

WHAT IS FALCONSTOR[®] NETWORK STORAGE SERVER (NSS)?

FalconStor NSS is a flexible storage virtualization solution that enables efficient and cost-effective provisioning and centralized management of storage resources across an entire organization. FalconStor NSS helps maximize storage utilization, reduce overall storage costs, and increase staff productivity. IT organizations can continue to leverage existing storage investments, reducing total cost of ownership (TCO). FalconStor NSS allows IT administrators to define business continuity policies appropriate to business application service-level agreements (SLAs) for a more service-oriented approach to application and data availability.

WHY DO I NEED FALCONSTOR NETWORK STORAGE SERVER?

IT administrators face many challenges in managing their storage environment. With the explosive growth of data from databases, mail applications, and office automation applications, it is becoming difficult to keep up with storage demands and manage environments efficiently and cost-effectively. Additionally, IT teams are challenged to get the most return on investment (ROI) on their storage purchases.

Many organizations manage and support a wide variety of disparate storage solutions, many of which don't integrate with each other, causing unnecessary pain and resource drain, as well as additional costs. Maximizing storage utilization is critical to eliminating unnecessary storage devices and expenditures. This enables organizations to focus more resources on running the business, as opposed to being distracted by IT data protection efforts.

WHAT ARE THE KEY DISTINGUISHING FEATURES OF FALCONSTOR NSS, AND HOW WILL THEY HELP ME MANAGE MY SAN STORAGE?

Storage virtualization: Allows administrators to virtualize physical storage for ease of provisioning and management, and to aid in "green" computing by optimizing existing capacity.

- Heterogeneous support: FalconStor NSS supports a wide range of industry-standard hardware and software, and can scale to manage large, heterogeneous storage environments. FalconStor NSS provisions storage for databases from Microsoft and Oracle, and email systems from Microsoft and IBM. It supports server virtualization solutions including VMware and Microsoft Hyper-V, and is certified to work with top enterprise management software solutions from BMC, CA, HP, and Tivoli. This flexibility and broad support enables easy integration within an existing infrastructure without disrupting operations and without the vendor lock-in often associated with other providers.
- Thin provisioning: Allows provisioning of virtual storage that represents a greater capacity than is physically allocated. Additional physical capacity is automatically allocated only when needed. This enables more efficient storage utilization. Thin provisioning can be applied to primary storage, replica storage at the disaster recovery (DR) site, and mirrored storage.
- TimeMark[®] snapshots: Enable the creation of periodic, scheduled, or on-demand point-in-time delta snapshot copies of data volumes. These delta snapshots contain only changed data and as such use minimal disk storage space. Up to 1,000 delta snapshots can be maintained per volume.
- TimeView[®] images: TimeMark technology includes the TimeView feature, which creates an accessible, mountable delta snapshot image that enables administrators to freely create multiple and instantaneous virtual copies of an active data set. The data set and/or replica copies can then be assigned to multiple application servers with read/write access for concurrent, independent processing, all while the original data set is actively being accessed/updated by the primary application server.
- Application-aware snapshot agents: Snapshot agents work seamlessly with replication and TimeMark technology to ensure full protection for active databases such as Microsoft SQL Server and Oracle, and messaging applications such as Microsoft Exchange and Lotus Notes. Complete, 100% transactional integrity is attained through a robust and automated process that safely and reliably takes snapshots of databases for point-in-time recovery. A group snapshot feature ensures transactional integrity of databases across multiple storage volumes.

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- WAN-optimized replication: Replicate primary storage via IP to secondary and tertiary storage onsite or offsite. Patented MicroScan™ technology eliminates exaggerated block-level changes due to inefficiencies at the application and file system layer. As a result, only changes at the granularity of disk-sector level (512-byte) are transferred. The MicroScan feature shrinks WAN bandwidth requirements and costs, making offsite DR technically and financially feasible for organizations of all sizes. Replication also includes built-in compression and encryption.
- Automated disaster recovery (DR) RecoverTrac™ technology provides automated recovery of critical business application servers and data, allowing recovery of any service at any time, to any place. RecoverTrac technology uses any combination of supported physical and virtual machines for any-to-any recovery including P2P, P2V, V2V, or V2P between similar or dissimilar machines. The RecoverTrac tool supports heterogeneous environments, eliminating costly vendor lock-in and maximizing ROI by leveraging existing hardware.
- Mirroring: FalconStor NSS provides block-level data mirroring across any disk system regardless of vendor/brand, disk type, or connectivity (Fibre Channel [FC], iSCSI, Fibre Channel over Ethernet [FCoE]). Data can be synchronized to a second storage device independent of the servers involved. There is no need for system-specific host-based tools. Once the mirror is online, future data is written simultaneously to both the primary volume and the mirror.
- SafeCache™/HotZone®: Business application storage performance depends on READ and WRITE latency. As READ I/O differs from WRITE I/O, FalconStor offers both READ-cache (HotZone) and WRITE-cache (SafeCache). Each caching algorithm is designed according to the READ and WRITE behavior, therefore is natively optimized to accelerate that operation's performance. When combined with SSD storage, SafeCache/HotZone allows you to manage intensive I/O peaks from the most demanding applications. The FalconStor NSS HA model includes synchronization of HotZone data volumes between FalconStor NSS HA cluster nodes, preserving the acceleration of READ performance.
- High availability (HA): When deployed in high availability (HA) IO optimized two or four node active-active clusters, FalconStor NSS offers flexible HA functionality SAN acceleration and flash optimized performance capable of providing over one million IOPS with very low latency.
- Stretch cluster: Combining the benefit of HA and site disaster protection, the stretch cluster functionality allows you to deploy a HA solution between two geographically separated sites. In case of failure on one site, data is immediately available at the other site without change, as the data sets are constantly synchronized between sites. Clustering is not limited to the same datacenter. FalconStor NSS Metro clusters support distances of up to 100.
- Alternate-READ mirror: From an application perspective, READs are more critical than WRITES (latency). Additionally, multiple client hosts may attempt to READ from the same volume simultaneously, such as databases or email storage groups. The Alternate-READ-Mirror is a duplicate mirror volume available to appropriate host access. This eliminates I/O bottlenecks of a single target READ volume, allowing simultaneous READ access to two identical volumes. Alternate-READ volumes can occur within a single FalconStor NSS server or across a two-node FalconStor NSS cluster.
- Smart-READ mirror: In addition to servicing primary IO, FalconStor NSS operates on ingested data to ensure its protection, thus generating secondary IOs. The Smart-READ functionality leverages both volume of the mirror to distribute primary and secondary IOs equally, preventing any impact on performance.
- FalconStor® HyperTrac™ Backup Accelerator: For organizations that require tape backup for regulatory compliance or corporate governance, the HyperTrac option increases backup speed, eliminates backup windows, and offloads processing from application servers. It runs on the backup server, automatically initiating and mounting TimeMark snapshots when backup jobs are run.
- Flash Read: When performance needs increase, adding Flash will allow IT to provide up to 450 thousand IOPS combined with extremely low latency, giving critical applications and services the room needed to operate fully.

WHAT ARE THE COMPONENTS OF FALCONSTOR NSS?

- FalconStor NSS Server: Provides storage provisioning, virtualization, and management. The FalconStor NSS Server also provides snapshots, mirroring, and replication.
- Server Console: Comprehensive, graphical administration tool to add/configure clients, set properties, and manage SAN-attached storage.
- SAN Disk Manager: Easy-to-use graphical administration tool provides local management and monitoring functions from the client and server side.

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- **Host-based multi-pathing:** The FalconStor® DynaPath™ Agent is a load balancing/path redundancy application that ensures constant data availability and peak performance across the SAN by performing FC load-balancing and transparent failover/failback services. In the event of a network issue, DynaPath will create parallel active storage paths that transparently reroute server traffic, avoiding interruptions.
- **Application-aware snapshot agents:** Residing on application servers, snapshot agents ensure that file systems, active applications, and databases are fully protected. These snapshots ensure 100% data and transactional integrity through a robust and automated process that safely and reliably takes snapshots of applications or databases for point-in-time recovery.
- **Recovery agents:** Agents enable recovery of all critical databases, messaging systems, and volumes in an infrastructure with full granularity to any point in time based on point-in-time snapshots.

WHAT STORAGE VENDORS DOES FALCONSTOR NSS SUPPORT?

FalconStor NSS supports the widest range of disk arrays, including those from:

- Dell
- Oracle
- Hitachi
- Fujitsu
- EMC
- NetApp
- HP
- Violin
- IBM

A complete Certification Matrix can be found on www.falconstor.com/matrix.

IF I ALREADY HAVE VOLUMES CREATED ON MY SAN,CAN I STILL USE FALCONSTOR NSS?

Yes. Through the Storage Service Enabler function, you can include existing data volumes into the FalconStor NSS management scheme in order to take advantage of data services such as snapshots and replication. Existing data volumes remain unchanged.

I WANT TO UPGRADE MY CURRENT DISK ARRAY FOR ANOTHER WITH LARGER CAPACITY OR MORE EFFICIENT POWER UTILIZATION. CAN FALCONSTOR NSS HELP ME?

Yes. FalconStor NSS provides mirroring as a simple way to migrate data in a heterogeneous storage environment via a SAN infrastructure. With FalconStor NSS, downtime is kept to a minimum when migrating data from existing storage to a newer disk array. Real-time migration is done through synchronous mirroring from the primary storage to the new storage device. This solution provides an exact replica of the primary storage while maintaining access to the data.

MY DATABASES REQUIRE VERY LARGE VOLUMES. HOW LARGE CAN A SINGLE VOLUME BE USING FALCONSTOR NSS?

As data volumes grow, so too must corresponding storage volumes. For this reason, FalconStor NSS supports 64TB LUNs. This is a differentiator, as most competitors only support 16TB LUNs. This feature integrates with latest version of Linux and Microsoft Windows that support 64TB, and with VMware vSphere v5.x, which also supports 64TB LUNs for much higher VM density on VMware ESX Server hosts.

WHAT IS THE POSITION OF FALCONSTOR NSS IN THE MARKETPLACE?

FalconStor NSS is a highly scalable solution designed to meet the needs of remote/branch offices (ROBO), midmarket organizations, and enterprises alike. FalconStor NSS virtual appliances offer cost-effective storage for the ROBO market. For midmarket organizations and enterprises, the FalconStor NSS Gateway enables storage virtualization, thin provisioning, automated DR, and centralized management. Midmarket and enterprise organizations seeking the highest availability and performance levels can leverage the FalconStor NSS VS Series HA Appliance.

HOW MANY SNAPSHOTS ARE AVAILABLE WITH FALCONSTOR NSS?

Disk-based backup is only as practical as the granularity and integrity of the recovery volumes created. FalconStor NSS enables you to take and keep up to 1,000 snapshots. Only FalconStor solutions offer this ability to take multiple application-specific snapshots for such a large library of critical business applications as a standard feature. In addition, intuitive wizards allow you to schedule, keep/discard, and reclaim snapshot resource area volumes.

DOES FALCONSTOR NSS SUPPORT VMWARE VSTORAGE APIS FOR ARRAY INTEGRATION (VAAI)?

Yes. Support for VMware VAAI promotes efficient deployment of VMware functionality across heterogeneous SAN storage. This VAAI support enables Full Copy/Fast Copy for creating multiple clones of a VM, Zero-WRITE for eliminating copy operations of identical data blocks in a volume, locking for access to specific virtual machine (VM) data within a LUN, thin provisioning, and space reclamation to reduce storage space usage. These functions enhance and improve the hypervisor performance and capabilities of VMware ESX Server hosts.

DOES FALCONSTOR NSS SUPPORT THE SNMP PROTOCOL?

Yes. Network management systems such as Tivoli, CA, CiscoWorks, and BMC operate on the standard SNMP protocol, which enables a centralized view of various IT network resources (servers, switches, storage). By supporting SNMP, FalconStor NSS enhances these management capabilities to optimize utilization, identify and mitigate bottlenecks, and more.

HOW CAN WE PURCHASE FALCONSTOR NSS?

FalconStor NSS is available through system integrators and value added resellers (VARs) around the world. FalconStor NSS can be purchased as software, gateways, HA appliances, virtual appliances for VMware environments, and expansion units for increased scalability. Because the solution is available in a variety of formats, prices will vary.

For more information, contact your local FalconStor office, visit www.falconstor.com/NSS, or test-drive a free 30-day trial of the FalconStor NSS Virtual Appliance: www.falconstor.com/NSSdownload.

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