

### Overview

HP StoreVirtual Storage provides a virtualized pool of storage resources to deliver enterprise SAN 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 fluctuating needs of virtualized environments. Intuitive, common management and storage federation meet the need for simplicity and flexibility in today's virtual datacenters. It allows data mobility across tiers, locations, and between physical and virtual storage. 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.

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### What's New

- Support for 10GigE 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.
  - 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.
  - All StoreVirtual arrays are 2.04 RoHS compliant.
  - 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)
  - Significant performance boost with dual-core HP StoreVirtual VSA support
  - Lower price on single HP StoreVirtual VSA licenses, now with 3 years of support included. New Multi-pack VSA licenses enable cost effective deployment at scale. The only VSA certified by VMware as a vSphere Metro Storage Cluster solution. Integration with Veeam software provides enhanced backup and recovery.
  - Support for Microsoft Windows Server 2012 with LeftHand OS v10.0.
  - Storage Replication Adaptor for VMware Site Recovery Manager 5.1: Integration streamlines/automates disaster recovery with StoreVirtual and ESX/ESXi.
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### Overview

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

- Portfolio of highly scalable, easy to use SAN solutions with superior HA and DR capabilities
- Perfect match for server virtualization, client virtualization, Windows, and Linux environments
- Rack mount and blade form factor for StoreVirtual Storage
- Addition of 8Gbit FC host connectivity on select model
- Intel® Xeon® E5-2600 Family CPU
- SAS and MDL SAS drives available
- LeftHand OS Software delivers
  - Storage Clustering for disruption free growth
  - Network RAID 0, 5, 6, 10, 10+1, and 10+2 (Synchronous Replication)
  - Thin Provisioning
  - 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
- 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, or site failure
- Hardware RAID Levels 10, 5, 6 (default is level 5)
- 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 ESX and Microsoft Hyper-V transforms server disk drives and external legacy storage 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 SANs

	<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>Number of Nodes per StoreVirtual SAN<sup>1</sup></b>	1	1	1	1	1
<b>Number of drives</b>	4	8	8	8	8
<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>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 (optional)	2 (optional)	2 (optional)	2 (standard)
<b>Bandwidth (1GbE)</b>	4 Gbit/sec	4 Gbit/sec	4 Gbit/sec	4 Gbit/sec	4 Gbit/sec

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<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, Application Integrated Snapshots, SmartClone, Remote Copy				
<b>Storage Protocol Support</b>	8Gb FC <sup>2</sup> / 10GbE iSCSI <sup>3</sup> / CIFS (SMB 2.0) <sup>4</sup> / NFS <sup>4</sup> / HTTP <sup>4</sup> / FTP <sup>4</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>Number of Nodes per StoreVirtual SAN<sup>1</sup></b>	1	1	1	1
<b>Number of drives</b>	12	12	12	12
<b>Capacity</b>	450GB 15K SAS	600GB 15K SAS	2TB 7.2K MDL SAS	3TB 7.2K MDL SAS
<b>CPUs</b>	1 (6 core)	1 (6 core)	1 (6 core)	1 (6 core)
<b>RAID Controllers</b>	1	1	1	1
<b>Memory</b>	64GB	64GB	64GB	64GB
<b>Controller Cache</b>	2GB	2GB	2GB	2GB
<b>Storage Ports (1GbE)</b>	4	4	4	4
<b>Storage Ports (10GbE)</b>	2	2	2	2
<b>Bandwidth (1GbE)</b>	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
<b>LeftHand OS software features</b>	Storage Clustering, Network RAID 5/6/10, Thin Provisioning, Application Integrated Snapshots, SmartClone, Remote Copy			



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<b>Storage Protocol Support</b>	8Gb FC <sup>2</sup> / 10GbE iSCSI <sup>3</sup> / CIFS (SMB 2.0) <sup>4</sup> / NFS <sup>4</sup> / HTTP <sup>4</sup> / FTP <sup>4</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>Number of Nodes per StoreVirtual SAN<sup>1</sup></b>	1	1
<b>Number of drives</b>	25	25
<b>Capacity</b>	600GB 10K SAS	900GB 10K SAS
<b>CPUs</b>	1 (6 core)	1 (6 core)
<b>RAID Controllers</b>	1	1
<b>Memory</b>	64GB	64GB
<b>Controller Cache</b>	2GB	2GB
<b>Storage Ports (1GbE)</b>	4	4
<b>Storage Ports (10GbE)</b>	2	2
<b>Bandwidth (1GbE)</b>	4 Gbit/sec	4 Gbit/sec
<b>Bandwidth (10 GbE)</b>	20 Gbit/sec	20 Gbit/sec
<b>LeftHand OS software features</b>	Storage Clustering, Network RAID 5/6/10, Thin Provisioning, Application Integrated Snapshots, SmartClone, Remote Copy	
<b>Storage Protocol Support</b>	8Gb FC <sup>2</sup> / 10GbE iSCSI <sup>3</sup> / CIFS (SMB 3.0) <sup>4</sup> / NFS <sup>4</sup> / HTTP <sup>4</sup> / FTP <sup>4</sup>	
<b>Customer Self Installable</b>	Yes	

### Overview

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

<sup>3</sup>10Gb upgrade is not available for the 4130

<sup>4</sup>CIFS (SMB3.1), NFS, HTTP & FTP support available on all StoreVirtual arrays with addition of HP StoreEasy 3830 Gateway Storage.

<sup>5</sup>More information available about StoreVirtual VSA in the Software section.

### 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 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.

#### 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 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 and Benefits

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 Insight Control Storage Module for vCenter, Native ESX MPIO / PSA support, Site Recovery Manager 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.

- **Reference Architectures for Client Virtualization**

VDI and client virtualization deployments are aided with the StoreVirtual reference architectures for VMware and Citrix for projects of all sizes.

### Family Information

HP StoreVirtual Storage, representing a virtualized pool of storage resources, delivers enterprise 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:

- LeftHand Storage Clustering
- LeftHand Network RAID
- LeftHand Thin Provisioning
- LeftHand Snapshots
- LeftHand Remote Copy/DR Solution (asynch replication)
- LeftHand Multi-Site/vMSC (synch replication)
- LeftHand Application Integration Solution Pack
- LeftHand FC Connectivity

#### StoreVirtual Services:

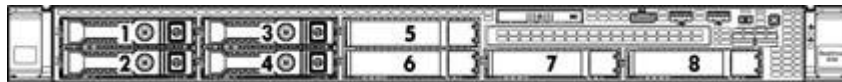
- StoreVirtual Storage include services resulting in 3yrs, 9x5, NBD for HW&SW support
- Factory warranty for all StoreVirtual Storage is 3yrs, 9x5, NBD for Hardware
- Installation & Startup services are available from HP & HP resellers. Installation and startup can be performed by customers

#### 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





### Family Information

#### HP StoreVirtual 4130 600GB SAS Storage

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

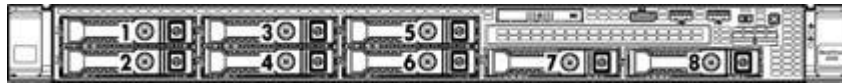
B7E16A

- 4 SFF SAS drives, 600GB, 6G SAS 10,000 RPM
- Single CPU - Intel Xeon ZE5-2620 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, 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 4130 Storage System with four 600GB SFF SAS drives

#### 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 ZE5-2620 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 ZE5-2620 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

### 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 4330 Storage System eight 900 GB SFF SAS drive

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

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#### 4330 Storage System Hardware:

- 8 SFF MDL SAS drives, 1TB, 6G SAS 7,200RPM
- Single CPU - Intel Xeon ZE5-2620 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

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

B7E20A

#### 4330 Storage System Hardware:

- 8 SFF SAS drives, 900GB, 6G SAS 10,000 RPM
- Single CPU - Intel Xeon ZE5-2620 at 2.0 GHz
- 32GB RAM
- HP 82E 8Gb Dual-port PCI-e FC HBA
- ZN552SFP+ 10GbE Dual-port NIC Adapter
- 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 900 GB SFF SAS drives
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### Family Information

#### HP StoreVirtual Storage Product Information:

<b>Overview</b>	
<b>Server Compatibility</b>	<b>Supports most HP ProLiant servers including HP ProLiant DL, SL, ML and c-Class Blade Servers</b>
<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">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">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 (4130 is available with 1 GbE only, 10Gb is an optional upgrade on the 4330)</li> </ul>
<b>Management</b>	<ul style="list-style-type: none"> <li>• The Centralized Management Console supports               <ul style="list-style-type: none"> <li>○ Windows XP</li> <li>○ Windows Vista</li> <li>○ Windows 7</li> <li>○ Windows Server 2003 R2</li> <li>○ Windows Server 2008</li> <li>○ Windows Server 2008 R2</li> <li>○ Windows Server 2012</li> <li>○ SUSE Linux Enterprise 10 / 11</li> <li>○ RedHat Enterprise Linux 4 / 5.0 / 5.1 / 5.2 / 5.3 / 5.4 / 5.5 / 5.6 / 6.1</li> <li>○ Fedora 11 / 12 / 13</li> <li>○ HP-UX 11i v2 (11.23) / v3 (11.31)</li> </ul> </li> <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

- LeftHand 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 LeftHand 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 LeftHand 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.
- LeftHand 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. LeftHand OS software manages all the storage allocations underneath a given volume, and the Thin Provisioning feature allocates space only as data is actually written to that volume. LeftHand 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.

### Software

#### 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, LeftHand 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

- LeftHand 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 LeftHand 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.

#### Performance Management

- The LeftHand 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 LeftHand 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

- LeftHand 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,

### Software

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 LeftHand Thin Provisioning architecture, and the volume clones can be used without limitation along with all other LeftHand 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 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 LeftHand 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 LeftHand 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 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 9x5 software phone support and software upgrades included
- New Zero-to-VSA Automated Install and Deployment tool allows for fast and easy deployment of

### Software

virtual SAN environments including scripting for ROBO/branch installations with ESX/ESXi.

- Available in packs of 1, 15, 60, and 1,000

**NOTE:** For more information visit: [www.hp.com/go/vsa](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.

**NOTE:** For more information visit: [www.hp.com/go/storageessentials](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: [www.hp.com/go/InsightRemoteSupport](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



### Software

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.

### HP StoreEasy 3830 Gateway Storage

**Operating System** Microsoft Windows Storage Server 2012, Standard

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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

HP StoreEasy 3830 Gateway Node

B7E00A

### 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 [www.hp.com/go/StoreVirtual](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 [www.hp.com/storage/Oracle](http://www.hp.com/storage/Oracle)

HP Storage for Microsoft hyperlink to [www.hp.com/storage/Microsoft](http://www.hp.com/storage/Microsoft)

HP Storage for SAP hyperlink to [www.hp.com/storage/SAP](http://www.hp.com/storage/SAP)



### Software

#### Backup 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 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.

### Software

*\*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: [www.hp.com/go/storeonce](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—plus, 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**

#### Choose either:

**HP Critical Advantage Level 3 Service**—Choose this service when you need an end-to-end infrastructure support solution that encompasses server, operating system, hypervisor, storage, and network. It's the level of support well suited for business-critical applications running on virtualized and x86 infrastructures. <http://h20195.www2.hp.com/V2/GetPDF.aspx/4AA3-1772ENW.pdf>

Or:

**3-Year HP Critical Service**—Designed for environments where downtime cannot be tolerated, HP monitors your environment around-the-clock, 365 days a year. We implement improvement projects to mitigate risks and reduce incidents. If outages do occur, they are addressed immediately with access to our dedicated critical support escalation resources.

<http://h20195.www2.hp.com/V2/GetPDF.aspx/4AA0-1613ENW.pdf>

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

#### Choose either:

**HP Critical Advantage Level 2 Service**—Opt for end-to-end infrastructure support including server, operating system, hypervisor, storage, and network in an environment running business critical applications on virtualized and x86 infrastructures. <http://h20195.www2.hp.com/V2/GetPDF.aspx/4AA3-1772ENW.pdf>

Or:



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

**3-Year HP Proactive 24 Service**-This is the right choice for environments where some downtime is acceptable. HP helps manage your IT environment for improved performance, stability, and availability. Your incidents are addressed 24x7, with a maximum 4-hour onsite response 365 days a year.

<http://h20195.www2.hp.com/V2/GetPDF.aspx/5981-9842EN.pdf>

#### **Basic Care-Minimum recommended support**

**3-Year HP Support Plus 24**-This service provides support for environments where some downtime is expected. HP provides around-the-clock hardware and software support onsite, including third-party support. We also provide cost-saving software updates and monitor ongoing operations through the latest remote tools. <http://h20195.www2.hp.com/V2/GetPDF.aspx/5981-6638EN.pdf>

#### **Plus:**

**HP Proactive Select**-Choose from an extensive menu of consultancy and technical services, such as onsite firmware upgrades, health checks, assessments, and education. (Includes 30 Proactive Select flexible credits.) <http://h20195.www2.hp.com/V2/GetPDF.aspx/4AA2-3842ENW.pdf>

#### **HP StoreVirtual VSA Software support**

HP StoreVirtual VSA includes three year of HP Software Support, standard 9x5 business hours phone support (software technical support and software product and documentation updates) and a 90 day media replacement only warranty.

Including software updates and comprehensive support enhances the performance and availability of your software. Experienced Response Center engineers provide trustworthy advice on issues such as software features and use, problem diagnosis and resolution, and software defect identification.

#### **Software Licensing Terms**

License keys enable all features of the HP StoreVirtual VSA, including storage clustering, managed snapshots, and remote copy. The full 10TB capacity of each VSA is available with the standard license key. Keys are required for each individual VSA instance.

#### **Implement right from the start**

Whichever level of care you select, it includes: HP Installation and Startup Service for HP StoreVirtual Storage, installs, sets-up and tests your hardware and software, on site-including configuration, delivers custom-tailored deployment of the storage so that it is properly integrated into your customer's environment. <http://h20195.www2.hp.com/V2/GetPDF.aspx/4AA1-4008ENW.pdf>

**HP StoreVirtual VSA Software** - HP Installation and Startup Service provides installation and configuration of the product for smooth startup and better business outcomes.

<http://h20195.www2.hp.com/v2/GetPDF.aspx/4AA1-1567ENW.pdf>

#### **Remote Support Tools**

**HP Insight Remote Support**-Count on proven technology to deliver secure, reliable 24x7 remote monitoring, diagnosis, and problem resolution, all available at no extra charge if you have an existing warranty, service agreement, or HP Care Pack Service with HP.

<http://h20195.www2.hp.com/V2/GetPDF.aspx/4AA2-4676ENW.pdf>

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

#### Additional services to meet your needs

**HP Storage Data Migration**—Proven expertise and tools help you migrate data across your data center or around the globe. <http://h20195.www2.hp.com/V2/GetPDF.aspx/5982-4107EN.pdf>

**HP Proactive Select**—Choose from an extensive menu of consultancy and technical services, such as onsite firmware upgrades, health checks, assessments, and education. (Includes 30 Proactive Select flexible credits.) <http://h20195.www2.hp.com/V2/GetPDF.aspx/4AA2-3842ENW.pdf>

#### 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. [www.hp.com/learn/storage](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).

#### 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>

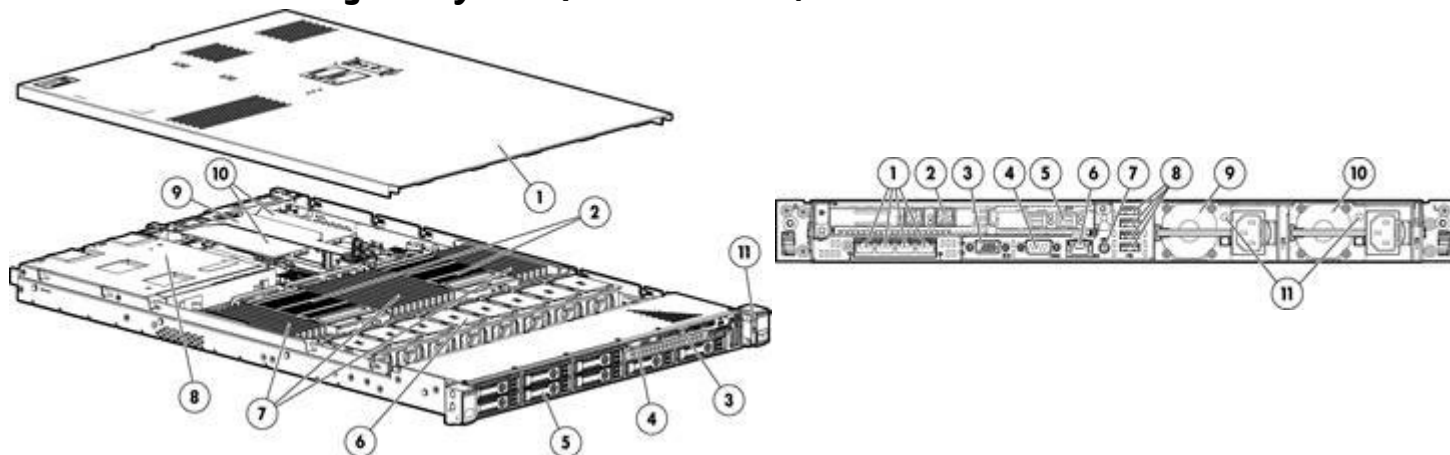
#### Additional Services Information

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 and 4330)



##### Front View:

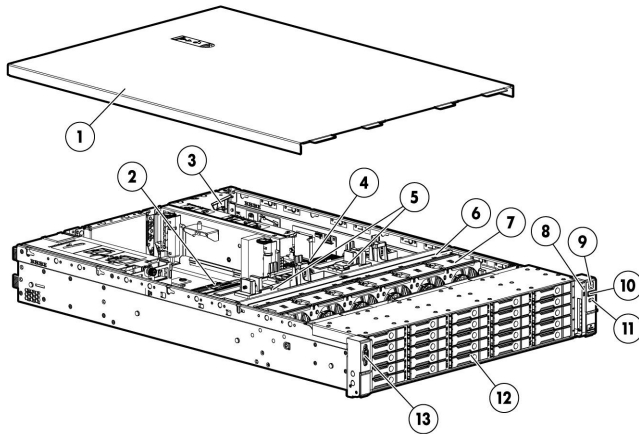
1. Hood Cover
2. 4130 and 4330: One (1) Single CPU - Intel Xeon ZE5-2620 processor
3. Video connector (requires Front Video Adapter Kit)
4. Slide-out System Insight Display (SID)
5. Hard Drive Bays
6. Removable hot-plug fan modules for easy serviceability
7. 24 DIMM slots: DDR3 Registered (RDIMM), Load 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

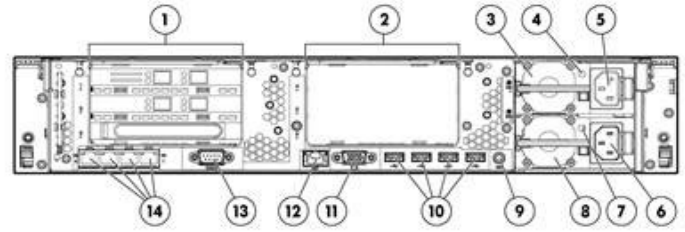
### Technical Specifications

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



##### Front View:

1. Quick removal access panel
2. Unused
3. 10Gb Ethernet cards
4. Single CPU - Intel Xeon ZE5-2620
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
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

#### 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	B7E25A
	HP StoreVirtual 4530 600GB SAS Storage	B7E26A
	HP StoreVirtual 4530 2TB MDL SAS Storage	B7E23A
	HP StoreVirtual 4530 3TB MDL SAS Storage	B7E24A
	HP StoreVirtual 4730 600GB SAS Storage	B7E27A
	HP StoreVirtual 4730 900GB SAS Storage	B7E28A
<b>NOTE:</b> 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 CN 600GB SAS Storage	B7E16AC
HP StoreVirtual 4330 CN 450GB SAS Storage	B7E17AC
HP StoreVirtual 4330 CN 900GB SAS Storage	B7E18AC
HP StoreVirtual 4330 CN 1TB MDL SAS Storage	B7E19AC
HP StoreVirtual 4330 FC CN 900GB SAS Storage	B7E20AC
<b>NOTE:</b> All China Specific StoreVirtual Storage is available in factory racked: just add "#0D1" as a suffix to the Part Numbers listed above when ordering.	

#### HP StoreVirtual Spare Components While HP StoreVirtual Storage Systems have everything you need to be up and running, the following spare kits are available for purchase.

##### StoreVirtual 4130/4330/4330FC

HP Fan module	667882-001
HP 460W Common Slot Platinum Plus Hot Plug Power Supply Kit	656362-B21
HP 750W Common Slot -48VDC Hot Plug Power Supply Kit	636673-B21
HP 1TB 6G SAS 7.2K rpm SFF (2.5-inch) SC Midline 1yr Warranty Hard Drive	652749-B21
HP 600GB 6G SAS 10K rpm SFF (2.5-inch) SC Enterprise 3yr Warranty Hard Drive	652583-B21
HP 450GB 6G SAS 10K rpm SFF (2.5-inch) SC Enterprise 3yr Warranty Hard Drive	652572-B21
HP 900GB 6G SAS 10K rpm SFF (2.5-inch) Dual Port Enterprise 3yr Warranty Hard Drive	719429-001

##### StoreVirtual 4530/4730

HP 750W Common Slot Platinum Plus Hot Plug Power Supply Kit	656363-B21
HP 750W Common Slot -48VDC Hot Plug Power Supply Kit	636673-B21
HP 600GB 6G SAS 10K rpm SFF (2.5-inch) SC Enterprise 3yr Warranty Hard Drive	652583-B21



### Configuration Information

HP 900GB 6G SAS 10K rpm SFF (2.5-inch) SC Enterprise 3yr Warranty Hard Drive	719429-001
HP 450GB 6G SAS 15K rpm LFF (3.5-inch) SC Enterprise 3yr Warranty Hard Drive	652615-B21
HP 600GB 6G SAS 15K rpm LFF (3.5-inch) SC Enterprise 3yr Warranty Hard Drive	652620-B21
HP 2TB 6G SAS 7.2K rpm LFF (3.5-inch) SC Midline 1yr Warranty Hard Drive	652757-B21
HP 3TB 6G SAS 7.2K rpm LFF (3.5-inch) SC Midline 1yr Warranty Hard Drive	652766-B21

### Step 2 - Options

#### StoreVirtual Upgrade Options

HP StoreVirtual 4030 10G BASE-SFP+ Upgrade Kit	B7E21A
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**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 AND CONNECTORS NOT INCLUDED. For supported cables & connectors, please reference the NC550SFP QuickSpecs at:

[http://h18000.www1.hp.com/products/quickspecs/13555\\_na/13555\\_na.html](http://h18000.www1.hp.com/products/quickspecs/13555_na/13555_na.html)

HP StoreVirtual P4000 G2 10G BASE-SFP+ Upgrade Kit	B7E22A
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**NOTE:** Use this kit to upgrade HP LeftHand StoreVirtual Storage Systems (previous 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 AND CONNECTORS NOT INCLUDED. For supported cables & connectors, please reference the NC550SFP QuickSpecs at:

[http://h18000.www1.hp.com/products/quickspecs/13555\\_na/13555\\_na.html](http://h18000.www1.hp.com/products/quickspecs/13555_na/13555_na.html)

#### HP StoreEasy Gateway Storage

HP StoreEasy 3830 Gateway Storage	B7E00A
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#### HP StoreVirtual VSA Software

HP StoreVirtual VSA Software for VMware ESX Server Stock LTU	TA688BB
HP StoreVirtual VSA Software for VMware ESX Server LTU	TA688BA
HP StoreVirtual VSA Software 15-pack for VMware ESX Server LTU	TC402A
HP StoreVirtual VSA Software 60-pack for VMware ESX Server LTU	TC403A
HP StoreVirtual VSA Software 1000-pack for VMware ESX Server LTU	TC404A
HP StoreVirtual VSA Software for VMware ESX Server E-LTU	TA688BAE
HP StoreVirtual VSA Software for VMware ESX Server E-LTU	TA688BAE
HP StoreVirtual VSA Software 60-pack for VMware ESX Server E-LTU	TC403AAE
HP StoreVirtual VSA Software 1000-pack for VMware ESX Server E-LTU	TC404AAE

### 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: [www.hp.com/products/powercords](http://www.hp.com/products/powercords)

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

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#### 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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#### 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

### Configuration Information

(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
Dimensions	1U				
	1.7 x 17.1 x 27.5 inches (4.32 x 43.47 x 69.85 cm)				
Weight	42.3 lb (19.2 kg)				
Power/Cooling	Redundant Hot-Plug Common Slot Power Supplies				
	Auto-switching universal 115/220 Volts				
@115V	607 BTU / h	705 BTU / h	721 BTU / h	676 BTU / h	808 BTU / h
	177.12 Watts	213.29 Watts	217.75 Watts	204.82 Watts	243.55 Watts
@220V	600 BTU/hr	696 BTU/hr	710 BTU/hr	667 BTU/hr	797 BTU/hr
	174.84 Watts	210.43 Watts	214.8 Watts	202.11 Watts	240.11 Watts
Environmental	System Inlet Temperature	Operating	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).		
		Non-operating	-30°to 60°C (-22°to 140°F). Maximum rate of change is 20°C/hr (36°F/hr).		
	Relative Humidity (non-condensing)	Operating 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.			
	Altitude	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).			
Regulatory	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
Dimensions (with bezel)	2U			
	3.44 x 17.54 x 29.50 in (8.73 x 44.55 x 74.93 cm)			
Weight	60.1 lb (27.27 Kg)			
Power/Cooling	Redundant Hot-Plug Common Slot Power Supplies			
	Auto-switching universal 115/220 Volts			
@115V	1219 BTU / h	1311 BTU / h	993 BTU / h	1074 BTU / h
	357.55 Watts	384.55 Watts	291.41 Watts	315.23 Watts
@220V	1202 BTU/hr	1292 BTU/hr	980 BTU/hr	1060 BTU/hr
	352.54 Watts	379.13 Watts	287.41 Watts	310.86 Watts
Environmental	System Inlet Temperature	Operating	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).	
		Non-operating	-30°to 60°C (-22°to 140°F). Maximum rate of change is 20°C/hr (36°F/hr).	
	Relative Humidity (non-condensing)	Operating 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.		
	Altitude	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).		
	Regulatory	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
<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>	1276 BTU / h	1287 BTU / h
	374.43 Watts	377.66 Watts
<b>@220V</b>	1258 BTU/hr	1269 BTU/hr
	369.16 Watts	372.34 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	

### Additional information online

StoreVirtual home page [www.hp.com/go/StoreVirtual](http://www.hp.com/go/StoreVirtual)

StoreVirtual VSA home page [www.hp.com/go/VSA](http://www.hp.com/go/VSA)

StoreVirtual VSA download [www.hp.com/go/TryVSA](http://www.hp.com/go/TryVSA)

StoreVirtual compatibility information [www.hp.com/go/storevirtualcompatibility](http://www.hp.com/go/storevirtualcompatibility)

StoreVirtual all things technical [www.hp.com/go/storevirtualsupport](http://www.hp.com/go/storevirtualsupport)



### Technical Specifications

#### 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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