Western Digital.

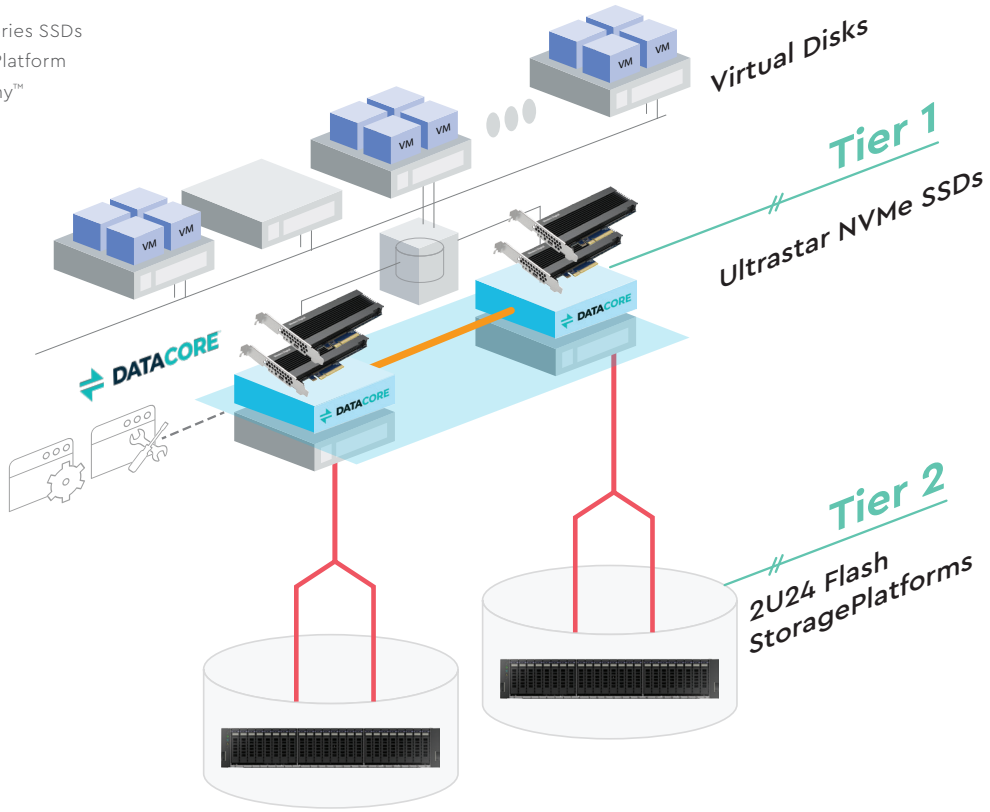
DATACORE

REFERENCE ARCHITECTURE JANUARY 2020

Tiered All-Flash Storage Solution

DATACORE READY

Tier 1: Ultrastar® NVMe™ series SSDs
Tier 2: 2U24 Flash Storage Platform
SW: DataCore SANsymphony™



This is an ideal solution for medium-to-large-sized enterprise workloads seeking all-flash performance at an attractive price. The solution provides excellent availability and high performance at a low TCO. The 2 tiers of storage allow data to be moved in real time to an appropriate storage layer that always provides the right performance at the right time for any data set.

To create a high performance all-flash NVMe storage solution, it takes just two mirrored server nodes with SATA (OS boot) and NVMe SSDs (data storage). Datacore SANsymphony software runs on two mirrored x86 servers boosted with Ultrastar® NVMe™ SSDs to create a high performance all-flash NVMe-based processing and storage solution.

For purposes of server sizing, the PCIe bus is used to install backend and frontend controllers. A Broadcom® HBA 9480–8i8e Tri-Mode Storage Adapter is used to connect the 2U24 Flash Storage Platform to the servers. The QLogic® HBA controllers are used to interconnect the servers and connect the servers to the SAN.

DataCore Ready servers can contain up to 24x Ultrastar NVMe SSDs as an ultra-high performance NVMe storage pool and 2x Ultrastar SATA SSDs for the Windows Server® operating system. Minimum configuration for the servers is 12x Ultrastar NVMe SSDs, with maximum total capacity of 92TB of NVMe flash storage (fully populated).

The 2U24 Flash Storage Platform can be equipped with Ultrastar SAS SSDs or Ultrastar SATA SSDs. Minimum configuration is 12 SSDs, with maximum total capacity of 368TB of Tier-2 flash storage (fully populated).

The DataCore SANSymphony software requires both DataCore SANsymphony EN-Node licenses (free to request and download) and at maximum 460 Datacore TB Capacity license. The actual amount of TB Capacity licenses is dependent on the total managed storage capacity in the configuration.

Note: After reaching full drive bay population of the various chassis in this configuration, further expansion is possible by simply adding additional Ultrastar Data60 and/or 2U24 Flash Storage Platforms to the existing SAS loops and upgrading DataCore TB Capacity license to the new total amount of managed capacity. It is possible to have up to 8 external storage shelves per server (4 shelves per SAS loop) in total, ranging up to almost 7PB of managed capacity per server.

[1]One megabyte (MB) is equal to one million bytes, one gigabyte (GB) is equal to 1,000MB (one billion bytes), and one terabyte (TB) is equal to 1,000GB (one trillion bytes) when referring to storage capacity. Accessible capacity will vary from the stated capacity due to formatting, system software, and other factors.

Per Server Configuration (2 Servers needed)

Item	Description	P/N	Qty
Server	DataCore Ready x86 Server		1
CPU	Intel® Xeon® Gold 5120 Processor	Intel Xeon Gold 5120 Processor	2
Memory	16GB PC4–21300 2666MHz DDR4 ECC Registered DIMM	1EX1407	12
System Disk	Ultrastar DC SA210 480GB SATA SSD	0TS1650	2
2.5" SATA Drive Trays	Tool-less black hot-swap 2.5 HDD drive tray (Red tab)	N/A (server base config)	2
VROC	SVR2U24 Option RAID VROC Premium Key	1EX1177	1
RAID controller for boot devices and expansion	Broadcom 9480–8i8e	SC-9480–8I8E	1
NVMe SSD	Ultrastar DC SN620 NVMe SSD	OTS1844 (3.84TB)	12
HBA for host connection	Qlogic 16Gb quad port Fibre Channel HBA	1EX1612	2

Storage expansion per Storage Server (2 expansions needed)

Item	Description	P/N	Qty
Tier-2 JBOF	Ultrastar 2U24 Flash Storage Platform SE2U24–24 46.08TB nTAA SATA RI-0.6DW/D SE	1ES0240	1
SAS cable	2U24 Cable IO HD mini-SAS to HD mini-SAS 3m 2Pack	Included in the 2U24 platforms	2

Software for 2 Storage Servers

Item	Description	P/N	Qty
Operating System	Windows Server 2016 Standard	OEM SKUs from server vendor	2
DataCore SW	SANsymphony EN-Node license	Free to request and download	2
No RAID overhead	Datacore TB Capacity license (1-year maintenance)	DEN-EWR-S12–100	139
	Datacore TB Capacity license (3-year maintenance)	DEN-EWR-S36–100	139
RAID-1 for data protection within the individual nodes	Datacore TB Capacity license (1-year maintenance)	DEN-EWR-S12–050	70
	Datacore TB Capacity license (3-year maintenance)	DEN-EWR-S36–050	70

Note: Any other RAID usage that would result in other managed net capacity will change the SKU accordingly;
Note: Any already existing EN capacity anywhere else will also change the SKU, depending on the total managed capacity;
Note: Above capacity figure calculation is based on minimum capacity configuration for all storage components resulting in 139TB raw capacity;

P/N scheme for **Nx** Datacore TB Capacity license DEN-EWR-S**xx-yyy** is as follows:

N	Total new managed capacity of the customer represented by the servers and the storage capacity added
xx	Maintenance term, i.e. 12 = 1 year / 36 = 3 year.
yyy	Total managed capacity band, after the new capacity is purchased 001 = 1 to 9 TB 010 = 10 to 24 TB 025 = 25 to 49 TB 050 = 50 to 99 TB 100 = 100 to 249 TB 250 = 250 to 499 TB 500 = 500 to 999 TB 01M = 1000 and above

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