

Intelligent Combination of Advanced Technologies

Simplicity and high-performance in proven solutions specifically designed to meet the highest demands in Media & Entertainment (M&E) workflows



"We are impressed both with the solid and reliable performance and the extraordinary low latencies of the Mellanox SX1012 switch. The combination of the SX1012 and ELEMENTS ONE is a powerful and versatile solution for every post-production facility."

-- André Kamps, CEO, ELEMENTS

All collaborative real-time workflows in the professional M&E industry, handling fast-pace production cycles and meeting tight deadlines, are reliant on seamless and fast sharing of media files between the various workstations connected to the shared storage system. While demands in terms of resolution are constantly growing, requiring the underlying IT infrastructure to provide even higher performance to process large-sized media files of 2K, 4K or even higher resolutions, both the project budgets and time-to-completion are shrinking noticeably. This unfavorable trend calls for more flexibility, capacity, reliability and performance of the media storage system than ever before.

In addition, the high-speed production cycles, generally involving a multitude of artists working on the same project at the same time, benefit from innovative SAN/NAS solutions that are easy to manage and maintain, in order to support autonomy of the production teams without depending on specialized IT personnel.

Testing Partners

ELEMENTS develops high-performance storage for the media and broadcast industry that is unprecedented regarding its simplicity and intuitive manageability – with virtually no IT skills required. As the first and only manufacturer in the global market, ELEMENTS has accomplished a fundamental breakthrough concerning shared storage and file systems in heterogeneous SAN/NAS environments and has managed to square the circle: sharing media files natively across all platforms and applications, even including those not allowing for native project and media sharing on a shared file system, such as Avid. With full Avid bin-locking, project sharing, and interplay support, ELEMENTS enables post-production and broadcast facilities to collaborate in a truly shared file system, even when utilizing Quantum's StorNext FS.

Mellanox Technologies is a leading supplier of end-to-end InfiniBand and Ethernet interconnect solutions for servers and storage. Mellanox interconnect solutions increase data center efficiency by providing the highest throughput and lowest latency, delivering data faster to applications and unlocking system performance capabilities. The Mellanox Ethernet switch family delivers the highest performance and port density with a complete chassis and fabric management solution, enabling converged data centers to operate at maximum scale while reducing operational costs and infrastructure complexity. The Mellanox SX1012 Ethernet switch supports 10/40/56Gb/s per port, allowing IT managers to build cost-effective and scalable switch fabrics for small-to-large clusters up to tens-of-thousands of nodes.

Technical Components

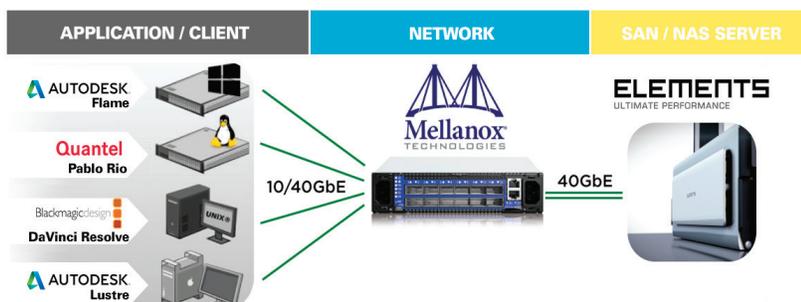
SAN/NAS Server: Server Configuration: ELEMENTS ONE, a 60-bay all-in-one server/media storage solution (in 4U) with up to 360TB of usable storage space, provides simultaneous access via SMB, NFS, AFP, and block-level.

Ethernet Switch: The Mellanox SX1012 switch system provides a simple-to-use and high-performing top-of-rack solution in a half-width 1U form factor by delivering up to 1.3Tb/s of nonblocking throughput with 10GbE or 40GbE link speed.

Test Environment: Real-Life Conditions Under Full Load

The Mellanox SX1012 40GbE switch was tested on an ELEMENTS ONE all-in-one SAN/NAS server under real-world conditions and under full load.

In the test set-up the ELEMENTS ONE server utilized 2x 40GbE ports of the SX1012; the remaining ports were used



This setup supports virtually every common NLE application

for client connections. In order to simulate real-life conditions of the M&E industry during the test, the clients were running Autodesk FLAME, Quantel Pablo Rio, DaVinci Resolve, and Autodesk Lustre. However, the set-up supports virtually every non-linear editing application available today.

Observations and Results: Utmost Simplicity and Flexibility

The most outstanding and remarkable observations during the test of the Mellanox SX1012 switch include:

- Easy and flexible setup and configuration
 - The Mellanox SX1012 provides a clearly-arranged and intuitive Web-based user interface, reducing the administration and maintenance effort significantly.
 - Each of the 40GbE ports of the Mellanox SX1012 can be “sliced” to provide four 10GbE connections. This convenient option of port-slicing enables support for up to 40 clients with 10GbE connections, which comes in very handy, especially for the high bandwidth requirements of NLE applications, processing DPX, or even 4K files. The port-slicing option provides unsurpassed versatility and flexibility for bandwidth throttling.
- Extremely low latency
 - During the “acid test”, the Mellanox SX1012 showed extremely low latency in both cut-through and store-and-forward modes.
- Small footprint
 - The Mellanox SX1012 is a 1U unit; however, unlike other Ethernet switches, it only uses half the width of the rack, making it exceptionally easy to create a high availability setup while still using only 1 rack unit.
- Cost efficiency
 - The cost per port of the Mellanox switch solution is very low compared to the cost per port of an 8Gb fibre channel switch. The performance delivered by the SX1012 makes the deployment of costly fibre channel and complex SAN infrastructure virtually obsolete.

Conclusion

The Mellanox SX1012 Ethernet switch demonstrated itself to be an excellent tool for tapping into the full potential of the ELEMENTS ONE SAN/NAS server. Its user-friendly concept fits perfectly with the basic approach in ELEMENTS of exceptional simplicity and an overall user-friendly management. Also, the small footprint of the Mellanox SX1012 complements the slim design of ELEMENTS, as the ELEMENTS ONE comes as a 60-bay system, accommodating up to 360TB of

usable storage space. In addition, both components, the SX1012 and ELEMENTS ONE, provide a remarkably easy and flexible scale-out option, making it simple for customers to grow as required in the future.

Above all, it is conspicuous that the SX1012 bolsters the ELEMENTS aim to flexibly serve the entire facility of a customer. While ELEMENTS ONE provides the option to simply connect all clients to the central storage and start collaborating immediately, the port-slicing option of the Mellanox SX1012 perfectly enhances that privilege by providing the option to allot appropriate bandwidths to certain applications (for example, assigning 10GbE connectivity to Final Cut Pro, Avid, and the like, while allowing DPX workflows such as DaVinci and Autodesk to access the storage through a 40GbE connection). Using just one storage system and one switch, the setup provides the option for post-production facilities to manage and control the network, customizing the bandwidth requirements of each client/application distinctively.

Bottom line: Instead of establishing a rather complicated high-maintenance set-up, utilizing both fibre channel and Ethernet, the combination of ELEMENTS ONE with the Mellanox SX1012 offers the unique opportunity to deploy a very simple and easy-to-use solution. The combination of ELEMENTS ONE with the Mellanox SX1012 offers the unique opportunity to deploy a very simple and easy-to-use solution: one server/storage and one switch provide high-performance simultaneously for both worlds of non-linear editing applications. These two high-performance components combine to create an overall ideal solution for deployment in the Media & Entertainment industry, as it provides unprecedented simplicity regarding the maintenance and unique flexibility in terms of both management and scalability. In addition, it provides high-performance in an extraordinarily small footprint.

“The ELEMENTS solution from top to bottom is tailored made for the media and broadcast industry. When ELEMENTS storage and Mellanox networking is combined it meets all demands for flexibility, capacity, reliability and performance. It gives a one-stop shop for artists for the most demanding video formats – even 3D, 4K or HFR!”

*-- Richard Hastie, Director, Global Media/
Entertainment Markets
Mellanox Technologies*



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