



Technical Partnership Between Archion and Telestream Fosters Automated 4K Workflows

Overview

The 4K digital media standard brings striking advantages in high-definition video resolution. At the same time, 4K video also demands four times more storage space and networking bandwidth as traditional HD video does. The sheer size of 4K assets creates new time-consuming tasks for post-production professionals – particularly the costly challenge of transferring 4K content from high-speed storage media to the wide range of workstations used for various forms of data manipulation throughout the post-production and broadcast processes.

Most 4K data is stored on networked devices, then transferred to application-driven workstations in order to achieve more responsive performance during the editing and streaming stages. Studios rely on staff members to manually organize these transfers of 4K data, according to the demands of scheduling and client deadlines – but very few studios have the infrastructure necessary for archiving and repurposing large numbers of 4K assets, or for streaming high bitrate and high framerate 4K video at scale.

These challenges have created a clear need for automated 4K workflows, in which all demands for storage, networking, processing, capture, multiplexing, transcoding and streaming are handled within a single integrated platform. Telestream and Archion have partnered to deliver this solution.

The Archion and Telestream solution

Telestream's Vantage with the Pipeline server provides a powerful workflow automation system, offering the ability to automate processing with live, capture, cloud 4k and all media formats, and to transcode, move and deliver media on demand. This server is highly scalable, with modules that can be added to increase capacity and codecs, as well as streaming, multiplexing and other useful features.

Archion's Velo, Omni and Omni Hybrid EditStor media storage systems serve as powerful NAS platforms. All these systems are engineered for storage and playback of all types of digital video media throughout the post-production, production, graphics and finishing stages. Every Archion EditStor system is more than capable of handling 4K – and beyond.

A wide range of Archion storage systems have been certified with the Telestream Vantage server. That means their 10GigE ports have been tested at full speed, performing file movement tests inside the Vantage server, performing direct conversion testing with ProRes files, transcoding, and creating and reading open files.

Here are the results.

Quicker file movement

Archion's EditStor media storage systems – the Velo, Omni and Omni Hybrid – have long been known to provide the highest bandwidth of any networked storage solution in the post-production industry. Where competing systems average around 300 MB/sec, The EditStor Velo system offers 2500 to 5000 MB/sec, while the Omni handles as many as 8000. Adding a single chassis jumps the speed even further. With 10GigE direct client connectivity, any EditStor system can achieve speeds of 1000 MB/sec from just a single NAS storage server.

When combined with Telestream's Vantage Media Processing Platform, Archion's standards-based networking enables Telestream Litespeed servers to be easily connected to four ports of high-speed 10gigE. This provides immediate, responsive performance in 4K video processing – a crucial factor in creating a cost-effective workflow.

In networking tests, an EditStor storage system connected to one port of 10GigE delivered 1000 MB/sec writes and 1200 MB/sec reads on a Telestream Vantage server. A test on file movement inside and outside the box – specifically a test MXF HD file – delivered speeds of 455.75 MB/sec. A test with four MXF HD files produced a transfer at a total bandwidth of 714 MB/sec.

These transfer speeds demonstrate that the networking speed of an EditStor storage system scales seamlessly according to the transfer demands of Vantage servers, streamlining networked 4K workflows at any scale.

Faster-than-real-time reading and writing

When working with 4K video, real-time reads and writes aren't fast enough: better-than-real-time performance is critical a smooth workflow. Very few servers are even equipped to deliver real-time reads and writes of 4K data across a network connection – let alone speeds above real-time.

However, the combination of EditStor and Vantage easily clocks real-time performance, and beyond. In a Direct Converter test, a 6GB file was used as a baseline to test an EditStor storage system's ability to work with real-time writes across the network. In this test, an EditStor system read from the Vantage server, and wrote to it, 8.2 percent faster than real-time.

A subsequent test with four copies of the file produced an average of 3.41x real-time reads and writes, with an aggregate throughput 13.64x real-time – significantly faster than any other networked storage system on the market today.

These results demonstrate that an EditStor storage unit connected to a Vantage server can exceed real-time reads and writes of 4K data – not only for one file, but also at scale. In workflows where time is a crucial factor, better-than-real-time performance significantly

increases the cost-effectiveness of a 4K workflow that integrates EditStor and Vantage products.

Multiple live capturing and transcoding

The Vantage transcoding product family has long been recognized for utilizing cutting-edge technologies to deliver high-quality video at exceptional processing speeds, along with the most extensive file format support in the industry.

Vantage's workflows seamlessly bridge input from incompatible devices, including FTP servers, professional cameras and NLEs, and encode that input into files that can be delivered across broadcast servers, web and mobile, SAN and other channels – a crucial ability in today's multiformat, multi-vendor video environments, where files may need to be converted from a wide variety of source formats into H.264, MPEG-2, or even analog delivery formats.

The massive throughput of an EditStor storage system makes multiple live capture and streaming even easier, providing real-time transcoding from the CPU to the storage device, regardless of the source or video format. In tests with a Vantage server, an EditStor storage system achieved a 93 percent CPU utilization – creating minimal stutter even when working with multiple streams of 4K video in real time.

With the help of Archion's high-performance 10GigE networking, Telestream's powerful tools for deinterlacing, resizing and encoding can now be utilized at scale, within a single automated 4K workflow.

Open growing file ingestion

The demands of handling 4K video files are further complexified by the need for capture and transcode open growing media. Very few systems can perform these tasks in real time for 4K streams – but the combination of EditStor media storage with a Vantage server handles it seamlessly.

To test this ability, a capture from a source stream was started, and a transcode was set up to start as soon as new media was detected on the server. An EditStor storage system captured the media and the transcode simultaneously – demonstrated by the fact that the 5.45 in and out duration of the output files matched that of the input files meaning the capture and transcode began at exactly the same time.

When the speed of the capture and transcode were analyzed, it was found that the EditStor was able to create open growing files 1.19x faster than real-time, and was able to read them at 4.43x real time – far outperforming many other networked media storage systems currently on the market.

This ability to transcode open growing files in real time significantly streamlines the process of acquiring incoming 4K data, saving time in the capturing and transcoding stages of the production process.

Archion: a world leader in high-performance shared media storage

Archion Technologies, a Los-Angeles based technology company, provides a wide range of innovative solutions for the broadcast, production, corporate, education, government, house of worship, and sports industries; from large production houses to the smallest media agencies; from film studios to universities to sports venues.

For nearly 15 years, Archion has defined a new standard of performance, protection and affordability for shared media storage solutions. Since its founding, the company's storage technologies have been critical to the success of thousands of TV, film, commercial, documentary, and other content creation projects, and have supported thousands of clients' media workflows with high performance, reliable, functional shared storage solutions.

From Final Cut Pro to Adobe Creative Suite to Avid MediaComposer and Pro Tools (as well as the leading finishing creative tools from such vendors as Autodesk and Blackmagic Davinci), Archion has delivered the power for just about all video and audio codecs and formats, including HD, 2K, 4K and higher.

The speed and simplicity of Archion's EditStor media storage systems

Archion's EditStor products provide the world's simplest and most affordable networked attached storage solutions for professional editorial teams. These products empower digital video professionals to meet the demands of today's post-production and finishing workflows, with a flexible, scalable, full-featured and fast shared storage infrastructure.

The **EditStor Velo** system supports industry standard IT file transfer protocols simultaneously – enabling maximum connectivity to servers and workstations, and seamless integration among online and offline workflows. The system also delivers a powerful range of media management features, such as the ability to create shared volumes of any size, while simultaneously expanding volumes on the fly without any downtime or performance degradation; as well as a comprehensive set of tools for user and group management and overall security.

EditStor's Omni provides a single media storage system for high-performance collaboration on all types of files, including raw 4K files and streams. This system replaces the complexity and expense of SAN network storage with a single high-density server storage system that imposes no limitations on high-definition digital video workflows. This 4K storage system supports all popular post-production and finishing tools, without requiring any drivers or client licenses – making it an ideal plug-and-play solution.

Designed for facilities with high demands for both video streaming and graphic rendering, the **EditStor Omni Hybrid** storage system uses dedicated high speed SSDs for caching IOP data, eliminating the need to move or copy rendered media, and unifying all video storage on a single centralized platform. The Omni's patented optimizing intelligence detects the difference between high throughput streams and small IOPS requests, and adjusts its processing on the fly for maximum performance – delivering the speed and processing power necessary for the most demanding 4K workflows

All EditStor storage devices are fully compatible with top brands of camera hardware, including 4K cameras from AJA, ARRI, Blackmagic, RED, Sony and more – as well as editorial and finishing applications such as Adobe Premiere, Avid Media Composer and ProTools, Apple Final Cut Studio, Autodesk Smoke and Flame, and Blackmagic Resolve; and animation/visual effects tools like Adobe After Effects, Autodesk Maya, Foundry Nuke and others.

What's more, EditStor devices offer all the automation tools of an enterprise storage server, including storage pools, volume replication and snapshot, data replication, volume manager, virtual tape volumes (created in the system), as well as direct and fast tape backup (LTO/LTFS) for long term archive.

All of Archion's RAID controllers use fully upgradeable flash firmware. Updates can be performed without restriping the drives, and can be reactivated with a simple restart of the controller.

These high-performance, feature rich media storage systems offer much more than just storing, creating, and sharing abilities. They integrate the flow, conversion, and management of media into a single seamless production, post production and finishing workflow, for teams using traditional HD video as well as 4K.

The power and flexibility of Telestream's Vantage platform

Telestream Vantage is a powerful, scalable, software-enabled media processing platform, designed to simplify management of every media service from the camera to the distribution point. The Vantage family of product are recognized as some of the most cost-effective tools for ingesting, editing, transforming, packaging, monetizing and distributing digital media.

Vantage Transcoding products provide top-notch video transcoding products for multiplatform distribution, from broadcast and cable to VOD, IPTV and multiscreen OTT. These products leverage cutting-edge technologies to deliver pristine quality, exceptional processing speeds, plus the industry's most extensive workflow automation & system support - on premise or in the cloud.

The **Vantage Workflow** range of products provide scalable, intelligent workflow automation for file-based content production and multi-channel distribution. These

systems unite transcoding, media capture, metadata processing, and analysis into a single system, which is designed to automate complex decision making and workflows.

Vantage Cloud offers transcoding and workflow in three configurations at scaled price points: *Over The Top*, which provides multiscreen adaptive bitrate transcoding and packaging; *Multiformat*, which adds transport stream, broadcast and content assembly to OTT for any required output; and *International*, which adds frame rate conversion and DVB subtitle burn-in to multiformat, simplifying European and North American format production from the same source material. All these systems are fast, secure, scalable, globally accessible, and financially flexible, with pay-as-you-go plans.

The entire Vantage product family provides support for more than 120 video and audio compression formats and file types, covering a broad range of input and output devices. Format support includes professional camera ingest formats, editing formats, archival formats, and delivery formats for broadcast, cable, IPTV, VOD, web, mobile and multiscreen OTT. From proxy resolutions through SD, HD, UltraHD and 4K, Vantage offers video processing and transcoding tools for the most high-demand processing tasks.

All Vantage servers offer up to 9x CPU acceleration, multi-threaded and optimized for multi-core 64-bit Windows Server architectures. Vantage system management tools automatically optimize multi-server and resource utilization to ensure maximum throughput. And with full 16-bit 4:4:4:4 video processing, all Vantage transcoding and content processing steps ensure lossless precision for all video processing algorithms – all at extremely fast speeds, with shorter turnaround times and higher throughput.

Vantage's hands-free automation guarantees consistent, reliable results. workflows are designed visually, allowing even complex media processes to be represented in an easy-to-understand way. Metadata conversion, analysis results, media files, and the processes around them can be designed with complete freedom, with integrated file tracking, temporary storage recovery, and metadata modeling. Even complex processes can be visualized simply within Vantage, which then automatically breaks them into steps that can be executed across multiple servers.

Intelligent workflows also simplify automated decision making on Vantage systems. Delivery destinations, encoding profiles, and entire process branches can be chosen on a job-by-job basis, removing the need for human intervention and allowing truly intelligent workflow automation. Cropping, black detection, telecine removal, and dozens of other options work automatically based upon your rules to pick the best unique result for each media file, while audio analysis and correction, caption analysis and extraction, and deep media inspection can all be performed as part of a fully automated workflow.

The Vantage Workflow Portal enables construction and deployment of custom user interfaces for individual operators. Vantage allows operators to access catalogs of media within a workflow, to search for specific content and perform a proxy review and approval – allowing clients, legal teams and other stakeholders to perform fast, browser-based reviews of media during processing. Through a browser based interface they can

then annotate media, allowing them to choose delivery destinations, add AMWA or broadcast metadata, or simply change file names as part of your overall media workflow.

With the ability to combine hundreds of servers seamlessly, the Vantage product line provides enterprise-class scalability. Task-level load balancing distributes each step in a Vantage process independently for reliable high-volume output. CPU-aware task scheduling offers significant improvements over traditional “round robin” techniques. Optional Advanced Task Scheduling allows administrator-defined rules for task weighting and server capacity, which in diverse media environments can improve overall throughput by as much as 30 to 50 percent.

Archion’s Velo, Omni and Omni Hybrid are all certified to work flawlessly with the Telestream Vantage server, delivering unprecedented speeds for reading, writing, capturing, transcoding and file ingestion.