

## SOLUTION BRIEF

# FalconStor Network Storage Server (NSS) for Microsoft Windows Server 2008 Environments

*FalconStor® Network Storage Server (NSS) provides storage virtualization and data replication services integrated with Microsoft Windows Server 2008 Failover Clustering between multiple sites for continuous data availability and a cost-effective, resilient IT infrastructure*

## Testimonial

**Users benefit from the combination of Microsoft and FalconStor:**

*“As an early adopter of Microsoft Hyper-V in our production environment, which runs hundreds of virtualized servers created with Microsoft Hyper-V virtualization technology, we have been able to benefit from FalconStor Software support of Hyper-V for nearly a year. Also, having tested FalconStor Software support for Microsoft Windows 2008 Failover Clustering and Hyper-V with different SANs between the primary and DR site, we are excited to see how well the failover process works without locking us into identical storage hardware at each location.”*

Oyvind Kaldestad, VP of Corporate IT,  
Lionbridge Technologies

The ultimate goal of all IT managers is to have applications that are completely resistant to failure of any kind, from small local breakdowns to major site outages. Whatever happens, business applications and associated data need to remain available and accessible.

This degree of security has traditionally been both complex and very costly to achieve, limited to only the largest IT shops with massive resources. With Microsoft Windows Server 2008 and its ability to create multi-site clusters with failover between sites, the goal of bulletproof application availability is becoming a reality for everyone.

## High availability (HA) vs. disaster recovery (DR): Should they be separate functions?

IT departments are used to thinking of high availability (HA) and disaster recovery (DR) as two separate functions working toward the same goal. HA is a local function, generally consisting of server clustering plus redundant hardware, RAID storage, and so on. It is designed to keep an application running if any given server in a cluster fails without a noticeable interruption to the end user.

DR, on the other hand, is a remote function. Data is copied to a distant location where it sits waiting until a time when it is needed. Servers at the DR site generally do not have knowledge of what the applications at the primary site are doing.

Divided in this manner, HA and DR are separate processes to manage, and neither one helps with the other. This adds to both the cost and complexity of IT data protection. With Microsoft Windows Server 2008 multi-site clustering, Microsoft is eliminating the divide between HA and DR, combining both into a single operation.

## Multi-site failover clustering: Simplicity in action

The concept behind failover clustering across multiple sites is very simple. Why have separate islands of management for HA and DR? Why not take your HA setup and extend it to another site, thereby obtaining the added protection of geographic distance? Having a single management interface with failover automation provides an easy-to-use solution that gives you the best of both worlds.

Multi-site failover clustering does exactly this. Multiple local nodes provide traditional HA functionality in the event of local server failure. Local application migration (from physical server to physical server) is also available for zero-downtime server maintenance. The cluster is then extended to another site. The process is as easy as adding another node to the cluster. It even works across different subnets, thus eliminating the need for stretched subnets. Multi-site failover clustering can be used to protect key Microsoft Windows workloads such as Microsoft SQL, Microsoft Exchange, DHCP and WINS services, file sharing, print sharing, etc.

The one piece missing in this scenario is a way to move the data across sites. In a multi-site cluster, each location has its own storage resources. The clustering software itself does not provide data movement. This is where FalconStor NSS comes in.

## Integrated storage virtualization and replication

FalconStor NSS provides storage virtualization and provisioning that integrates with Microsoft Windows Server 2008 Failover Clustering configured as multi-site clusters, supporting both physical servers and virtual machines running on Microsoft Hyper-V virtualization software. Thin Provisioning technology reduces storage footprints and eases server management, while storage resource pooling helps ensure applications receive the disk resources that match their service level agreements (SLAs).

When FalconStor NSS is used to provision storage, SAN grade block-level data replication services can be set up for virtualized disks. FalconStor NSS uses sub-block WAN-optimized data replication to reduce the amount of data sent over the wire to the bare minimum, providing significant savings on the costliest component of replication, which is bandwidth. Data write-order integrity is maintained during all copy operations, ensuring there are no data corruption problems. FalconStor NSS also provides shared storage to support the local clustered nodes.

During a planned site migration or maintenance mode, FalconStor NSS automatically detects that a request has been made by the Microsoft clustering service to transfer application processing from a local node to a remote node. After the local node stops processing data, the system ensures that all data is flushed from memory to disk. At that point, FalconStor NSS captures a frozen data image using TimeMark® snapshot technology. It then synchronizes that final data state with the data at the remote site, ensuring that data at the remote site has 100% transactional integrity. The application can start up at the remote site without any of the startup delays associated with crash-consistent data image repair that is so common in many replication schemes. FalconStor NSS also automatically reverses the status of the storage nodes, with the original "primary" storage designated as the "replica" and vice-versa. Data updates now begin to flow in the other direction. This allows for seamless failback

## About FalconStor

FalconStor Software, Inc. (NASDAQ: FALC), the premier provider of TOTALLY Open™ Data Protection solutions, delivers the most comprehensive suite of products for data protection and storage virtualization. Based on the award-winning IPStor® platform, products include the industry-leading Virtual Tape Library (VTL) with Single Instance Repository (SIR) for deduplication, Continuous Data Protector™ (CDP), Network Storage Server (NSS), and Replication option for disaster recovery and remote office protection. Our solutions are available from major OEMs and solution providers and are deployed by thousands of customers worldwide, from small businesses to Fortune 1000 enterprises.

operations to the original primary site. All of this is handled without any operator intervention beyond a simple point-and-click request to move the application from one node to the other.

In the event of a true site failure, the cluster will detect that the primary site is no longer operative and it will start applications at the recovery site. By default it will use the most recent data replicated before the primary site failure occurred. Because there may be issues such as rolling corruption over time, FalconStor NSS also maintains a series of application-aware data snapshots at the recovery site, ensuring transactional consistency during recovery. In the event that the most current data is corrupt or unusable, it is easy to roll-back the volumes to an earlier point in time, prior to the corruption event.

## Accelerating backup operations

Even with a full local and multi-site failover clustering implementation in place, many organizations are required to back up data to physical tape. FalconStor NSS offers the FalconStor HyperTrac™ Backup Accelerator option to automatically mount snapshots from FalconStor NSS to existing backup servers for backing up the data to either a virtual tape library such as FalconStor Virtual Tape Library (VTL) or to physical tape. Applications are not impacted because backup occurs directly from the snapshot to the tape device. This is a centralized, LAN-free, serverless backup methodology that eliminates all backup software clients. Rapid tape drive speeds are easily attainable. Throughout the process, data replication continues without interruption.

## Cost-effective, resilient infrastructure

The combination of FalconStor NSS and Windows Server 2008 with multi-site clusters provides a cost-effective and resilient IT infrastructure to deliver continuous application uptime for critical Microsoft Windows workloads including Microsoft Exchange, Microsoft SQL Server, Microsoft SharePoint, critical Microsoft Windows services such as DNS, DHCP, and Active Directory, as well as a host of other supported enterprise database and messaging applications. By tightly integrating data replication with Microsoft clustering services, the combined solution is easy to manage, reducing the complexity and costs normally associated with remote-site clustering and DR configurations.

For more information, visit [www.falconstor.com](http://www.falconstor.com) or contact your local FalconStor representative.

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