

Enmotus *FuzeDrive* Enables a New Class of Hybrid Storage Solution for 4K Video Workstations

Delivers SSD Streaming Performance with HDD Capacities Capable of Streaming Raw Video Feeds of Uncompressed 4K video

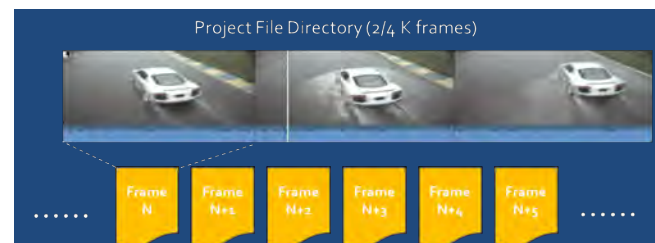
FuzeDrive is intelligent hybrid storage software that enables you to build hybrid storage solutions with commodity hardware by “*Fuzing*” SSDs and traditional hard drives into virtual hybrid storage that is fully automated. An advanced MicroVirtualization™ layer provides an ultra high performance virtual IO layer specifically designed to handles today’s most demanding SSD throughput and IO traffic. MicroTiering™ technology relocates active data to the SSD tier in real time, resulting in application performance characteristics of a pure SSD solution, leaving less frequently accessed data on slower media tiers. SSDs are treated as primary storage (not used as temporary cache), so the active data remains on the SSD permanently, or until displaced by more active data using an innovative load balancing algorithm. In addition, support for manually pinning a file to either the SSD or HDD tiers provides even greater flexibility and convenience when specific know projects or data files need to be located on the SSD tier form the get-go.

The Challenge: A large number of hard drives are required to support the 1.5GB/s+ rates required for streaming raw 4K video streams during video editing projects i.e. 20 or more. A much smaller number of SSDs on the other hand can easily handle the multiple 4K streams but are prohibitively expensive and smaller, especially when there are multiple team members all requiring the same level of performance for a project. SSDs that are low

enough in cost are simply too small to hold the required number of frame based files for the entire video project, causing excessive amounts of copying and “floppy-net” to move data back and forth during editing.

The solution: Using Toshiba SSDs in a RAID 0 configuration, *fuzed* with low cost high capacity hard drives also in a RAID 0 configuration, a cost effective large capacity virtual SSD-HDD hybrid drive may be created that can easily handle large video projects. Furthermore, the size of the SSDs may be tailored to the scope of the project be it dailies, shorts or movies.

FuzeDrive can either automatically detect which individual 4K frame files need to be on the SSD as they are accessed and relocate them without any user intervention. Alternatively, the user may select a range of files to promote manually if they know in advance which frame files they wish to work with.



Only promote the section of the project you are working on to SSD. Simply select the files (frames) and tell the engine to promote now. Files will start promoting immediately, increasing performance for 2/4K stream rates



Configuration:

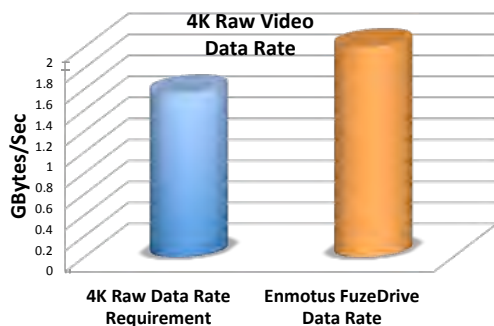
A single high performance workstation was connected via Mellanox's high speed Infiniband to a storage server configured with 4 480GB Toshiba SSDs along with 16 500 GB HDDs. The SSD and HDDs were configured into 2 RAID 0 groups using an Adaptec 7 series RAID Controller. The storage server was connected to an external JBOD through an LSI 9286-8E MegaRAID controller, which contained an additional 12 3TB HDDs. These drives were also configured into a RAID 0 group.

Pooling all 3 RAID groups into a single tier by using the Enmotus FuzeDrive Hybrid Storage Software created a high performance hybrid drive. The total system capacity was 45.92 TBs, of which 1.92 TBs was SSD. The client workstation contained an Intel IrisPro VGA and Adobe's Premiere Pro Video Editing software.



Professional Video Editing Solution with Enmotus FuzeDrive provides nearly 46TB of capacity and delivers 2 GBytes/sec of data throughput, more than enough to satisfy the requirements of 4K Raw Video

Performance



The Enmotus FuzeDrive Video Editing solution provided 2 GBytes/Sec data rates, which exceed the requirements needed by 4K raw video. Iometer was used to validate the data rates.

Conclusion

The Enmotus FuzeDrive Hybrid Storage Solution provides video editing applications performance when you need it along with all the capacity to store high definition raw video files. The final solution is a high performance, high capacity solution that meets the needs of the most discriminating users at affordable price points. Editors can manually pin their active video files for editing to the high-speed SSD tier, thereby guaranteeing they meet the performance requirements of 4K Raw video, then return them to the slower hard drives when done. The SSD tier can be sized appropriately to make sure they meet the capacity requirements of projects. The majority of the video files can be stored on cost effective hard drives until they are required for an active project.

PERFORMANCE WHEN YOU NEED IT – CAPACITY WHEN YOU DON'T!