Maxta / Intel Performance-Optimized Reference Architecture

Validated, performance-optimized MxSP configuration on Intel servers, processors and PCIe SSDs

A validated, performance-optimized hyperconverged configuration combining Maxta MxSP® software with Intel® Xeon® processors and Intel® SSD DC series

Overview

This reference architecture details a validated, performance-optimized Maxta Storage Platform (MxSP) configuration running on Intel servers with Intel Xeon processors and Intel PCIe solid-state drives (SSDs). The combination of Maxta's software-defined hyperconverged storage with Intel's enterprise-class server hardware delivers exceptional performance for demanding virtualized workloads while maintaining the simplicity and cost advantages of a hyperconverged architecture.

Solution Architecture

The reference architecture leverages Intel Xeon E5-2600 v3/v4 family processors providing the compute foundation, Intel SSD DC P3600/P3700 series NVMe PCIe drives for high-performance flash storage, Intel Ethernet X710 10GbE network adapters for inter-node communication, and Intel Server System R2000 series rack-mount servers as the hardware platform. MxSP software is installed on each server in the cluster, aggregating local storage resources into a shared, distributed storage pool with enterprise-class data services.

Configuration Details

Server Hardware

Each node in the validated configuration consists of an Intel Server System with dual Intel Xeon E5-2600 v3/v4 processors (minimum 8 cores per socket recommended), 128 GB DDR4 ECC registered memory (minimum 64 GB), Intel SSD DC P3600 or P3700 series NVMe drives for MxSP flash tier (intent log, read cache, and metadata), SATA 7200 RPM enterprise HDDs for capacity tier, and Intel Ethernet X710 dual-port 10GbE adapter for dedicated MxSP inter-node traffic.

Software Stack

The validated software configuration includes Maxta MxSP software (latest release), VMware vSphere 6.0 or later (also validated with KVM/OpenStack), and Intel NVMe drivers optimized for PCIe SSD performance.

Network Requirements

A dedicated 10GbE private network between MxSP nodes is highly recommended for optimal performance. Intel X710 adapters support SR-IOV and RDMA capabilities that can further enhance storage network performance.

Performance Characteristics

The Intel-optimized configuration with NVMe PCIe SSDs delivers significantly higher IOPS and lower latency compared to SATA SSD configurations. The MxSP Intent Log (MxIL) on NVMe flash absorbs write latency spikes by collecting random writes and de-staging them to spinning disk in large sequential I/Os. The read cache tier on Intel SSDs accelerates frequently accessed data, while the Metadev feature stores file system metadata on high-performance flash for accelerated metadata operations.

Key Benefits

- Validated, pre-tested configuration eliminates interoperability guesswork
- NVMe PCIe SSDs deliver up to 5x higher IOPS than SATA SSDs for flash-tier operations
- Intel Xeon scalable architecture allows independent scaling of compute and storage
- Hypervisor-agnostic deployment supports VMware vSphere, KVM and OpenStack
- Enterprise-class data services including snapshots, clones, compression and replication
- VM-centric management through MxInsight integrated into vSphere Web Client or Horizon UI

Deployment Considerations

Minimum cluster size is three nodes for quorum. MxSP allocates 100+ GB per node for the intent log and 100+ GB for read cache on the Intel SSD flash tier. Metadev capacity should be provisioned at 5% of HDD capacity for 4K page size deployments or 3% for 8K page size. A dedicated 10GbE network is recommended for inter-node MxSP traffic to ensure optimal performance under load.

About Maxta

Maxta is redefining enterprise IT infrastructure through a groundbreaking approach to hyperconvergence that dramatically simplifies operations while delivering much greater agility and cost savings. Our award-winning MxSP® software and MaxDeploy® appliances offer unparalleled freedom of choice in servers, storage devices and server virtualization platforms. For more information, visit www.maxta.com.