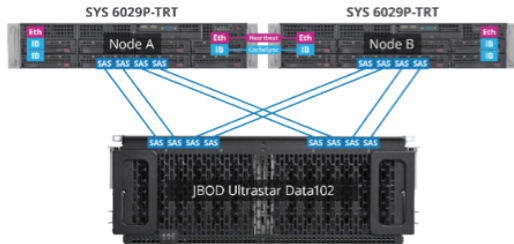


High Performance Fault-tolerant Data Storage System

Maximum throughput and compute density

Server: Supermicro SuperServer 6029P-TRT
JBOD: Ultrastar Data102
SW: RAIDIX 4.6



To create a fault-tolerant data storage system, it takes two storage nodes and one or more JBODs with SAS disks. This reference architecture uses either 2x Supermicro® 6029P-TRT platforms or 1x Supermicro SuperServer® 2029BT-DNR platform (for space constrained environments) connected to 1x Ultrastar® Data102 JBOD storage platform. The RAIDIX software controller function runs on top of the Supermicro nodes.

For purposes of server sizing, the PCIe bus is used to install backend and frontend controllers. Broadcom® 9400 8e controllers are used to connect the Ultrastar Data102 storage platform to the Supermicro servers. The synchronization channel slot is Infiniband™, supported by Mellanox® ConnectX-4 VPI adapter card (PCIe3.0 x16) on each node.

The server(s) is equipped with Micron® NVDIMM modules to protect the cache from power outage. Dirty cache segments will be synchronized via InfiniBand 100Gb.

The Ultrastar Data102 can be equipped with Ultrastar DC HC620 or HC6560 SAS HDDs, providing a data

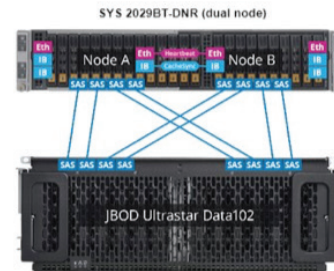
Server Configuration

Item	Description	P/N	Qty
Platform	SuperServer 6029P-TRT (single node)	SYS-6029P-TRT	2
	SuperServer 2029BT-DNR (dual node)	SYS-2029BT-DNR	1
CPU	Intel® Xeon® Silver 4112 processor	Intel Xeon Silver 4112 processor	4
Memory	16GB PC4-21300 2666MHz DDR4 ECC Registered DIMM Micron MTA36ASF472PZ-2G6D1	MEM-DR416L-CL06-ER26	12
Persist. memory	Micron NVDIMM-N Module 16GB, MTA18ASF2G72PF1Z-2G6	MTA18ASF2G72PF1Z-2G6	8
System Disk	SanDisk® Extreme PRO 240GB SSD	SDSSDXPS-240G-G25	4
	Supermicro SSD-DM032-PHI (dual node)	SSD-DM032-PHI	2
Hot-swap 3.5" to 2.5" SATA/SAS Drive Trays	Tool-less black hot-swap 3.5-to-2.5 converter HDD drive tray (Red tab)	MCP-220-00118-0B	4
HBA for cache-sync	Mellanox ConnectX-4 VPI adapter card, EDR IB (100Gb/s), dual-port QSFP28, PCIe3.0 x16 (single node config)	MCX456A-ECAT	2
	Mellanox ConnectX-4 VPI InfiniBand EDR controller, single QSFP28 connector SIOM form factor (dual node config)	AOC-MHIBE-m1CG	2
HBA for JBOD connection	Broadcom HBA 9400-8e tri-mode storage adapter	05-50013-01	4
Ethernet patchcord	Ethernet patch cord for cache sync 0.5m		1
Cable for cache sync	Mellanox passive copper cable, VPI, EDR 1m (single node config)	MCP1600-E001	2
	Mellanox passive copper cable, VPI, EDR 1m (dual node config)	MCP1600-E001	1
HBA for host connection	Mellanox ConnectX-4 VPI adapter card, EDR IB (100Gb/s), dual-port QSFP28, PCIe3.0 x16	MCX456A-ECAT	2

Note: Alternatively, 2x AVAGO 9300-8e controllers or 1x 9405W-16e controller (requires availability of 16x PCIe slots) can be used for the JBOD connectivity.

Space optimized

Server: Supermicro SuperServer 2029BT-DNR (dual node)
JBOD: Ultrastar Data102
SW: RAIDIX 4.6



Target Applications:

- HPC (Academic research, life sciences, earth sciences)
- Media & Entertainment (Non-linear editing, VFX applications, rendering)
- Video Surveillance (city security services, large transport hubs), up to 500 Full HD cams
- Disk backup target
- Enterprise File Services: Home directories, file shares
- Web-scale building block

repository of up to 2.0PB¹ in a 4U storage rack. Minimum configuration is 60 drives, providing an upgrade roadmap of up to 102 drives. If a performance tier is required, it is possible to install up to 24 SAS/SATA SSDs in the drive slots.

Software

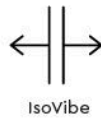
Item	Description	P/N	Qty
RAIDIX	RAIDIX 4.6 DC/NAS/iSCSI/FC/SAS/IB/SSD-cache/QoSmic/SanOpt/Extended 5 years support/unlimited disks	RX46DSMMC-NALL-SQ0S-P5	1

JBOD Configuration

Item	Description	P/N	Qty
JBOD	Ultrastar Data102 storage platform		1
SAS cable	Ultrastar Data102 cable IO HD mini-SAS to HD mini-SAS 2m 2 pack		8

Note: The controller function for RAIDIX-based data storage systems can be played by most x86 server platforms, including Supermicro, AIC, Dell™, Lenovo™, HPE, and many others. This reference architecture uses the Supermicro platform as an example.

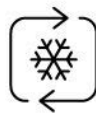
Note: This reference architecture is subject to maximum performance and functioning of all the options available.



IsoVibe

IsoVibe™ Vibration Isolation Technology

Precise cuts in the baseboard provide a suspension for the drives in the chassis, isolating them from transmitted vibration. The result is that consistent performance is maintained, even when all the drivers are working hard.



ArcticFlow

ArcticFlow™ Thermal Zone Cooling Technology

By Introducing cool air into the center of the chassis, drives operate at lower and more consistent temperatures than conventional systems. This results in lower fan speeds, reduced vibration, lower power consumption, quieter operation and ultimately higher reliability.

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