Mellanox TECHNOLOGIES

pixitmedia

PixStor and Mellanox Ethernet: A Global Software-Defined Platform for Your M&E Workflows

Support Uncompressed 4K and UHD Content Production and Delivery with User-determined Performance and Scalability

THE CHALLENGE

For media producers, uncompressed, ultra-high definition format offers the best way to preserve accurate source content, delivering the highest quality real life experience to the audience. However, the resulting requirements for increased bandwidth, capacity and data management are too overwhelming for traditional IT infrastructures.

Traditional IT infrastructures typically consisting of NAS and SAN silos is often underutilized, difficult to scale and insufficiently dynamic to cope with rapidly changing workflows. Unsuitable for production workflow requirements, these architectures fail to meet the ever tightening budget and time-to-market constraints in today's highly competitive marketplace.

THE SOLUTION

Pixit Media and Mellanox have developed an IP-based, software-defined solution that not only addresses the fast-growing demands for storage capacity, network bandwidth and system scalability, but also significantly increases user productivity and production workflow efficiency. The solution consists of the PixStor, a global software-defined storage solution, running on a Mellanox Ethernet switch, a high-performance and reliable IP networking platform.

PIXSTOR: WORKFLOW-CENTRIC SOFTWARE-DEFINED STORAGE FOR M&E

To overcome the inefficiency of traditional IT infrastructures which severely inhibit the productivity of media professionals, PixStor provides a global storage platform that consolidates existing NAS (Isilon, BluArc, FAS, etc.) and SAN (StorNext, XSAN, etc.) technologies, enabling content producers to access media files easily and reliably from their studios or on the go. It provides such transparency in scale and performance that the content producers can completely focus on their projects, rather than the constraints of their IT infrastructure.

- A global storage namespace: PixStor aggregates multiple tiers of storage and presents them to all users as a single, common file system. Using intelligent, policy-based data management, PixStor ensures that the correct files reside on the correct tier. As a result, PixStor can support uncompressed 4K playback and standard file sharing from the same, shared project directory structure to an unlimited number of users.

KEY BENEFITS

- M&E workflow-aware software-defined storage with a global shared namespace

- Intelligent tiering and data migration with a single view of data on premise and in the cloud

- User-friendly, fast search and analytics through automatic user and file system metadata extraction

- Python APIs for seamless integration with creative platforms and "in-application" management

- Transparent, future-proof and high-performance networking with simplified topology and linear scalability

"Enabling 4K and UHD content transported end-to-end over IP with guaranteed performance, Mellanox Ethernet complements PixStor to deliver a single platform for M&E workflows – removing technology islands, reducing running costs and improving user productivity/workflow efficiency."

Ben Leaver

CEO, Pixit Media

- **Open, standard file sharing protocols**: The PixStor architecture is completely open and can be tailored for the needs of any workflow. It can also easily be updated for any changes to or expansion of that workflow. PixStor supports standard network file sharing protocols such as SMB/CIFS, NFS, FTP, and supports numerous 4K codecs for a secure, predictable and, most importantly, reliable editing experience. Even for most demanding uncompressed frame based playback, a native file system driver is also available if required.

- **Guaranteed performance with no single point of failure**: PixStor manages data placement and services data I/Os intelligently. By placing data in the correct storage tier, aggregating IO requests, and pre-fetching data to cache locally, PixStor delivers excellent performance from small random I/Os to large sequential file access. Furthermore, with multiple protected failure domains, such performance scaling can be realized without any outage or workflow interruption.

- **Workflow-aware storage**: PixStor's Python API offers the capability of 'in-application' management of common PixStor data and file management tasks. Pipeline developers can rapidly deploy new features from their applications that interact directly with the storage, enabling artists to easily and safely 'self-manage' the central repository without ever having to leave the application.

- **Easy to search and access**: PixStor automatically ingests data and associated metadata into the Pixit Media EasySearch interface, creates preview proxies for quick browsing and result validation. It also harvests metadata directly from images, videos, sequences and documents, reducing the need for human intervention. Instant access and search of data is provided from an intuitive search interface with auto-filtering capabilities.

- **Easy, centralized monitoring and analytics**: Centralized, automated monitoring of all major solution components from a single interface vastly reduces the complexity. Offering industry-leading capacity and performance analytics, PixStor helps administrators track the growth and usage of the solution with the click of button and provides uncovers deep insights into the actual cost of storing and serving data.
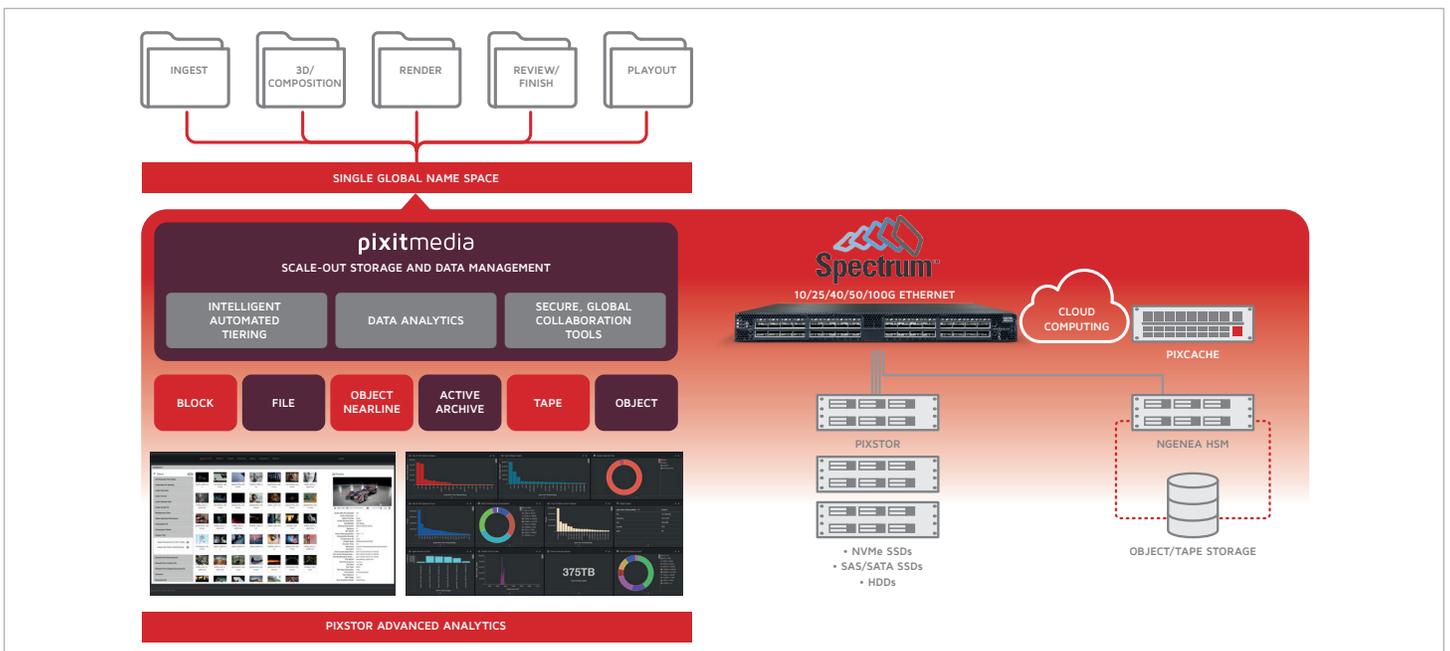
MELLANOX ETHERNET SOLUTION: END-TO-END IP INTERCONNECT WITH UNCOMPROMISED PERFORMANCE

Speed and cost are key to content production in a collaborative environment. IP networking is inherently open, flexible, cost efficient, and scalable. With enhanced QoS and reliability capabilities, IP networking provides an efficient, high performance infrastructure for producing and delivering uncompressed 4K and UHD media content.

PixStor uses Mellanox IP networking to connect the back-end storage tiers as well as the front-end clients, to eliminate expensive fibre-channel networks. Optimized for ultra-low latency and a lossless networking fabric, the Mellanox networking solution meets the most demanding performance requirements for any M&E workflow.

- **Non-blocking 10/25/40/50/100G Ethernet switches**: Mellanox Ethernet switches deliver predictable performance at full line rates. Non-blocking switching, consistent ultra-low latency, and no packet drop at any packet size makes the network invisible throughout the content production and delivery pipeline. Featuring various port counts and network speeds, Mellanox switches support various configurations. Further, with speeds ranging from 10GbE to 100GbE, the same Mellanox switches can meet the needs of today and tomorrow.

- **Uncompressed 4K and UHD support**: Mellanox switches provide guaranteed performance for multiple streams of uncompressed 4K and UHD content from PixStor to applications such as the Nuke Studio desktop — up to 6GB/s throughput at 40GbE network speed. More importantly, such performance is achieved without any frame drops.

- **Hardware-based acceleration with RDMA offload**: Mellanox Ethernet solutions not only deliver high performance, they also provide network offload functionality such as end-to-end RDMA over Converged Ethernet (RoCE), which increases throughput significantly over traditional TCP and maximizes the CPU utilization and the storage performance.

PixStor: Workflow-Centric Software-Defined Storage for M&E

- Ease of use and management: Mellanox provides network orchestration and automation software, NEO, to make the network configuration and management effortless, even for people without a limited networking background. REST APIs make it easy to integrate NEO into other management software.

Mellanox provides end-to-end Ethernet solutions from switches, adapter cards, cables and management software to greatly improve both the IT infrastructure and content production efficiency, significantly lowering the total cost of ownership.

BUSINESS BENEFITS

With a single "global" view of media content between workflows among content producers across geographic locations, the PixStor platform enables full utilization of resources and facilitates real-time collaboration, a de facto requirement for content production today. It also provides a wide range of backend storage hardware choices from multiple storage vendors, empowering customers to purchase the most appropriate storage for their ever-changing needs.

The Pixit Media and Mellanox solution delivers predictable storage and network performance, allowing media producers to focus on their tasks rather than the complexities and limitations of traditional IT infrastructures. The open, transparent, highly-scalable storage/network also makes it agnostic to new media formats and future-proof for new applications, such as 4K/8K and virtual reality playback.

The workflow-centric, easy to search and access capabilities not only simplify complex operations, but also give the creative artists deep insight into data profile and usage for self-management and increased productivity.

The Pixit Media and Mellanox solution provides market leading cost efficiency. The tiered data placement and intelligent data migration of PixStor help maximize $/GB. Mellanox 10-100GbE networking delivers the bandwidth needed for UHD and unleashes the performance of PixStor storage.

Seamlessly integrated, the Pixit Media and Mellanox solution delivers highly scalable capacity, performance and reliability and is the one platform for all studios and all workflows.

About Pixit Media
Founded in 2011, Pixit Media's team of innovators, designers, and developers continue to deploy the most advanced IP-based data storage platforms for the media and entertainment market. Pixit Media provides highly scalable, efficient and enterprise-class storage, network and archive solutions for the Post-Production and Broadcast industries. Featuring some of the top content creation and distribution customers in the world, Pixit Media is the perfect partner for the supply and support of media production and delivery workflow solutions. www.pixitmedia.com.

About Mellanox
Mellanox Technologies is a leading supplier of end-to-end Ethernet and InfiniBand intelligent interconnect solutions and services for servers, storage, and hyper-converged infrastructure. Mellanox offers a choice of high performance solutions: network and multicore processors, network adapters, switches, cables, software and silicon, that accelerate application runtime and maximize business efficiency for a wide range of markets including high performance computing, enterprise data centers, Web 2.0, cloud, storage, network security, telecom and financial services. More information is available at www.mellanox.com.

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