

# Mellanox High Speed Intelligent Network Enhances Performance of XSKY Distributed SDS

Traditional storage solutions generally cannot provide sufficient flexibility and scalability to meet the challenges of business growth for enterprise IT architectures. Moreover, such solutions are costly, which makes companies reticent to plan for long-term upgrades. In order to maximize flexibility, most enterprises have chosen cloud-based services as an alternative.

However, for most companies, key applications must be deployed in-house in the data center, so they can be controlled internally. For such circumstances, a scalable, reliable, secure, cost-efficient storage solution is required.

Employing Mellanox's 56Gb end-to-end InfiniBand solution, XSKY's Ceph-based Software Defined Storage (SDS) products meet these requirements. The products dispatch distributed storage cluster resources to provide applications with predictable, reliable storage services. By utilizing ensured performance, virtualization and traffic isolation, a data center's diversified storage needs can be met and scaled as needed.

## X-EBS

Produced by XSKY Beijing Data Technology, X-EBS (XSKY Enterprise Block Storage) is a distributed block storage product for enterprises use. Incorporating Ceph, the popular open-source distributed storage system, X-EBS offers greatly optimized software performance, enhancing

reliability, usability and flexibility significantly. X-EBS is capable of automatic 7x24 maintenance without any command line. X-EBS helps operators and enterprises to control the costs of extending their storage pool, integrating or replacing existing midrange storage and building a comprehensive application portfolio to support various OLTP or OLAP businesses.

## X-EBS & Mellanox Solutions

RDMA (Remote Direct Memory Access) significantly reduces latency in network transmission and provides outstanding throughput by using offloading functionality to the hardware. In applications that require highly efficient computing, RDMA is widely used for network data transmission and interactive computing. RDMA completely bypasses the CPU for I/O tasks, freeing resources for accelerating application operations (server-to-server or server-to-storage), achieving greatly improved system efficiency.

As the industry leader in developing RDMA-based products and solutions, Mellanox produces high performance end-to-end RDMA devices. XSKY EBS employs an RDMA-supported Mellanox ConnectX®-3 VPI network adapter to maximize its network accelerating framework and to decrease CPU overhead, thereby resolving the performance bottleneck on interconnected nodes in distributed storage."

*"There is chemistry when Ceph, the world's leading open-source SDS, meets the cutting-edge networking technology, RDMA. The joint work of Mellanox and XSKY makes the storage platform suitable for more transaction-intensive workloads."*

*- Haomai Wang  
XSKY CTO and  
Ceph Kraken featured developer*

## Solution Architecture

For those who require a high performance end-to-end network, the option of XSKY with an InfiniBand interconnect is ideal. Applications are deployed on the compute nodes and the XSKY Data Client (XDC) generates block storage volume locally at those nodes for the applications to use. The data client is connected to the storage cluster and initiates the interactions via InfiniBand/RDMA. Meanwhile, the data distribution traffic between nodes is also transmitted via InfiniBand/RDMA.

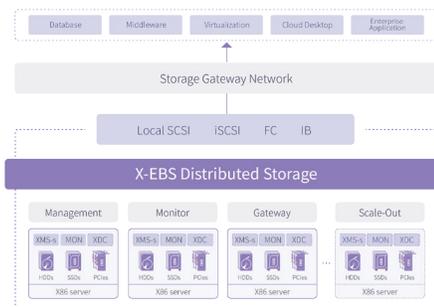


Figure 1. X-EBS Distributed Block Storage

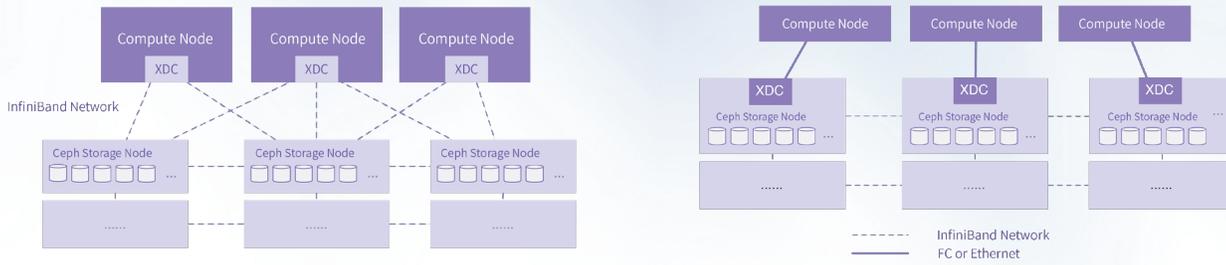


Figure 2. Option 1 - overall InfiniBand interconnect; Option 2 - front-end FC or iSCSI, back-end InfiniBand network

In this scenario, the network segment of the I/O path is fully operated on InfiniBand, and there are no known disadvantages to this model.

Another option is for the XSKY data client to be deployed on storage nodes, while the compute nodes access XDC via iSCSI or Fiber Channel. XDC interacts with the storage cluster instead of the compute nodes. In this scenario, the InfiniBand network resides only within the storage clusters, with no relationship whatsoever to the compute nodes. Between compute nodes, a traditional FC network or 10 Gigabit Ethernet are employed. Traditional enterprises will benefit from this deployment by leveraging existing devices while maintaining a consistent interface between applications and storage clusters, which is very convenient for management. This deployment also works well in other scenarios that incorporate virtualization or cloud-based computing.

**Market Prospects**

According to the predictions made by Wikibon, an internationally recognized technology authority, the market for storage devices and storage technology will grow steadily in the coming years while the market share for traditional SAN/NAS storage will increasingly decrease. By 2021 the market share for hyperscale server SAN and enterprise server SAN will reach over 80%, and will pass 90% by 2026. Clearly, the

future will be dominated by Software Defined Storage (SDS). The critical elements of SDS are core software and distributed, interconnected interactive communication. Any company that can take full advantage of open-source software and emerging network technologies as the storage market develops will gain a competitive advantage over its competition.

As the global leader in providing end-to-end interconnect solutions, Mellanox has partnered with by many important brands, including EMC, HPE, NetApp, IBM, Oracle, PureStorage, DDN and Huawei to offer cutting edge storage devices and technologies. XSKY, as an emerging SDS product provider in China and one of the pioneers of promoting open-source storage technologies, possesses abundant experience in open-source distributed storage Ceph. Together, these two powerful providers have introduced a high performance solution that incorporates the most advanced storage and interconnect technologies, easing access to market opportunities for its users. By employing this combined solution, companies can improve performance and efficiency in utilizing SDS, empowered them to create new scenarios for their various applications.

**About XSKY**

XSKY Beijing Data Technology Corporation Ltd is a China-based technical company focusing on software-defined-infrastructure products and services. XSKY builds internet carrier operation experience, mainstream open-source technology, and enterprise best practices into its products, offering customer future-ready scale-out storage solutions. It is also a major committer to the open-source storage system, Ceph. For more information, please visit <http://www.xsky.com/en/>

**About Mellanox**

Mellanox Technologies is a leading supplier of end-to-end InfiniBand interconnect solutions and services for high-performance computing, enterprise data centers, financial services, and many other markets. More information is available at [www.mellanox.com](http://www.mellanox.com).

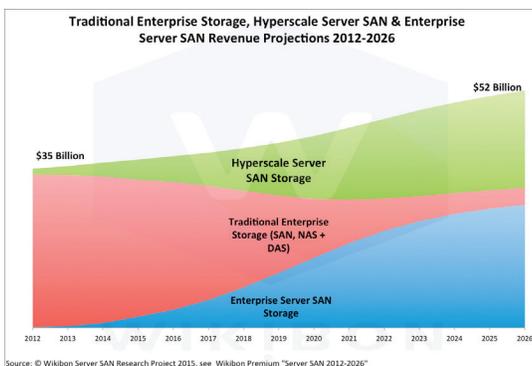


Figure 3. Market growth for storage devices and technology



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