



Hewlett Packard
Enterprise

Eliminate compromise

HPE 3PAR StoreServ Storage family





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Flash-optimized storage for the New Style of Business

IT has never been more important to doing business, which means that storage infrastructure must be simpler, smarter, faster, more flexible, and more business aligned than ever. The world is moving rapidly toward a New Style of Business where success is defined by how quickly your business can turn ideas into value. Is your data center ready?

With a flexible, **flash-optimized architecture**, HPE 3PAR StoreServ Storage provides the only primary storage architecture you'll ever need. Regardless of whether you are a midsize enterprise experiencing rapid growth, a large enterprise looking to support IT as a Service (ITaaS), or a global service provider building a hybrid or private cloud, **HPE 3PAR StoreServ Storage** features a modern architecture to support better business outcomes. A range of models bring Tier-1 data services to the midrange, deliver all-flash array performance for the cost of a spinning disk array, and provide mission-critical resiliency and quality of service (QoS).

Consolidate with confidence

Hewlett Packard Enterprise 3PAR StoreServ Storage offers true convergence of block, file, and object access while eliminating single points of failure so you can consolidate with confidence. By delivering Tier-1 resiliency and secure administrative segregation of users, hosts, and application data using virtual machine technology, 3PAR StoreServ Storage lets you serve multiple user groups and applications from a single storage system with complete confidence that access to your data will not be compromised or interrupted.

Full hardware redundancy paired with software features that perform error checking and seamless failover/failback help ensure complete system resiliency, even when the unexpected happens. Autonomic configuration prevents human error, while remote diagnostics let you tap into proactive monitoring and management to protect against unforeseen issues.

Don't just take our word for it.

With the **HPE 3PAR Get 6-Nines Guarantee Program**, HPE stands behind the ability of 3PAR StoreServ Storage systems to deliver data high availability with 99.9999 percent uptime.¹



High Performance

IOPS/Bandwidth, low latency



Continued Cost Decline

Raw \$/GB, usable \$/GB



Tier-1 Reliability

Availability, integrity, QoS



Higher Density

Terabyte per rack unit and Petabyte per rack



Ease of Use & Management

Accomplish more in less time



Converged & Integrated

Block, file, object, backup...

Future-ready



Figure 1. Storage requirements for the New Style of Business

¹ Contact HPE for full terms and conditions.

Deliver uncompromising QoS

HPE 3PAR StoreServ Storage lets you deliver higher service levels to more users and applications with less infrastructure. When combined with Tier-1 resiliency, the multi-controller scalability and extreme flexibility built into the platform eliminates the need to deploy and maintain separate storage silos to deliver different QoS levels.

System-wide striping of data provides high and predictable service levels for a wide range of workload types through the massively parallel and fine-grained striping of data across all internal resources (disks, ports, loops, cache, processors, etc.). As a result, as the use of the system grows—or in the event of a component failure—service conditions remain high and predictable.

Prioritization controls let you specify minimum thresholds for your most mission-critical applications and workloads to help deliver consistency and help ensure that you always meet the necessary QoS levels for your highest priority applications.



“We literally did a side-by-side bake-off in our data center, utilizing real workloads to evaluate **performance, scalability, resiliency,** and **TCO...** when we looked at the detail level in the four categories mentioned, the 3PAR StoreServ 7450 hit the ball out of the park.”

- Lee Pedlow, Senior Director of Production Services, Sony Network Entertainment International (SNEI)

Accelerate performance

HPE 3PAR StoreServ Storage makes innovative use of flash-based storage technologies to give **you a choice between all-flash arrays, converged flash arrays that use solid-state storage** tiered with spinning media, and the use of flash-based media to extend system cache. The only all-flash array to deliver inline deduplication at scale with hardware acceleration, 3PAR StoreServ Storage supports this capability across all systems in its product family that have a flash tier to increase usable capacity, lower total cost of ownership, and extend the life expectancy of flash media.

In cases where there is a large amount of duplicate data, inline deduplication also improves write throughput and performance. Other storage architectures that support deduplication are not able to offer these benefits at the same

HPE 3PAR Flash Advisor Toolset

Wondering about the return on investment of adding flash to your existing infrastructure? With the **HPE 3PAR Flash Advisor Toolset**, you can get the most out of your current storage investment by understanding the benefits of adding flash.

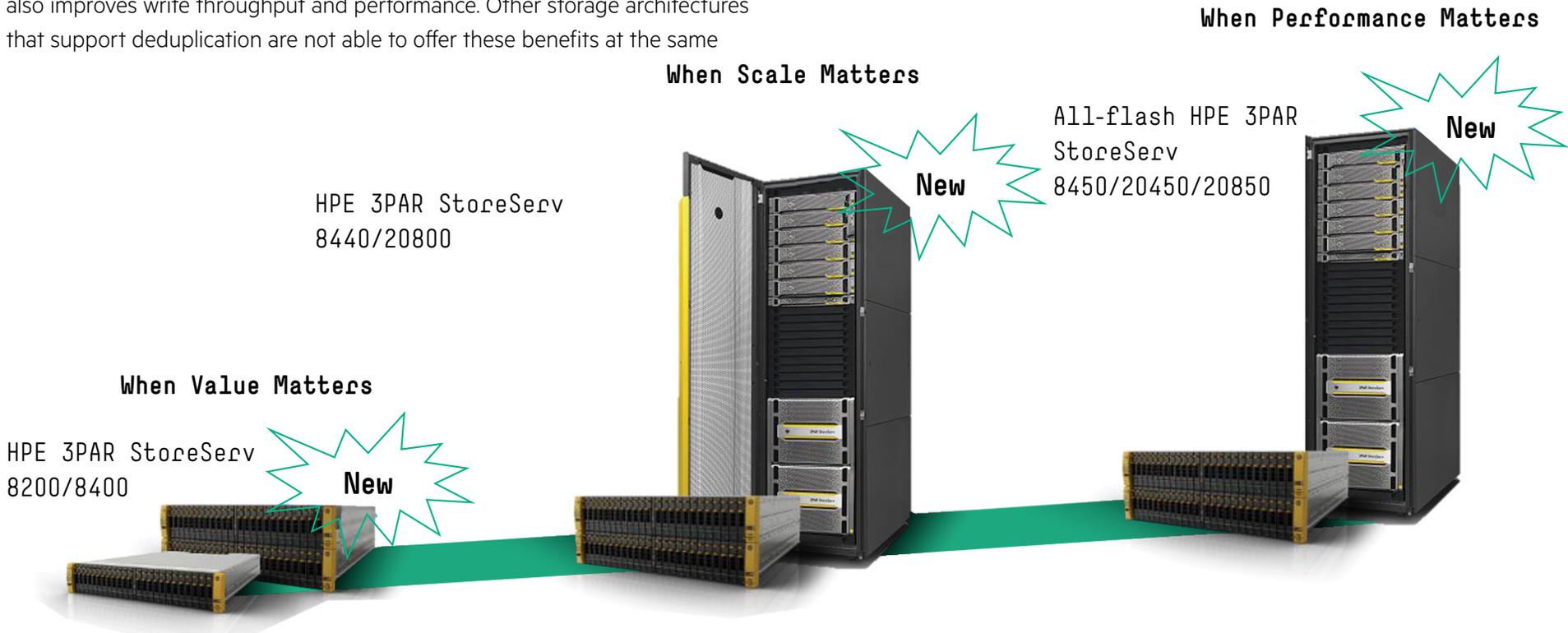


Figure 2. All-flash HPE 3PAR StoreServ Storage

Serve a broad spectrum of workloads

HPE 3PAR StoreServ Storage features Converged Controllers that support the optional **HPE 3PAR File Persona Software Suite** to deliver a tightly integrated, converged solution for provisioning block storage volumes as well as file shares from a single converged system.

HPE 3PAR StoreServ File Persona software unlocks capabilities built into the **HPE 3PAR Operating System Software** and the system's Converged Controllers to deliver true convergence of block and file workloads in addition to object access.

Enabling the **HPE 3PAR File Persona Software** adds home directory consolidation, file sharing, and custom cloud application capabilities to the array, extending the ability to serve virtualization, database, and application workloads that use block protocols to new file use cases—all from the same storage capacity and the same unified management interfaces.

With this software, you can:

- Save up to 71 percent on data center space and power requirements with agile provisioning of block, file, and object access²
- Get seamless compaction of file data with built-in zero-detection capabilities
- Easily extend the architectural benefits of the platform for block workloads to new use cases

² HPE internal analysis compared to EMC VNX, September 2014.

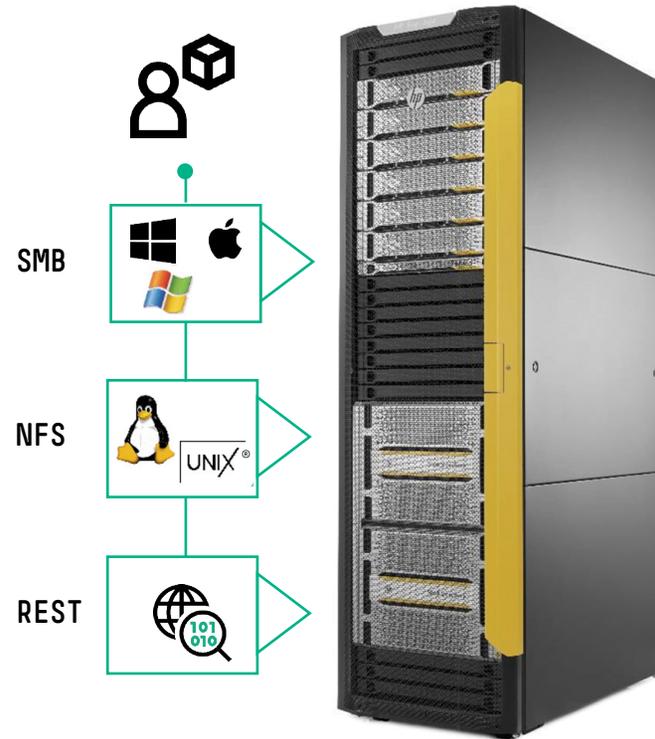


Figure 3. HPE 3PAR File Persona Software built into the HPE 3PAR OS

- Enjoy a single thin capacity pool for block and file
- Get fully unified management with rich file protocol support and object access
- Protect your data and your applications with continuous access, user-driven recovery, DAR encryption, anti-virus & backup

Cut capacity requirements by 50 percent

HPE 3PAR StoreServ Storage features **industry-leading thin technologies** that reduce capacity requirements with a comprehensive approach to space efficiency that eliminates overprovisioning and uses fast and simple space reclamation. HPE 3PAR Gen5 Thin Express ASICs in each storage controller deliver mixed workload support and provide the high-performance engine behind these unique thin technologies. This lets you purchase 50 percent less storage to meet your application requirements without compromising performance or utilization.³

Need a sure thing?

The **HPE 3PAR Get Thin Guarantee Program** promises a minimum 50 percent reduction in capacity requirements when you replace legacy storage with HPE 3PAR StoreServ Storage—guaranteed.⁴

Free storage efficiency assessment

Do you know how to reduce energy, floor space, and disk capacity requirements while slashing administrative time by up to 90 percent?

Get a **FREE** storage assessment from HPE that includes:

- A complete efficiency audit of your current storage
- Storage utilization ratios and standard capacity
- Array sizing needed to meet SLAs

Read more about the benefit of the free assessment

Sign up now



³ ⁴ Contact HPE for full terms and conditions.

Respond 8X faster

Simplify, automate, and expedite management with Storage that is **self-configuring, self-provisioning, and self-optimizing**. HPE 3PAR StoreServ Storage eliminates traditional manual storage planning and change management with autonomic management and optimization features that are intelligent, take place at a subsystem level, and don't require administrator intervention. These features let you respond 8X faster than our main competitor by shrinking provisioning time from hours, weeks, and days to just seconds. Automation also reduces the opportunity for human error.

- Provision a volume in only 15 seconds.
- Deliver high performance to all applications, even under failure conditions.
- Quickly adapt to the unpredictable by optimizing QoS levels with one click.

Making the move has never been easier

Are you an HPE EVA Storage customer interested in modernizing your storage? If you liked your EVA array, you're going to love 3PAR. HPE makes it simple and painless to modernize your infrastructure with **three ways to make the move to HPE 3PAR StoreServ Storage**. Get started today!

Load balance without virtualization complexity

HPE 3PAR StoreServ Storage supports **federated data mobility** across Tier-1, midrange, and flash arrays so you can manage resources at the data center level without external virtualization appliances.

- Respond to unpredictable and dynamic demands by moving data and workloads between arrays without impact to applications, users, or services
- Eliminate additional virtualization layers and management overhead with peer-based storage federation
- Map workloads to the right resources and establish tiers of storage across the data center for different service-level objectives
- Improve data availability and protection in clustered VMware® and Microsoft® Hyper-V environments

Painless modernization onto Tier-1 storage

This federated data mobility also simplifies technology refreshes by eliminating data migration as a pain point—including:

- **Upgrading from HPE EVA Storage**
- **Replacing legacy EMC VMAX, CLARiiON CX4, and VNX arrays**
- **Replacing HDS TagmaStore Network Storage Controller (NSC), Universal Storage Platforms (USP), and Virtual Storage Platforms (VSP)**
- **Replacing legacy IBM XIV systems**

Shield your business from application downtime

Application downtime can be fatal to your business and can come from a variety of sources—from human error to natural disasters. As a result, data protection is a continuum that must cover a wide range of scenarios.

HPE 3PAR StoreServ Storage offers **a highly resilient, Tier-1 architecture** that provides the first line of defense against application outages with high availability features such as fault tolerance and hardware redundancy.

Point-in-time (PIT) snapshots add additional protection against application errors and data corruption or loss.

Low-cost remote replication protects against site-wide outages and natural disasters with the flexibility to replicate between any member of the HPE 3PAR StoreServ family—regardless of model. Add to this online, disk-based backup with **HPE StoreOnce Systems** and you have comprehensive data protection that minimizes your risk from all angles.

HPE StoreOnce increases your application protection level by letting you maintain more frequent snapshots for longer and for less. Free up flash capacity on your HPE 3PAR StoreServ array by **offloading snapshots to more cost-effective backup**. Free your data center from dependence on traditional backup infrastructure by taking advantage of flat backup to reduce backup ISV licensing costs.

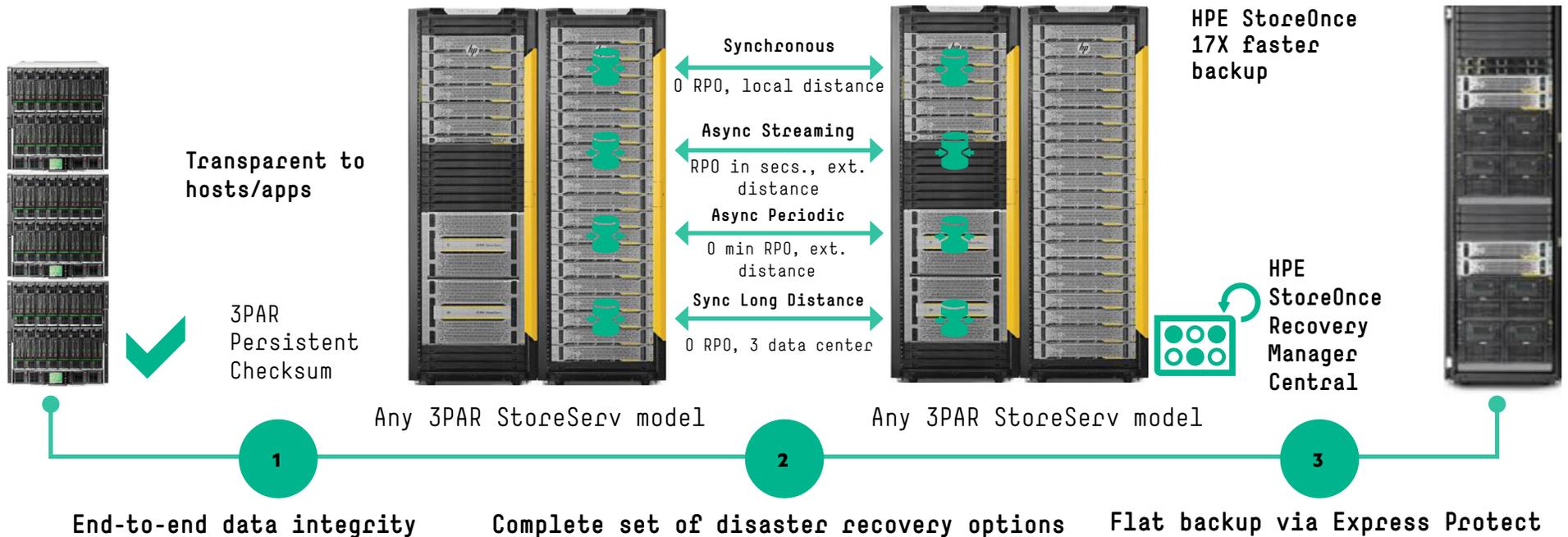


Figure 4. End-to-end availability and protection for enterprise applications with HPE StoreOnce Recovery Manager Central

Setting new standards for agility and efficiency

With a **modern architecture built for virtualization, the cloud, and ITaaS**,

HPE 3PAR StoreServ Storage anticipates new requirements with a resilient, secure, multi-tenant platform that lets you:

- Provision instantly
- Improve provisioning agility for block and file
- Serve diverse and unpredictable workloads
- Deliver sustainable performance
- Flexibly adapt to shifting business demands
- Drive up resource utilization across the data center
- Drive down total cost of ownership for storage

A tightly clustered, multi-controller, scale-out architecture lets you grow into rather than out of your storage. Add new applications and workloads affordably and non-disruptively—all within a single, autonomically tiered, flash-optimized array.



High Performance

Flash-optimized architecture



Application Integration

Integration with VMware, Oracle, Microsoft SQL and Exchange



Reliability

Proven, highly resilient architecture



Ease of Use

Self-configuring, self-optimizing, and self-tuning



Scalability

Scale-out architecture with multiple Active-Active nodes



Drive Efficiency

Get the most out of your flash investments



Disaster Recovery

Data protection with multi-site synchronous and asynchronous remote copy



Data Mobility

Federate across systems and sites for greater efficiency

Flash-optimized architecture featuring a Mesh-Active design

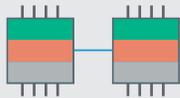
HPE 3PAR StoreServ Storage features a Mesh-Active design based on a unique system of controller interconnects. **This flash-optimized architecture** combines the benefits of monolithic and modular architectures while eliminating price premiums, scaling complexities, and the performance bottlenecks of legacy storage designs.

Unlike legacy Active-Active controller architectures, **the HPE 3PAR Mesh-Active design** allows each volume to be active on every controller in the system. This delivers robust, load-balanced performance and greater headroom for cost-effective scalability.

A high-speed, full-mesh interconnection joins multiple storage controllers to form a cache-coherent, flash-optimized Mesh-Active cluster that is ideal for low-latency, high-performance, internode communication. Purpose-built 3PAR Gen5 Thin Express ASICs in each node connect all controllers via dedicated, high-bandwidth, low-latency links and spread I/O workloads widely across the array using direct memory access (DMA) to reduce latency times.

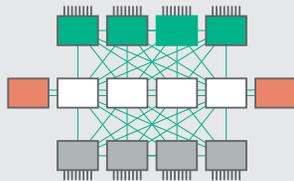
Traditional architecture tradeoffs

Traditional modular storage



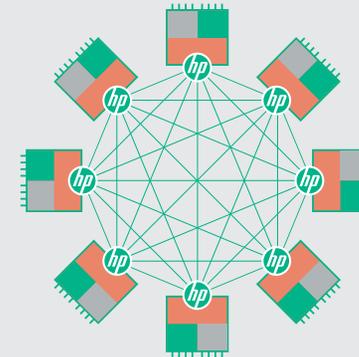
- ✓ Cost-efficient
- ✗ Typically active/passive or active/optimized
- ✗ Dual-controller design limits scalability and resiliency

Traditional monolithic storage



- ✓ Scalable, resilient, and Active-Active
- ✗ Complex and costly
- ✗ Static and inflexible

HPE 3PAR Architecture



Full-mesh interconnect

- ✓ Cost-effective
- ✓ Scalable
- ✓ Resilient
- ✓ Mesh-Active
- ✓ Meets cloud-computing requirements for efficiency, multi-tenancy, and autonomic management

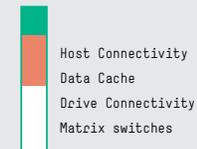


Figure 5. Legacy architectures versus HPE 3PAR StoreServ Storage

Brochure

Fine-grained virtualization and system-wide striping

The **HPE 3PAR Architecture** uses three levels of storage virtualization to drive up capacity utilization and accelerate performance. This fine-grained approach to storage virtualization:

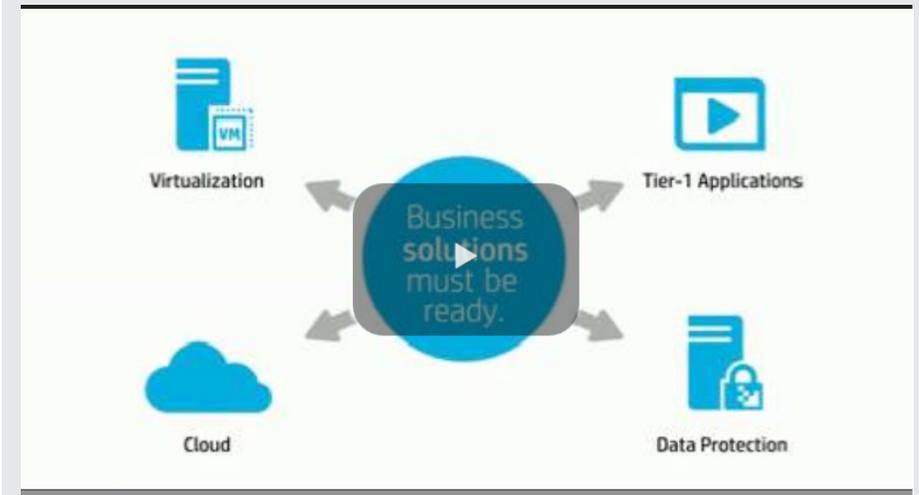
- Divides each physical disk into granular allocation units that can be independently assigned and dynamically reassigned to different logical disks to create virtual volumes
- Enables mixed RAID levels on the same physical drive
- Supports flash and other nonvolatile memory types

Logical disks are the virtualization layer in which QoS parameters are applied (availability level, drive media type, RAID level, etc.). This enables sub-LUN tiering and system-wide striping of data, increasing capacity utilization and performance levels. Fine-grained virtualization combined with system-wide striping drives uniform I/O patterns by spreading wear evenly and system-wide. System-wide sparing also helps guard against performance degradation if there is a media failure by enabling faster, “many-to-many” rebuilds.

Learn more

Download the **HPE 3PAR StoreServ Architecture** technical white paper.

HPE 3PAR StoreServ Storage



HPE 3PAR StoreServ Storage provides a single product family across midrange, high-end, and all flash arrays designed to meet the demands of ITaaS. It is the only primary storage platform you need to respond to change with agility and efficiency.

Unique technologies extend your flash investments

HPE innovations around flash not only help bring down the cost of flash media, but 3PAR Gen5 Thin Express ASICs within each node also provide an efficient, silicon-based, zero-detection mechanism that “thins” your storage and extends your flash media investments. These ASICs **power inline deduplication for data compaction** that removes allocated but unused space without impacting your production workloads—extending the life of flash-based media by avoiding unnecessary writes. The unique Adaptive Read and Write feature also serves to extend the life of flash drives by automatically matching host I/O size for reads and writes.

In addition, while other architectures generally reserve entire drives as spares, the 3PAR Architecture reserves spare chunklets within each drive. Sparing policies are adjusted automatically and on the fly to avoid using flash for sparing, **thus lengthening media lifespan and helping to drive down performance costs**. A five-year warranty on all HPE 3PAR StoreServ flash drives protects your storage investments.

Take five minutes to estimate your savings

Calculate the potential three-year cost savings and ROI from migrating your data from traditional storage to HPE 3PAR StoreServ Storage. Click [here](#) to get started saving with the HPE Storage Quick ROI Tool.

Persistent technologies for Tier-1 resiliency

HPE 3PAR StoreServ Storage systems deliver Tier-1 resiliency via built-in hardware redundancy reinforced with persistent software technologies:

• **Peer Persistence**

- Keeps your business-critical applications running seamlessly with automated, transparent failover and failback
- Improves overall availability with peer federation for **VMware** or **Windows®** **clusters**

• **Persistent Cache**

- Removes performance impacts resulting from unplanned component failures; is ideal for maintaining service levels in the virtual data center
- Leverages the unique Mesh-Active design to preserve write caching in the event of a failure by rapidly “remirroring” cache to other nodes within the cluster

• **Persistent Ports**

- Supports high availability in virtualized environments
- Automatically fails over any front-end controller port that experiences laser loss
- Enables transparent switchover of host path connections
- Keeps host paths online throughout the software upgrade process

HPE 3PAR Software and Suites

Building on the **HPE 3PAR Operating System**, HPE offers a range of standalone software products and bundled software suites to enhance the agility and efficiency of your infrastructure.

Operating System Suite
Thin Deduplication
Adaptive Flash Cache
System Reporter
StoreServ Management Console (SSMC)

Replication Suite
Virtual Copy
Remote Copy
Peer Persistence
Cluster Extension

Optimization Suite
Dynamic Optimization
Adaptive Optimization
Priority Optimization
Peer Motion

File Persona Suite
SMB & NFS protocols
Object Access API
File and user services

Remote Copy
Extension Suite
Peer Persistence
Cluster Extension

Security Suite
Virtual Domains
Virtual Lock

Recovery Manager Central
Flat backup & restore
End-to-end application protection

Application integration
Microsoft Hyper V
Microsoft SQL
Exchange
Oracle

Click [here](#) for more information on software and suites.

Required
Optional

Figure 6. HPE 3PAR Software Suites enhance the agility and efficiency of your infrastructure

Application-managed storage

HPE invests in technologies to support key strategic IT initiatives by working with partners such as VMware, Citrix®, Red Hat®, **Oracle**, Symantec, Microsoft, and **SAP®** to develop **integrated, platform-specific storage solutions** that work with HPE 3PAR StoreServ Storage.

Server and desktop virtualization

Exclusive **virtualization and automation** features built into HPE 3PAR StoreServ Storage work with our software products and solutions to deliver unique benefits for VMware vSphere, VMware View, Microsoft Windows Server® Hyper-V, Citrix XenServer, Red Hat Enterprise Virtualization (RHEV), and Oracle VM.

Through collaboration with VMware on its Virtual Volumes (VVols) storage architecture, all HPE 3PAR StoreServ Storage solutions support simple, granular VM-level storage control, disaster recovery, and QoS in VMware environments.

HPE and VMware partnered for over three years working on the definition, development, and testing of the VVols specification with VMware using HPE 3PAR StoreServ as the Fibre Channel reference platform for this technology.

Integration with Microsoft System Center and VMware vCenter gives enhanced visibility into storage for application owners while **HPE StoreOnce Recovery Manager Central** provides superior granularity and control of array-based snapshots VMware and Microsoft environments.

Databases

Database performance and availability are so critical that many organizations apply generous capacity and management resources to maintain needed service levels. HPE 3PAR StoreServ Storage removes these inefficiencies. For example, with HPE 3PAR Thin Persistence software and the new Oracle ASM Storage Reclamation Utility (ASRU), your **Oracle databases** stay thin by autonomically reclaiming stranded database capacity. HPE also offers cost-effective Oracle- and **SQL-aware snapshot technologies**.

Email and communications

Given the importance of **Microsoft Exchange** for mission-critical email communications, many organizations devote significant amounts of storage capacity and management resources to this essential application. HPE 3PAR StoreServ Storage enables you to support a large number of mailboxes with a larger size limit while reducing cost per mailbox from dollars to cents. Use snapshot technology to recover email messages quickly, affordably and from multiple points in time.

Learn more at
hpe.com/storage/3PAR



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[Download the full version of the HPE 3PAR StoreServ Family Brochure here.](#)

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