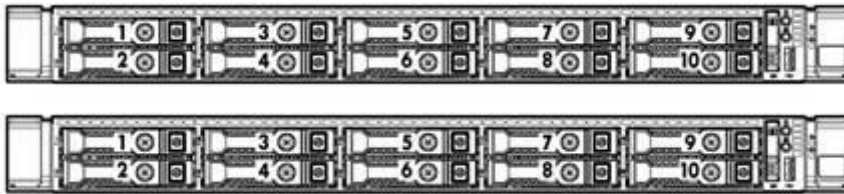
- StoreVirtual 4630sb Blade Server (720477-001)
- HP D2700 900GB 6G SAS SFF 22.5TB BUNDLE
- 25 SFF SAS drives, 900GB, 6G SAS 10,000 RPM
- Dual CPU - Intel Xeon E5-2620 at 2.0 GHz
- Two Mini SAS 2m cables
- 64GB RAM
- 2GB flash backed cache
- Support for RAID 5, 6, 10
- Two 10Gbit NICs (HP FlexFabric 10Gb 2-port 554FLB FlexibleLOM)
- iLO4 Advanced Pack Management
- Smart Array Advanced Pack 2.0

What's in the Box:

- Each sku contains the following major components:
  - One 4630 Storage System with 25 900 GB SFF SAS drives

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#### HP StoreVirtual 4335 Hybrid Storage



#### HP StoreVirtual 4335 Hybrid SAN Solution

HP StoreVirtual 4335 Hybrid SAN Storage  
This is a bundle SKU consists of two 4335 Hybrid storage,

K2Q81A

Each of the 4335 Storage System Hardware:

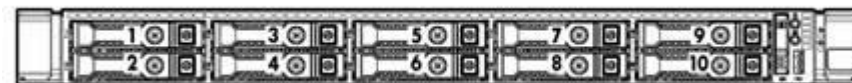
- 3 SFF SSD drives, 400GB, 12G SAS
- 7 SFF SAS drives, 900GB, 6G SAS 10,000 RPM
- Single CPU - Intel Xeon E5-2640v2 at 2.0 GHz
- 32GB RAM (2x 16GB 2Rx4 PC3L-10600R)
- Redundant hot swap power supplies (460W CS Platinum Plus Hot Plug)
- 2GB Flash backed write cache
- Support for RAID 5, 6 (on HDD tier, SSD tier fixed with RAID 5)
- Quad port 1Gbit NIC
- Dual port 10Gbit NIC (NC552SFP 10GbE 2P Svr Adapter)
- iLO4 Management - iLO Advanced Pack
- Smart Array Advanced Pack 2.0

What's in the Box:

- Each sku contains the following major components:
  - Two 4335 Storage System with 3 400GB SSD and 7 900 GB SFF SAS drives

### Family Information

per node



#### HP StoreVirtual 4335 Hybrid Storage

HP StoreVirtual 4335 Hybrid Storage  
4335 Storage System Hardware:

F3J70B

- 3 SFF SSD drives, 400GB, 12G SAS
- 7 SFF SAS drives, 900GB, 6G SAS 10,000 RPM
- Single CPU - Intel Xeon E5-2640v2 at 2.0 GHz
- 32GB RAM (2x 16GB 2Rx4 PC3L-10600R)
- Redundant hot swap power supplies (460W CS Platinum Plus Hot Plug)
- 2GB Flash backed write cache
- Support for RAID 5, 6 (on HDD tier, SSD tier fixed with RAID 5)
- Quad port 1Gbit NIC
- Dual port 10Gbit NIC (NC552SFP 10GbE 2P Svr Adapter)
- iLO4 Management - iLO Advanced Pack
- Smart Array Advanced Pack 2.0

#### What's in the Box:

- Each sku contains the following major components:
  - One 4335 Storage System with 3 400GB SSD and 7 900 GB SFF SAS drives

#### HP StoreVirtual P4000 G2 Memory Upgrade Kit

HP StoreVirtual P4000 G2 Memory Upgrade Kit  
Memory Upgrade Kit

K2Q44A

- HP 4GB (1x4GB) Single Rank x4 PC3L-10600 (DDR3-1333) Registered CAS-9 Low Power Memory Kit
- Certain HP P4000 models will require additional memory kit to enable Space Reclamation functionality (available in LeftHand OS 12.0)
- Space Reclamation feature keeps the storage as lean and efficient as possible by reclaiming unused space resulting from deleted or vacated data.

#### HP StoreVirtual VSA Software

HP StoreVirtual VSA Software

All HP StoreVirtual VSA Software comes with the following features:

- Installable on either VMware vSphere or Microsoft Hyper-V
- Available in 1TB, 4TB, 10TB, or 50TB versions for term licenses of 3 year or



### Family Information

5 year licenses

Includes 3 years of software support for each license

Description	SKUs
HP StoreVirtual VSA 2014 4TB 3pk 3yr	TC484A, TC484AAE, TC485A
HP StoreVirtual VSA 2014 4TB 3pk 5yr	D4U01A, D4U01AAE, D4U02A
HP StoreVirtual VSA 2014 10TB 3yr	TC486A, TC486AAE, TC487A
HP StoreVirtual VSA 2014 10TB 500pk3yr	TC497A, TC497AAE, TC498A
HP StoreVirtual VSA 2014 10TB 5yr	D4U03A, D4U03AAE, D4U04A
HP StoreVirtual VSA 2014 10TB 500pk 3yr	TC497A, TC497AAE, TC498A
HP StoreVirtual VSA 2014 10TB 500pk 5yr	D4U05A, D4U05AAE, D4U06A
HP StoreVirtual VSA 2014 50TB 3yr	TC499A, TC499AAE, TC500A
HP StoreVirtual VSA 2014 50TB 5yr	D4U07A, D4U07AA, D4U08A
HP StoreVirtual VSA 2014 50TB 300pk 3yr	TC501A, TC501AAE, TC502A
HP StoreVirtual VSA 2014 50TB 300pk 5yr	DRU09A, D4U09AAE, D4U10A
HP StoreVirtual VSA 2014 Upg 4-10TB 3yr	TC503A, TC503AAE, TC504A
HP StoreVirtual VSA 2014 Upg 4-10TB 5yr	D4U11A, D4U11AE, D4U12A
HP StoreVirtual VSA 2014 Upg 4-50TB 3yr	TC505A, TC505AAE, TC506A
HP StoreVirtual VSA 2014 Upg 4-50TB 5yr	D4U13A, D4U13AAE, D4U14A
HP StoreVirtual VSA 2014 Upg 10-50TB 3yr	TC507A, TC507AAE, TC508A
HP StoreVirtual VSA 2014 Upg 10-50TB 5yr	D4U15A, D4U15AAE, D4U16A

For more information on the StoreVirtual VSA, go to: <http://www.hp.com/go/vsa>

### HP StoreVirtual Storage Product Information:

<b>Overview</b>	
<b>Server Compatibility</b>	Supports most HP ProLiant servers including HP ProLiant DL, SL, ML and c-Class Blade Servers
<b>Industry Standard x86/x64 servers support</b>	<ul style="list-style-type: none"> <li>Supports most multi-vendor industry standard 32-bit and 64-bit Intel and AMD based servers. HP requires the Third-Party Server to be logo'd and listed on the Microsoft Windows Server Catalog.</li> <li>Refer to the Microsoft website: <a href="http://www.microsoft.com/windows/catalog/server/">http://www.microsoft.com/windows/catalog/server/</a></li> <li>HP recommends that the Third-Party Server Vendor is an active member of TSANet. Refer to the TSANet website for details: <a href="http://www.tsanet.com">http://www.tsanet.com</a></li> </ul>
<b>OS Support</b>	<ul style="list-style-type: none"> <li>HP StoreVirtual products support a wide variety of Operating Systems. For a complete list of supported operating systems, please visit HP Storage SPOCK at <a href="http://h20272.www2.hp.com/index.aspx">http://h20272.www2.hp.com/index.aspx</a></li> <li>OS compatibility information can also be accessed at the following link: <a href="http://www.hp.com/go/storevirtualcompatibility">http://www.hp.com/go/storevirtualcompatibility</a></li> </ul>
<b>Interconnects</b>	<ul style="list-style-type: none"> <li>Either 4ea 1 GbE iSCSI or 10 GbE, platform dependent</li> </ul>

### Family Information

	(4130 is available with 1 GbE only, 10Gb is an optional upgrade on the 4330)
<b>Management</b>	<p><b>The Centralized Management Console supports :</b></p> <ul style="list-style-type: none"> <li>• Windows Server 2012 R2</li> <li>• Windows Server 2012</li> <li>• Windows Server 2008 R2</li> <li>• Windows Server 2008</li> <li>• VMware vSphere 6</li> <li>• VMware vSphere 5.5</li> <li>• VMware vSphere 5</li> <li>• Red Hat Enterprise Virtualization</li> <li>• Red Hat Enterprise Linux 6</li> <li>• SUSE Linux Enterprise Server 11</li> <li>• Ubuntu Server Edition 10.04 LTS, 12.04 LTS</li> <li>• Citrix XenServer 6.2</li> <li>• Oracle VM 3.2</li> </ul> <p><b>Management integration:</b></p> <ul style="list-style-type: none"> <li>• OpenStack</li> <li>• VMware vCenter Server via HP OneView for vCenter Server</li> <li>• Microsoft System Center Operations Manager via HP Storage Management Pack</li> <li>• Microsoft System Center Virtual Machine Manager via SMI-S interface</li> </ul> <p>More on StoreVirtual compatibility can be found at:  <a href="http://www8.hp.com/h20195/v2/GetDocument.aspx?docname=4AA2-5654ENW">http://www8.hp.com/h20195/v2/GetDocument.aspx?docname=4AA2-5654ENW</a></p> <ul style="list-style-type: none"> <li>• HP ProLiant Integrated Lights-Out 4 Remote Management Baseboard Mgmt Controller IPMI 2.0</li> </ul>

### Software

#### HP StoreVirtual All Inclusive Software Product Features Storage Clustering

- StoreVirtual Storage Clustering allows a customer to create pools of storage by consolidating storage nodes on the network into clusters. Storage Clustering provides online scalability, both within a volume and across the entire storage pool. All available physical capacity is aggregated and available to the volumes created on the array.
- In order to scale capacity and/or performance, the IT administrator simply adds nodes to the storage cluster. The StoreVirtual OS software automatically redistributes the data for optimal data availability and performance. All the capacity, processing power, and bandwidth included in each node are aggregated into the entire cluster, ensuring an increase in performance as it grows. To make the process even easier, HP StoreVirtual Storage lets IT administrators expand volumes and add storage nodes online, without taking the volumes offline or causing application downtime.
- Customers can use StoreVirtual Storage Clustering to implement different tiers of storage. For instance a storage cluster of SAS-based storage nodes can be implemented for performance while a storage cluster of MDL SAS-based storage nodes is implemented for higher density, all managed from a single interface.

#### Network RAID

- For increased access to the array, customers can install storage nodes anywhere on the IP network. StoreVirtual nodes in a cluster can be spread out between several racks on a floor, across several floors in a building, or across buildings on a campus site or a metropolitan area. Typical round trip latency should be 2 milliseconds or less. A StoreVirtual cluster can thus eliminate the risk of data loss in the event of a disk, controller, storage node, power, network, or site failure.
- StoreVirtual Network RAID stripes and protects multiple copies of data across a cluster of storage nodes, eliminating any single point of failure in the HP StoreVirtual array. Applications have continuous data availability in the event of a power, network, disk, controller, or entire storage node failure.
- IT administrators can manage redundancy on a per-volume basis to optimize storage utilization and match the data protection of the volume to the application data on that volume. Customers choose from Network RAID level 0, 5, 6, 10, 10+1, or 10+2 to protect data across the storage nodes, only allocating additional storage space for data that warrants additional protection. For increased protection, Network RAID can also be integrated into environments where application servers are clustered, enabling true, seamless, geo-cluster solutions that provide both application and storage clustering across geographies.

#### Thin Provisioning

- Most storage vendors place the provisioning burden on storage administrators, asking them to predict how much space will be needed in the future for volumes, snapshots and remote copies, and what the expected storage growth rate will be. That information is required because most storage provisioning models call for pre-allocation of storage space on the array. Errors in estimation are inevitable, and can be expensive or cause snapshots and backups to fail. Worse yet, if administrators over-allocate storage, it is nearly impossible to reclaim that unused space.
- StoreVirtual Storage does not require pre-allocation of storage space. StoreVirtual OS software manages all the storage allocations underneath a given volume, and the Thin Provisioning feature

### Software

allocates space only as data is actually written to that volume. StoreVirtual Thin Provisioning allows customers to purchase only the storage needed today and then add more storage to the clusters as application data grows. This raises the overall utilization and efficiency of the array and ultimately increases the ROI associated with the storage.

#### Space Reclamation

- Unused virtual disk space (SAUs) can be reclaimed in disk pools after files have been deleted from virtual disks by hosts. Files must be permanently deleted to be considered as unused space. The unused SAUs are returned to the pool.
- StoreVirtual Storage can now reclaim space automatically while the feature is turned-on in VMware vSphere and Microsoft Windows environments using T10 UNMAP.
- HP have introduced some extra performance statistics to enable space reclamation to be monitored which include: IOPS Space Reclamation, Latency UNMAP. These can be accessed by added to the Performance Monitor window so that you can verify the effect of space reclamation on your StoreVirtual node.

#### VMware Multi-pathing

- It can reduce latency and improve performance in VMware vSphere environments. The MEM also optimizes data-path traffic in multi-site (or stretch-cluster) configurations.
- Once the StoreVirtual MEM is installed on the ESX server, all supported StoreVirtual iSCSI volume connections made to an iSCSI SAN will be claimed by the StoreVirtual MEM. There is no need to configure the connections manually.
- When the StoreVirtual MEM is installed, all load balancing is automatically managed by the HP\_PSP\_LH path selection plug-in.

#### REST API

- REST API offers the flexibility to request the details of a single entity using a unique ID or field, or information on a collection of entities using the entity type within the URL. Within an Entity, Unique Resource Identifiers (URIs) to other resources (Entities or Collections) are returned as part of a Link object, which may contain the full resource for user/client convenience.
- In StoreVirtual storage, a single management group may consist of one or more clusters, which are composed of storage systems and volumes. With Rest API-based management, administrators can read, add, and create these volumes. Volume templates are available through REST API, facilitating the creation of multiple volumes with the same configuration. With a single command, administrators can also obtain the status of all associated storage volumes. REST API supports all volume operations available through the StoreVirtual Centralized Management Console (CMC). Storage administrators can obtain a list of permissible actions on any entity or collection of entities through the list-actions query parameter. Administrators can specify additional volume attributes when creating or modifying volumes with REST API, including the designation of thin or full provisioned volumes and Adaptive Optimization capability.

StoreVirtual REST API is used in conjunction with JSON, a resource-based data transfer mechanism, to further simplify communications between the scripting client and the HP StoreVirtual storage system. JSON is derived from the JavaScript scripting language to enhance interfaces and build dynamic websites. Like REST API, JSON is noted for its simplicity and usability as it can send data in plain text, making it easy to

### Software

read and understand.

#### **Application Integrated Snapshots**

- The StoreVirtual Application Aware Snapshot Manager allows for the creation of application consistent snapshots of VMware and Hyper-V VMs and of Microsoft VSS enabled applications.
- Application Integrated snapshots create instant point-in-time copies of data on a per-volume basis. Snapshots can be created in a variety of ways to meet business or application requirements. Administrators can create them manually ad-hoc, on a scheduled or scripted basis, or via the Microsoft VSS framework, and can then access these point-in-time snapshots to recover individual files or folders from the volume, or rollback an entire volume. Unlike most storage vendors that require a snapshot reservation, StoreVirtual Snapshots are always thinly provisioned for efficiency, only consuming storage space on the array for the data written to the snapshot, eliminating any upfront space reservation or guesswork that could lead to snapshot and backup job failures.
- Built into the StoreVirtual storage and Centralized Management Console, application integrated snapshots provide automated quiescing for Microsoft VSS enabled applications without additional software or hardware requirements. Sets of VSS snapshots are easily created, scheduled, and recovered using the CMC.

#### **Remote Copy**

- StoreVirtual Remote Copy lets customers replicate thin provisioned snapshots between primary and remote locations. Because remote copies are thin provisioned no space reservation at the remote location is required. Remote Copy is used for centralized backup and disaster recovery and can be set up on a per-volume basis. Remote copies placed on a recurring schedule allow customers to achieve point-in-time asynchronous replication of the data between locations, sites, or data centers.
- Integrated into the StoreVirtual Remote Copy software is intelligent bandwidth management ensuring that the data traffic can be sent across shared WAN links without adversely impacting other network traffic. Administrators simply set the bandwidth limit for remote copies between the two sites and the LeftHand OS software holds that limit.
- A failover/failback wizard is also included with Remote Copy for step-by-step, easy to execute disaster recovery procedures when needed most.
- Remote-Copy leverages application integrated snapshots to enable VMware and Hyper-V VMs as well as Microsoft VSS applications to be replicated in a quiesced state, providing faster application recovery.

#### **Adaptive Optimization (VSA and 4335 only)**

- HP StoreVirtual Adaptive Optimization is an innovative technology that greatly increases the efficient use of faster storage devices (such as SSDs or Storage Accelerators) by intelligently moving data between storage devices with different performance characteristics within a single storage system.
- The StoreVirtual Adaptive Optimization feature reduces planning complexity by utilizing innovative algorithms to pinpoint hot data at a highly granular level and re-provision data in real time while maintaining a balance between background IO operations and application IO requirements. The result is an effective solution that increases performance substantially without administrator intervention.

### Software

- Adaptive Optimization is configurable on a per volume basis, and requires no tuning or specialized configuration to implement.
- Performance benefits are available immediately, as the StoreVirtual Adaptive Optimization engine constantly monitors the IO demands placed on the StoreVirtual cluster and reacts in near real-time. There is no need to wait for a scheduled operation to move data to the proper tier.

### Performance Management

- The StoreVirtual Performance Management System is designed from the ground up to make it easy to obtain the performance metrics that customers need, when they need them. One click of the mouse and the Performance Monitor is up and running in the Centralized Management Console (CMC) so there is no external software to install. The monitor provides a short list of relevant statistics and counters, letting administrators obtain performance metrics rolled up to their preferred level of abstraction.
- The StoreVirtual Performance Monitor provides performance information on a per-application server/virtual machine, logical volume, snapshot, storage cluster, and storage node basis, so there's no wading through irrelevant statistics in search of pertinent information. The Performance Monitor's graphical user interface is simple and elegant, and each statistic includes a detailed explanation of what it means for SAN performance.

### SmartClone Technology

- StoreVirtual SmartClone technology instantly replicates data volumes and data sets into virtual copies or "clones" without requiring additional storage space. Each volume clone lets administrators save time and space in a variety of environments and applications, from server and desktop provisioning, to boot-from-SAN provisioning, to the rapid copying of production data into test and development environments.
- SmartClone technology is based on the space-efficient StoreVirtual Thin Provisioning architecture, and the volume clones can be used without limitation along with all other StoreVirtual OS features like Network RAID, Thin Provisioning, Snapshot, and Remote Copy. The feature works by taking any volume or snapshot and making one or many clones in an instant. The cloning function makes a permanent, read/write volume on the array, pointing back to the original volume's blocks instead of duplicating the blocks. By managing each clone as a pervasive volume, SmartClone eliminates any requirement for a volume, snapshot, or any of its predecessors to exist after the clone has been created, and also eliminates the need to run de-duplication software, because there are no duplicate blocks. The clone shares the original volume's blocks and uses copy-on-write semantics. SmartClone technology reduces storage costs and increases overall storage efficiency. Administrators can store "gold-master" system images on the array for virtual desktop and boot-from-SAN implementations, and quickly provision test environments using real production data. To simplify management, administrators can view all of the relationships between clones, volumes, and snapshots graphically in the Control Management Console.
- SmartClone technology leverages application integrated snapshots to enable Microsoft VSS applications to be cloned in a quiesced state, providing easier application testing and recovery.

### Centralized Management Console

- All HP StoreVirtual arrays are managed from the Centralized Management Console (CMC). An administrator simply connects via the IP network to the storage nodes. Multiple data centers and

### Software

sites of storage can be managed from a "single pane-of-glass" no matter where the nodes are physically located. The CMC also includes an integrated Performance Monitor providing administrator with detailed, real-time metrics and the ability to export statistics. All of the StoreVirtual OS features are managed from the CMC for simple, easy-to-manage storage.

- The SAN Status Home Page provides a single view of the entire storage environment. Critical information such as Alerts and utilization is displayed for all Management Groups in a single pane of glass.

### HP StoreVirtual Related Software

#### HP StoreVirtual Recovery Manager

- Speeds and simplifies recovery of Windows files and folders
- Auto mount snapshots for StoreVirtual volumes
- Search and restore to recovery point to make recovered data available to end users

#### HP StoreVirtual VSA Software

- The HP StoreVirtual VSA Software is a Virtual Storage Appliance that provides complete enterprise-level virtualized SAN functionality for VMware or Microsoft Hyper-V without external array hardware. By virtualizing the internal disk capacity of the server running vSphere or Hyper-V, the VSA Software eliminates the need for external shared storage required to implement advanced hypervisor features
- Multiple VSA's running on multiple servers create a clustered pool of storage with the ability to replicate data across the hosts allowing volumes to stay on-line in the event of a server failure
- Small to medium businesses and remote office customers can lower their IT infrastructure costs and enable higher levels of protection for business critical systems without the purchase of additional hardware
- VSA Software deployed at remote sites are managed as virtual storage nodes using the same Centralized Management Console used to manage your HP StoreVirtual Storage
- 3 year or 5 year 9x5 software phone support and software upgrades included
- New Zero-to-VSA Automated Install and Deployment tool allows for fast and easy deployment of virtual SAN environments including scripting for ROBO/branch installations with ESX/ESXi.
- Available with 1TB, 4TB, 10TB and 50TB licenses
- Free 1TB licenses are available with the purchase of select ProLiant servers.
- Available in packs of 500 (10TB license) and 300 (50TB license)

**NOTE:** For more information visit: <http://www.hp.com/go/vsa>

#### HP Storage Essentials Storage Resource Management Enterprise Edition Software

- HP Storage Essentials software provides path aware management for HP StoreVirtual Storage.
- Its automatic discovery and topology visualization of the infrastructure around the HP StoreVirtual increase people efficiency to deal with growth and complexity.
- HP Storage Essentials reduces cost of ownership by supplementing the capacity management of the StoreVirtual with capacity optimization across the data path from application to virtual volumes to StoreVirtual.

### Software

**NOTE:** For more information visit: <http://www.hp.com/go/storageessentials>

#### HP Insight Remote Support Software

- For small and midsize environments: HP Insight Remote Support Standard provides basic remote monitoring, notification/advisories and service dispatch and can be installed on a shared HP ProLiant Windows application server. This software supports server and storage devices, including all StoreVirtual SANs, and is optimized for environments with 1-50 servers. Ideal for customers who do not need proactive service delivery and integration with a management platform.
- For midsize and large environments: HP Insight Remote Support Advanced is integrated with HP Systems Insight Manager (SIM). It provides comprehensive remote monitoring, notification/advisories, dispatch and proactive service support for nearly all HP servers, storage, network, and SAN environments, including all StoreVirtual Storage. It also enables HP to deliver higher levels of proactive support in line with HP Mission Critical Services support agreements.
- Both HP Insight Remote Support solutions are available at no additional cost to customers with a valid warranty on HP technology, an HP Care Pack Service or HP contractual support agreement.

**NOTE:** For more information visit: <http://www.hp.com/go/InsightRemoteSupport>

#### HP Storage Management Pack for Microsoft System Center

The HP 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:

[http://spock.corp.hp.com/spock/utility/document.aspx?docurl=Shared%20Documents/an/solutions\\_microsoft/storage\\_management\\_pack\\_for\\_system\\_center.2013\\_01\\_03.pdf](http://spock.corp.hp.com/spock/utility/document.aspx?docurl=Shared%20Documents/an/solutions_microsoft/storage_management_pack_for_system_center.2013_01_03.pdf)

HP Storage Management Pack can be downloaded free from the following website:

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

#### **HP StoreEasy 3830 Gateway Storage**

HP StoreVirtual Storage combined with HP StoreEasy 3830 Storage enables you to consolidate block and file storage onto a single, high-performance system - giving your business the flexibility to meet changing business needs on-demand.

HP StoreEasy 3830 Storage delivers efficient, secure, and highly available file services that help address your changing file-serving needs. It reduces your cost of ownership by simplifying management, increasing resource utilization, centralizing growth, and protecting data. HP StoreEasy 3830 Storage leverages the Server Manager capabilities in Microsoft Windows Storage Server 2012 to provide a simple and consistent experience for managing block and file storage for multiple workloads centrally.



### Software

#### HP StoreEasy 3830 Gateway Storage

<b>Operating System</b>	Microsoft Windows Storage Server 2012, Standard
Processor	Intel® Xeon® E5-2609 (2.40GHz/4-core/10MB/80W) Processor
Memory	16 GB (4 x 4GB)
Storage Controller	Smart Array P420i with 1 GB FBWC Controller with internal SAS port for O/S drives)
Internal Storage	2 x 450GB 6G SAS 10K 2.5" ENT hot-plug LFF HDDs (O/S mirror)
Expansion Slots	3 x PCIe (6 with optional PCIe Riser)
Network Ports	4 x 1GbE
Form Factor	2U Rack

#### Application Solutions

HP StoreVirtual is the ideal solution for many customers running Oracle, Microsoft, SAP environments and those customers who are deploying virtual server and desktop technologies like VMware, Citrix, Hyper-V, and Oracle Virtual Machine. HP StoreVirtual delivers enterprise functionality that enhances virtual environments, simplifies management, and reduces costs. Easy to deploy, scale and maintain, HP StoreVirtual Storage ensure that crucial business data remains available. This innovative approach to storage provides unique double fault protection across the entire array, reducing vulnerability without driving up costs the way traditional SANs can.

For customers, one of the greatest concerns is always database performance. With storage clustering, StoreVirtual customers get industry leading, impressive performance along with the scalability, availability, and ease of management capabilities.

HP has developed best-in-class expertise in Oracle, Microsoft, SAP, and Virtualization Hypervisor technology through extensive testing with the HP StoreVirtual, HP servers, and management software; high availability and disaster recovery solutions; and backup and recovery on the Oracle, Microsoft, and SAP application platforms.

To learn more about StoreVirtual specific white papers on Oracle, SAP, Microsoft, VMware and Citrix deployments go to the Resource Library on <http://www.hp.com/go/StoreVirtual>.

For an overview of HP Storage Solutions for Oracle, Exchange, SAP and Virtualization environments, visit the solution sites supporting each of these applications.

HP Storage for Oracle hyperlink to <http://www.hp.com/storage/Oracle>  
HP Storage for Microsoft hyperlink to <http://www.hp.com/storage/Microsoft>  
HP Storage for SAP hyperlink to <http://www.hp.com/storage/SAP>

### Backup

### Software

#### Options

##### **Creating and end-to-end IP SAN storage solution**

When combining HP StoreVirtual Storage with the HP StoreOnce Backup System, users can create an affordable end-to-end IP SAN storage solution that is both easy to implement and easy to maintain. From entry-level solutions for a remote or branch office to mid-range solutions that scale for multiple sites, HP StoreOnce Backup Systems provide the optimal balance of affordability, manageability, and reliability to handle the data protection needs of your HP Storage.

##### **HP StoreOnce Backup System**

##### **Creating and end-to-end IP SAN storage solution**

When combining HP StoreVirtual Storage with HP StoreOnce Backup systems users can create an affordable end-to-end IP SAN storage solution from primary storage to data protection, from remote office to data center, that is both easy to implement and easy to maintain. From entry-level solutions for a remote or branch office, to enterprise solutions that scale across multiple sites and data centers, HP StoreOnce provides disk-based backup with a single, unified deduplication engine for the optimal balance of affordability, manageability, scalability, and reliability to handle the data protection needs of your HP Storage.

##### **HP StoreOnce Backup**

The HP StoreOnce Backup family with StoreOnce deduplication provides consolidated, automated backup and DR operations that span enterprise data centers, regional, and remote or branch offices. With StoreOnce Backup you can:

Meet shrinking backup windows - with a broad range of price/performance points spanning from 1TB/hour to 100 TB/hour. Optimize dedupe performance with HP StoreOnce Catalyst, enabling Federated Deduplication across the StoreOnce Backup range - dedupe at the application source, at the backup server or at any of the HP StoreOnce target appliances to best suit your configuration.

Keep pace with data growth - HP StoreOnce disk-based data protection with StoreOnce deduplication reduces the amount of backup data you need to store by up to 95%, so with our scale-out architecture you can pay-as-you-grow to retain up to 10 petabytes of data in a single pool with the leading performance HP StoreOnce B6200.

Simplify data protection for even the most complex environments - with our single StoreOnce deduplication technology managing the movement of data between remote offices and enterprise data centers has never been easier. Dedupe once and once only, before simply transferring the deduped data around the organization with many-to-one and cascaded data movement.

Enhance the manageability of DR and Remote Office backup operations - automate backup and DR processes and use a single pane of glass to manage the data movement between HP StoreOnce appliances in remote offices and enterprise data centers using your current backup application.

Be confident in your data protection - HP StoreOnce Backup systems have been specifically designed with backup in mind, without the limitations of general purpose NAS appliances. Furthermore, for high availability enterprise applications, HP StoreOnce B6200 with Autonomic Restart means a more resilient solution at a price/performance point that is up to 75% better than the leading competitor.

With HP StoreOnce Backup you can keep pace with today's data protection challenges, improve storage

### Software

efficiency and reduce management overheads. The systems seamlessly integrate with your current backup applications and provide flexible integration for both SAN and virtualized environments to make the most of existing investments.

*\*Actual performance is dependent upon configuration data set type, compression levels, number of data streams, number of devices emulated and number of concurrent tasks, such as housekeeping or replication.*

For more information on HP StoreOnce Backup Systems, please go to: <http://www.hp.com/go/storeonce>

### Service and Support, HP Care Pack, and Warranty Information

#### Service and Support

#### **Technology Services for increased uptime, productivity and ROI**

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

#### **Protect your business beyond warranty**

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

#### **What HP Storage Technology Services can do for you**

HP Storage Technology Services can help you design, deploy, test, integrate, support, and manage IT and infrastructure solutions. HP storage lifecycle support services offers a full spectrum of customer care—from technology support to complex migrations to complete managed services.

#### **Choose the right level of support, deployment and integration services**

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

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

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

#### **Additional Option:**

**HP Proactive Care Personalized Support**—The HP Proactive Care Personalized Support option allows for an increased personalization of the Proactive Care support experience through the assignment of an Account Service Manager (ASM) who provides IT best practice advice to help address IT issues and projects. The ASM will develop an annual support plan, provide four days of operational and technical advice, and conduct

#### For more information

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

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

### Service and Support, HP Care Pack, and Warranty Information

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

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

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#### Customer Technical Training

Consider education as an integral part of your strategy to get the best return on investment for your HP storage solution. HP offers a variety of training courses on storage software, networking, archiving and disk storage systems. Our classes are available in many delivery modalities from traditional instructor-led courses at one of our 80 training centers worldwide to on-site training customized to your needs or online. <http://www.hp.com/learn/storage>

**NOTE:** A two day training course for StoreVirtual Storage is available and recommended. Order part number HF383E (QTY 2). To order additional training seats simply specify an increased quantity (QTY 2 per additional seat).

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#### HP Services Awards

HP Services continues to be recognized for service and support excellence by customers, partners, industry organizations and publications around the world. Recent honors and award reflect our services team's dedications, technical expertise, professionalism and uncompromising commitment to customer satisfaction. For a list of all our awards, please visit:

<http://h20219.www2.hp.com/services/cache/433028-0-0-225-121.htm>

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#### Additional Services Information

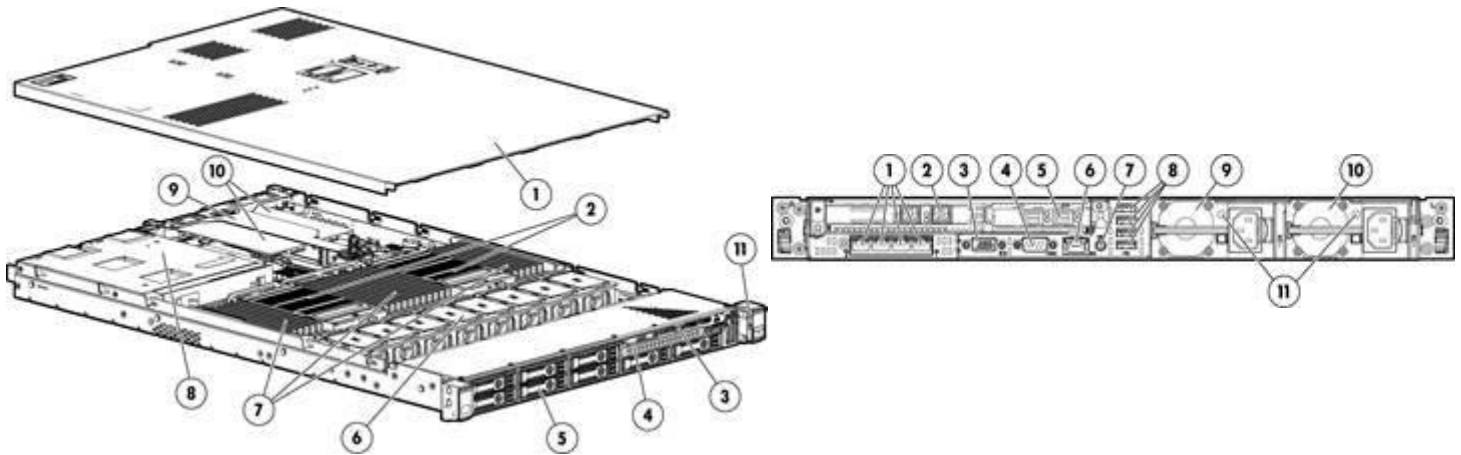
For more information about HP Care Pack Services for Storage, please visit:

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

If you have specific questions, contact your local HP representative. Contact information for a representative in your area can be found at "Contact HP" <http://www.hp.com>

### Configuration Information

#### HP StoreVirtual Storage 1U System (4130, 4330 and 4335)



#### Front View:

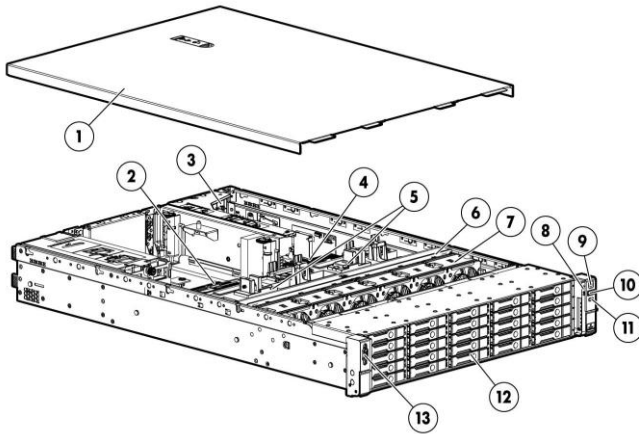
1. Hood Cover
2. 4130 and 4330: One (1) Single CPU - Intel Xeon E5-2620 processor  
4335: One (1) Single CPU - Intel Xeon E5-2640 processor
3. Video connector (requires Front Video Adapter Kit)
4. Slide-out System Insight Display (SID)
5. Hard Drive Bays
6. Removable hot-plug fan modules for easy serviceability
7. 24 DIMM slots: DDR3 Registered (RDIMM), Load Reduced (LRDIMM) or Unbuffered (UDIMM) memory
8. Redundant Hot Plug Platinum Plus Power Supplies
9. Removable Riser Cage assembly for 2 x PCIe 3.0 Slots
10. Fibre Channel and 10Gb Ethernet cards
11. Active Health and Network Status LEDs

#### Rear View:

1. FlexibleLOM ports (4 ports 1Gb each)
2. Dual-port 8Gb Fibre Channel (4330 FC only)
3. Video Connector
4. Serial connector
5. Dual-port 10Gb Ethernet (optional on 4330, Standard on 4330 FC)
6. iLO Management Engine NIC connector
7. Unit ID LED/button
8. 4 USB connectors (not used for storage operation)
9. Power supply bay 2
10. Power supply bay 1
11. Power Supplies Health/Activity Indicators

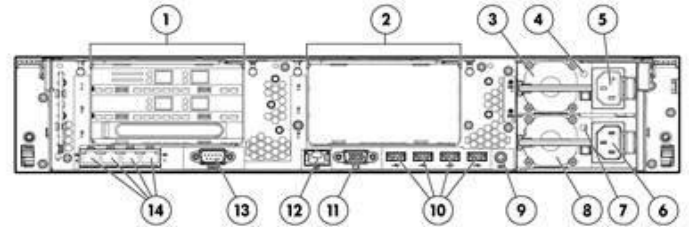
### Configuration Information

#### HP StoreVirtual Storage 2U System (4530 and 4730)



#### Front View:

1. Quick removal access panel
2. Unused
3. Fibre Channel and 10Gb Ethernet cards (where applicable)
4. Single CPU - Intel Xeon E5-2620
5. 24 DIMM slots: DDR3 Registered (RDIMM), Load Reduced (LRDIMM), or Unbuffered (UDIMM) memory
6. Air Baffle
7. Hot-plug fans, full N+1 redundancy
8. Health LED
9. Power On /Standby button and system power LED button
10. USB connector
11. Unit ID LED
12. Drive Bays (12x LFF for 4530, 25x SFF for 4730)
13. Video connector

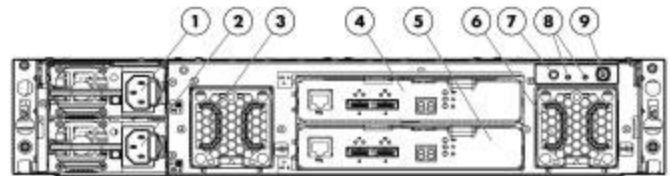
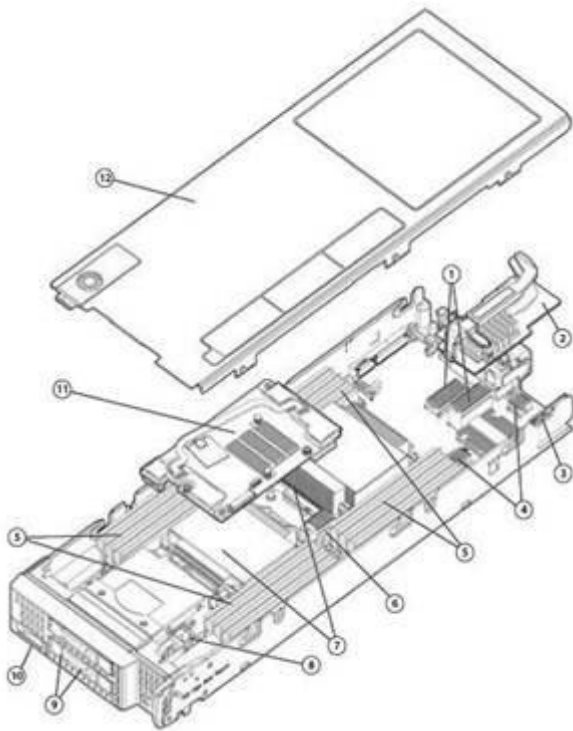


#### Rear View:

1. 8Gb FC and 10Gb SFP+ (where applicable)
2. Unused
3. Power Supply 1
4. Power Supply 1 Power LED
5. Power supply 1 Power connection (with Intelligent PDU communication)
6. Power supply 2 Power connection (with Intelligent PDU communication)
7. Power Supply 2 Power LED
8. Power Supply 2
9. Unit ID LED/Button
10. USB connectors (4 - not used)
11. Video connector
12. iLO connector
13. Serial connector
14. FlexibleLOM ports, 4 ports 1Gb each

### Configuration Information

### HP StoreVirtual Storage 4630 BladeSystem



#### HP StoreVirtual 4630sb

1. Two (2 x) PCIe 3.0
2. Slots mezzanine I/O expansion slots
3. FlexibleLOM adapter
4. MicroSDHC card connector
5. FlexibleLOM connectors (supporting one (1) FlexibleLOM)
6. Sixteen (16) DDR3 DIMM memory slots (8 per processor)
7. HP Smart Array P220i Controller connector
8. Two (2) Intel® Xeon® E5-2600 family processors
9. Internal USB 2.0 and Trusted Platform Module (TPM) connectors
10. Two (2) small form factor (SFF) hot-plug drive bays
11. HP c-Class Blade SUV (Serial, USB, VGA) connector
12. HP Smart Array P721i Controller with 2GB FBWC Access panel

#### 4630 Disk Shelf Rear Panel components

1. Power supply baySupply 1
2. Power Supply 2
3. Fan 1
4. I/O Module A
5. I/O Module B
6. Fan 2
7. Rear UID push button
8. Enclosure LEDs
9. Power on/standby button



### Configuration Information

#### Step 1 - StoreVirtual Base Configuration: Choose a SAN that best fits your needs

SAN Configuration	Model Description	Part Number
	HP StoreVirtual 4130 600GB SAS Storage	B7E16A
	HP StoreVirtual 4330 450GB SAS Storage	B7E17A
	HP StoreVirtual 4330 900GB SAS Storage	B7E18A
	HP StoreVirtual 4330 1TB MDL SAS Storage	B7E19A
	HP StoreVirtual 4330 FC 900GB SAS Storage	B7E20A
	HP StoreVirtual 4530 450GB SAS Storage	B7E25B
	HP StoreVirtual 4335 Hybrid Storage	F3J70A
	HP StoreVirtual 4530 600GB SAS Storage	B7E26B
	HP StoreVirtual 4530 2TB MDL SAS Storage	B7E23A
	HP StoreVirtual 4530 3TB MDL SAS Storage	B7E24A
	HP StoreVirtual 4530 4TB MDL SAS Storage	F3J69A
	HP StoreVirtual 4730 600GB SAS Storage	B7E27A
	HP StoreVirtual 4730 900GB SAS Storage	B7E28A
	HP StoreVirtual 4730 FC 900GB SAS Storage	B7E29A
	HP StoreVirtual 4630 900GB SAS Storage	B7E30A
	HP StoreVirtual 4335 Hybrid SAN Solution	K2Q81A
	HP StoreVirtual 4335 Hybrid Storage	F3J70B

**NOTE:** All StoreVirtual Storage is available factory racked: just add "#0D1" as a suffix to the Part Numbers listed above when ordering.

#### China Specific Solutions All 4130 / 4330 Storage ordered for sale in China should use the following part numbers:

Model Description	Part Number
HP StoreVirtual 4130 600GB China SAS Storage	B7E16AC
HP StoreVirtual 4330 450GB China SAS Storage	B7E17AC
HP StoreVirtual 4330 900GB China SAS Storage	B7E18AC
HP StoreVirtual 4330 1TB MDL China SAS Storage	B7E19AC
HP StoreVirtual 4330 FC 900GB China SAS Storage	B7E20AC
HP StoreVirtual 4335 China Hybrid SAN Solution	K2Q81AC
HP StoreVirtual 4335 China Hybrid Storage	F3J70AC

**NOTE:** All China Specific StoreVirtual Storage is available in factory racked: just add "#0D1" as a suffix to the Part Numbers listed above when ordering.

### Configuration Information

#### Step 2 - Options

##### StoreVirtual Upgrade Options

HP StoreVirtual P4000 G2 Memory Upgrade Kit K2Q44A

**NOTE:** Use this kit to upgrade certain HP P4000 models to enable Space Reclamation functionality (available in LeftHand OS 12.0). Space Reclamation feature keeps the storage as lean and efficient as possible by reclaiming unused space resulting from deleted or vacated data.

HP StoreVirtual 4030 10G BASE-SFP+ Upgrade Kit B7E21A

**NOTE:** Use this kit to upgrade HP StoreVirtual Storage Systems (current model) to 10 GbE, and connect to a 10 GbE iSCSI network. It has 2 x 10GbE SFP+ ports per kit. 1 Upgrade kit per node required to upgrade. CABLES , CONNECTORS and SFP's ARE NOT INCLUDED. For supported cables & connectors, please reference the NC552SFP QuickSpecs at:  
[http://h18004.www1.hp.com/products/quickspecs/14068\\_div/14068\\_div.html](http://h18004.www1.hp.com/products/quickspecs/14068_div/14068_div.html)

HP StoreVirtual P4000 G2 10G BASE-SFP+ Upgrade Kit B7E22A

**NOTE:** Use this kit to upgrade HP StoreVirtual Storage Systems (current model) to 10 GbE, and connect to a 10 GbE iSCSI network. It has 2 x 10GbE SFP+ ports per kit. 1 Upgrade kit per node required to upgrade. CABLES , CONNECTORS and SFP's ARE NOT INCLUDED. For supported cables & connectors, please reference the NC552SFP QuickSpecs at:  
[http://h18004.www1.hp.com/products/quickspecs/14068\\_div/14068\\_div.html](http://h18004.www1.hp.com/products/quickspecs/14068_div/14068_div.html)

##### HP StoreVirtual VSA Software

HP StoreVirtual VSA SKUs are available at the StoreVirtual VSA QuickSpecs:  
<http://h18000.www1.hp.com/products/quickspecs/productbulletin.html#spectype=worldwide&type=html&docid=13255>

HP StoreVirtual VSA 4TB 3 Pack

HP StoreVirtual VSA 10TB

HP StoreVirtual VSA 10TB 500 Pack

HP StoreVirtual VSA 50TB

HP StoreVirtual VSA 50TB 300 Pack

HP StoreVirtual VSA Upgrade 4TB to 10TB

HP StoreVirtual VSA Upgrade 4TB to 50TB

HP StoreVirtual VSA Upgrade 10TB to 50TB

### Configuration Information

#### Step 3 - Other StoreVirtual Storage Options

##### Description

Two 6' Highline (IEC-IEC) power cord ships standard per 4130/4330 Node **NOTE:** HP StoreVirtual 4130/ 4330 Storage do not ship standard with NEMA power cords (P/N 163719-002) that allow connection to 110V US wall outlets in a home or office. HP StoreVirtual Storage is primarily connected to PDU's in data center racks so they ship standard with only a PDU power cord (416151-B21).

If a user wishes to power HP StoreVirtual Storage using a 110V receptacle (NEMA-15), the NEMA power cord (AF556A) must be ordered separately. If customers require a power cord, they can check the power cord matrix for the appropriate cord.

Please see the UPS and PDU cable matrix's on the Power Protection page under Power Cords that lists cable descriptions, requirements, and specifications for UPS and PDU units at the new HP Power Cord Link @ HP.com. Use the following new link: <http://www.hp.com/products/powercords>

**NOTE:** Rack models ship standard with IEC cables.

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### Configuration Information

#### **Step 4 - Choose Supported Options For iSCSI Infrastructure**

Select each required option with quantities specified. HP StoreVirtual Storage support servers with industry standard Gigabit and 10 Gigabit (SFP+) Ethernet components from various manufacturers that conform to IEEE 802.3 standards.

##### **Description with Parts Shipped:**

For details on standard Gigabit Ethernet components (including Gigabit Ethernet switches, Network Interface cards and Ethernet cables) from HP <http://welcome.hp.com/country/us/en/prodserv/networking.html>

For details on standard Fibre Channel components (including Fibre Channel switches, HBAs and Fibre cables) from HP <http://h18006.www1.hp.com/storage/networking/index.html>

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### Configuration Information

#### Step 5 - Choose Rack Options

Select each required option with quantities specified.

##### Rack Airflow Requirements

##### HP Intelligent Series Racks -

- Intelligence - HP Intelligent Series rack-level enclosures with HP Location Discovery Services and HP Power Discovery Services enable your servers to self-identify and inventory themselves. This allows you to optimally place workloads while eliminating manual and error prone asset management tasks.
- Cooling - With an industry leading 81% open perforation area on the door, HP Intelligent Series Rack enclosures deliver higher airflow, allowing cooling efficiency and sustainable power savings.
- Convenience - Unmatched cable management in the back of the rack provides tool-less operations and extra space for hot air to pass from the rack.
- Structural Integrity - Up to 3,000 lbs of dynamic loading enables HP Intelligent Series Racks to be configured, shipped and moved with all types of equipment.

**CAUTION:** If a third-party rack is used, observe the following additional requirements to ensure adequate airflow and to prevent damage to the equipment: Front and rear doors: If your 42U server rack includes closing front and rear doors, you must allow 830 square inches (5,350 sq cm) of hole evenly distributed from top to bottom to permit adequate airflow (equivalent to the required 64 percent open area for ventilation). Side: The clearance between the installed rack component and the side panels of the rack must be a minimum of 2.75 inches (7 cm).

**CAUTION:** Always use blanking panels to fill all remaining empty front panel U-spaces in the rack. This arrangement ensures proper airflow. Using a rack without blanking panels results in improper cooling that can lead to thermal damage.

Rack Kit HP StoreVirtual rack models have fixed rails which provide support for racks with round mounting holes and tool-free support for racks with square mounting holes (including Compaq/HP 7000, 9000, 10000 and i-Series), with an adjustment range of 26" - 36".

Telco Rack Support - Support for all 2 and 4 post Telco racks and threaded hole racks requires an additional option kit from Rack Solutions. The Rack Solutions brackets can be purchased at: <http://www.racksolutions.com/hp/>

**NOTE:** Cat5e cables are required to connect Interface Adapters to Console Switches. Cat5e cables can be found at the following URL: <http://www.hp.com/go/kvm>.

**NOTE:** It is mandatory to use a shock pallet when shipping racks with equipment installed.

**NOTE:** Please see the QuickSpecs for Technical Specifications and additional information: [http://h18004.www1.hp.com/products/quickspecs/14223\\_na/14223\\_na.html](http://h18004.www1.hp.com/products/quickspecs/14223_na/14223_na.html)

**NOTE:** For additional information regarding Rack Cabinets, please see the following URL: <http://www.hp.com/go/rackandpower>.

### Technical Specifications

	4130 600GB SAS Storage	4330 450GB SAS Storage	4330 900GB SAS Storage	4330 1TB MDL SAS Storage	4330FC 900GB SAS Storage	4335 Hybrid Storage
<b>Dimensions</b>	1U					
	1.7 x 17.1 x 27.5 inches (4.32 x 43.47 x 69.85 cm)					
<b>Weight</b>	42.3 lb (19.2 kg)					
<b>Power/Cooling</b>	Redundant Hot-Plug Common Slot Power Supplies					
	Auto-switching universal 115/220 Volts					
<b>@115V</b>	607 BTU / h	705 BTU / h	721 BTU / h	676 BTU / h	808 BTU / h	912.28 BTU / h
	177.12 Watts	213.29 Watts	217.75 Watts	204.82 Watts	243.55 Watts	267.53 Watts
<b>@220V</b>	600 BTU/hr	696 BTU/hr	710 BTU/hr	667 BTU/hr	797 BTU/hr	912.29 BTU / h
	174.84 Watts	210.43 Watts	214.8 Watts	202.11 Watts	240.11 Watts	267.53 Watts
<b>Environmental</b>	<b>System Inlet Temperature</b>		<b>Operating</b>		10° to 35°C (50° to 95°F) at sea level with an altitude derating of 1.0°C per every 304.8 m (1.8°F per every 1000 ft) above sea level to a maximum of 3048 m (10,000 ft), no direct sustained sunlight. Maximum rate of change is 10°C/hr (18°F/hr). The upper limit may be limited by the type and number of options installed. System performance may be reduced if operating with a fan fault or above 30°C (86°F).	
			<b>Non-operating</b>		-30° to 60°C (-22° to 140°F). Maximum rate of change is 20°C/hr (36°F/hr).	
	<b>Relative Humidity (non-condensing)</b>		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.			
	<b>Altitude</b>		Operating 3048 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). Non-operating 9144 m (30,000 ft). Maximum allowable altitude change rate is 457 m/min (1500 ft/min).			
<b>Regulatory</b>	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					

### Technical Specifications

	4530 450GB SAS Storage	4530 600GB SAS Storage	4530 2TB MDL SAS Storage	4530 3TB MDL SAS Storage	4530 4TB MDL SAS Storage
<b>Dimensions (with bezel)</b>	2U				
	3.44 x 17.54 x 29.50 in (8.73 x 44.55 x 74.93 cm)				
<b>Weight</b>	60.1 lb (27.27 Kg)				
<b>Power/Cooling</b>	Redundant Hot-Plug Common Slot Power Supplies				
	Auto-switching universal 115/220 Volts				
<b>@115V</b>	1219 BTU / h	1311 BTU / h	993 BTU / h	1074 BTU / h	1200 BTU / h
	357.55 Watts	384.55 Watts	291.41 Watts	315.23 Watts	351.92 Watts
<b>@220V</b>	1202 BTU/hr	1292 BTU/hr	980 BTU/hr	1060 BTU/hr	1167.4 BTU / h
	352.54 Watts	379.13 Watts	287.41 Watts	310.86 Watts	342.45 Watts
<b>Environmental</b>	<b>System Inlet Temperature</b>	<b>Operating</b>	10° to 35°C (50° to 95°F) at sea level with an altitude derating of 1.0°C per every 304.8 m (1.8°F per every 1000 ft) above sea level to a maximum of 3048 m (10,000 ft), no direct sustained sunlight. Maximum rate of change is 10°C/hr (18°F/hr). The upper limit may be limited by the type and number of options installed. System performance may be reduced if operating with a fan fault or above 30°C (86°F).		
		<b>Non-operating</b>	-30° to 60°C (-22° to 140°F). Maximum rate of change is 20°C/hr (36°F/hr).		
	<b>Relative Humidity (non-condensing)</b>	<b>Operating</b> 10% to 90% relative humidity (Rh), 28°C (82.4°F) maximum wet bulb temperature, non-condensing. <b>Non-operating</b> 5% to 95% relative humidity (Rh), 38.7°C (101.7°F) maximum wet bulb temperature, non-condensing.			
	<b>Altitude</b>	<b>Operating</b> 3048 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). <b>Non-operating</b> 9144 m (30,000 ft). Maximum allowable altitude change rate is 457 m/min (1500 ft/min).			
<b>Regulatory</b>	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				

### Technical Specifications

	4730 600GB SAS Storage	4730 900GB SAS Storage	4730 900GB FC SAS Storage	4630 900GB SAS Storage
<b>Dimensions</b> (with bezel)	2U	2U	2U	2U for disk shelf, one slot in chassis for blade
	3.44 x 17.54 x 29.50 in (8.73 x 44.55 x 74.93 cm)			3.47 x 17.99 x 22.3 in (8.8 x 45.0 x 56.7 cm) (disk shelf only)
<b>Weight</b>	60.1 lb (27.27 Kg)			50 lb (22.6 kg) (disk shelf only)
<b>Power/Cooling</b>	Redundant Hot-Plug Common Slot Power Supplies			
	Auto-switching universal 115/220 Volts			
<b>@115V</b>	1276 BTU / h	1287 BTU / h	651 BTU / h	N/A
	374.43 Watts	377.66 Watts	391.61 Watts	N/A
<b>@220V</b>	1258 BTU/hr	1269 BTU/hr	1316 BTU/hr	1680 Btu/hr
	369.16 Watts	372.34 Watts	386.15 Watts	510.22 Watts
<b>Environmental</b>	<b>System Inlet Temperature</b>	<b>Operating</b>	10° to 35°C (50° to 95°F) at sea level with an altitude derating of 1.0°C per every 304.8 m (1.8°F per every 1000 ft) above sea level to a maximum of 3048 m (10,000 ft), no direct sustained sunlight. Maximum rate of change is 10°C/hr (18°F/hr). The upper limit may be limited by the type and number of options installed. System performance may be reduced if operating with a fan fault or above 30°C (86°F).	
		<b>Non-operating</b>	-30° to 60°C (-22° to 140°F). Maximum rate of change is 20°C/hr (36°F/hr).	
	<b>Relative Humidity (non-condensing)</b>	<b>Operating</b> 10% to 90% relative humidity (Rh), 28°C (82.4°F) maximum wet bulb temperature, non-condensing. <b>Non-operating</b> 5% to 95% relative humidity (Rh), 38.7°C (101.7°F) maximum wet bulb temperature, non-condensing.		
<b>Altitude</b>	<b>Operating</b> 3048 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). <b>Non-operating</b> 9144 m (30,000 ft). Maximum allowable altitude change rate is 457 m/min (1500 ft/min).			
<b>Regulatory</b>	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			



### Technical Specifications

#### Additional information online

<b>StoreVirtual home page</b>	<a href="http://www.hp.com/go/StoreVirtual">http://www.hp.com/go/StoreVirtual</a>
<b>StoreVirtual VSA home page</b>	<a href="http://www.hp.com/go/VSA">http://www.hp.com/go/VSA</a>
<b>StoreVirtual VSA download</b>	<a href="http://www.hp.com/go/TryVSA">http://www.hp.com/go/TryVSA</a>
<b>StoreVirtual compatibility information</b>	<a href="http://www.hp.com/go/storevirtualcompatibility">http://www.hp.com/go/storevirtualcompatibility</a>
<b>StoreVirtual all things technical</b>	<a href="http://www.hp.com/go/storevirtualsupport">http://www.hp.com/go/storevirtualsupport</a>

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#### Environment-friendly Products and Approach

#### End-of-life Management and Recycling

Hewlett-Packard offers end-of-life HP product return, trade-in, and recycling programs in many geographic areas. For trade-in information, please go to: <http://www.hp.com/go/green>. To recycle your product, please go to: <http://www.hp.com/go/green> or contact your nearest HP sales office. Products returned to HP 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 web site at: <http://www.hp.com/go/green>. These instructions may be used by recyclers and other WEEE treatment facilities as well as HP OEM customers who integrate and re-sell HP equipment.

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### Summary of Changes

Date	Version History	Action	Description of Change:
21-Aug-2015	From Version 18 to 19	Changed	Added LeftHand OS 12.0 features
09-Feb-2015	From Version 17 to 18	Changed	Added the <b>HP StoreVirtual 4335 Hybrid SAN Solution</b>
29-Aug-2014	From Version 16 to 17	Changed	Changes made throughout the entire QuickSpecs
14-Feb-2014	From Version 15 to 16	Changed	HP StoreVirtual VSA Software was revised in Step 2 of Configuration Information.
08-Feb-2014	From Version 14 to 15	Changed	StoreVirtual Upgrade Options was revised in Step 2 of Configuration Information.
17-Jan-2014	From Version 13 to 14	Changed	Correction made in the Family Information section.
09-Dec-2013	From Version 12 to 13	Changed	Overview charts, Family Information, and Software were revised.  HP StoreVirtual 4335 Hybrid Storage was added
24-May-2013	From Version 11 to 12	Changed	Correction made in Step 2 of the Configuration Information section.
17-May-2013	From Version 10 to 11	Changed	Correction made to the North America and Canada versions only.
10-May-2013	From Version 9 to 10	Changed	Family Information: Updated HP StoreVirtual 4130 600GB SAS Storage in the Models section.  Service and Support, HP Care Pack, and Warranty Information: Completely updated the entire section.  Configuration Information: Updated Step 1 and Step 2.
05-Apr-2013	From Version 8 to 9	Changed	Configuration Information: Updated hyperlink in StoreVirtual Upgrade Options sections.
29-Mar-2013	From Version 6 to 7	Changed	Updated the following: Overview - Models table - replaced "number of nodes per StoreVirtual SAN" with "StoreVirtual Scalability" for all models; Family Information - 4330 1TB MDL SAS Storage - corrected drive information; Configuration Information - Drive Bays for 2U systems; Step 1 - changed part number for 4630 900 GB 6G SAS 10K SFF drive; Step 2 - options - corrected part number for P4000 G2 10G BASE-SFP+ Upgrade Kit; Technical Specifications - updated dimensions and weight for 4730 and 4630 models.
25-Mar-2013	From Version 5 to 6	Added	Overview: Added For information on the LeftHand Gen 2 products, please visit the Gen 2 QuickSpecs page at <a href="http://h18000.www1.hp.com/products/quickspecs/13552_na/13552_na.pdf">http://h18000.www1.hp.com/products/quickspecs/13552_na/13552_na.pdf</a> to the What's New section and 4730 FC 900GB SAS Storage and 4630 900GB SAS Storage information to the At A Glance section.  Family Information: Added HP StoreVirtual 4730 FC 900GB SAS Storage and HP StoreVirtual 4630 900GB SAS Storage

### Summary of Changes

			<p>information to section.</p> <p>Configuration Information: Added HP StoreVirtual Storage 4630 Blade System and Added 4730FC and StoreVirtual 4630 Information to Step 1 section.</p> <p>Technical Specifications: Added 4730 900GB FC SAS Storage and 4630900GB SAS Storage information to Technical Specifications Chart.</p>
		Changed	Configuration Information: Update HP StoreVirtual Storage 2U System (4530 and 4730) and Updated Step 1 section SAN Configuration models.
22-Feb-2013	From Version 3 to 4	Changed	Changes made to the Family Information section.
19-Feb-2013	From Version 2 to 3	Changed	Changes made throughout the entire QuickSpec.
07-Dec-2012	From Version 1 to 2	Changed	Minor changes made to the Family Information chart.

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