

Brochure



HP 3PAR Storage

Tier 1 storage
for virtualization
and the cloud



The efficiency and agility required by today's most demanding data centers

HP 3PAR Storage —built for virtualization, cloud, and ITaaS

HP 3PAR Storage is the only storage platform that can meet the demands of the modern data center. With a range of models, HP 3PAR Storage delivers the efficiency and agility required by virtual, cloud, and IT as a service (ITaaS) environments.

HP 3PAR Storage is designed from the ground up to exceed the economic and operational requirements of today's most demanding data centers. As an HP Converged Storage platform, HP 3PAR Storage delivers the performance, scalability, and availability required of Tier 1 storage along with unique technology benefits not available with traditional platforms.



Thin technologies

Start thin, get thin, and stay thin. HP 3PAR Storage enables you to meet your performance and service level objectives with 50 to 75 percent fewer disks and up to 90 percent less administration time. Save up to 60 percent on the cost of a storage technology refresh and then maximize storage ROI over time by keeping incremental purchases, administration, and operating costs to a minimum.



Green storage

Do more with less. With HP 3PAR Storage you can purchase up to 75 percent less capacity—meaning less equipment to house, fewer disks to power and cool, less hardware to downcycle after it has reached its end of life, and a reduced carbon footprint.



Autonomic storage

It's like breathing—you don't even have to think about it. Simplify, automate, and expedite storage management by handling storage provisioning, tiering, and change management autonomically—intelligently, at a sub-system level, without administrator intervention.



Storage federation

Meet the needs of today's data center with the ability to move data and workloads between arrays without impact to applications, users, or services. Simply and non-disruptively shift data between any model HP 3PAR Storage system without additional management layers or appliances.



Secure multi-tenancy

Consolidate with confidence. Achieve higher service levels for more users and applications with less infrastructure. HP 3PAR Storage is designed to support massive consolidation by supporting mixed workloads and secure administrative segregation of users, hosts, and application data. Deliver higher performance levels, greater availability, and next-generation functionality to multiple user groups and applications from a single storage system.

Data center virtualization

Increase virtualization return on investment. Double virtual machine density on your physical servers, spend up to 90 percent less time managing your storage, and support your virtualization deployment with 50 percent less storage capacity. HP 3PAR Storage is built from the ground up to deliver performance that exceeds the demands of virtualized data centers along with transformative levels of simplicity, agility, and efficiency.

HP 3PAR Architecture

The tightly clustered, multi-tenant HP 3PAR Architecture allows you to start small and grow as you go—adding new applications and workloads affordably and non-disruptively—all within a single, autonomously tiered array.



HP 3PAR ASIC with Thin Built In

The HP 3PAR ASIC with Thin Built In features an efficient, silicon-based zero-detection mechanism.

This unique hardware capability gives HP 3PAR Storage the power to remove allocated but unused space

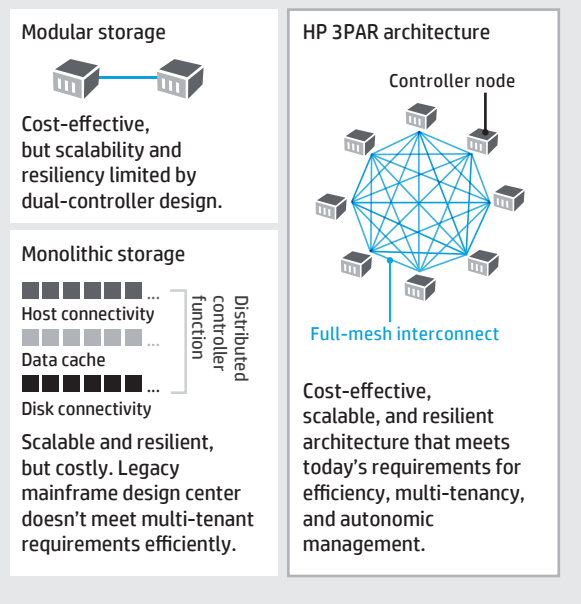
without impacting performance. The HP 3PAR ASIC also delivers mixed workload support to alleviate performance concerns and cut traditional array costs. Transaction- and throughput-intensive workloads run on the same storage resources without contention, thereby cutting array purchases in half. This is particularly valuable in virtual server environments, because HP 3PAR Storage allows you to double virtual machine density so you can increase consolidation and improve ROI.

The accelerated performance of the purpose-built HP 3PAR ASIC, combined with Rapid RAID Rebuild capabilities, also fuels the platform's Fast RAID 5 and Fast RAID 6 capabilities, which enable clients to achieve the performance of traditional RAID mirroring with up to 66 percent less storage capacity.

Mesh-Active controller design

HP 3PAR Storage features a unique Mesh-Active controller design as part of an architecture purpose-built for virtual and cloud data centers. This architecture combines the benefits of monolithic and modular architectures while eliminating price premiums and scaling complexities. Unlike legacy “active-active” controller architectures—where each volume is active on only a single controller—this Mesh-Active design allows each volume to be active on every mesh controller in the system. This design delivers robust, load-balanced performance and greater headroom for cost-effective scalability, overcoming the tradeoffs typically associated with modular and monolithic storage. A high-speed, full-mesh, passive system backplane joins multiple controller nodes to form a cache-coherent, active-active cluster.

Traditional storage architecture vs. HP 3PAR architecture

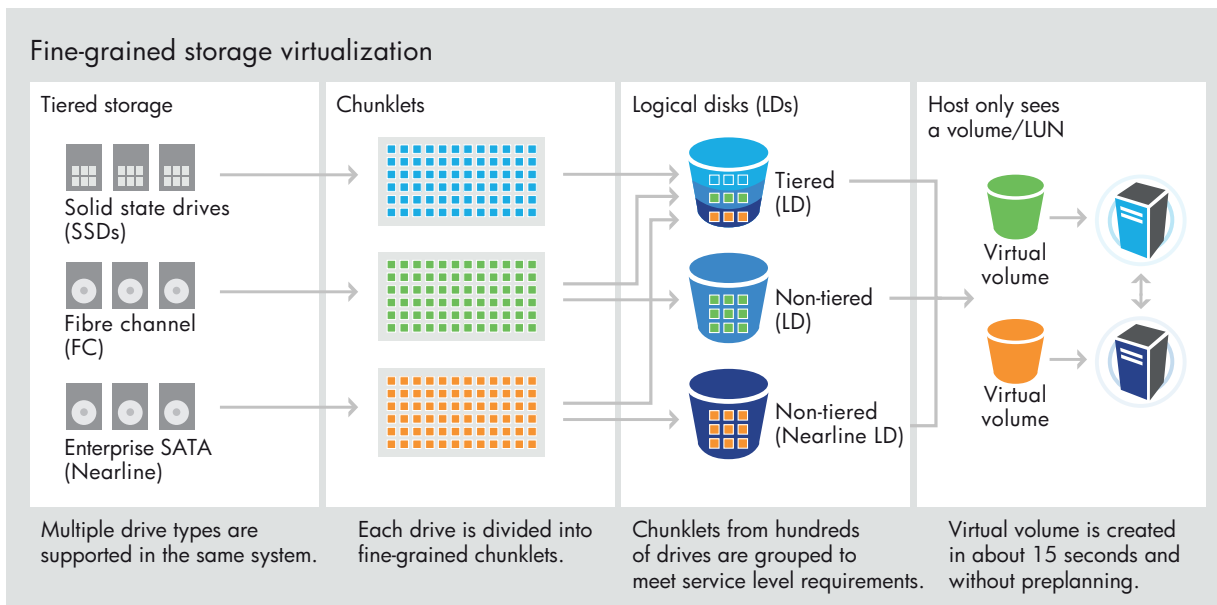


Fine-grained virtualization and wide striping

Fine-grained virtualization divides each physical disk into granular allocation units, or *chunklets*, each of which can be independently assigned and dynamically reassigned to virtual volumes of different quality of service (QoS) levels. This fine-grained virtualization unit means that each disk drive can support many QoS levels so the system can make the most efficient use of physical assets. Writes are striped widely across all system resources (controllers, cache, disks, and loops). This enables the system to deliver both a high capacity utilization rate and high performance levels simultaneously. Even the smallest volume can leverage the performance of 50 or 100 disk drives and all the system's clustered controller nodes for optimal performance without compromising capacity utilization.

Persistent Cache

HP 3PAR Persistent Cache eliminates performance impacts that result from unplanned component failures, making it a must-have for maintaining service levels in the virtual data center. This resiliency feature was designed to gracefully handle component failures by eliminating the performance penalties associated with "write-through" mode. A feature of all quad-node and larger arrays, Persistent Cache leverages the array's unique Mesh-Active design to preserve write caching by rapidly re-mirroring the cache to other nodes in the cluster in the event of a failure.



HP 3PAR Software

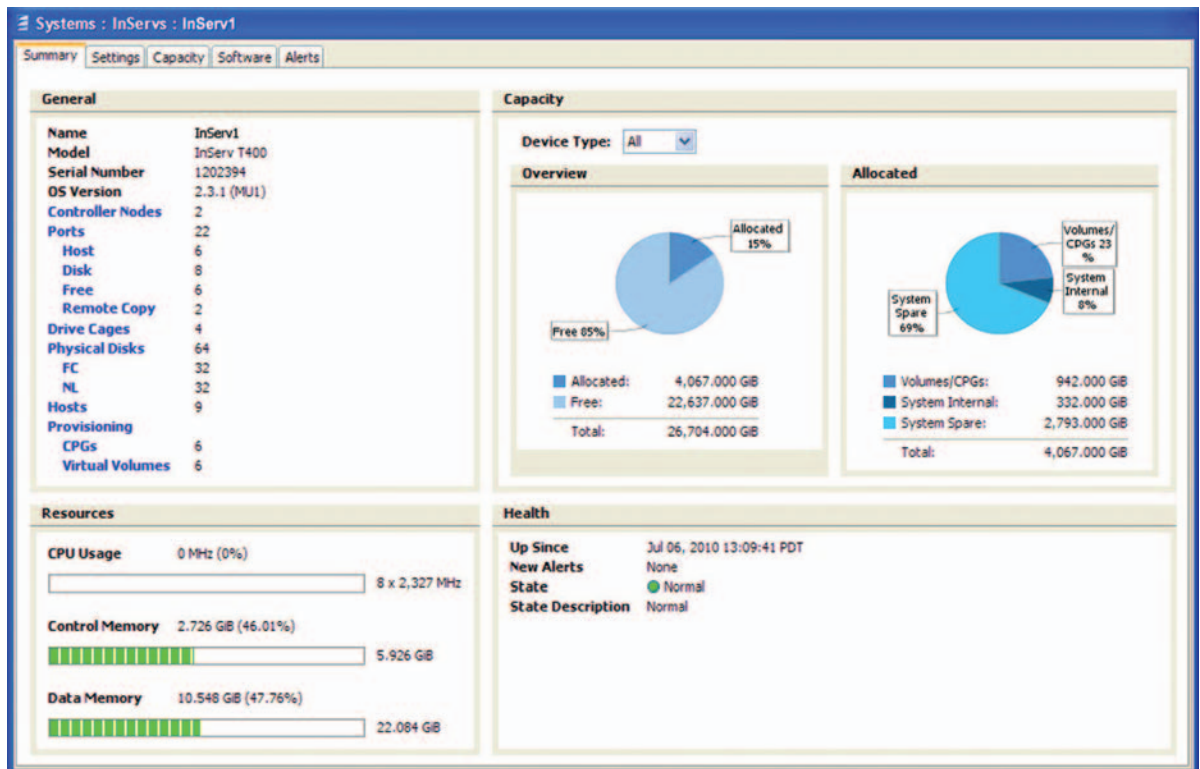
HP 3PAR Storage leads the industry in providing array management features that remove the layers of complexity that typically weigh down storage administration. We deliver products that enhance visibility and control while eliminating costly, repetitive, and error-prone manual tasks. Building on HP 3PAR Operating System Software, HP 3PAR Storage offers a range of products to enhance the agility and efficiency of your infrastructure and enable you to do more with less.

Operating system

HP 3PAR Operating System Software employs advanced internal virtualization to enhance administrative efficiency, system utilization, and storage performance. The HP 3PAR OS holds the key to simplifying storage management by handling provisioning and change management autonomously—intelligently, at a sub-system level, and without administrator intervention.

Management console

The HP 3PAR Management Console simplifies administration through a unified, point-and-click interface that supports all HP 3PAR Software and provides uncommonly rich instrumentation for the physical and logical objects within all of your HP 3PAR Storage arrays. This rich instrumentation, combined with robust and customizable reporting capabilities, eliminates the need for add-on software tools and consulting services related to diagnosis and troubleshooting. Open administration support is provided via simple network management protocol (SNMP) and storage management initiative specification (SMI-S).





Thin technologies

HP 3PAR Storage offers unique software products that utilize the industry's only Thin Built In hardware architecture. The HP 3PAR thin technologies are delivered by HP 3PAR Thin Suite, which includes:

HP 3PAR Thin Provisioning Software

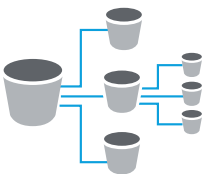
Cuts storage area network (SAN) costs, floor space requirements, and energy expenses by up to 75 percent. No more dedicating resources for each application or service level. No more paying to power, house, and cool disks that you may never need.

HP 3PAR Thin Conversion Software

Leverages the Thin Built In ASIC to eliminate up to 75 percent of your legacy capacity by allowing the simple and rapid conversion of fully provisioned storage to thin provisioned storage.

HP 3PAR Thin Persistence Software

Reclaims space from deleted volumes so your storage stays thin over time. Supports the Oracle ASM Storage Reclamation Utility (ASRU) for eliminating stranded capacity within Oracle databases, as well as the Symantec™ Thin Reclamation API, which allows a host file system to intelligently communicate with the array to reclaim space associated with file deletions.



Data protection and disaster recovery

The data protection and disaster recovery products available with HP 3PAR Storage are based on uniquely flexible and efficient copy-on-write snapshot technology that allows you to affordably maximize both recovery point and recovery time objectives.

HP 3PAR Full Copy Software

Creates point-in-time clones with independent service level parameters. Supports rapid resynchronization and is thin provisioning-aware.

HP 3PAR Virtual Copy Software

A reservationless, non-duplicative, copy-on-write software product that allows you to protect and share data from any application. Capacity is never reserved up front and changed data is never duplicated within the snapshot tree.

HP 3PAR Remote Copy Software

Protect and share data from any application more affordably. Dramatically reduce the cost of remote data replication and disaster recovery by leveraging thin copy technology, permitting the combination of mid-range and high-end arrays, and reducing the need for professional services. Remote Copy features new zero-detection capability that cuts initial synchronization bandwidth consumption by 99 percent.



Data persistence, resilience, and security

HP 3PAR Storage offers several data resilience and security products designed to work with its multi-tenant architecture to deliver the robust functionality demanded by Tier 1 storage, the cost structure attractiveness of Tier 2 storage, and the agility you expect from a highly virtualized infrastructure.

HP 3PAR Peer Motion Software

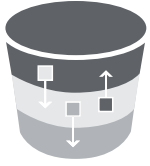
Delivers storage federation by enabling data and workloads to be simply and non-disruptively moved between any model HP 3PAR Storage system without impact to applications, users, or services.

HP 3PAR Virtual Domains Software

Virtual machine software that delivers secure, segregated access and robust storage services for different applications and user groups. Supports increased storage service levels (performance, availability, and functionality).

HP 3PAR Virtual Lock Software

Enables the secure retention of storage volumes. Delivers an efficient approach to data governance and legal discovery processes when used in conjunction with reservationless, non-duplicative snapshots.



Autonomic storage tiering

Policy-driven, autonomic storage tiering technologies balance cost and performance to meet service level requirements for the lowest cost while increasing business agility and minimizing risk. For HP 3PAR P10000 systems, this technology is delivered as part of the HP 3PAR Optimization Suite.

HP 3PAR Adaptive Optimization Software

Leverages a proven, fine-grained data movement engine, and applies it to independent regions within a volume. The result is highly reliable, non-disruptive, autonomic tiered storage that delivers the right QoS to the right data at the right time so you can meet service level targets for up to 30 percent less.

HP 3PAR Dynamic Optimization Software with Autonomic System Rebalance

Non-disruptively distributes and redistributes application volumes across tiers to align application requirements with data QoS levels on demand. Analyzes how volumes use physical disks and automatically makes intelligent, non-disruptive adjustments to help ensure optimal volume performance and capacity utilization.



Autonomic provisioning

HP 3PAR Storage is designed to handle volume provisioning and change management autonomically—intelligently, granularly, and without administrator intervention.

HP 3PAR Autonomic Groups Software

Enables you to create host, volume, and domain groups to automate and expedite storage provisioning. With Autonomic Groups, three clicks and 60 seconds are all you need to fully create and provision multiple volumes to multiple servers.

HP 3PAR Rapid Provisioning Software

Eliminates array planning by delivering instant, application-tailored provisioning through the fine-grained virtualization of lower-level components. Provisioning is managed intelligently and autonomically while the striping of data across internal resources provides high and predictable service levels for all workload types.



Autonomic management

With HP 3PAR Storage, host-based software products reduce manual administration by offering autonomic performance and capacity utilization monitoring and establishing secure, autonomic communication channels between storage and hosts.

HP 3PAR System Reporter Software

A simple-to-use, Web-based performance and capacity management tool that aggregates historical system data for one or more HP 3PAR Storage systems. Ideal for troubleshooting, planning, consolidated monitoring, and collecting information required for service level agreement (SLA) and chargeback support.

HP 3PAR Host Explorer Software

Automates host discovery and collection of detailed host configuration information to speed provisioning and simplify maintenance. Securely communicates host information such as Fibre Channel World Wide Name (WWN) and host multi-path data to the system to reduce manual administration.

Application-managed storage

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



Server and desktop virtualization

Exclusive virtualization and automation features built into HP 3PAR 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. These benefits help you increase virtualization ROI, enabling you to consolidate by purchasing 50 percent fewer physical servers, simplify by spending 90 percent less time managing your virtual data center, and save by cutting storage capacity requirements by 50 percent or more.



Databases

Database performance and availability are so critical that many organizations apply generous capacity and management resources to maintain needed service levels. HP 3PAR Storage removes these inefficiencies, eliminating the tradeoff between capacity utilization, efficiency, and performance. For example, with HP 3PAR Thin Persistence Software and the new Oracle ASM Storage Reclamation Utility (ASRU), your Oracle databases stay thin by autonomically reclaiming stranded database capacity. And only HP 3PAR Storage offers the cost-effective Oracle- and SQL-aware snapshot technologies, HP 3PAR Recovery Manager for Oracle and HP 3PAR Recovery Manager for SQL Server.



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. HP 3PAR Storage enables you to support a large number of mailboxes with a larger size limit while reducing cost per mailbox from dollars to cents. In addition, with HP 3PAR Recovery Manager for Exchange, you can recover email messages quickly, affordably, and from multiple points in time.



HP 3PAR Storage components



Controller nodes

- The building blocks of the system's unique Mesh-Active architecture
- Controller-independent instance of HP 3PAR OS for hardware and software fault tolerance
- Online-configurable adapter cards for abundant native host connectivity (Fibre Channel and iSCSI)
- Built-in Gigabit Ethernet ports for Remote Copy
- ASIC-assisted RAID XOR calculations
- HP 3PAR ASICs with Thin Built In for inline, non-disruptive capacity optimization
- Unique mixed workload support for simultaneously high transaction- and throughput-intensive performance



Full-mesh backplane

- High-speed, full-mesh, passive system backplane that joins multiple controller nodes
- Forms a cache-coherent, Mesh-Active cluster
- Low-latency interconnect allows for tight coordination and simplified software model









Drive chassis

- Switched architecture for advanced error isolation
- Industry-leading density
- Redundant, hot-pluggable components
- Redundant Fibre Channel paths to controller nodes



Drive magazines

- Fully tiered; magazines available for Fibre Channel, Nearline (enterprise SATA), and solid state drives (SSDs)
- Hot-pluggable

	HP 3PAR F-Class		HP 3PAR T-Class		HP 3PAR P10000	
	F200 	F400 	T400 	T800 	V400 	V800 
Description and usage	World's first cache-coherent, quad-controller architecture for scalable, efficient departmental and remote office consolidation		Designed to deliver enterprise IT as a utility service simply, efficiently, and flexibly. Delivers massive consolidation and performance headroom for virtual and cloud data centers.		Tier 1 storage for virtual and cloud data centers that support the delivery of IT as a service. Designed to deliver consolidation of thousands of virtual machines and help ensure that applications never lose access to data.	
HP 3PAR ASIC	Gen3	Gen3	Gen3	Gen3	Gen4	Gen4
Controller nodes	2	2-4	2-4	2-8	2-4	2-8
Built-in Gigabit Ethernet ports	YES	YES	YES	YES	YES	YES
Fibre Channel host ports	0-12	0-24	0-64	0-128	0-96	0-192
iSCSI host ports	0-8	0-16	0-16	0-32	0-16	0-32
Disk drives	16-192	16-384	16-640	16-1280	16-960	16-1920
Drive chassis	2-12 3U drive chassis (16 drives each)	2-24 3U drive chassis (16 drives each)	2-16 4U drive chassis (40 drives each)	2-32 4U drive chassis (40 drives each)	2-24	2-48
Drive types (mixable)	Fibre Channel, Nearline (enterprise SATA), SSD	Fibre Channel, Nearline (enterprise SATA), SSD	Fibre Channel, Nearline (enterprise SATA), SSD	Fibre Channel, Nearline (enterprise SATA), SSD	Fibre Channel, Nearline (enterprise SATA), SSD (up to 128 per controller node pair)	Fibre Channel, Nearline (enterprise SATA), SSD (up to 128 per controller node pair)
Max capacity (approximate)	128 TB	384 TB	400 TB	800 TB	800 TB	1600 TB
Cabinets	HP 3PAR 2-M or third-party EIA-standard 19 inch cabinet	HP 3PAR 2-M or third-party EIA-standard 19 inch cabinet	HP 3PAR 2-M cabinet(s)	HP 3PAR 2-M cabinet(s)	HP 3PAR 2-M or third-party EIA-standard 19 inch cabinet	HP 3PAR 2-M cabinet(s)

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