EFS450

Enterprise class, distributed scale-out storage designed for the most demanding collaborative media environments

A heritage of storage innovation

For over a decade EditShare has delivered highly scalable shared storage systems that enable media professionals to deliver outstanding content. Along with companion asset management and archiving solutions, EditShare's media storage and management tools have increased productivity across broadcast and media enterprises around the globe.

The EditShare EFS 450 is an enterprise-class scale-out storage system designed for the most demanding collaborative media production environments. EFS 450 combines an advanced distributed file system with intelligent load balancing, a scalable, fault-tolerant architecture and cost effective 10/25/40/50/100 GbE connectivity. The result is a media-engineered shared storage solution that is easily managed, can tolerate surprising amounts of hardware faults, reliably delivers massive bandwidth to hundreds of concurrent creative client devices while achieving new economies in storage cost.

Feature-rich collaboration

As expected, EFS 450 permits wide scale simultaneous users of media with project sharing, and support for the leading NLE's including Avid Media Composer Ultimate®, Adobe Premiere Pro®, Apple Final Cut X® and a host of other creative finishing tools.

All EFS 450 systems can be purchased with the option of our FLOW Media Management software, a powerful platform for creative control of all files during the production process. From ingest to archive, FLOW will log, index, tag, organize and manage your media assets. Unique collaboration tools such as AirFLOW, allow remote users to browse, search and download proxy or high-res files to support review & approval. The FLOW Story module enables remote editing from any location, the timeline can be sent to online editing platforms for finishing. For high resolution workflows, FLOW also supports scan and proxy support for 4K DPX, Open EXR, and other file-per-frame workflows.

In addition, all EFS 450 systems can be purchased with the option of our Ark Media Archive software. Implementing nearline disk or LTO tape archiving solutions is as easy as adding optional EditShare EFS 40NL or Ark Tape hardware. Furthermore, nearline project parking is supported through our EFS 40NL. The EFS 40NL stays within a single EFS namespace across online and nearline storage.

Infinitely scalable storage

EFS 450 is the ideal solution for any media enterprise already coping with or expecting to cope with massively expanding media volumes. Its unique architecture lets users start with a storage solution as small as 96TB and build up to 5 PB and beyond with additional storage nodes that can be added at any time.

EFS 450 eliminates the management challenges of other forms of media storage. No matter how large the system grows, it always presents a single global namespace. Capacity expansion is as simple as connecting additional storage nodes and allowing the EFS files system to distribute content across the expanded system. And all the while, users continue to use their regular production workflows. Finally, you will enjoy the peace of mind delivered by Editshare technical services personnel and our regional partners as we support your growing EFS system.

Prodigious performance

To ensure continuous high bandwidth performance, EFS 450 is designed to eliminate,

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minimize, and manage the impact of resource contention produced in all shared storage applications. System metadata plays a vital role in directing storage clients to the assigned location of media assets. Typically, if multiple clients request the same asset, one might be delayed until a preceding request is fulfilled. Unlike typical media storage systems, EFS Metadata Controllers store metadata in fast memory and virtually eliminate delays and latency associated with concurrent asset requests.

Similarly, EFS distributes media data across many disks within each storage node as well as across many storage nodes. This is done to reduce the chances of disk contention due to concurrent file requests. And in the rare but statistically unavoidable case where a storage node is busy servicing another request, EditShare SwiftRead technology allows EFS 450 to skip that node and obtain the requested data through other means.

The unique design approach enables EFS to support hundreds of concurrent users and to deliver the bandwidth necessary for today's UHD, 4K DPX and other High Resolution, High Dynamic Range and High Frame Rate media formats.

Each EFS 450 storage node is equipped with 10/25/40/50/100 GbE networking ports. The ports are typically bonded to an appropriate switch. 10 GbE is sufficient for most customer workflows, where individual connected workstations need to play back multiple layers of uncompressed HD or compressed UltraHD codecs such as DNxHR, or 10 or more layers of codecs such as DNxHD 220 and ProRes HQ. In scenarios where you are working exclusively with high data rate codecs such as uncompressed HD, uncompressed 4K, or DNxHR, 40 GbE will satisfy with bandwidth to spare.

Native Fault-Tolerance

At EditShare we understand that great performance is meaningless without the ability to deliver it 24 hours a day, 7 days a week. And whenever possible, we let this philosophy influence the decisions and choices we pursued in the design of EFS 450. Every hardware chassis, for example, is equipped with redundant hot swappable power supplies, mirrored hot swappable OS boot drives and redundant fans. Similarly, we chose Ubuntu, a distribution of Linux which is renowned for reliable operation and freedom from viruses and other security problems.

EFS metadata controllers journal metadata changes every few seconds, snapshot metadata every hour and export backup copies of journals and snapshots to EFS 450 storage node. Even in the extremely unlikely case of a complete metadata controller failure, system metadata is automatically backed up to another part of the system.

Media data files are protected via two separate mechanisms. Within each storage node, files are protected with standard RAID 5 (or RAID 6) redundancy and permit that node to survive one (or two) disk failures without impact to the media files. In addition, media files are distributed across as many as 5 storage nodes with similar data/parity protection. This allows an EFS system to lose an entire storage node without suffering any loss of media data or interruption in workflow.

Higher availability

In addition to the highly fault tolerant basic configuration, EFS also provides a number of optional High Availability (HA) configurations. These include a second metadata controller and the EditShare HA software stack that implements advanced IPMI-fencing and PDU-fencing mechanisms. The result is a robust storage solution with No single points of failure.

EFS 450 Front

EFS 450 Rear

EFS Metadata Front

EFS Metadata Back

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EFS 450 Product Information

EFS 450 Storage Hardware

- Based on HPE DL380 Gen 10 Rack-mountable 2U server with 16 HDDs (4 drives in midplane)
- Motherboard with powerful 12 core CPU
- 64 GB of RAM
- Boot disks: 2 x 480 GB SSDs, hot-swappable, rear-accessible, RAID-1 protection (1+1)
- Storage disks: 16 x enterprise-grade HDDs in 4, 6, 8, 10, or 16 TB capacities, hot-swappable, front-accessible, RAID-6
- 12 Gb/s Hardware RAID Controller with 16 SATA/SAS ports (dedicated RAID controller for each 16-drive set)
- Hot-swappable Power Suplies, Fans, Media, and OS drives
- 4 x 1 Gb ports included
- 10GBASE-T, 10 GbE SFP+, 10/25G SFP28, and 100/50/40G QSFP28 NIC options available

Metadata Server Hardware

- Based on HPE DL360 Gen 10 Rack-mountable 1U server
- Motherboard with powerful 8 core CPU
- 64 GB of RAM
- Boot disks: 2(4) x 480 GB SSDs, hot-swappable, rear-accessible, RAID-1 protection (1+1)
- Hot-swappable Power Supplies, Fans, Media, and OS drives
- 4 x 1 Gb ports included
- 10 GBASE-T, 10 GbE SFP+, 10/25G SFP28, and 100/50/40G QSFP28 NIC options available

Technical Specifications

Electrical

EFS 450 Storage Server

Input Voltage	100-240 VAC
Input Frequency	50-60 Hz
Power Consumption (steady state/peak)	500 W

EFS Metadata Server

Input Voltage	100-240 VAC
Input Frequency	50-60 Hz
Power Consumption (steady state/peak)	85 W

Dimensions

Height/Width/Depth

EFS 450 Storage Server	8.73 x 44.54 x 73.02 cm 3.44 x 17.54 x 28.75 in
EFS 450 Shipping Dimensions	27.00 x 60.02 x 96.85 cm 10.63 x 23.63 x 38.13 in
EFS Metadata Server	4.29 x 43.46 x 74.98 cm 1.69 x 17.11 x 29.5 in
EFS Metadata Server Shipping Dimensions	24.13 x 60.02 x 99.06 cm 9.50 x 23.63 x 39.00 in

Thermal Emissions

EFS 450 Storage Server	1902 BTU/hr (577 W)
EFS Metadata Server	1902 BTU/hr (577 W)

Environmental

EFS 450 Storage Server

Operating Temperature	10°C (50°F) - 35°C (95°F)
Operating Humidity	8% - 90%, non-condensing
Storage Temperature	-30°C (-22°F) - 60°C (140°F)
Storage Humidity	5% - 95% non-condensing

EFS Metadata Server

Operating Temperature	10°C (50°F) - 35°C (95°F)
Operating Humidity	8% - 90%, non-condensing
Storage Temperature	-30°C (-22°F) - 60°C (140°F)
Storage Humidity	5% - 95% non-condensing

Weight

EFS 450 Storage Server

Weight	24.5 kg (54 lbs)

EFS Metadata Server

Weight	13.77 kg (30.36 lbs)

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