

Infotrend Solution Brief - Media & Entertainment

Media Content Workflow

Infotrend EonStor DS 4000 / 3000 systems play major roles in the modern-day media content workflow. The systems contribute significantly with their tremendous performance, scalability and adaptability. Beginning with video capturing onto storage device (ingest), the storage then provides stored data for editing and encoding (transcode). When done, the tuned content may be streamed (content delivery) to viewers upon request or archived.



The storage demand for the process of media content creation requires a combination of read, write, IOPS and storage capacity. Infotrend's EonStor DS 4000 / 3000 performances compliment one-another and can easily handle the media content creation process as shown in the illustration below. The ingest, render / transcode, content delivery, edit / composite sections of the media content creation highly rely on sequential read and write performances. The content delivery, edit / composite, digital asset and archive sections of the media content creation largely rely on storage capacity and the ability to scale, accordingly.

Fast Sequential Throughput

EonStor DS 4000

- 11,000 MB/s Seq. read performance
- 5,500 MB/s Seq. write performance
- 600K random IOPS
- Support up to 8x 4K Playback Video Streams

EonStor DS 3000

- 5,500 MB/s Seq. read performance
- 2,200 MB/s Seq. write performance
- 350K random IOPS
- Support up to 5x 4K Playback Video Streams



Ingest
High sequential
write performance



Render/transcode
High random I/O
performance



Content delivery
Scalable capacity,
high read performance



Edit/composite
Fast write and I/O
with scalable capacity



**Digital asset
management**
Scalable capacity
and high reliability



Active archive
Long-term storage
capacity and access
for content

Highly Scalable with Mass Storage Capacity

EonStor DS 4000

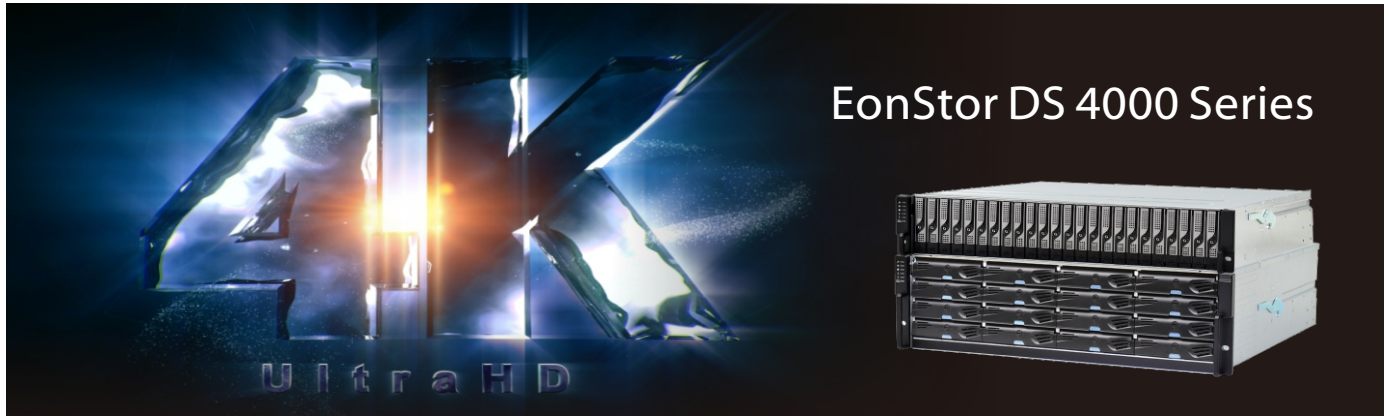
- Support up to 444 drives
- High density model: 4U 60-bay JBOD

EonStor DS 3000

- Support up to 360 drives
- High density model: 4U 48-bay/4U 60-bay RAID and JBOD

Best for High Bandwidth Workstation

Infortrend's EonStor DS 4000 series feature 12Gb SAS and 16Gb Fibre connectivity. It is the ideal high power multimedia workstation with consistent throughput, flexible and highly scalable storage capacity. It supports multiple simultaneous 4K media streams while allowing editors to go about their usual tasks. When extra storage capacity is needed, EonStor DS 4000 can expand online, uninterrupted, for additional storage space with high density JBODs up to 444 hard drives. Infortrend EonStor DS 4000 is the leading solution for the Media & Entertainment industry.



Leading Performance

- 11,000MB/s seq. read
- 5,500MB/s seq. write
- Up to 600K Random IOPS
- Massive throughput gets you ready for 4K media and beyond
- Support max. 128GB DDR4 memory per ctrl

12Gb/s SAS Technology for Expandability and Performance

- 12Gb/s SAS interface on client and drive sides
- 12 Gb/s SAS doubling the previous 6Gb/s transfer speed

Dual host boards for Flexible connectivity

- Mixed FC, SAS, iSCSI
- Massive performance gain

Online Expansion for Wide Scalable

- Connection with SAS 12Gb/s JBOD
- Dual SAS 12Gb/s expansion ports to maximize throughput
- Up to 444 drives per system
- Compatible JBODs in different form factors

Emergency Backup Power

- Super capacitors with flash module
- Cache data backup to flash module during power outage
- Long lasting and maintenance-free

Redundant Core Components to Ensure High Availability

- Both EonStor DS 4000 series systems and JBODs have redundant core components (controllers, PSUs, FANs)
- The combination of redundant core components and data services translate to 99.9999% availability

Data and Security Services

- Compatible with self-encrypting drives (SEDs)
- Secure remote replication
- Intelligent Drive Recovery (IDR) media scan and error correction
- Snapshot, remote replication and more

User Friendly

- Intuitive SANWatch and RAIDWatch interfaces
- Command line interface customization
- User friendly yet sophisticated UI with full access to features

Green Design

- Redundant 80 PLUS power supplies
- Accommodate 2.5" and 3.5" drives (hybrid tray)
- Intelligent drive and fan spindown

Small Editing Group and Archiving

With today's demand for ultra high definition contents, the Media & Entertainment industry is always looking for ways to improve their techniques in every possible way, from special effects to the storage hardware that supports vast content streams. Infotrend EonStor DS 3000 is the ideal solution for multimedia editing with simultaneous multiple 4K media stream support. Infotrend's EonStor DS 3000 media solution features 16Gb Fibre connectivity, the latest in storage technology and flexible online expansion up to 360 hard drives.



Tested and Proven Performance

- Simultaneously stream five 4K videos with sustained throughput.
- Up to 350K random IOPS and 5,500 MBps throughput

Online Expansion for Ultra Scalability

- Expand up to 360 HDDs
- Supports the latest NL-SAS technologies (largest storage capacity available)
- Capable of uninterrupted JBOD online-expansion

Variety of form factor

Available in 2U 12-bay/3U 16-bay/4U 24-bay and high density form factors 2U 24-bay, 4U 48-bay and 4U 60-bay

Connection and Upgrade Flexibility to Keep System Up-to-Date

- Hybrid iSCSI host ports for extra connectivity
- Swappable host board design that allows future upgrades
- Host boards are available in FC 16Gb, FC 8Gb, etc

Redundant Core Components to Ensure High Availability

- Both EonStor DS 3000 series systems and JBODs have redundant core components (controllers, PSUs, FANs)
- The combination of redundant core components and data services translate to 99.9999% availability

Advance Data Integrity, Backup and Protection

- On demand 128-target snapshot backup (upgradeable to 4096 targets)
- 64 replication pair volume mirror/copy (upgradeable to 256)
- Remote replication for offsite backup and disaster recovery
- Intelligent Drive Recovery (IDR) detects in advance and repairs fault sector(s) to avoid catastrophic failures.

User Friendly Management

- Exclusive SANWatch 3.0 browser-based interface makes management accessible from a single front end
- Proprietary RAIDWatch 3.0 provides RAID protection and powerful best practice facilities
- Support for intricate CLI editing

Energy Saving Design

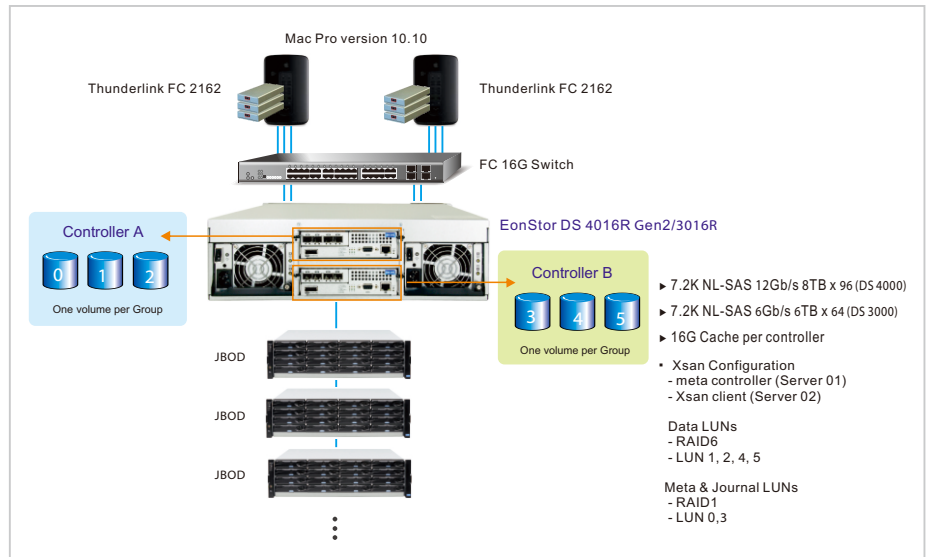
- Efficient 80 PLUS power supplies
- Intelligent drive spin-down reduces energy draw by up to 60% while extending drive lifespan

Simulated and Tested for Capability and Compatibility

Put to the test with actual simulated environment using Infotrend EonStor DS 4000/3000, 16Gb thunderbolt and MAC Pro to prove the solution's potential in M&E industry.



Real World Simulation with Dedicated 2K, 4K, 5K Streams



AV Optimization Function

- **Read-ahead** not only automatically detects multiple sequential I/O behaviors, but also appropriately sets up the size of pre-read cache for each stream, prompting essential media data to be cached, providing a stable high throughput without frame drop.
- Suitable **maximum drive response time** ensures every drive responds to each I/O request immediately.

Video Format	Read Throughput Improvement(%)**
(5K) 5120 x 2700 10-bit-RGB	25%-31%
(4K) 4096 x 2160 10-bit RGB	28%-34%
(2K) 1920 x 1080 10-bit RGB	14%-20%

* The performance improvement percentages shown are only guaranteed in specific configurations with AJA benchmark tool
 ** Tested with EonStor DS 4000 Gen2 series

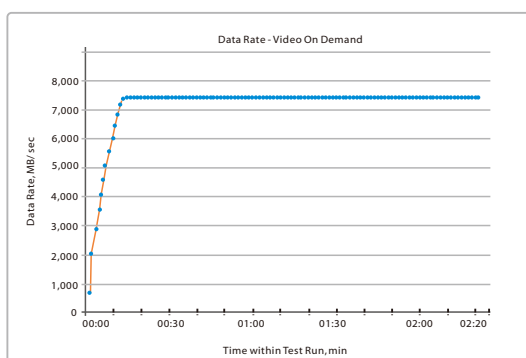
Performance

AJA Benchmark Tool Test

EonStor DS 4000 Gen2			EonStor DS 3000	
Stream Performance	# of Streams in Read	# of Streams in Write	# of Streams in Read	# of Streams in Write
(5K) 5120 x 2700 10-bit-RGB 24fps	6	3	DS 4000 Gen2 is recommended	
(4K) 4096 x 2160 10-bit RGB 24 fps	8	5	5	2
(2K) 2048 x 1556 10-bit RGB 24 fps	23	12	15	5
Throughput Performance	Reads Total (MB/s)	Writes Total(MB/s)	Reads Total (MB/s)	Writes Total(MB/s)
(5K) 5120 x 2700 10-bit-RGB	7729	4467	DS 4000 Gen2 is recommended	
(4K) 4096 x 2160 10-bit RGB	7569	4378	5100	1877
(2K) 2048 x 1556 10-bit RGB	7040	3717	4864	1639

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SPC-2 Simulation Test



- Supports **9,400 Simultaneous Streams** – Ideal for VOD applications
7,400 MB/s Data Rate

EonStor DS 4000 Gen2 meets the needs of VOD applications by boosting system performance and providing a much improved video streaming experience, solidifying Infotrend's capabilities as a leading provider of VOD optimized storage solutions.

- **Best for Following Application**

- Entertainment: movie on demands
- Online education and training
- Videoconferencing



Company Background

Curiosity Stream is an SVOD platform that streams original and licensed content over the internet. Users can access content via website, multiple mobile apps, and streaming devices such as AppleTV and Roku.

“The Infortrend solution has really saved the day for us. The RAID solution is extremely capable and with 16Gb/s FC hosts, it quadrupled our storage and network speed in one week. Additionally, its management platform and graphical user interface (GUI) is one of the cleanest and fastest I have ever seen.”

–Mr. Ray German, Server Manager at CuriosityStream.



Requirement

- Storage space and speed were the driving factors. We evaluated several solutions and found the Infortrend solution to provide all of the features we required with an excellent price point.
- Application used with Final Cut Pro X, Adobe After Effects, Final Cut Server, Telestream Episode.

Infortrend Solution

- EonStor DS 3060R – 60 bays high density model
- Sixty NL-SAS 6Gb/s 4TB drives
- Eight LUNs with RAID5



Company Background

Splash Entertainment, an animation studio that produces children's TV series.

“Thanks to this new solution, we now have a properly combined storage solution for our general data storage and post production tasks, and are more capable of being a market leader in the animation industry.”

– said Mr. Patrick Coy, Director of Technology at Splash Entertainment.



Requirement

- Decentralized infrastructure negatively impacted on productivity and management costs
- Struggled to meet performance and capacity requirements.
- Additional RAID to handle Metadata, and scratch disk.

Infortrend Solution

- Infortrend EonStor DS 3024 and JB 2024B
- 16Gb/s HBA & FibreConnect 16Gb/s switches



Jinan Television (JNTV)

Company Background

Jinan Television (JNTV), established in December 1984, currently has 7 channels, 16 departments and 800+ employees.

Requirement

Data growth exceeding expectations

- Need a solution that is easy to install, expand, operate and manage
- Compatible with JNTV's operations and existing solutions
- Broadcasting system, general editing and apple system editing



Infotrend Solution

Infotrend RAID Storage Systems:

- EonStor DS 1016 – all-around high performance RAID storage system
- EonNAS 3016 – compatible with Apple operating systems



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