INDUSTRY BRIEF

# TURN YOUR DATA CENTER INTO A MEGA DATA CENTER WITH METROX LONG-HAUL SYSTEMS

## CONNECTING REMOTE DATA CENTERS AND STORAGE THROUGH LONG-HAUL CONNECTIVITY

In today's computing business environment, companies are always looking for more compute, storage, data transfers, bandwidth, and data security - including at the edge. One area where this is achievable is the data center.

When storing huge volumes of data, traditional on-premises data centers frequently suffer capacity limitations, leading to non-optimal resource usage. Data center facilities are often in danger of running out of power, cooling, or physical space - requiring companies to build new data centers while upgrading network infrastructure.

To meet growing computing demands, modern data centers are scaling up in more efficient and distributed ways. To support scalable physical space, power, and business continuity, a highly connected computing infrastructure must provide powerful connectivity hubs that enable the seamless and efficient delivery and receipt of data among networks, businesses, and end-users.

### Addressing Challenges with NVIDIA MetroX

Companies have generally had two options to overcome power and physical space limitations: either destroy and replace the existing on-premises infrastructure with a larger one, or connect their multiple on-premises data centers.

By adopting the NVIDIA MetroX family of long-haul systems, companies can evolve from the paradigm of multiple, disconnected, localized data centers to a single mega data center interconnected by multiple long-reach, point-to-point links to provide maximum performance, uptime, and scalability.

This paper showcases the use of MetroX long-haul systems to empower remote data centers and remote storage access with local-like performance capabilities, including fast compute, high volume data transfer, and improved business continuity. MetroX supports more R&D and application executions, while also enabling more local or cloud users. This leads to faster product development—and remote storage for easy backup and disaster recovery.

## DISASTER RECOVERY

The MetroX family of products makes it possible to use remote data center sites to build a mega-data center that provides superior disaster recovery protection and business continuity. Synchronous disaster recovery data centers are usually located tens of kilometers away from the primary site. Providing ultra-low latency and 400Gb/s of bidirectional bandwidth, MetroX is a simple, out-of-the-box, high-availability management solution for long-haul connectivity.


## PERFORMANCE COMPUTING

MetroX systems boost supercomputing performance. Optimized for high density and scalability, MetroX is the only long-haul solution that enables high-performing RDMA (Remote Direct Memory Access) transactions over long-haul connectivity and dense wavelength-division multiplexing (DWDM) infrastructures. Imagine a high performance computing setup in which hundreds of thousands of nodes are spread over multiple facilities separated by up to tens of kilometers. Using MetroX systems to create a mega-datacenter improves both bandwidth and latency, while also realizing significant savings in capital expenditures.

MetroX's ability to handle high throughput at a high port density significantly reduces hardware costs and improves bandwidth. One customer deployed four MetroX-2 appliances—with 4x 100G InfiniBand long-haul links—to connect compute nodes across two new remote sites separated by  around 4 km. By doing so, the company is able to fully saturate the four long-haul links with high-bandwidth, low-latency RDMA storage traffic.

## STORAGE

Data storage solutions powered by InfiniBand networking provide the fastest access to your data. MetroX enables users to extend InfiniBand capabilities across geographically distributed compute and storage systems. MetroX solves the challenge of storing all resources in one location by providing access to shared storage with multiple clusters and data analytics machines located in various data centers. Real-time processing is now possible across the entire network, where compute nodes and storage can be as far as 40 kilometers apart with MetroX.

## AT THE EDGE

NVIDIA Quantum InfiniBand technology delivers high-performance data migration at scale-even over long distances - when using NVIDIA MetroX in edge-to-data center use cases. MetroX allows for rapid disaster recovery and better use of remote storage and compute infrastructures, including at the edge. By accelerating the connectivity of computational clusters to storage and edge facilities, MetroX enables the transmission of input from scientists' workstations, cameras, mobile devices, and myriad other sources of locally generated data to remote data centers across long distances and multiple geographic sites.

## UNIFIED FABRIC MANAGEMENT

MetroX systems can be managed with NVIDIA Unified Fabric Manager (UFM®) software. UFM enables data center operators to efficiently provision, monitor, and operate the state-of-the-art InfiniBand data center fabric.

## CONCLUSION

MetroX enables users to build a more efficient and powerful network by connecting remote facilities - transforming dispersed, disconnected clusters into a single mega data center.

The advantages of MetroX include ease in combining, controlling, and managing distant sites, while extending the reach of InfiniBand RDMA interconnect over long distances using dedicated InfiniBand fiber or a pre-installed DWDM infrastructure.

Customers can take advantage of a low-cost, low-power solution for long-haul interconnect alongside the benefits of the fastest interconnect, providing two 200GB/s ports for local connectivity and two 100GB/s links for long-haul connectivity.

**Ready to Get Started?**

To learn more about NVIDIA MetroX solutions, visit:
**nvidia.com/en-us/networking/infiniband-long-haul-systems**



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