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Damon Robertson
Coolspirit Ltd

Our address

24 The Bridge Business Centre
Beresford Way
Chesterfield
S41 9FG

Get in touch

Call us on: 01246 454222
Email us: web@coolspirit.co.uk
Find us: [View location map](#)
Web: www.coolspirit.co.uk

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HyperFS

Digital workflows at hyper-speed

The HyperFS™ solution from FalconStor Software is an innovative file system that simplifies the management and access of multiple types of large files. HyperFS meets the challenges of today's demanding applications by offering remarkable performance and scalability. Providing concurrent high-speed file access to heterogeneous clients across a global name space, HyperFS also empowers organizations with hardware-independent data protection, storage virtualization, and Thin Provisioning.

Highlights

- > Massive scalability supports up to 144PB of storage
- > High performance, low latency
- > Global name space and built-in NAS for ease of use
- > Dedicated metadata server (MDS)
- > Built-in NAS feature
- > Open architecture for hardware independence
- > Supports Microsoft Windows, Linux, and Mac OS X clients
- > Flexible deployment options
- > Comprehensive data protection
- > Thin Provisioning maximizes disk utilization, reducing storage costs and power consumption

Massive scalability

The HyperFS solution supports up to 144PB of storage and tens of billions of files in a single file system together with hundreds of clients in a single global name space. Storage capacity can be added rapidly and dynamically.

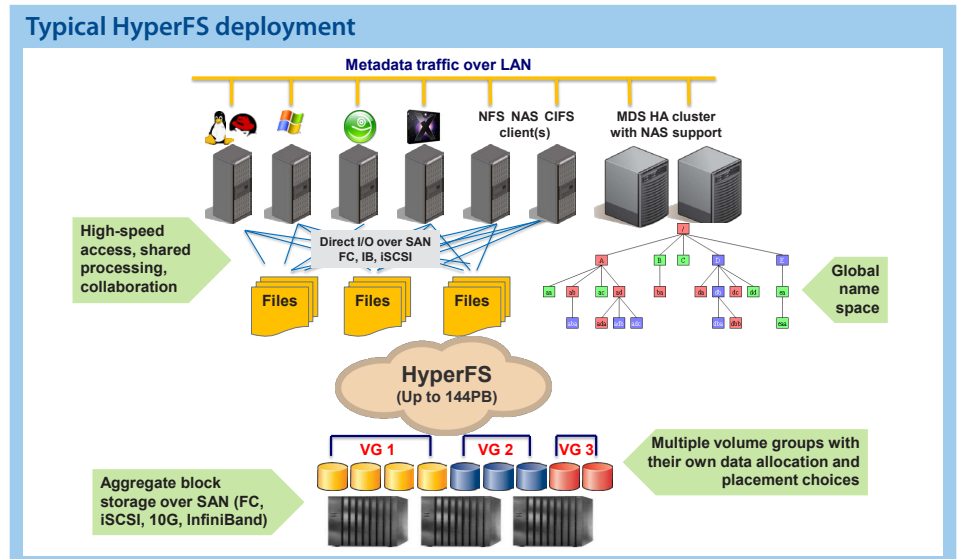
High performance

The HyperFS solution leverages standard high-speed SAN technology for data movement directly between the requesting client and the data store while POSIX-compliant file system protocol traffic is carried over the LAN.

The HyperFS solution is not a network file system like NFS. HyperFS takes file management beyond a single system by providing scalable access from multiple systems. It interacts with applications in the same manner as a local file system, but is designed to deliver much higher performance, scalability, and fault tolerance by allowing access to the data from multiple, heterogeneous systems directly and simultaneously. HyperFS overcomes the data transmission bottlenecks of traditional distributed file systems. Data is transmitted over InfiniBand, Fibre Channel (FC), or iSCSI connectivity for maximum performance. This makes HyperFS an ideal solution for the media and entertainment (M&E) industry and for other organizations that utilize high-bandwidth video streaming applications.

Global name space

All HyperFS clients share a single global name space. Administrators can expand, move, rebalance and reconfigure storage without affecting how users view and access it, and without downtime. Data changes are automatically updated in the name space, and require no client reconfiguration or downtime.



Dedicated MDS

Metadata is processed by separate metadata servers (MDS) connected to both the SAN and the LAN. The MDS is responsible for processing file system metadata, organizing the directory tree, journaling, maintaining file properties, recording logs of file operations, byte-range locking, authorizing file access, and directing snapshot copies. By providing dedicated metadata processing and splitting its path from the primary data path, HyperFS ensures high performance and low latency for demanding workflow applications.

A high availability (HA) clustered architecture allows organizations to maximize data availability and operational efficiency. Two MDS can operate in an active/passive mode, providing quick failover if the active MDS fails.

Clients can share data easily and seamlessly over a LAN using standard NFS and CIFS protocols using a built-in NAS feature. The support operates in the MDS, requiring no additional gateway. Built-in NAS also integrates with existing LDAP/Active Directory environments.

Flexible deployment options

The HyperFS solution can be integrated with leading third-party hardware with supported versions of Linux installed. SAN storage is supplied by the end user or the reseller. This solution takes full advantage of an enterprise's existing storage resources and provides low-cost, high-performance, cross-platform technology that is easily scalable and highly available.

HyperFS can also be implemented with FalconStor® Network Storage Server (NSS) gateway software. This configuration works with any FalconStor NSS certified gateway server hardware and storage array, and enables comprehensive data protection, storage virtualization, and Thin Provisioning. When deployed in this manner, the HyperFS solution leverages all of the SAN and data protection benefits and features of FalconStor NSS, including built-in snapshots, WAN-optimized replication, and data migration for maximum data availability. Individual data sets or entire systems can be recovered locally or remotely within minutes.

Specifications

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| Maximum capacity | 144PB per file system |
| Maximum number of file systems | 16 per MDS |
| Maximum file size | 32TB |
| Maximum number of files | Tens of billions depending on file size |
| Maximum number of LUNs | 4096 |
| Maximum LUN size | Variable – limited only by maximum drive logical block addressing |
| HA features | Active/standby metadata servers Metadata journaling Active/standby NAS (NFS and CIFS) |
| Maximum tested throughput on a single unit | >2.3 GB/s |
| Maximum number of clients | Largest installed > 800 |
| POSIX compliance | Compliant with POSIX for file semantics and locking |
| NFS support | NFS version 3.x, 2.x |
| MDS OS support | Red Hat Enterprise Linux 5.3/5.2 (64-bit) CentOS Linux 5.3/5.2 (64-bit) Oracle Enterprise Linux 5.3/5.2 (64-bit) |
| SAN technology support | FC, iSCSI, InfiniBand |
| Client OS support | Microsoft Windows – 32- & 64-bit (XP/2003/2008/Vista/7) Red Hat Enterprise Linux 4.x/5.x (32- & 64-bit) CentOS Linux 4.x/5.x (32- & 64-bit) Oracle Enterprise Linux 4.x/5.x (32- & 64-bit) SuSE (32- & 64-bit) Mac OS X 10.5.x – 32-bit (Leopard) Mac OS X 10.6.x – 64-bit, 32-bit (Snow Leopard) |
| MDS hardware | Memory: 2GB RAM minimum (8GB recommended) CPU: Dual-core AMD Opteron and Intel Xeon EM64T are supported System disk: 80GB minimum disk space, SCSI, IDE, or SATA Network Interface Card: Gigabit Ethernet network cards that are supported by Linux FC HBAs: QLogic 23xx, 24xx, 256x (For a complete list of supported HBAs, see the FalconStor Certification Matrix) |
| FalconStor NSS version | 6.1 |

