



NetworkAppliance®

The evolution of storage.™

# NETWORK APPLIANCE™ UNIFIED STORAGE SOLUTIONS

## The Windows® Storage Advantage

Authored by Network Appliance | September 2002 | TR3195

### white paper

Network Appliance technology and expertise solve a wide range of data storage challenges for organizations, adding business value and enabling them to create and sustain a competitive advantage.

### Abstract

A major challenge for Windows storage deployments is the complexity that arises from the varying storage needs of different Windows applications, resulting in the proliferation of multiple, independent types of data storage. Provisioning, maintaining, and managing complex Windows storage environments strain administrative staff and IT budgets, as organizations try to accommodate continued explosive storage growth, and ensure data availability and business continuance.

Network Appliance is ideally positioned to address these problems, offering a full line of storage solutions that can meet all Windows storage requirements. Network Appliance combines innovative software and hardware solutions with a corporate culture dedicated to storage excellence and customer care to ensure customer success while reducing the total cost of ownership.

This paper discusses the unique benefits that Network Appliance brings to Windows storage.

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## The Explosion in Windows Storage

The last few years have witnessed explosive growth in storage deployment. According to Solomon Smith Barney, businesses will continue to see data grow by 100% year to year with a projected CAGR for storage of 15% through 2005. This explosion is being driven by a variety of sources including Internet applications, e-mail, data warehouses, and mission-critical applications such as ERP.

Windows environments are mirroring if not exceeding the growth in the overall storage market. Increased deployments of Windows servers for file serving, messaging, database, and Internet and intranet applications are pushing the limits of Windows data management in areas such as storage deployment, capacity management, backup, and data recovery and stressing the administrators responsible for Windows servers and storage.

## The Windows Storage Challenge

The increasing power of Windows servers along with expanding storage requirements creates some serious challenges for Windows storage systems. Traditional storage solutions are frequently unable to meet these needs. Among the most serious challenges faced by Windows storage are:

- Growing complexity in the types and amounts of deployed storage
- A need for greater flexibility and scalability
- An absolute requirement to ensure data availability and protect critical data
- The need to control costs, including the upfront cost of storage systems and—more importantly—the cost of managing and maintaining storage

### Increased Storage Complexity

The storage situation has been greatly complicated by the need for different types of storage to meet different needs. Windows servers typically have local, direct-attached storage (DAS) for software and some nonshared data. Servers also typically share access to network data stored on Windows file servers or network-attached storage (NAS). Storage area networks (SAN) are becoming increasingly common as organizations consolidate storage on SANs to reduce the complexity that resulted from a large number of servers, each with its own substantial storage pool.

SANs, however, have not replaced DAS and don't take the place of NAS, so the goal of consolidation is only partially achieved. As a result, a typical administrator may be responsible for managing two or even three types of storage: DAS, NAS, and SAN. Since different types of storage are typically managed using different tools (requiring different skill sets and possibly additional headcount), this adds substantially to the administrative burden at a time when administrators are already a scarce and valued asset. The major cost of storage ownership is the administrative overhead required to maintain it, so the impact of this complexity should not be underestimated.

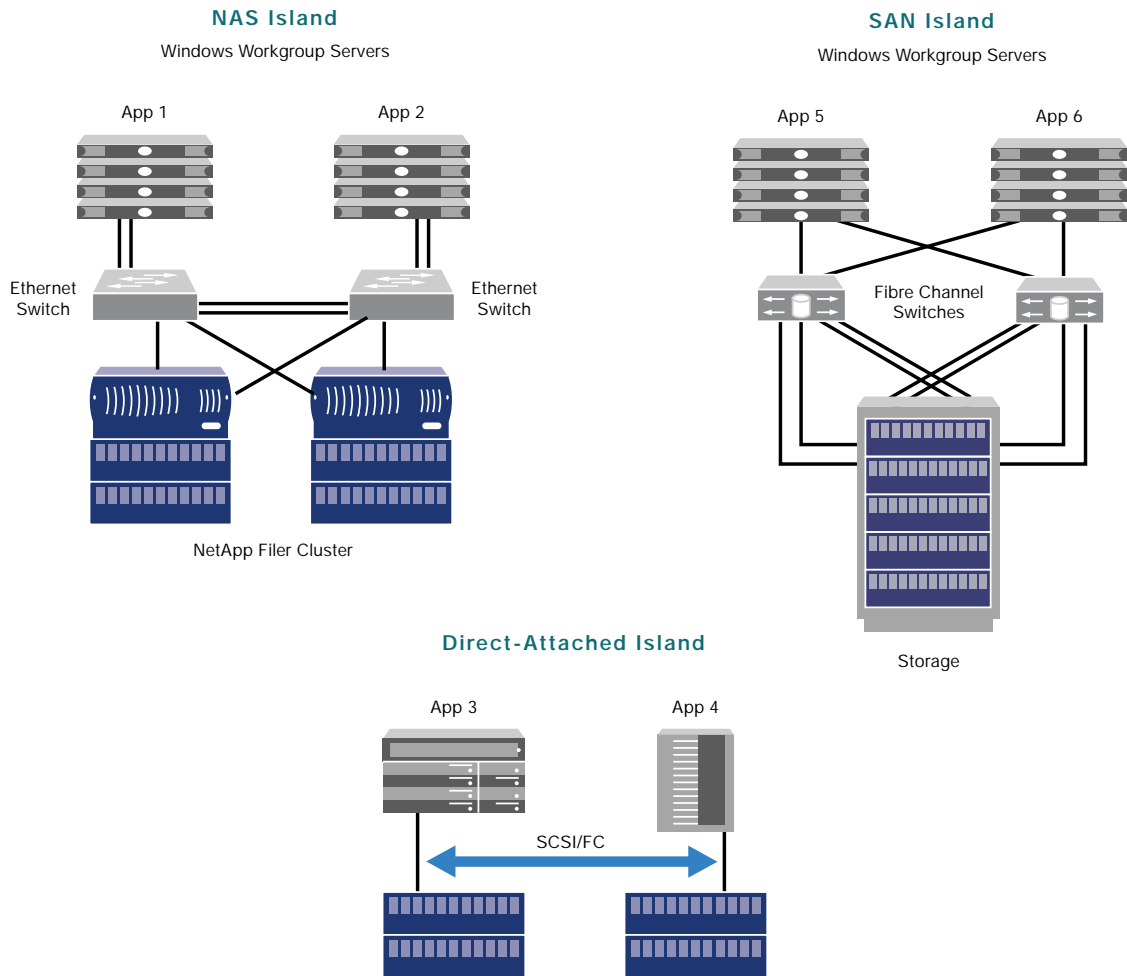


Figure 1) Today's Data Center.

### Scalability

Increasingly, Windows applications require both greater storage capacity and performance, straining current capabilities. A storage system that meets today's needs may rapidly become inadequate if it lacks scalability and flexibility to meet growing demands. The flexibility of a storage system becomes crucial as organizations increase efforts to separate storage deployment and management from server deployment and management.

### Availability

Data availability is crucially important since critical business applications are frequently required to be online and available 24 hours a day. For such applications, RAID is essential, and highly available storage systems are often required. Increasing data availability also requires more from the storage vendor. A high level of end-to-end service and support is essential to ensure that data availability goals are met.

### Data Protection

The loss of critical data can result in financial ruin for today's data-driven companies. Business continuance—ensuring local data availability and protecting against site-wide disasters—is essential. However, for many companies, the cost of data protection is a serious limiting factor. Online solutions provide fast recovery from failure or disaster, but these solutions are often expensive, forcing companies to opt for less-expensive tape solutions that may create long delays in recovering critical data and restoring operations.

### Total Cost of Ownership

Controlling the cost of growing storage pools is becoming increasingly difficult as administrators struggle to provision and manage separate pools of DAS, NAS, and SAN storage, and to achieve data availability and application uptime goals. Simplifying the storage management picture is becoming critical, as IT organizations search for a way to facilitate storage deployment, management, and growth. New alternatives and new solutions are needed.

### The Network Appliance Advantage

Network Appliance is uniquely positioned to solve Windows storage challenges with a comprehensive line of storage hardware, software, and services designed to provide end-to-end enterprise storage solutions that reduce the total cost of storage ownership. Recent studies by INPUT have shown that storage solutions based on Network Appliance hardware and software can reduce TCO by up to 60% over competing Windows storage solutions.

### Unified Storage and Comprehensive Management

Network Appliance delivers integrated hardware and software solutions that simplify storage deployment and management. With Network Appliance unified storage solutions a single storage platform can meet all the storage needs of a Windows environment. System managers need to manage only a single storage platform—a platform widely recognized for its ease of use. By dramatically reducing the complexity of a Windows storage environment, Network Appliance makes it possible to deploy and manage more storage with fewer personnel.

### Superior Scalability and Flexibility

At the same time, Network Appliance storage solutions deliver unparalleled performance and scalability. A single storage appliance can scale to support many terabytes of storage without compromising performance or ease of management. Because of the exceptional flexibility provided by unified storage, Network Appliance storage solutions easily adapt to meet evolving—and even unforeseen—storage needs.

### Industry-Leading Availability and Enterprise-Class Service and Support

Ensuring data availability is of paramount importance at Network Appliance. Individual NetApp® storage appliances routinely deliver availability of 99.997% or greater—just minutes of downtime per year—and clustered appliances deliver availability in excess of 99.998%. Product reliability is achieved through simplicity, integration, innovation, and testing coverage rather than a reliance on excessively complicated hardware and software mechanisms. Hardware and software are designed and built from the ground up to perform specific tasks with exceptional dependability, and Network Appliance stands behind its products with industry-leading, around-the-clock support.

Network Appliance provides enterprise-class service and support for Windows environments. A full suite of professional services is available directly from Network Appliance and through partners for

systems integration and migration services. Customer support is provided through Network Appliance Global Support Centers.

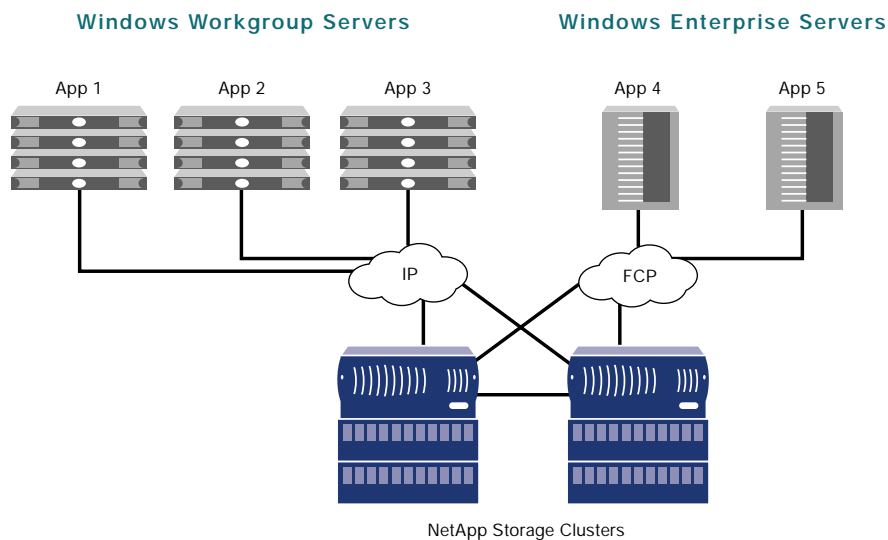
### Advanced Data Protection

Network Appliance hardware is complemented by a comprehensive line of data protection and business continuance software designed to ensure rapid recovery from failures or disaster. A solution can be tailored to meet the exact needs of virtually any customer.

## Meeting Your Windows Storage Needs

### Unified Storage Solutions

As discussed earlier, a major problem in Windows storage is the proliferation of DAS, SAN, and NAS storage pools. With Network Appliance unified storage solutions a single storage platform can meet all the storage requirements of a Windows environment, dramatically simplifying storage management. System managers can manage all storage as a single pool, making capacity planning easier and eliminating the islands of under-utilized and over-utilized storage that are found in a typical data center. Applications simply access storage in the way that best meets their needs. Fibre Channel connections are supported for DAS or SAN storage where block I/O is required (common applications such as Exchange and SQL Server require block I/O), while high-speed network connections facilitate shared file access (NAS).



**Figure 2)** Tomorrow's Data Center with Unified Storage.

### Comprehensive Data Management in a Windows Environment

Effective data management is the key to the successful deployment and operation of Windows storage. Network Appliance makes the management of large storage pools simple through the elimination or simplification of most common storage tasks. One of the design goals for unified storage was to ensure that storage could be managed using Windows volume management, regardless of the mode of access. Most SAN storage can only be managed with proprietary management tools. The unified storage solutions enable management by NetApp management tools or native Windows volume management tools to ensure easy integration into Windows environments.

Ease of management is an important design criterion for all NetApp hardware and software. NetApp storage appliances are easy to install and avoid most of the time-consuming offline file and disk maintenance tasks—such as adding disk space, expanding file systems, and doing backups—required by other systems, ensuring that each appliance is intrinsically easy to manage. With optional software, multiple storage appliances can be managed effectively and conveniently from a single location.

### Data Protection and Business Continuance

Disaster preparedness and recovery are critical. Minutes of downtime are costly. Hours of downtime can be catastrophic. Network Appliance storage solutions can provide comprehensive disaster readiness and business continuance for Windows environments. Since Network Appliance business continuance solutions run on the storage platform, there is little or no disruption or impact to the operation of critical Windows servers. A broad range of solutions is available to meet a variety of needs such as local data backup (to tape or online storage), protection against mistakes and application errors, or protection against site-wide catastrophes. Remote site mirroring and disaster recovery plans can be implemented quickly and effectively, without added administration costs.

A comprehensive solution recognizes the particular data protection requirements of different data sets, balancing the cost of the solution against time-to-recover. The most critical data can be protected with online solutions for extremely rapid recovery. Nearline disk storage solutions or tape can be used to protect data of lower importance.

### The Right Solution for Windows Storage

Reducing complexity, facilitating management, and providing a clear path for future growth are the keys to successful Windows storage deployment and management. Network Appliance offers a unique combination of innovative software, simple, reliable hardware, and enterprise-class service and support to meet all your Windows storage needs now and in the future.

In addition, Network Appliance is focused on remaining in sync with Microsoft's announced storage strategy. The NetApp solutions will complement Microsoft's .Net technology. Network Appliance hardware has passed compliance testing from Microsoft's Windows Hardware Quality Labs (WHQL) for inclusion on the Hardware Compatibility List (HCL), demonstrating proper operation in Windows environments.

Network Appliance's unified storage solutions dramatically simplify the task of deploying and managing Windows storage. Industry-leading data availability and seamless business continuance solutions ensure that critical data is always protected and available. With demonstrated low TCO, Network Appliance is the right choice for Windows storage.



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