HP Storage
Product Portfolio
Daniel Stamm,
März 2013
Positionierung StoreVirtual und StoreServ

HP StoreVirtual 4730
HP 3PAR StoreServ 7200
Established storage designs from legacy storage vendors are 15 to 25 years old
Impossible to adjust to new trends

- Evolution to delivery of ITaaS/Cloud
- Explosion of Human Information
- Converged Infrastructure
- Software Defined Datacenters
Transforming the industry with HP Converged Storage

Modern storage architecture designed for the cloud, optimized for big data and built on converged infrastructure.

Converged management orchestration
Choreograph across servers, networks, and storage

Scale-out and federated software
Non-disruptive data growth and mobility

Standard x86-based platforms
Increase storage performance and density
Transforming storage with the power of Convergence
## HP Storage Array Positioning

<table>
<thead>
<tr>
<th>Architecture</th>
<th>Dual Controller</th>
<th>Scale-out Cluster</th>
<th>Dual Controller</th>
<th>Mesh-Active Cluster</th>
<th>Fully Redundant</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Connectivity</strong></td>
<td>FC, SAS, iSCSI</td>
<td>iSCSI, FC</td>
<td>FC, iSCSI, FCoE</td>
<td>FC, iSCSI, (FCoE planned)</td>
<td>FC, FCoE</td>
</tr>
<tr>
<td><strong>Performance</strong></td>
<td>30K random read IOPs; 1.5GB/s sequential reads</td>
<td>35K random read IOPs 2.6 GB/s sequential reads</td>
<td>55K random read IOPs 1.7 GB/s sequential reads</td>
<td>&gt; 390K random read IOPs; &gt; 14 GB/s sequential reads</td>
<td>&gt;1000K random read IOPS &gt; 10GB/s sequential reads</td>
</tr>
<tr>
<td><strong>Application Sweet spot</strong></td>
<td>SMB, Enterprise ROBO, consolidation/ virtualization Server attach, Video surveillance</td>
<td>SMB, ROBO and Enterprise – Virtualized inc VDI , Microsoft apps, ITaaS BladeSystem SAN (P4800)</td>
<td>Enterprise - Microsoft, Virtualized, OLTP</td>
<td>Enterprise and Service Provider , ITaaS, Utilities, Cloud, Virtualized Environments, OLTP, Mixed Workloads</td>
<td>Large Enterprise - Mission Critical w/Extreme availability, Virtualized Environments, Multi-Site DR</td>
</tr>
<tr>
<td><strong>Capacity</strong></td>
<td>600GB – 192TB; 6TB average</td>
<td>7TB – 768TB; 72TB average</td>
<td>2TB – 480TB; 36TB average</td>
<td>5TB – 1600TB; 120TB average</td>
<td>10TB – 2000 TB; 150TB average</td>
</tr>
<tr>
<td><strong>Key features</strong></td>
<td>Price / performance Controller Choice Replication Server Attach</td>
<td>All-inclusive SW Multi-Site DR included Virtualization VM Integration Virtual SAN Appliance</td>
<td>Ease of use and Simplicity Integration/Compatibility Multi-Site Failover</td>
<td>Multi-tenancy Efficient Thin Technologies Performance Autonomic Tiering and Management</td>
<td>Constant Data Availability Heterogeneous Virtualization Multi-site Disaster Recovery Application QOS (APEX) Smart Tiers</td>
</tr>
<tr>
<td><strong>OS support</strong></td>
<td>Windows, vSphere, HP-UX, Linux, OVMS, Mac OS X, Solaris, Hyper-V</td>
<td>vSphere, Windows, Linux, HP-UX, MacOS X, AIX, Solaris, XenServer</td>
<td>Windows, VMware, HP-UX, Linux, OVMS, Mac OS X, Solaris, AIX</td>
<td>vSphere, Windows, Linux, HP-UX, AIX, Solaris, OVMS</td>
<td>All major OS’s including Mainframe and Nonstop</td>
</tr>
</tbody>
</table>
Ready to help wherever you are in the journey

OPTIMIZE
Traditional IT

BUILD
What’s Next

ACCELERATE
Time to Results

ESTABLISHED PLATFORMS
MSA | EVA | XP | Tape

CONVERGED STORAGE
3PAR StoreServ | StoreVirtual
StoreOnce | StoreAll

CONVERGED SYSTEMS & SERVICES
We’ve already started delivering on the future

Simplified portfolio and a milestone in the HP Storage transition

**Primary Storage**

**HP 3PAR StoreServ**
Tier-1 storage for virtualization and ITaas for block, object and file

**Information Retention / Analytics**

**HP StoreAll**
Hyperscale storage to tame and mine your content explosion

**Information Protection**

**HP StoreOnce**
Industry’s only Federated Deduplication from small sites to service providers

**HP StoreVirtual**
- LeftHand OS v10
- Better-Together Models

**Software Defined Storage**

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HP StoreVirtual Storage
Versatile software defined storage – any way you want it.
## HP StoreVirtual 4000 Storage

**Scale-out storage with high availability and simplicity for SMB to Midrange environments**

<table>
<thead>
<tr>
<th>Simple</th>
<th>Scalable</th>
<th>Highly Available</th>
</tr>
</thead>
<tbody>
<tr>
<td>Virtualization integration and intuitive management</td>
<td>Scale-out architecture with all-inclusive feature set</td>
<td>Built-in high availability and disaster recovery</td>
</tr>
</tbody>
</table>

*The most versatile storage platform* - Scale from VSA to rack or blades as the business grows or use a combination of platforms – same features, same management

And all software inclusive!

*VSA stands for Virtual Storage Appliance*
HA for multi-site virtualized environments

VMs remain online should the following go offline:
- Rack
- Room
- Floor
- Building

**Higher availability for virtual environments**

- NR10 volumes accessible at both sites
- VMWare and Hyper-V volumes remain online during site failure
- Volumes automatically re-synch after failed site comes back online

Single cluster stretched between two racks, rooms or buildings

NR 10 = Network RAID 10, this is like a synchronous mirrored LUN
Highly available storage (smaller size or DR)

HP P4000 Virtual SAN Appliance

- P4000 Virtual Machine for ESX/ESXi and Hyper-V
- Fully featured
- Create highly available SANs on servers
  - Support servers listed on hypervisor’s HCL
  - Convert existing SAN or DAS into P4000 storage

Affordable HA and DR for small and/or remote site
HP StoreVirtual features and integration

All-inclusive feature set
• Network RAID – synchronous replication
• Peer Motion data mobility
• Linear capacity and performance scaling
• Pay-as-you-grow, scale capacity and performance as needed, non-disruptively
• Space-efficient thin provisioning
• Integrated disaster recovery
  – Snapshots
  – Remote Copy
  – Multi-site array

Application integration
• vSphere Storage API integration (VAAI, VASA)
• VMware vCenter Server storage management
• Replication adapter for VMware vCenter Site Recovery Manager
• HP Insight Control for Microsoft System Center
• HP Management pack for SCOM
• VSS provider & requestor functions
• LeftHand DSM for MPIO
• Application Aware Snapshot Manager
• Recovery Manager for Windows
• Windows Active Directory
Seamless and non-disruptive data mobility

StoreVirtual Peer Motion

In 6 Clicks – Seamlessly move volumes between:
- Systems
- Tiers
- Locations
- Disk types
- Form factors
- Different generations
- Physical and virtual platforms

In a matter of minutes - Swap out/in entire clusters – upgrade technology non-disruptively

All data remains online and available
HP StoreVirtual – the versatile platform (iSCSI and FC*)

Whatever the environment – there’s a StoreVirtual platform that fits

HP StoreVirtual
4130 & 4330, 4530 & 4730
Consolidate storage on performance or capacity optimized tiers

HP StoreVirtual
VSA
Turn any server into a virtual array

HP StoreVirtual
Blade
Storage for a converged infrastructure

Midsize enterprise

Scale from VSA to BladeSystem as the business grows or use a combination of StoreVirtual platforms – same features, same management

ROBO
SMB
LeftHand OS

15
HP 3PAR StoreServ
The gold standard for tier 1 storage in Virtual/ITaaS

**Autonomic:** Reduce time spent managing storage by 90%
- System responds effortlessly and instantly to new workload demands

**Efficient:** Reduce capacity requirements by up to 50% - **Guaranteed** *
- Hardware enabled thin technologies and tiering for high efficiency without tradeoffs

**Multi-tenant:** Double VM density per server – **Guaranteed** *
- Bulletproof tier-1 resilience for massive consolidation of unpredictable mixed workloads

**Federated:** Non-disruptive data mobility between systems
- HP Peer Motion for easy refresh and data services management across multiple arrays

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Everything you’d want in a next generation EVA

A pain free and risk free evolution that takes the best of EVA into the future of storage

EVA DNA
• Smart Start
• Online Import from EVA to 3PAR directly from EVA Command View
Combine the power of two leading technologies

**HP 3PAR**
- Leading in Cloud Service Providers
- Clustered controller architecture
- Industry leading efficiency technologies
- Multi-tenancy for mixed workloads
- Advanced application integrations

**Common**
- Virtualization & wide striping
- Capacity efficient snapshots
- Management simplicity
- Leading TCO

**HP EVA**
- Trusted - 100,000 Arrays installed WW
- Simplest midrange system on the planet
- Leading hardware efficiency

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Polymorphic Simplicity: Storage Without Boundaries

- New 3PAR StoreServ 7000
- New 3PAR File Services
- New All-SSD Array
- New EVA to 3PAR Upgrade Path
- ONE Architecture – mid to high

Only HP

Tier 1 Storage at Less than $40K USD!
Redefining the Midrange from $25K USD!
## HP 3PAR StoreServ Storage

### Same OS, Management Console and Software Features

<table>
<thead>
<tr>
<th></th>
<th>StoreServ 7200</th>
<th>StoreServ 7400</th>
<th>StoreServ 10400</th>
<th>StoreServ 10800</th>
</tr>
</thead>
<tbody>
<tr>
<td>Controller Nodes</td>
<td>2</td>
<td>2 - 4</td>
<td>2 – 4</td>
<td>2 – 8</td>
</tr>
<tr>
<td>Fibre Channel Host Ports</td>
<td>4 – 12</td>
<td>4 – 24</td>
<td>0 – 96</td>
<td>0 – 192</td>
</tr>
<tr>
<td>Optional 1Gb iSCSI Ports</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>Optional 10Gb iSCSI Ports</td>
<td>0 – 4</td>
<td>0 – 8</td>
<td>0 – 16</td>
<td>0 – 32</td>
</tr>
<tr>
<td>Optional 10Gb FCoE Ports</td>
<td>0 – 4</td>
<td>0 – 8</td>
<td>0 – 16</td>
<td>0 – 32</td>
</tr>
<tr>
<td>Built-in IP Remote Copy Ports</td>
<td>2</td>
<td>2 – 4</td>
<td>2 – 4</td>
<td>2 – 4</td>
</tr>
<tr>
<td>GBs Cache</td>
<td>24</td>
<td>32 – 64</td>
<td>96 – 192</td>
<td>192 – 768</td>
</tr>
<tr>
<td>Disk Drives</td>
<td>8 – 144</td>
<td>8 – 480</td>
<td>16 - 960</td>
<td>16 - 1920</td>
</tr>
<tr>
<td>Available Drive Types</td>
<td>SLC SSD (max/array)</td>
<td>100, 200GB (120)</td>
<td>100, 200GB (240)</td>
<td>100, 200GB (256)</td>
</tr>
<tr>
<td></td>
<td>15krpm 300GB</td>
<td>300GB</td>
<td>300GB</td>
<td>300, 600GB</td>
</tr>
<tr>
<td></td>
<td>10krpm 450GB</td>
<td>450GB</td>
<td>450GB</td>
<td>450, 900GB</td>
</tr>
<tr>
<td></td>
<td>7.2krpm 2, 3TB</td>
<td>2, 3TB</td>
<td>2, 3TB</td>
<td>1, 2TB</td>
</tr>
<tr>
<td>Read throughput MB/s</td>
<td>2,500</td>
<td>4,800</td>
<td>6,500</td>
<td>13,000</td>
</tr>
<tr>
<td>IOPS (true backend IOs)</td>
<td>150,000</td>
<td>320,000</td>
<td>180,000</td>
<td>360,000</td>
</tr>
<tr>
<td>SPC-1 Benchmark IOPS</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>450’213</td>
</tr>
</tbody>
</table>

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HP 3PAR virtualization advantage

Traditional Array
- Each RAID level requires dedicated drives
- Dedicated spare disk required
- Limited single LUN performance

HP 3PAR – like EVA
- All RAID levels can reside on same drives
- Distributed sparing, no dedicated spare drives
- Built-in wide-striping based on Chunklets

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3PAR Hardware Architecture

Cost-effective, scalable, resilient, meshed, active-active

- 7200 with 2 nodes
- 7400 with 4 nodes
- 10800 with 8 nodes

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HP 3PAR ASIC

Hardware Based for Performance

- Thin Built in Zero Detect
- Fast RAID 10, 50 & 60
  Rapid RAID Rebuild
  Integrated XOR Engine
- Tightly-Coupled Cluster
  High Bandwidth, Low Latency Interconnect
- Mixed Workload
  Independent Metadata and Data Processing
HP 3PAR Thin Technologies Leadership

Overview: Pave efficiency without compromise

Start Thin with Thin Provisioning

Traditional Provisioning

4TB 4TB

3PAR Thin Provisioning

4TB 1TB 1TB

Get Thin with Thin Conversion

Reduce Tech Refresh Costs by up to 60% *

Stay Thin with Thin Persistence

Thin 3PAR volumes stay thin over time

Buy up to 75% less storage capacity *

* See HP’s Get Thin Guarantee on http://www.hp.com/storage/getthin

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HP 3PAR Leadership – Efficient

HP 3PAR customers reduce TCO by 50%

“Only the HP 3PAR StoreServ platform provides a thin provisioning implementation that delivers the most efficient storage utilization.” *

* Quote out of the “Thin Technologies Competitive Comparison” Whitepaper by the Edison Group in September 2012
Zusammenspiel mit VMware

HP StoreVirtual 4730

HP 3PAR StoreServ 7200
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NR 10 = Network RAID 10, this is like a synchronous mirrored LUN
How HP LeftHand P4000 SANs protect application data

Customer challenges
Tightened recovery SLAs
Application aware data protection is called for
No added cost or complexity

Typical situation
Back-up and recovery via snapshots augment traditional data protection
Application recoverability in doubt

- P4000 application integrated snapshots:
  - Quiesced snapshots for ESX or VSS applications
  - No custom scripts
  - No added GUI & no training
  - No added SW cost
  - No added management server

- And, P4000 application integrated snapshots support:
  - Remote copy for disaster recovery
  - SmartClone volumes for quiesced applications or VMs
3PAR VMware Integration

HP 3PAR Utility Storage is the perfect fit for virtualized environments

– Allows greater virtual machine (VM) density thanks to
  • Inherent wide-striping
  • Mixed workload support
  • Full VAAI integration
– Simplified storage administration with the VMware vCenter Server integration
– Seemless storage over two sited: Peer Persistance
– Simplified disaster recovery due to full VMware vCenter Site Recover Manager (SRM) integration
– Efficient integration of HP 3PAR Thin Technologies
– Easy recovery and replication using HP 3PAR Recovery Manager Software for VMware vSphere

HP Leadership – Federation

HP 3PAR Peer Motion – Online Import – Peer Persistence

**Data mobility**
- Respond to growth and changing demands – map and move workloads to the right resources

**Built-in tech refresh**
- Do-it-yourself lifecycle data migration without service disruption – now including EVA to 3PAR

**Federated High-Availability**
- Never lose data access across metropolitan distances

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Peer Persistence v1 – 3PAR Storage & VMware

High Availability Enhancements

What does it provide?
- Load Balancing across data centers with Storage vMotion
- High Availability of VMware environments across data centers
- Transparent LUN presentation across two sites within synchronous Remote Copy distances

How does it work?
- Based on 3PAR Remote Copy and vSphere ALUA host mode persona 11
- Presents primary Vol as active and secondary as standby
- Remote Copy Group migration initiated by "setrcopygroup switchover <group>" command

Supported environments:
- ESX vSphere 5.x
- Sync Remote Copy
- Up to RC supported max of 2.6ms (~260km)

Requirements:
- 3PAR Disk Arrays
- 3PAR Remote Copy License
- 3PAR Peer Persistence License

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VMware ESX DR with SRM

Automated ESX Disaster Recovery

What does it do?

- Simplifies DR and increases reliability
- Integrates VMware Infrastructure with HP 3PAR Remote Copy and Virtual Copy
- Makes DR protection a property of the VM
- Allowing you to pre-program your disaster response
- Enables non-disruptive DR testing

Requirements:

- VMware vSphere™
- VMware vCenter™
- VMware vCenter Site Recovery Manager™
- HP 3PAR Replication Adapter for VMware vCenter Site Recovery Manager
- HP 3PAR Remote Copy Software
- HP 3PAR Virtual Copy Software (for DR failover testing)

Also see the [3PAR vSphere Whitepaper](#)
3PAR Recovery Manager for VMware

Array-based Snapshots for Rapid Online Recovery

Solution composed of

- 3PAR Recovery Manager for VMware
- 3PAR Virtual Copy
- VMware vCenter

Use Cases

- Expedite provisioning of new virtual machines from VM copies
- Snapshot copies for testing and development

Benefits

- Hundreds of VM snapshots granular, rapid online recovery
- Reservation-less, non-duplicative without agents
- vCenter integration – superior ease of use

See also http://h18006.www1.hp.com/storage/software/3par/rms-vsphere/index.html
Datensicherung

HP StoreVirtual 4730  
HP 3PAR StoreServ 7200
Datenschutz, Redundanz und Desaster Recovery

• No Single Point of Failure Design
• Snapshot Technik für schnellen und schlanken online Schutz, vor allem schnelles Recovery
• Redundante Lösung in Bezug auf Desaster Recovery
  • Stretched HP StoreVirtual Cluster mit Network RAID 10
  • Remote Copy mit HP 3PAR StoreServ, eventuell Peer Persistance oder SRM
• Backup Lösung auf Band und / oder StoreOnce
HP StoreOnce Backup

Backup to disk: Leading performance and efficiency from SMBs to Service Providers
HP StoreOnce: Disk-Based Data Protection

Data Protection

MORE DATA amount of data to protect doubles every 18 months
MORE LOCATIONS estimate of 50% company data resides in remote offices
MORE OVERHEADS operational costs, management time and resource throttles innovation to 30% of spend
MORE RISK 60% of companies that lose their data will shut down within 6 months of the disaster
HP StoreOnce Key Features

**Helps to meet backup windows**
- Consolidates multiple parallel backup streams to a single appliance
- Offers disk–based performance

**Protects remote offices**
- Automates backup and DR
- Centralizes data protection of multiple sites and allows management from a single pane of glass

**Offers reliable disaster recovery**
- Deduplicates backup data
- Automates offsite replication of changed, deduplicated blocks
- Uses lower cost, lower bandwidth links
- Simplifies remote management

**Provides rapid file restore**
- Keeps 20x more backup data on hand for longer
- Integrates data and restore across multiple platforms
HP StoreOnce Vision: A single disk-based deduplication solution across the Enterprise
HP StoreOnce portfolio
Greater scalability, more flexibility

Data Protector 7

2620 Series
- 2.5TB's usable

4210 Series
- 4 to 9TB's usable with upgrade

4220 Series
- 8 to 18TB's usable with upgrade

4420 Series
- Scalable to 38TB's usable

4430 Series
- Scalable to 76TB's usable

B6200
- Scalable to 512TB's usable

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Thank you