

Transparent Business Continuity and Availability through HP Scalable NAS

Solution Brief

Today's business environment demands organizations, irrespective of their size, to be prepared for all sorts of disruptions (both natural and man-made) and can't afford to fall victim to downtime. To meet the changing needs of businesses, current data backup, storage, retrieval, and recovery processes are being challenged. Quick and accurate access to data is a top priority for businesses needing to meet industry, compliance or availability requirements. Additionally, inefficiencies in traditional approaches to data backup, storage, and recovery are causing significant impacts to today's IT operational imperatives including excess costs and underutilized investments.

Can any organization afford seconds, minutes or hours of inaccessibility to data? Whether you are an enterprise firm with millions of customers or a mid-size organization with limited customers, the importance of data availability and accessibility is the same. In the fast-paced, 24/7 global economy, quick access to data is critical for every business.

The importance of data availability

The technology industry has long provided high availability solutions that provide reliable access to data and enable business continuity. Historically, those systems have been very complex and expensive and required high levels of technology skills to implement and maintain. As a result, only the largest organizations could deploy them. Everyone else did the best they could with backup and hoped nothing bad happened.

Today every business needs business continuity and availability solutions. A CEO cannot simply hope that bad things will not happen to the organization or customers. Business partners want to be sure that they have associated with safe, highly available, and "continuous-business" organizations so their privacy, business assets, and intellectual property are protected. Data availability is as important to the success of a mid-size organization as it is to a large global enterprise and the need for a transparent, affordable, and appropriate business continuity and availability solution has never been so urgent.

Many organizations of all sizes, in all industries and located across the globe require applications to be running and data to be always available. The needs of these organizations go far beyond simple disaster recovery, requiring an environment that maintains business continuity during and immediately after a disaster. To make it more interesting, the number and types of applications that require this level of protection is very diverse, according to the Enterprise Strategy Group, Milford, MA, a leading IT research firm.

Many paths to business continuity and availability

Reduce the frequency, impact, and cost of downtime. Protect business-critical information. Mitigate and manage business and technology risks. If these are on your agenda, then you have many business continuity and availability options, but you need to make sure the solution is appropriate for the level of protection desired. A simple way to achieve effective, affordable business continuity and availability is HP StorageWorks Scalable NAS.

HP Scalable NAS is highly available, scalable network attached storage (NAS) for any industry solution. Whether you have islands of Windows servers that need to be consolidated, too many virtual machines to keep track of or desire increased performance while reducing cost of serving Oracle files, HP Scalable NAS can meet your needs. If digital content ingestion, management, protection, and archiving is more your focus, you'll find that HP Scalable NAS provides long-term scalability and capacity well suited for exploding datasets including photo sharing, mobile ringtone/wallpaper downloads, audio/video file downloads, blog sites, aerial geo-map data acquisition, and more. Scalable NAS is a combination of NAS or storage area network (SAN) hardware, HP Scalable NAS (PolyServe) software, and has either a Windows or Linux operating system.

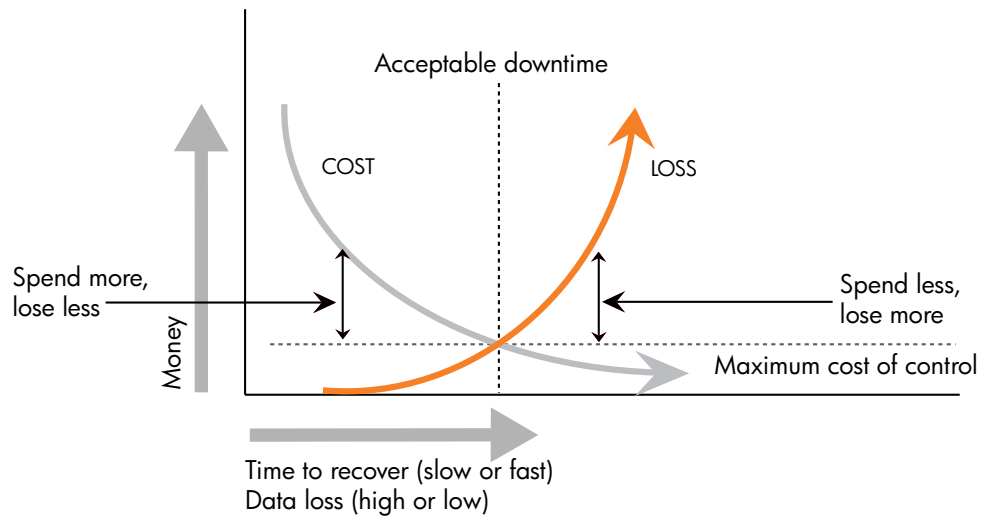
On the top end, the HP Extreme Data Storage (ExDS) 9100 from the HP Scalable NAS product line can scale to over 800 Terabytes (TB) and over 3 GB/seconds of throughput.

HP Scalable NAS systems are redundant throughout, making them fault tolerant without requiring extra hardware or high availability (HA) clustering technology. Able to handle both block-level and file-level data, Scalable NAS products make the ideal infrastructure foundation for a business continuity and availability strategy.

Is Scalable NAS the right solution for you?

A fault-tolerant system such as Scalable NAS is designed from the ground up for reliability and availability and is built to ride through component failure. It consists of a set of infrastructure hardware (storage and switches) and software components designed for redundancy that reduces any single point of failure.

Together, with the 99.999 percent available HP Enterprise Virtual array (EVA), the system is capable of achieving very high levels of system uptime, which means that, for all practical purposes, your data is always available. The "shared data" aspect of Scalable NAS goes beyond traditional NAS architectures to further enhance data availability by making sure the data is accessible from multiple servers.



Roswell Park Cancer Institute (RPCI) in Buffalo, New York needed an IT infrastructure that would provide comprehensive disaster recovery while accommodating an estimated 20 terabytes of data generated every year. The data, mainly comprising of medical images and patient records, serves as a cornerstone of the institute's care and research as well as its regulatory compliance. Consistent high data availability was considered a must-have.

RPCI turned to an HP Scalable NAS system, HP EVA FS, supplemented with a 10-terabyte archive platform and HP ProLiant Servers. Since implementing the fault-tolerant HP Scalable NAS system, RPCI has marked considerable gains in productivity and patient care, while making sure its vital patient records are secured and easily recovered in the event of disaster. (Source 4AA1-4546ENW case study)

www.hp.com/go/4AA1-4546ENW

Gauge your data and system recovery requirements

After you have made sure that your primary storage and server systems are robust and highly available, you can then consider a variety of other data availability options that address data and system recovery¹ in the event a major disaster strikes. These include such options as replication, snapshots, mirroring, disk-to-disk (D2D) archiving, and tape.

Which options you choose to supplement your fault tolerant system depends on your business's tolerance level for application downtime. Each service or application should be rated on its importance in maintaining uptime. This drives availability requirements such as recovery time objective (RTO), which specifies the length of time you can accept your data to be unavailable, and recovery point objective (RPO), which describes your tolerance data loss. There is a direct relationship between the cost of the data recovery option and the RTO and RPO.

For example, you can have continuous access to your data (RPO and RTO = 0), even through a metro-wide power outage. This is the case for mission-critical systems, but the cost will be very expensive, prohibitively high for most companies. However, if you can wait a few hours to recover your data or you can tolerate losing the most recent data, costs will be considerably less. The objective is to find a solution that delivers acceptable levels of data availability at an affordable price. Between RTO and RPO, in effect, you define what amounts to acceptable downtime and data loss following a system failure.

¹For a more detailed discussion on planning a disaster recovery solution visit www.hp.com/go/businesscontinuity or search for HP document 4AA1-6439ENW

Available products in Scalable NAS

Enterprise File Services (EFS) Clustered Gateway

The HP StorageWorks EFS Clustered Gateway is a file server (or NAS head) that delivers scalable file serving performance with assured availability for mid-range and enterprise customers on an industry standard platform (HP ProLiant servers). This enables you to purchase only the file serving capability you require and add additional NAS heads as you need them—without a forklift upgrade. Since the EFS Clustered Gateway uses industry standard operating systems, you can also utilize familiar tools and processes to manage and maintain the solution.

The EFS Clustered Gateway uses a shared data architecture and provides continuously available storage that can also be scaled as application needs dictate without loss of performance. High throughput file serving workloads that require high availability are ideal for EFS Clustered Gateway because its shared data architecture makes sure that there is no single point of failure—every server in the cluster sees the same view of the data.

EFS Clustered Gateway provides unified storage management. It can create an integrated block- and file-level storage solution out of any SAN, consolidating individual silos of storage into a single, shared pool of storage that simplifies storage allocation, yields high utilization, and reduces IT costs as compared to traditionally architected storage solutions.

- Can be configured into a cluster of up to 16 NAS heads and allows scaling of file serving performance in a near linear fashion to over 3 GB/s
- Supports HP ProLiant and HP ProLiant BladeSystems servers and Windows and Linux operating systems

- Includes an HP Management Pack for Microsoft System Center Operations Manager 2007 for alerting through SNMP traps
- Enables “Role-Based Administration and Security” with integration to Active Directory groups
- Provides single sign-on Active Directory based authentication that simplifies login and authentication
- Supports Auditing as it records to the Windows Event Log any human initiated changes and logon attempts included failed/succeeded logons
- Enables a single-node backup solution so that all backups can be run from a single server
- Helps complete a disaster recovery strategy by supporting offsite or cross-campus failover and auto-volume reconstruction as it can re-assemble all component volumes and enable the second site to recover quickly
- Maintains cache coherency and data integrity in the event of a single or multiple file server failure. Clients are failed over transparently and uniformly distributed across the cluster to facilitate optimal load balancing and uninterrupted file serving for critical applications

4400 Scalable NAS File Services

Medium-sized customers who need to seamlessly increase application throughput far in excess of traditional NAS products and easily grow storage capacity online without service disruption will find that the HP StorageWorks 4400 Scalable NAS File Services is a fully-configured storage solution.

It includes an HP StorageWorks 4400 Enterprise Virtual Array (EVA), and provides scalable file serving performance and high availability. The 4400 Scalable NAS File Services offers great total cost of ownership with a low initial purchase price and shared data architecture that yields lower management expenses from a shared pool of file serving nodes and storage.

- Base configuration includes three file serving nodes and 4.8 TB of storage and can scale up to 16 nodes and 96 TB of storage and support 128 TB (Linux)/32 TB (Windows) filesystem sizes
- Dual-array controllers provide no single points of failure
- Includes management and replication software and both Windows and Linux are supported
- Supports HP ProLiant BladeSystems and NFS, CIFS, HTTP, FTP, HTTPS, and iSCSI file protocols
- Instant data recovery with advanced replication supports comprehensive data protection and disaster recovery policies for your critical data
- Sets up fast for quick deployment of file and storage services since it has been configured in the factory
- Transparently scale application throughput and reduce file-serving bottlenecks to increase the productivity of your file serving applications
- Easily add storage online to support growth without over provisioning
- Native application hosting simplifies application server environment and dramatically increases file serving application performance

Extreme Data Storage (ExDS) 9100

The HP StorageWorks Extreme Data Storage 9100 system is an infrastructure built for the next generation of content-serving applications including digital content ingestion, management, protection, and archiving. It is specifically designed to be extremely scalable, easy to manage, and incredibly affordable with great performance and availability for service providers and enterprise customers alike. Its ability to independently scale beyond traditional storage systems in both capacity and performance enables content-rich applications to expand rapidly when required. ExDS 9100 is well suited for exploding datasets such as photo sharing, mobile ringtone/wallpaper downloads, audio/video file downloads, blog sites, aerial geo-map data acquisition, and more.

- Base configuration provides three highly-available storage blocks with 246 TB of raw capacity out of the box
- Maximum configuration can handle up to 10 high-availability storage blocks totaling 820 TB of raw capacity
- Offers high availability with seamless failover of hardware
- Is a fully redundant appliance with no single points of failure and Redundant Array of Independent Disks (RAID) drive protection
- Performance block design enhances system performance seamlessly any time that it is needed
- Performance block easily scales up to 16 blades with up to 12.8 cores per unit for an astounding 3.2 GB/s of raw performance

- Provides one pool of file storage with fully parallel symmetric access from all blades, and multiple access protocols such as NFS and HTTP

Scalable NAS products also take full advantage of the data protection capabilities built into the EVA, including fully integrated snapshot and snapclone features, and easy data restoration. In addition, it works seamlessly with HP data protection and disaster recovery solutions such as:

- **HP Data Protector:** Automates high-performance backup and recovery, from disk or tape, over unlimited distances, to enable 24/7 business continuity and improve IT resource utilization
- **HP StorageWorks Business Copy EVA Software:** An array-based application that utilizes a powerfully simple HP StorageWorks Replication Solutions Manager (RSM) user interface, creates, manages, and configures local replication on the full EVA product family to meet business continuity and regulatory requirements
- **HP StorageWorks Continuous Access EVA Software:** Protects valuable data by switching from one HP StorageWorks Enterprise Virtual Array (EVA) to another to provide advanced disaster recovery and ease of management

With these solutions Scalable NAS is able to provide effective business continuity and availability under any circumstances. It delivers a fundamental building block of enterprise-class business continuity and availability solutions but in a more cost-effective and reliable solution than comparable NAS systems.

A major European company needed to provide continuous access to home shares and data for 5,000 users. Their existing configuration had very uneven file server and storage usage and required continuous division of users and their data among three traditional active: passive clusters. They found that maintenance, which occurred frequently, was forcing user downtime for as much as 33% of their population. They moved to a 'stretched' HP Scalable NAS cluster across two locations and took advantage of HP Continuous Access product to synchronously replicate data between two HP EVA storage arrays. The scalability and high availability of the HP Scalable NAS heads provided continuous user data access without having to partition the users and data. They also recognized the advantage of having a platform that could incrementally scale by adding additional Scalable NAS heads as new users were added.

Improved technologies in Scalable NAS

Shared data

Scalable NAS products are a next-generation approach to enterprise NAS. At their core are clustered storage technology and a fully symmetrical cluster file system that enables multiple NAS heads to simultaneously access the same data. This is what HP means by shared data. Shared data is a powerful advancement, enabling thousands of clients to simultaneously access the same file in a shared data pool, and that access can be balanced across multiple NAS heads for very fast performance.

Shared data also has significant advantages for business continuity. Once multiple NAS heads can simultaneously access the same data—a shared file system—they can act as very fast failover partners for each other. In fact, even the term failover now becomes a misnomer, as there is no transfer of file systems or access rights. If four NAS heads all share simultaneous access and one fails, the other three just pick up where the failed NAS head left off—seamlessly and automatically.

Add multi-path connections to RAID arrays, health monitoring software, client-transparent failover of NFS connections, and a proven 99.999% available RAID array system. The result is a cost-efficient, fully fault-tolerant NAS solution for high data availability and business continuity.

To enable simplified deployment of shared data, Scalable NAS has a pre-installed software on the server or NAS head—HP StorageWorks Enterprise Files Services (EFS) Clustered Gateway. Using shared data architecture servers can be configured into a

cluster of up to 16 servers. This clustering capability allows you to scale your file serving performance in a near linear fashion to an existing cluster or existing SAN-based storage you own. In the event of a node failure, all file serving is failed-over to the remaining nodes within the cluster with full data and cache read/write coherency. EFS Clustered Gateway provides continuously available storage that can also be scaled as application needs dictate without loss of performance. The shared data architecture of the EFS Clustered Gateway is well suited to file server consolidation projects.

The HP ExDS9100 solution is a fully redundant appliance with no single points of failure and RAID drive protection and uses industry leading HP BladeSystem servers as NAS heads. This solution is very well suited to content storing and archiving, digital media, healthcare/life sciences, and Web 2.0 applications.

High-availability clustering

HP approach to enterprise NAS produces a very favorable data availability business case because many of the capabilities that enable business continuity and availability are inherent in the HP Scalable NAS product. These capabilities, such as high availability (HA) clustering, do not have to be purchased separately—they are part of the solution from the start.

Easy-to-deploy failover policies

Similarly, built-in HA management makes setting up failover policies easy and fast to deploy. Unlike complex high availability solutions with many-to-many or active: active fan-out failover policies, Scalable NAS can be deployed with point-and-click ease, saving time and money. All the administrator has to

Declared Enterprise Strategy Group: Traditionally, many enterprises have taken a segmented approach to business continuity and availability, adding point technology and reactive services to address disaster recovery. This approach can be very complex, time-consuming and costly. The task becomes much easier when a single vendor (like HP) takes responsibility for architecting, implementing, testing, and supporting the solution.

www.hp.com/go/4AA1-3538ENW

do is to point to the failover target, files system, or share, select appropriate policies, and click. Once deployed, similar tools make it easy to administer and manage, thereby enabling effective business continuity and availability at an affordable cost.

Improved compatibility

HP Scalable NAS approach is compatible with other high availability, backup, and disaster recovery systems-organizations may already deploy-and it works within the existing network infrastructure. As a result, it adds a level of affordable, fault tolerant data protection and availability that other systems seldom intend to provide.

Cost-effective data protection

In between increasing the availability of your primary systems (deploying fault-tolerant infrastructure) and robust disaster recovery solutions, comes data protection. It is often said that there are people who back up their data and those that will learn to back up their data. This statement rightly suggests that all systems fail sooner or later and that without regular and proper data protection systems, recovering data from a failed system is at best painful, and at the worst, impossible.

There a number of common methods for data protection:

- Replication and snapshot: Different ways of copying data
- Mirroring: Enables zero data loss

- Data backup: Moves copies of data to a remote location
- Archiving: Moves data that is no longer actively used

Each of these methods protects data in different ways for different purposes and at different cost points. Organizations can combine various methods to achieve the appropriate level of data protection at the right cost. HP Scalable NAS delivers high data availability and business continuity transparently and affordably. It reduces the need to cobble together a variety of components to protect data or enable availability. It is cost effective because everything needed for high availability comes inherent in every Scalable NAS offering. There is nothing additional to buy.

Look to an ever-ready future

Business continuity and availability is not a benefit available only to large enterprises. Companies of all sizes must count on their business continuity and availability strategies to address everything from data theft to natural disasters to public health crises.

Companies must build infrastructures that insulate business processes against all potential threats. Utilizing HP Scalable NAS technology as part of a business continuity and availability solution means less risk of downtime, higher business velocity, better resiliency to inevitable disruptions, and a higher return on your IT investments.

Factory Express

HP Factory Express is designed to help you get a better return from your IT investment by providing customization, integration and deployment services along with your storage and server purchases. It provides predictable, trusted and tested IT solutions tailored to your business needs. We allow you to customize hardware to your exact specifications in the factory—helping to speed up deployment and free up internal resources. www.hp.com/go/factoryexpress

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

Financial Services

HP Financial Services provides innovative financing and financial asset management programs to help customers cost-effectively acquire, manage and ultimately retire their HP solutions. For more information on these services, please contact your HP representative or visit www.hp.com/go/hpfinancialservices

HP Services

HP Services: scalable, flexible and reliable—just like your storage

To capitalize fully on your HP storage solution requires a service partner who thoroughly understands your storage technology and systems environment. With HP Services, you gain the advantage of established methodologies and the industry's broadest portfolio of integrated storage solutions for enhanced information management and optimization.

HP is committed to help you optimize your infrastructure, and can help you manage and evolve your storage environment so that you can facilitate future growth, decrease operational costs, and protect data while reducing risk.

Recommended Services for HP Scalable NAS

Support Plus helps you increase the performance and availability of your infrastructure with comprehensive, consistent hardware and software services. Working with HP IT team, HP Services engineers deliver onsite hardware support and over-the-phone software support 13 hours per day, 5 days per week. Service coverage encompasses HP products and selected multivendor hardware and software.

HP Proactive 24 Service is an integrated hardware and software support solution designed to help you get more from your IT investment. It combines industry-leading technical assistance with proactive account services to cover the entire infrastructure and to improve the stability, availability, and operational effectiveness of the IT environment.

HP Critical Services increases availability and performance across your entire IT infrastructure with a powerful combination of proactive onsite technology expertise provided by HP-certified high-availability experts. Additionally, you have priority reactive assistance from the HP worldwide network of mission-critical response centers and remote support tools to monitor your environment for potential problems.

For more information, please visit <http://www.hp.com/services/support>

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