HPE 3PAR Replication Software

Effortless business continuity for bulletproof storage

HPE 3PAR StoreServ Storage: Agile tier 1 storage capabilities from midrange to enterprise

As an organization that constantly takes leaps and strides toward growth, you've seen firsthand what it means to maintain a perfect balance between managing large and increasing data volumes, rising business demands, cost efficiency, and sustainable growth. And, while you juggle these multiple facets within your business, you also consider advancements and changes on the outside that can deeply impact what goes on inside your business.

HPE 3PAR StoreServ Storage is an easy-to-deploy, affordable, upgradable system that has been designed from the ground up to meet fluctuating and mixed workload demands. With efficient, autonomic, and resilient tier 1 capabilities and a unique, multinode-capable storage architecture, HPE 3PAR StoreServ Storage provides affordable scalability to your data center, meeting your application demands and enabling sustainable growth. HPE 3PAR StoreServ Storage prepares and supports your data center regardless of what your future holds—whether it's server virtualization, an infrastructure refresh, or just simplifying storage to more efficiently handle rapid data growth.

Protect against the unpredictable with replication for HPE 3PAR StoreServ Storage

HPE 3PAR Replication Software is designed to maintain business continuity by delivering simple, fast, and economical application data protection, transparent failover, and disaster recovery solutions. HPE 3PAR Replication includes HPE 3PAR Virtual Copy, HPE 3PAR Remote Copy, HPE 3PAR Peer Persistence, and HPE 3PAR Cluster Extension software to help you protect, share, and freely move data across data centers without impacting your business applications. Uniquely flexible Remote Copy technology and efficient copy-on-write snapshot technology based on Virtual Copy allow you to affordably optimize both recovery point and recovery time objectives. Peer Persistence offers automated transparent failover across data centers and HPE 3PAR Cluster Extension enables automatic failover over distances. The intelligence and automation of the software suite's offerings reduce complexity, human resource requirements, and potential errors at critical moments.

Key features and benefits

Powerful yet agile and simple replication
- Multiuse, multinode disaster recovery that is set up, tested, and running in minutes

- Automated transparent failover between sites at metropolitan distances, with an option to have a 3rd copy at geographic distance

- Mirroring of data between HPE 3PAR StoreServ systems for reduced complexity

- Up to 2048 instantly available point-in-time snapshots

Highly efficient and flexible implementation saves you money and time
- Synchronous, asynchronous streaming and asynchronous periodic replication dramatically reduces cost

- Reservationless snapshots prevent the creation of allocated but unused capacity

- Thin-aware, point-in-time copies deliver unprecedented savings

- Autonomically frees up unused space following snapshot deletions to keep utilization high

- Supports replication over Fibre Channel as well as existing IP network out of the box

Guards against risk with enhanced user control
- HPE 3PAR Cluster Extension Software for flawless integration of Remote Copy with high availability (HA) server clustering software

- With HPE 3PAR Peer Persistence, automated transparent failover maintains business continuity even in the event of a disaster

- HPE StoreOnce Recovery Manager Central offers end-to-end availability and protection for your enterprise applications and VMware® environments

Share and protect data from any application, simply and affordably

Backup, recovery, business intelligence, development, and testing are all processes that are enhanced by the ability to leverage the use of point-in-time (PIT) copies. However, most traditional copy solutions lack flexibility and require too great an investment in online capacity to be considered economical.

HPE 3PAR Virtual Copy Software flexibly delivers instant PIT copies of your data so you can share and protect data from almost any application, simply and affordably. Use HPE 3PAR Virtual Copy Software to stay ahead of the innovation curve—for example, by safely expediting test and development—while containing costs with a thin-aware implementation that decreases the amount of physical capacity that is actually being consumed by your data. HPE 3PAR Virtual Copy Software is a reservationless, non-duplicative, copy-on-write product that consumes capacity only for changed data. It does this in fine-grain increments and without ever duplicating changed data within a snapshot tree.

HPE 3PAR Virtual Copy Software helps eliminate the cost and performance overhead of host-based snapshots. The unique performance advantages of HPE 3PAR StoreServ Storage enable you to leverage snapshots without the performance concerns that weigh down traditional array-based copies. For example, the platform's mixed workload support allows a production IOPS-intensive application and a sequential backup process (based on an associated snapshot) to run with negligible impact on each other. In addition, the system's fine-grain virtualization and automatic load balancing capabilities decrease the contention between base and snapshot volumes inherent in other architectures.

Snapshots from multiple HPE 3PAR StoreServ Storage systems are centrally administered from a single user interface called StoreServ Management Console, the same console used to manage all other system functions. To further reduce administration time and decrease the chance of human error, you can automate creation and expiration of snapshots across multiple boot and data volumes.

Simple, efficient, and affordable disaster recovery

The ability to replicate data to remote locations in the most efficient and cost-effective way possible is a must in modern data centers. Unfortunately, many of today's disaster recovery (DR) and data replication solutions are fraught with complexity, compromises, and unnecessary costs.

HPE 3PAR Remote Copy Software is a unique replication technology that allows you to protect and share data from any application more simply, efficiently, and affordably. Remote Copy dramatically reduces the cost of remote data replication and DR on several fronts—for example, by leveraging thin copy technologies, by reducing the need for professional services, and by supporting Asynchronous and Synchronous Replication to meet low recovery time objectives (RTOs) and zero-data-loss recovery point objectives (RPOs). HPE 3PAR Remote Copy also makes it economical for customers to implement DR solutions by allowing replication across high-end, midrange, and flash platforms within the HPE 3PAR StoreServ family.

In addition, HPE 3PAR StoreServ Storage is the first platform to offer autonomic DR configuration that enables you to set up and test your entire DR deployment—including multisite replication using multiple models of HPE 3PAR StoreServ systems and multiple replication modes—in just minutes. With Native IP as well as Fibre Channel (FC) support, HPE 3PAR Remote Copy Software delivers out-of-the-box connectivity over your IP network, enabling you to replicate data more cost-effectively by leveraging your existing infrastructure. Achieve robust DR without the expensive converters and management of a separate, special-purpose infrastructure.

Since HPE 3PAR Remote Copy Software is "thin-aware," target volumes provide the same cost and ease-of-use benefits as thin source volumes. With the combination of HPE 3PAR Thin Provisioning Software and HPE 3PAR Remote Copy Software, both primary and remote sites can share in the benefits of allocating volumes just once while consuming only necessary physical capacity. The result is unprecedented efficiency in data replication.

With Asynchronous Replication solutions, the primary storage array does not wait for the I/O acknowledgment from the secondary storage array when processing I/O. When network bandwidth is at a premium, HPE 3PAR Remote Copy offers Asynchronous Periodic mode of replication, where changed data within a volume or a Remote Copy volume group is transferred only once; no matter how many times it may have changed between synchronization intervals. For applications that require an extremely low RPO, HPE 3PAR StoreServ offers an Asynchronous Streaming replication mode that assures data protection against disasters by providing an RPO in seconds whereas, Asynchronous Periodic mode ensures minimal RPO even over extended distances.

With Synchronous Replication solutions, when I/O is initiated by the application or storage cache, the primary storage array waits for the I/O acknowledgement from the secondary storage array, before sending the acknowledgement to the application or storage cache. This mechanism is essential for failover of transactional applications. Synchronous mode solutions are suitable for data centers within metro distances and have a recovery point objective of zero seconds. For Synchronous Replication solutions, Synchronous Long Distance mode delivers a disaster recovery solution across long distances with a potential for zero-data-loss RPO and an RTO of minutes. This is achieved with a replication configuration that uses three sites to simultaneously replicate a virtual volume from the primary array, in synchronous mode, to an HPE 3PAR StoreServ Storage array located at a synchronous site.

Achieve high availability in your multisite federated environment

Non-disruptive data mobility across systems and metropolitan distances enables you to not only protect your data but also load balance at will. **HPE 3PAR Peer Persistence Software** enables HPE 3PAR StoreServ Storage systems located at metropolitan distances to act as peers to each other, presenting a nearly continuous storage system to hosts and servers connected to them. This capability allows you to configure a high-availability solution between two sites or data centers where planned or unplanned failover and failback remain completely transparent to the hosts and applications running on those hosts. With traditional failover models, hosts must be restarted upon failover, while Peer Persistence Software allows hosts to remain online. This prevents interruption of business applications, even when they switch from their original site to the DR site, resulting in a much improved recovery time.

Peer Persistence Software also allows you to use both their primary and secondary sites in an "active-active" mode, thereby putting your secondary site to a much better use than an expensive insurance policy against disaster. It enables you to move your hosts from one site to another based on your business and performance needs without impacting the applications running on those hosts.

HPE 3PAR Peer Persistence leverages the robust high-availability solutions already available on HPE 3PAR StoreServ Storage, and extends it even further by enabling a peer relationship between two storage systems located at geographically separated sites. The software is built on the same industry-leading Mesh-Active technology and massively parallel architecture that the HPE 3PAR StoreServ platform is known for, and thereby allows customers with remote replication to deploy Peer Persistence without any additional appliances or hardware.

With support for a third data center, HPE 3PAR Peer Persistence also provides extreme data protection with replication over distance in addition to, have non-disruptive data mobility in case of local storage failure. Peer Persistence with support for a third data center provides the best in class high-availability solution combined with an efficient disaster recovery solution based on asynchronous periodic replication.

Enables automatic failover of application services over geo distances

Automatic failover of applications over distances not only ensures data protection but also cuts down on round the clock dependency on manual intervention in cases of outages. **HPE 3PAR Cluster Extension software** delivers automatic failover of application services and enables read/write access of target HPE 3PAR StoreServ Storage systems over geo distances. Cluster Extension software initiates true hands free failover/failback decision making, as it detects failures and automatically manages recovery without human intervention.

HPE 3PAR Cluster Extension software provides the elasticity and scalability to a single cluster by extending it across distances. Cluster Extension software also monitors and recovers disk pair synchronization on an application level, thus efficiently meeting the recovery point and recovery time objectives (RPO and RTOs).

Implementation of Cluster Extension solution provides the highest standards of data integrity and protects your valuable information against the threat of downtime—whether planned or unplanned.

The complete HPE 3PAR software portfolio

Manage

StoreServ Management Console
Command Line Interface
System Reporter
Service Processor
File Persona
Smart SAN
HPE OneView integration
WSAPI, SMI-S and SNMP
OpenStack® integration
VMware integration
Dockers containers support

Protect

Remote Copy
Peer Persistence & CLX
Recovery Manager Central
Data-at-rest encryption
File Store snapshots
Persistent Checksum
Persistent Cache
Persistent Ports
Virtual Lock and File Lock
VSS Provider

Optimize

Adaptive Sparing
Adaptive Flash Cache
Priority Optimization
Federation (Peer Motion, Online Import)
Adaptive Optimization
Express Protect
Adaptive Reads and Writes
Express Writes
Autonomic Cache Offload
Mixed Workload Technology

Efficient

Zero Detect
Deduplication
Compression
Data Packing
Thin Provisioning
Virtual Copy
Thin Conversion
Thin Persistence
Express Layout
Express Indexing
Express Scan

Predictive analytics powered by StoreFront Remote

Manage: Everything you need to get up and running quickly and efficiently.	Simplified management is offered by the **HPE 3PAR StoreServ Management Console (SSMC)**. The scriptable **HPE 3PAR Command Line Interface (CLI)** gives you powerful customization capabilities that are simple to configure and reduce the need for extra management tools. **HPE 3PAR System Reporter** helps track performance and capacity utilization trends for multiple HPE 3PAR StoreServ systems. Remote error detection along with support for diagnostics and maintenance activities is offered via **HPE 3PAR Service Processor**. Rich file protocols from SMB/CIFS to NFS and FTP, and a RESTful Object Access API for programmatic access to files are offered with **HPE 3PAR File Persona**. Built-in automated SAN configuration is offered with **HPE 3PAR Smart SAN. HPE OneView integration**, gives you a web-based interface that is common across enterprise servers, storage and networking. Support for the **Storage Management Initiative Specification (SMI-S)** provides simplified storage management from within the Microsoft® System Center Management framework. With **OpenStack integration**, over both iSCSI and Fibre Channel protocols, the flexibility and cost-effectiveness of a highly resilient cloud-based open source platform that meets the requirements of your mission-critical applications, is offered. HPE 3PAR StoreServ Storage **integration with VMware vSphere**® enables you to take advantage of architectural benefits such as wide striping, a Mesh-Active clustered controller design, mixed workload support, and hardware-assisted VMware vSphere APIs for Array Integration (VAAI) support. **Dockers containers support** helps deliver enterprise-grade storage availability, resiliency and performance for stateful containers.
Protect: Safeguard your most mission-critical of applications.	**HPE 3PAR Remote Copy** offers simple and cost-effective data protection for efficient multi-tenant disaster recovery. **HPE 3PAR Peer Persistence** ensures transparent autonomic failover over metropolitan distances. **HPE 3PAR Cluster Extension Software** enables automatic failover across data centers using Remote Copy Asynchronous mode. **HPE Recovery Manager Central** allows you to create, manage and automate crash-consistent snapshots for any application and app-consistent snapshots for VMware vSphere, Microsoft SQL Server, Oracle and SAP HANA®. **HPE 3PAR StoreServ Data-at-Rest Encryption** protects data from both internal and external security breaches by securely encrypting all data as it is written to the drive. End-to-end data integrity, protection against silent corruption from the host to the storage array is offered via **HPE 3PAR Persistent Checksum**. **HPE 3PAR Persistent Cache** maintains service levels, so they are not impacted by unplanned component failures—a key requirement for the virtual data center. Non-disruptive upgrades to HPE 3PAR StoreServ 8000 Storage systems without relying on multipathing software and without initiating failover is initiated via **HPE 3PAR Persistent Ports**. **HPE 3PAR Virtual Domains and HPE 3PAR Virtual Lock Software** helps segregate access and deliver robust storage services for different applications and user groups with additional security attached to the retention of storage volumes. **HPE 3PAR File Lock** enables data preservation to meet the enterprise governance requirements.
Optimize: Make the best use of the available storage capacity.	**HPE 3PAR Adaptive Sparing** leverages the system's sparing approach to improve the performance and endurance of flash. Performance acceleration is assured by **HPE 3PAR Adaptive Flash Cache**, which reduces application response times. **HPE 3PAR Priority Optimization** assures service levels with QoS controls for mission-critical applications. **HPE 3PAR Peer Motion** enables load balancing at will, wherein movement of data and workloads between arrays does not impact, applications, users, or services. **HPE 3PAR Online Import** is included to enable migration from HPE EVA, EMC, HDS or IBM Storage systems. **HPE 3PAR Adaptive Optimization** improves storage utilization by enabling cost-optimized storage tiering. **HPE 3PAR Express Protect** enables backups to StoreOnce—all through the familiar RMC GUI. **HPE 3PAR Adaptive Reads and Writes** help to avoid unnecessary data reads and writes to reduce latency, enhance backend performance and extend flash media lifespan. **HPE 3PAR Express Writes** enhances write acceleration that helps optimize CPU utilization and depending on workload, delivers greater throughput. **HPE 3PAR Autonomic cache offload** helps reduce cache bottlenecks by automatically changing the frequency at which data is offloaded from cache to flash media based on utilization rate. **HPE 3PAR Multi-tenant I/O processing** enables performance improvement for mixed workloads or virtual desktop infrastructure (VDI) deployments by breaking large I/O into smaller chunks so that small read requests don't get held up behind larger I/O requests, ensuring reduced latency.
Efficient: Get maximum performance with minimum expenditure.	**HPE 3PAR Zero Detect** reduces the cost of storage by identifying and removing repeated data from incoming data streams. **HPE 3PAR Deduplication** helps reduce the amount of flash needed to store data by preventing the storage of duplicate data. **HPE 3PAR Compression** helps reduce the amount of flash needed to store data by reducing the data footprint. **HPE 3PAR Data Packing** helps improve storage efficiency and bandwidth by condensing multiple smaller data sets together. **HPE 3PAR Virtual Copy Software** protects and shares data affordably with rapid recovery using reservationless, non-duplicative, copy-on-write snapshots. **HPE 3PAR Thin Technologies**—including **HPE 3PAR Thin Provisioning, Thin Conversion, Thin Persistence, and Thin Copy Reclamation**—achieve data compaction by leveraging built-in hardware capabilities. **HPE 3PAR Express Layout**, allows HPE 3PAR controller nodes to share access to SSDs in order to drive efficiency. **HPE 3PAR Express Indexing** helps deduplicate data inline and with a high degree of granularity. **HPE 3PAR Express Scan** helps remove redundant data in-line and prevents wastage of CPU cycles.

HPE Technology Services

The support services portfolio will help complement the performance and reliability of the HPE 3PAR StoreServ Storage infrastructure. HPE provides complete, end-to-end lifecycle services for your entire infrastructure—servers, storage, networks, and software. Our services also help you consolidate your support management and whenever necessary, we collaborate with independent software vendors directly. By integrating hardware and software services, we offer you a support experience that is relevant to your business needs.

Advise, transform, and integrate
Navigate through the complexities of storage, backup, archive, disaster recovery and Big Data with advisory, transformation and integration consulting.

Deploy and implement
Access expertise to support deployment, operations, relocation, sanitization and disposal plus improvement-focused education.

Operate and support
Find the level of personalized, proactive and simplified support right for your business.

Note: Specific service availability varies by product.

HPE Foundation Care
A comprehensive suite hardware and software services aimed to help increase the availability of IT infrastructure.

HPE Proactive Care
An integrated set of reactive and proactive services designed to help you improve the stability and operation of your converged infrastructure to achieve better business outcomes. HPE Proactive Care has been specifically designed to support devices in IT environments, providing enhanced support that covers servers, operating systems, hypervisors, storage, storage area networks (SANs) and networks.

HPE Proactive Care Advanced
This service expands on HPE Proactive Care Service and is designed to help maximize the benefits of IT investments, maintain IT infrastructure stability, achieve business and IT project objectives, reduce operational costs and free IT staff for other priority tasks. An assigned HPE Account Support Manager (ASM) provides personalized technical and operational advice, including HPE best practices gleaned from HPE's broad support experience.

HPE Datacenter Care
HPE's most comprehensive support solution tailored to meet specific data center support requirements. It offers a wide choice of proactive and reactive service levels to cover requirements ranging from the most basic to the most business-critical environments.

HPE Lifecycle Event Services
These services are sold on a per-event basis and include services to help deploy technologies and solutions as well as assessments and other services to help optimize and operate the IT infrastructure.

Optimize your IT investment strategy with new ways to acquire, pay for and use technology, in lock-step with your business and transformation goals.
hpe.com/solutions/ hpefinancialservices

HPE Factory Express provides customization and deployment services along with your storage and server purchases. You can customize hardware to your exact specifications in the factory—helping speed deployment.
hp.com/go/factoryexpress

Take five minutes to calculate the potential three-year cost savings and ROI you can expect by migrating from your current storage to an HPE 3PAR StoreServ Storage solution. **Click here** to go to the HPE Storage Quick ROI Calculator.

Gain the skills you need with ExpertOne training and certification from Hewlett Packard Enterprise. With HPE Converged Storage training, you will accelerate your technology transition, improve operational performance, and get the best return on your HPE investment. Our training is available when and where you need it, through flexible delivery options and a global training capability.
certification-learning.hpe.com/

[1] IDC
[2] HPE CSC reports 2014–2015

Get connected and get back to business

Unlock all of the benefits of your technology investment by connecting your products to HPE Enterprise. Achieve up to 77 percent[1] reduction in down time, near 100 percent[2] diagnostic accuracy and a single consolidated view of your environment. By connecting, you will receive 24x7 monitoring, pre-failure alerts, automatic call logging and automatic parts dispatch. HPE Proactive Care Service and HPE Datacenter Care Service customers will also benefit from proactive activities to help prevent issues and increase optimization. All of these benefits are already available to you with your server, storage and networking products, securely connected to HPE support.

To learn more, visit **hpe.com/services/storage**.

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