

The Big Picture:

- Maximize performance – EMC's Celerra Multi-Path File System, combines the benefits of NAS file sharing with the performance and scalability attributes of a SAN. As more Telestream TrafficManager video encoding nodes are added, more performance throughput is delivered resulting in shorter video conversion time.
- Cost reduction - Moving video files from locally attached storage, to a consolidated Celerra Unified Storage solution with Telestream TrafficManager allows greater cost savings, while accelerating the application performance with Celerra MPFS.
- Redundancy - MPFS-enabled storage combined with Telestream's peer-to-peer fully redundant server arrays provide a highly resilient, fully redundant video processing platform.
- Optimized environment - Consolidate redundant locally attached storage to high performance NAS thereby improving transaction throughput and reducing elapsed video encoding runtimes.
- Application transparency - MPFS works seamlessly with TrafficManager, so no application changes are required.

Celerra MPFS with Telestream TrafficManager

The conversion of video files between different formats is a complex computing task. High Definition (HD) video files can be hundreds of gigabytes in size, and converting files for use between different systems typically requires a great deal of CPU power, RAM, and I/O throughput. Further, the speed of conversion and creation of video files is a critical metric for many media companies. Typically video production processes run against hard deadlines, and last-minute changes may require that hours of video content be converted in minutes.

Telestream develops products that create and transform video files, including tools that automate video processes. The Celerra MPFS with Telestream's TrafficManager™ solution is used to automate the video processes for video advertising and syndication content for broadcast, cable, and other media companies. Typically, TrafficManager is used to move and convert hundreds of video files every day, often using a cluster of servers working cooperatively, running Telestream's FlipFactory software. In such a clustered server environment, reliable, high-performance shared storage is essential, both as temporary storage for video files as they are converted, and as permanent storage for both original and converted files. The nature of video file conversion ("transcoding") requires highly random-access of files, and high throughput, from the storage devices.

The EMC Celerra MPFS has been tested and found to increase the I/O performance and throughput on TrafficManager by 75% on average, as measured by the time required to complete high-volume Standard Definition (SD) and High Definition (HD) video copying and conversion processes.

Infrastructure Test Environment:

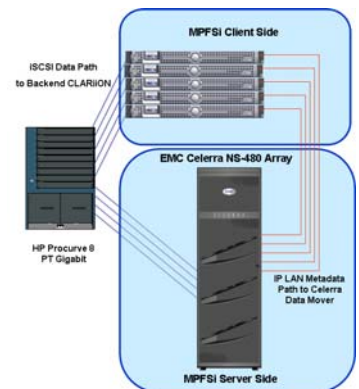
The storage configuration consisted of an EMC Celerra NS-480 Unified Storage Platform with iSCSI connectivity between the Telestream TrafficManager application servers and NS-480. The MPFS filesystem was created and optimized across 45 disk spindles using 4 Gb fibre drives with 300 Gb capacity each. The server environment consisted of two Dell 2950 servers, each consisting of dual, quad-core processors, dual gigabit ethernet ports, and 4 GB of RAM.

MPFS over iSCSI was used to optimize the I/O throughput and reduce the elapsed time of the TrafficManager video encoding by using the dual iSCSI paths on the Dell servers for block based data read and write activity directly to the integrated CLARiON CX4 storage in the NS-480 Unified Storage Platform.

Two tests were performed simulating high-volume spot and syndication workflows commonly found within broadcast and cable companies;

- Test 1 localized 100 30-second spots from a digital delivery service, generated a proxy view of each spot, matched the spot with a copy-required dublist, trimmed the slate from each spot, converted the spot to broadcast-quality MPEG-2, and delivered the spot to its on-air destination. This test was performed first with 100 SD spots, and then with 100 HD spots.
- Test 2 converted five 30-minute TV shows to broadcast-quality MPEG-2. This test was also performed for both SD and HD syndicated material.

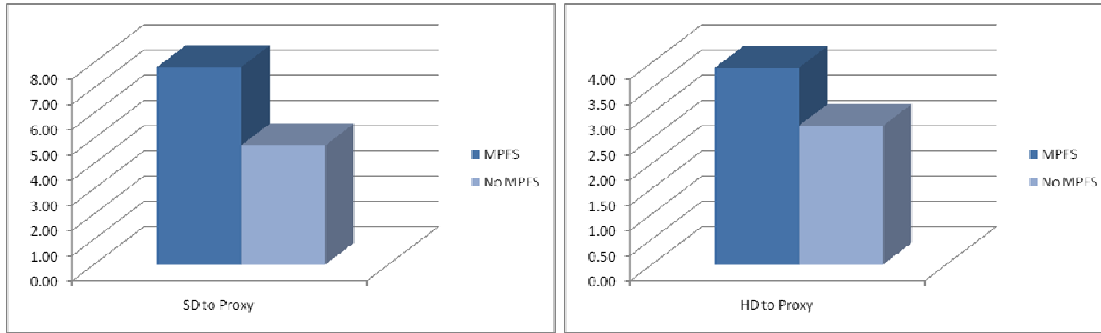
With both tests, the actual transcoding was performed using the EMC Celerra NS-480 as the shared storage. That is, all file reading and writing was done directly to the NS-480 without involving a copy to local hard drives.



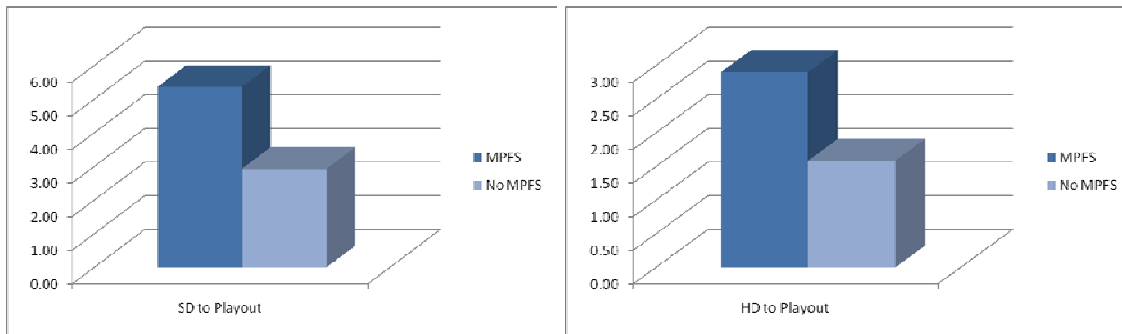
Results:

MPFS was found to improve the conversion time by an average of 75%. Performance benchmarks were measured in “Times Faster than Real-Time”, that is, given a minute of processing power, how many minutes of material could be processed. Specific results are shown in the charts below

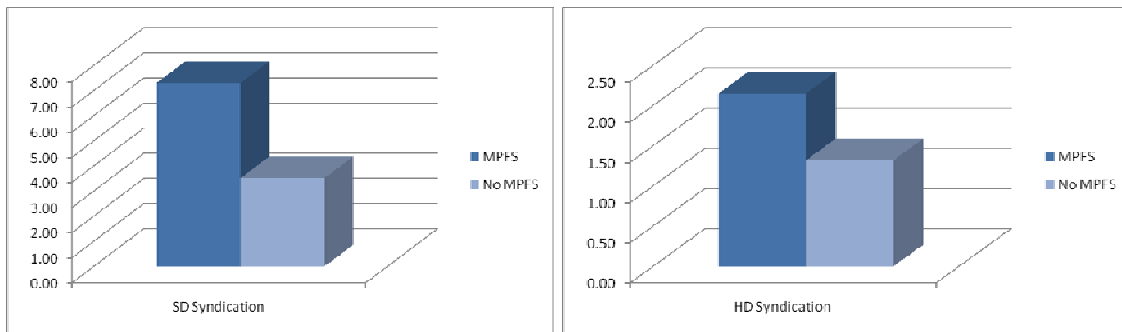
For spot-to-proxy workflows, MPFS allowed SD spots to be converted at 7.8 “times faster than real-time” (xFTRT); that is, for every minute of processing power, almost eight minutes of video footage was converted. HD spots were converted at 3.9xFTRT.



When converting to on-air quality MPEG-2, SD material was converted at 5.3xFTRT, while HD was converted at 2.9xFTRT.



Long-form syndicated SD content was converted at 7.3xFTRT while the equivalent HD content was converted at 2.2xFTRT.



Conclusions:

The EMC Celerra MPFS with Telestream TrafficManager Solution demonstrated improved conversion time by an average of 75% over traditional NFS for the intensive I/O bandwidth requirements of the TrafficManager application.

The performance advantage is achieved as the Celerra NS-480 was configured with MPFS to accelerate data transfer to TrafficManager clients by providing separate transports for file data and file-system metadata. Metadata traffic passes over IP to the Celerra x-blade, while all file read and write data passes over iSCSI directly to the integrated storage array.

While the tests executed used iSCSI to a Celerra NS-480 Unified Storage Platform, MPFS can also use Fibre Channel connections directly to backend Symmetrix® or CLARiiON® arrays in Celerra Gateway configurations for additional scalability and performance.

About Telestream

Telestream products make it possible to get video content to any audience regardless of how it is created, distributed or viewed. Throughout the entire digital media lifecycle, from capture to viewing, for consumers through high-end professionals, Telestream products range from components to fully-automated workflow systems. Telestream enables users in a broad range of business environments to leverage the value of their video content. Telestream and its team of video experts are located in Nevada City, California, USA and Stockholm, Sweden. The company is privately held, and additional information about Telestream can be found at www.telestream.net

About EMC:

EMC Corporation (NYSE: EMC) is the world's leading developer and provider of information infrastructure technology and solutions that enable organizations of all sizes to transform the way they compete and create value from their information. Information about EMC's products and services can be found at www.EMC.com.