NYRIAD®

ULTRAIO™ STORAGE FOR MINIO S3

Imagine a revolutionary new storage architecture that combines the power of GPUs and CPUs to deliver a combination of performance, resilience, and efficiency, enabling massive amounts of data to be managed in a highly available storage system. Nyriad® is enabling a new generation of storage solutions that empower businesses to grow, adapt, and stay competitive in a data-driven world. We are simplifying how data is stored, accessed, and managed.

PERFORMANCE - RESILIENCE - EFFICIENCY

REIMAGINE YOUR OBJECT STORAGE WITH MINIO™ S3

AND NYRIAD'S ULTRAIO™ GPU-POWERED STORAGE ARCHITECTURE

KEY RESULTS

- Up to **24,000** Object Gets per Second
- Up to **13,000** Object Puts per Second
- **10GB/s** S3 Bandwidth (Network Limited)

WHY NYRIAD ULTRAIO FOR MinIO™ S3

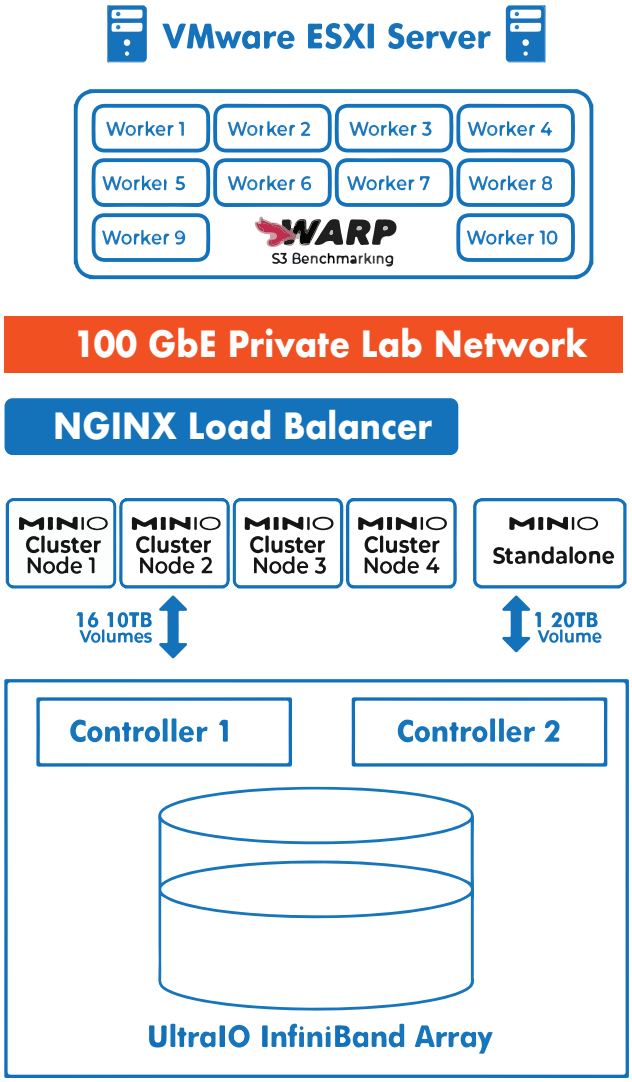
MinIO™ offers enterprise-grade, open source object storage with a wide range of deployment options and multiple business use cases. Whether deployed in a distributed, multi-node architecture or as a single standalone node, the Nyriad UltraIO system's GPU-accelerated block-level erasure coding provides consistently high performance, resiliency, and efficiency for on-premises S3 storage. Now MinIO users can decide how best to deploy their systems without worrying about performance or data integrity. Even with a standalone single node deployment, performance is equivalent to distributed mode and the UltraIO product's erasure coding delivers the highest efficiency and data resiliency.

TEST PURPOSE

Nyriad deployed MinIO S3 with UltraIO storage in two different configurations to compare the performance of distributed mode versus standalone. In most benchmarking exercises, distributed mode is chosen in order to spread the workload across many servers and storage devices. However, with the UltraIO solution's high bandwidth network interfaces and combined processor architecture, standalone mode significantly reduces deployment complexity and cost, while delivering the same performance.

MinIO is deployed in two configurations:

- Standalone mode is a single blade server with 1x 20TB UltraIO iSER volume. Here there is no MinIO erasure coding.
- Distributed Mode Cluster is deployed across 4 blade servers. Each node has 4x 10TB volumes



for a total of 16 volumes. By default, MinIO uses erasure coding across this cluster. There is currently no mechanism to disable this.

Each blade server has :

- 1x 100Gb InfiniBand connection to storage
- 1x 25GbE connection to the data network
- 1x 25GbE connection to the management network

Note: This means that no single server can exceed 10GB/s storage bandwidth, or 2.5GB/s network bandwidth

Testing tools include:

- MinIO Speedtest: Included with each deployment and accessed via the MinIO GUI.
- MinIO WARP: Deployed locally on the standalone server and also deployed across 10x virtual machines.

TEST RESULTS

Employing the two test tools provided by MinIO, multiple parameters for object size and thread count were used in both deployment configurations with consistent results.

PUT Throughout (30 threads)

	10KB	100KB	1MB	10MB
UltraIO MB/s	114.12 11,965 obj/s	636.28 6.672 obj/s	1798.58 1,886 obj/s	2297.9 290 obj/s

Get Throughout (30 threads)

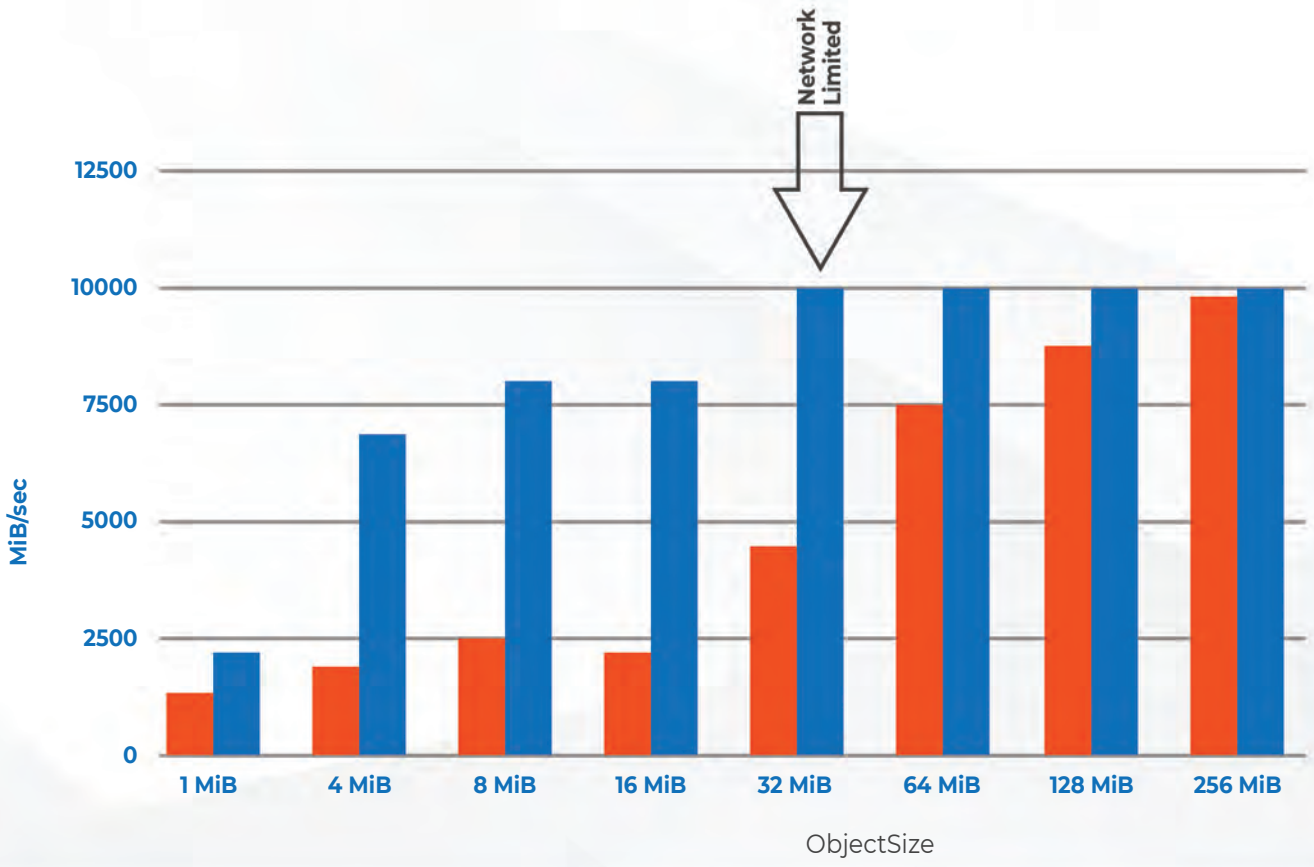
Obj Size	10KB	100KB	1MB	10MB
UltraIO MB/s	270.4 28,356 obj/s	1854.77 19,449 obj/s	5631.60 5,905 obj/s	8614.55 903 obh/s

LEARN MORE

Nyriad can provide test results for specific test parameters along with implementation best practices for integrating the UltraIO solution into new or existing MinIO deployments.

Large Object Performance in Distributed Mode vs. DAS

(Blue = UltraIO, Orange = DAS)



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