



Zadara and Mellanox Deliver Higher Performance Storage for Data Centers and Cloud

Mellanox RoCE Boosts Zadara Storage Performance by 3X-10X

BACKGROUND

As a rule, traditional storage solutions lack the scalability and flexibility to support the expansion of enterprise IT infrastructures. They always require large up-front capital expenditures, multi-year planning cycles, expensive daily maintenance, and disruptive upgrades. As a result, more and more enterprise customers have adopted cloud services as an alternative. However, for many enterprises, business critical applications must still run in their on-premises data centers. Such customers demand a scalable and cost effective storage solution for their data centers while keeping enterprise-class performance, reliability, and security intact.

Powered by Mellanox's end-to-end RoCE-based Ethernet solution, Zadara Storage met these requirements by offering an on-premises-as-a-service solution. The Zadara solution provisions dedicated storage resources to applications with predictable performance and Quality of Service. Such guaranteed performance, virtualization, and isolation enable data centers to grow without limit while adding storage only when necessary. This pay-as-you-grow approach delivers significant cost savings in both CAPEX and OPEX.

The Zadara Storage solution can run both at customer premises as well as on public clouds. Zadara customers gain the benefit of seamlessly replicating between their data centers and the cloud at the click of a button.

ZADARA STORAGE SOLUTION

Zadara Storage provides high-performance, highly-available block, file and object storage through its patented, software-defined Virtual Private Storage Arrays (VPSA™). A VPSA has its own resources – dual controllers and a choice of storage devices – and is connected to standard x86 servers using iSCSI or NFS over a 25, 40, 50 or 100G Ethernet fabric. Dedicated VPSAs can be created by different users for specific applications. In this scale-out multi-tenant architecture, Zadara Storage can scale to petabytes of storage and support hundreds of applications.

SOLUTION HIGHLIGHTS

- Flash Storage enables Higher Software Defined Network Efficiency
- NVMe Storage Runs Best over Higher Performance Networking Solutions
- RoCE enables up-to 5 times Higher Performance vs. TCP/IP

"With Mellanox end-to-end RoCE solution, we were able to achieve performance increases of 3-10X. In particular, the SN2100 is an ideal ESF switch providing unmatched value."

- Nelson Nahum, CEO, Zadara Storage

As an enterprise-class storage solution, Zadara Storage offers features such as active-active failover, snapshot, cloning, replication, remote mirroring, data protection, and encryption. In addition, to take advantage of commodity hardware, the Zadara solution supports data reduction techniques such as thin provisioning to achieve greater cost efficiency.

Zadara Storage is designed to deliver guaranteed performance and service levels to individual applications. VPSAs are defined and managed by software so that the storage device mix is tailored to the individual customer demand – both workloads and budget. Zadara Storage can service both demanding workloads as primary storage and backup and repository workloads as secondary storage. VPSAs for different workloads are isolated from each other.



Guaranteed high performance of a scale-out storage solution depends on a reliable, high performance network. Mellanox High Bandwidth (25, 40, 50 & 100G) Ethernet switches and network adapters deliver the guaranteed networking performance for Zadara Storage. Workloads demanding ultra-low latency are further accelerated by using iSER (iSCSI Extensions for RDMA) and NVMe-oF (NVMe over Fabrics) protocols over RoCE (RDMA over Converged Ethernet) capabilities in the Mellanox solution.

MELLANOX END-TO-END ROCE SOLUTION

Mellanox makes industry-leading, high performance end-to-end Ethernet products, from switches and network adapter cards to cables and transceiver modules. Leveraging its market-proven, standards-based RDMA implementation, Mellanox Ethernet adapters push the low-latency envelope further by supporting iSER and NVMe-oF over RoCE and offloading these features from the CPU. In the network fabric, its Spectrum Ethernet switches support true cut-through latency and run at full line-rate throughput without any packet loss at 10/25/40/50/100G speeds. Spectrum switches optimize RoCE performance with advanced congestion control and prevention of congestion spreading. In addition, its WJH (What Just Happened) network telemetry feature enables real-time monitoring of RoCE and TCP storage data flows.

The Mellanox Ethernet solution delivers the following benefits:

- **Latency acceleration for storage servers** – iSER and NVMe-oF over RoCE support in Mellanox network adapters significantly offload the CPU, reducing latency and improving server efficiency

- **Highest and most predictable network switch performance** – no packet drops and 300ns network latency at any packet size and workload
- **Ideal TOR switch for storage / RoCE** –
 - Small footprint: two 16-port switches side-by-side in 1RU
 - Simple to use and flexible for various configurations: ports support 10/25/40/50/100G, with the option to scale from 16 x 40/100G ports to 64 10/25G ports in the same switch with splitter cables
 - Advanced congestion notification and superior buffer management for both RoCE and TCP-based data flows
 - Easy, one-click RoCE configuration and extensive visibility for monitoring and troubleshooting
- **Best price/performance Ethernet solution** – Best performance/latency, compact design, and low power consumption, improving rack and server efficiency, thereby reducing the TCO

With Mellanox's end-to-end networking solution and RoCE support, Zadara has seen improved latency, IOPS and throughput – 3X internode performance gain and 10X end-to-end performance improvement.

CONCLUSION

Providing enterprise storage as a service, Zadara Storage offers enterprise customers a scalable and pay-as-you-grow storage platform for both on-premises data centers and the cloud, without losing enterprise-class features required by their customers. To meet demanding application needs, more and more businesses are implementing Zadara's iSER and NVMe-oF options powered by Mellanox's RoCE-based Ethernet solution. As the result, customers see up to 10X performance improvement. Combined, the Zadara and Mellanox solution delivers best-in-class performance and helps customers achieve operational and cost efficiency.

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

About Zadara Storage

Zadara Storage offers enterprise storage-as-a-service, delivering high-performance, highly available file and block storage. The company's patented software-defined Virtual Private Storage Arrays™ (VPSA™) deliver flexible multi-tenant enterprise SAN and NAS technology for petascale primary and secondary storage. Visit www.zadarastorage.com



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