

# NexentaEdge and Mellanox Solution Brief

## Nexenta and Mellanox Unleash Scale-Out and Performance Software-Defined Cloud Storage



NexentaEdge, object & block storage, via Mellanox high-speed Ethernet solution delivers high performance, fully featured storage services for next generation cloud native applications.

### Storage in the Cloud Era

Cloud infrastructures require unfettered scalability and an open architecture which allow for highly efficient resource utilization with unified and transparent operational services. For modern, fast paced businesses, data-centric clouds need scalability to keep up with the growth of data consumption and the rapid emergence of new applications. Modern cloud infrastructure must be flexible and dynamic in nature in order to provide the right level of compute, storage, and networking resources to guarantee application level performance in changing workload demand conditions. With data-growth outpacing the typical IT budget, the only viable strategy is one that leverages industry standard hardware components, which can be dynamically provisioned in a way that matches business priorities. The seamless continuity of enterprise-class security, reliability and availability, are essential capabilities for a modern cloud infrastructure.

As a pioneer in open source-driven software defined storage (OpenSDS) solutions, Nexenta develops core capabilities in its product portfolio to enable organizations to run their businesses securely, flexibly, and cost effectively. Utilizing high performance networking, such as Mellanox Ethernet switches, Nexenta storage solutions help organizations deploy web-scale solutions which can run everyday business applications smoothly. In addition our storage solutions are expandable enough to respond to fast-changing technology trends from social media, mobility, ever-growing big data solutions, and the emerging Internet of Things paradigm. The provisioning and orchestration of this agile IT infrastructure can be integrated with the industry-redefining OpenStack, CloudStack, as well as custom do-it-yourself cloud deployment models for all types of clouds – private, public, and hybrid.

### Key Benefits

- High performance, low latency iSCSI Block and Swift and S3 Object services
- Best-in-class performance for small random I/Os for virtualization and OLTP applications
- Simple scaling to 100's of PBs
- Dedicated 40G storage network fabric for line rate and lossless network data transfers
- Intelligent data placement and inline data reduction for best storage efficiency
- Low touch operational model for configuring and operating and managing storage and network autonomously

# NexentaEdge™ and Mellanox

## Solution Benefits

### NexentaEdge™

NexentaEdge, Nexenta's scale-out software defined storage solution, is specifically designed to deliver high performance, petabyte scale, full featured storage services that are required by next generation clouds, big data, and cloud native applications. Scalable from 100's of Terabytes to 100's of Petabytes and 100's of servers in a single cluster, NexentaEdge provides full-featured, high performance iSCSI block and object services with inline deduplication, inline compression and unlimited snapshots and clones.

NexentaEdge software deploys as containerized microservices on shared nothing clusters of low cost industry standard servers running Linux, interconnected via 10 Gigabit Ethernet or higher. In addition to the good streaming performance that many other scale-out solutions deliver, Nexenta shines with its best-in-class performance for small random I/O operations, which makes it particularly adapted for large scale virtual machine environments and transactional applications.

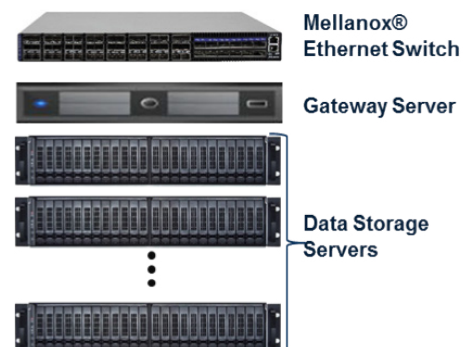
NexentaEdge's container based deployment model, performance and functionality make it an ideal storage solution for use cases such as Active Archive, OpenStack, Cloud Native Applications utilizing containers, that require petabyte scale storage scalability and elasticity. The ability to serve high performance, low latency, iSCSI block devices also allows NexentaEdge to address virtualization environments by providing high performance data stores.

### Mellanox 10/40G Ethernet Switches

NexentaEdge utilizes the network fabric in a very unique way. By leveraging a patented multicast technique to perform dynamic data placement over the networked storage servers, NexentaEdge always performs read and write I/Os with the lowest possible latency. To ensure such high performance, NexentaEdge requires a dedicated internal, or back-end, high-speed network fabric connecting all servers (both storage nodes and gateway nodes) in the Nexenta cluster. This internal network must not be shared with any other clients in the datacenter.

Mellanox 10/40G Ethernet switches are the ideal Top-of-Rack (TOR) switches for NexentaEdge's internal network. These non-blocking Mellanox switches provide the high-performance, low-latency, networking needed for all types of storage arrays – HDD, all-flash and hybrid. The best-in-class performance, simplicity, and cost effectiveness of the Mellanox Ethernet switches enable NexentaEdge to deliver its core capabilities in various cloud deployments.

- **True non-blocking switch** – Mellanox switches are able to forward at full line rate for all packet sizes and port combinations - a requirement for NexentaEdge back-end network
- **Predictable network performance** – Ultra-low network latency that has very little variation (jitter) is essential for predictable performance of both small random I/Os and large sequential blocks
- **10G today and 40G ready** – A simple cable change is all that is required to change the switch port speed from 10 Gigabit Ethernet to 40 Gigabit Ethernet when next-gen NexentaEdge storage requires 40 Gigabit interconnections



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# NexentaEdge™ and Mellanox

## Solution Benefits

- **Simple to use and flexible for various configurations**

- SX1012: The industry's smallest 40 Gigabit capable switch. It has 12 ports which support 1G/10G/40G operation, with the option to scale to 48x 10G ports with splitter cables. Its half-width form factor allows the placement of two SX1012s side-by-side in a single 1RU slot
- SX1410/SX1024: 1RU form factor with 48x 10G ports and 12x 40/56G uplink ports. Configurable to 54x 10G ports and 8x 40/56G uplinks

- **Easy-to-deploy and manage** – Mellanox Ethernet switches are easy to install and configure. Mellanox NEO™ allows networking configuration and management of a NexentaEdge configuration in one mouse click. Plugins to VMware NSX and OpenStack are available

- **Best price/performance Ethernet solution** – Best performance/latency, compact design, and low power consumption improve rack and server efficiency, thus reducing the total cost of ownership.

## Conclusion

Nexenta and Mellanox break new ground for software-defined storage in terms of reliability, functionality and cost efficiency. NexentaEdge is designed to deliver high performance Block and Object storage services and limitless scalability. Connecting the servers in the NexentaEdge cluster in the back-end network, Mellanox Ethernet switches provide non-blocking high-speed network connectivity, with ease of deployment/management and the best cost/performance. Together, the joint solution enables next generation OpenStack clouds, petabyte scale active archives and Big Data applications.

## About Mellanox

Mellanox Technologies is a leading supplier of end-to-end Ethernet interconnect solutions and services for enterprise data centers, Web 2.0, cloud, storage and financial services.

More information is available at [www.mellanox.com](http://www.mellanox.com).

## About Nexenta

Nexenta is the global leader in Open Source-driven Software-Defined Storage (OpenSDS) with 6,000+ customers, 400+ partners, 33 patents, and more than 1.5 exabytes of storage under management. Nexenta OpenSDS solutions are 100% software-based; and 100% hardware-, protocol-, and app-agnostic providing organizations with the “true” benefits of Software-Defined Everything-centric cloud computing for all types of Clouds – Private, Public, and Hybrid.

For more information, visit [www.nexenta.com](http://www.nexenta.com).



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