Scale Logic and NetApp Joint Solution

Scale-out NAS and SAN optimized for a converged media platform

The Challenge

Media organizations don't just need to store the data they produce. They need to make their files accessible to a team of editors, artists, producers, and more, often simultaneously. To do this, they need a central, shared file system that is high performance, transparent, fault tolerant, and scalable.

The Solution

HyperFS is a scalable, high-availability, global file system supporting both block- and file-based protocols simultaneously to deliver both high-bandwidth SAN and dynamic, on-the-fly scale-out NAS functionality. HyperFS leverages 15+ years of software development and is optimized for converging, content-centric workflows such as broadcast, film and video post, VOD, OTT, and IPTV. Thousands of users worldwide rely on HyperFS's modular design and unique capabilities not only to scale up storage capacity, but also to scale out user performance independently or in concert with one another.

Based on sound TCO, ease of use, optimized performance settings, and policy-based storage tiering, HyperFS is quickly becoming one of the leading file systems for the global media and entertainment industry. Broadcasters and postproduction facilities around the world use HyperFS as their trusted, high-performance file system because of its reliability, enhanced data protection, and open systems design approach to service today's demanding video production and distribution workloads.

HyperFS improved features

SAN and LAN clients simultaneously access the same data by either file level (using scale-out NAS) or block level (using SAN) using 8Gb/16Gb Fibre Channel, 1 Gigabit Ethernet (1GbE)/10GbE, or ISCSI. This provides Windows, Mac, or Linux SAN-based editing clients with a way to share files with Windows, Mac, or Linux LAN clients using standard SMB, CIFS, or NFS protocols leveraging Scale Logic's integrated application server platform as a gateway to deliver scale-out NAS performance and enabling file-based workflows for LAN clients.

Dynamic storage reconfiguration, scale-out, and even migration add tremendous flexibility to media operations. The system can scale to over a billion files and directories and many petabytes of capacity.

KEY FEATURES

- Single global namespace across all storage tiers
- Windows, Linux, and Mac cross-platform file sharing
- File locking
- System expansion on the fly supporting online HW migration
- Capacity quota (directory and user or group)

SOLUTION COMPONENTS

- Scale Logic HyperFS global file system
- NetApp® E-Series storage system or array
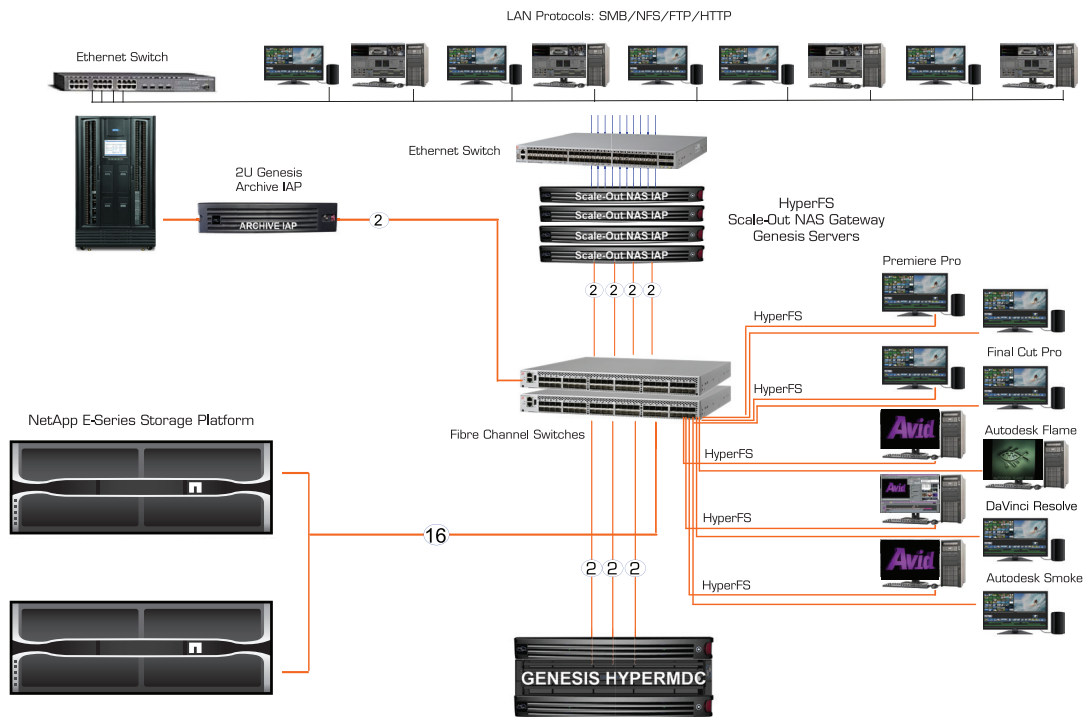- Genesis HyperMDC metadata server cluster

LAN Protocols: SMB/NFS/FTP/HTTP

Ethernet Switch

2U Genesis
Archive IAP

ARCHIVE IAP

2

Ethernet Switch

Scale-Out NAS IAP
Scale-Out NAS IAP
Scale-Out NAS IAP
Scale-Out NAS IAP

HyperFS
Scale-Out NAS Gateway
Genesis Servers

Premiere Pro

2 2 2 2

HyperFS

HyperFS

Final Cut Pro

NetApp E-Series Storage Platform

Fibre Channel Switches

HyperFS

Autodesk Flame

HyperFS

DaVinci Resolve

16

2 2 2

HyperFS

Autodesk Smoke

GENESIS HYPERMDC

DIAGRAM 1: HYPERFS SCALE-OUT NAS GATEWAY GENESIS MDC SERVERS AND NETAPP E-SERIES ARRAYS.

The software is designed with client and MDC default diagnostic and performance counting functions. Therefore, it enables users to analyze causes of failures and to optimize the system's performance by analyzing I/O characteristics. The embedded antifragment distribution allocation algorithm and online defragment tool can help users reduce and clear fragments caused during continuous operating of the system.

NetApp E-Series and EF-Series storage

Incredibly reliable and cost-effective, NetApp E-Series and EF-Series arrays easily meet the performance and capacity requirements of media workflows. These arrays are preferred by large broadcast production workgroups and boutique 4K facilities because they are the only production storage arrays with 99.999% reliability. Part of this reliability is their "phone-home" feature, which alerts NetApp of potential disk failures before a hard disk fails, encouraging replacement of drives before any impact on media workflows occurs.

And with E-Series, you can choose between RAID 5, RAID 6, or Dynamic Disk Pools technology, which dramatically reduces disk rebuild time, provides more consistent performance, and eliminates the need for hot or cold spares.

NetApp E-Series and EF-Series arrays offer a granular yet scalable modular building block for HyperFS deployments. The arrays scale from a few terabytes to many petabytes of capacity and from a few to dozens of gigabytes per second of sustained video throughput in a granular, building-block fashion.

Multiple E-Series and EF-Series arrays with different performance and capacity profiles can be mixed and aggregated within a single HyperFS namespace, offering a hybrid, multipurpose solution without complicated media management workflows. By adding NetApp flash storage in hybrid arrays, operations can optimize support for ancillary transcoding and for rendering workflows, even when they run concurrently with real-time edit clients.

Additional features of the joint solution include:

- File-level fault isolation (FLFI) and file system uptime during single LUN failures
- File locking
- Intelligent fault detection
- SMTP email alerts
- System expansion on the fly supporting online HW migration
- Capacity quota (directory and user or group)
- ACL support, AD/LDAP user integration
- Logging for performance analytics with Windows clients
- Active antifragmentation
- Support for data migration interface
- Data and metadata LUN mirror
- Automatic load balance and fault isolation for scale-out NAS
- Native multipath support
- ICAP for antivirus
- SNMP monitoring

Business Benefits

HyperFS with NetApp E-Series is a distributed file system that provides high-performance, cost-effective transparency, fault tolerance, and scalability.

Transparency

Whether you're an end user or an administrator, HyperFS just works. File usage and access across various systems are handled automatically by a system certified to work with over 200 media applications. HyperFS's GUI is as powerful as a CLI and is simple to learn on any system, making it possible for an admin to learn HyperFS in a few hours, rather than weeks or months. Furthermore, admins can apply what they learn on one system to other systems because the HyperFS clients have the same look and feel across Windows, Mac, and Linux operating systems.

Fault tolerance

HyperFS offers exceptional performance during failure. HyperFS has failover and failback plans to keep the system running at full capacity if any part of the hardware fails. HyperFS also offers a number of other options for data security, including mirroring and tight integration with data protection applications. Although full mirroring is an option, HyperFS can limit the mirroring to only the metadata controller, making sure that the vital file system metadata is backed up without the more costly mirroring of your entire media dataset. Failed drives can be quickly diagnosed and replaced, making it an exceptionally fault-tolerant solution that can keep working during a failure situation and recover from it quickly.

Scalability

Scaling a HyperFS system is as simple as using or administering one. The HyperFS GUI can search for available LUNs, which can be added to or removed from the storage pool with a few clicks of a mouse. Adding processing power is just as simple. You can scale incrementally on the fly for true scalability.