DG Series storage features and specifications

Product features, technical specifications

Lenovo

DM and DG Series comparison

	DM3000H	DM5000H	DM5000F	DM5100F	DM7000H	DM7000F	DM7100H	DM7100F	DG5000	DG7000
Form factor	2U	2U	2U	2U	3U	3U	4U	4U	2U	4U
CPU cores	12	24	24	24	32	32	40	40	24	40
Physical memory	64 GB	64 GB	64 GB	128 GB	256 GB	256 GB	256 GB	256 GB	128 GB	256 GB
Max drive count	144	144	144	48	480	384	720	480	48	96
NVDIMM/NVRAM	8 GB	8 GB	8 GB	16 GB	16 GB	16 GB	32 GB	32 GB	16 GB	32 GB
Onboard / Pre-configured ports										
100 GbE	-	-	-	-	-	-	4	4	-	4
25 GbE	-	-	-	4	-	-	4 or 12	4 or 12	4	4 or 12
32 Gb FC	-	-	-	-	-	-	-	-	-	-
16 Gb FC	-	-	-	-	-	-	0 or 8	0 or 8	-	0 or 8
40 GbE	-	-	-	-	-	-	-	-	-	-
19 GbE	4	4	4	-	4	4	-	-	-	-
10GBASE-T	0 or 8	0 or 8	0 or 8	4	4	4	-	-	4	-
UTA2	0 or 8	0 or 8	0 or 8	-	8	8	-	-	-	-
SAS	4 (12 Gb)	4 (12 Gb)	4 (12 Gb)	-	8 (12 Gb)	8 (12 Gb)	8 (12 Gb)	8 (12 Gb)	-	-
I/O expansion slots	-	-	-	4	0 or 4	4	10	10	4	10
ONTAP® support	9.4RC1+	9.4RC1+	9.4RC1+	9.8GA+	9.1GA+	9.1RC1+	9.7GA+	9.7GA+	9.12.1P4	9.12.1P4

Features and specifications -1

Features	DG5000 specifications	DG7000 specifications
NAS Scale-out maximum	12 high availability pairs	12 high availability pairs
Maximum SSDs	576	1152
Maximum raw capacity	8.8 PB	17.6 PB
Effective maximum memory capacity	1536 GB	3072 GB

Features	DG5000 specifications	DG7000 specifications
SAN scale-out maximum	Six high availability pairs	Six high availability pairs
Maximum SSDs	288	576
Maximum raw capacity	4.4 PB	8.8 PB
Effective maximum memory capacity	768 GB	1536 GB

Features and specifications -2

Per-system specifications (high availability dual controller)		
Features	**DG5000 specifications**	**DG7000 specifications**
Controller form factor	2U with 24 SSD slots	4U
PCIe expansion slots	4	10
FC target ports (32 Gb auto ranging)	16	24
FC target ports (16 Gb auto ranging)	Not applicable	32
100 GbE ports (40 GbE auto ranging)	4	16
40 GbE ports (can be four 10 GbE)	Not applicable	Not applicable
25 GbE ports (10 GbE auto ranging)	16	16
10 GbE ports	Not applicable	32
10Gbase-T (1 GbE auto ranging)	4	16
Storage networking supported	NVMe/TCP, NVMe/FC, FC, iSCSI, NFS, pNFS, CIFS/SMB, S3	NVMe/TCP, NVMe/FC, FC, iSCSI, NFS, pNFS, CIFS/SMB, S3
OS version	9.12.1P4	9.12.1P4
Shelves and media	DG240N (2U, 24 drives, NVMe QLC SSDs)	DG240N (2U, 24 drives, NVMe QLC SSDs)

Cluster node limits

DG systems can be joined in the same ONTAP cluster with DM systems.

DG-only clusters Maximum cluster nodes	NAS	SAN
DG5000, DG7000	24	12

DG & DM clusters Maximum cluster nodes	NAS	SAN
DG5000, DG7000	24	12
DM7100		
DM5100		
DM7000		
DM5000		
DM3000		

DG Series storage features

DG Series storage arrays have the following features:

- They are built with 15.3 TB NVMe QLC SSDs, which provide a minimum raw capacity of eight 15.3 TB SSDs (122 TB).
- DG systems only support the DG240N NVMe expansion enclosure when it is attached to QLC SSDs.
- Conversion of the DM5100F or DM7100F to the DG Series is not possible.
- DG systems only support QLC SSDs, and attaching TLC SSDs will result in an unsupported configuration.
- DG systems can be integrated into the same ONTAP cluster as DM systems and are also compatible with Metrocluster and SnapMirror.
- DG systems do not support SAS-attached storage shelves; they only support NVMe-attached DG240N shelves.

Differences between DM and DG storage

- The DG Series only supports QLC SSDs and does not support the TLC SSDs used in the DM Series.
- The DG Series only supports 15 TB SED NVMe QLC SSDs.
- The DG Series drive packs will be sold as 2-packs (two drives) instead of the DM 6-packs (six drives).
- The DG Series will support a minimum of four 2-packs (eight drives), while the DM Series requires a minimum of two 6-packs (12 drives).

ONTAP is the operating system for DM and DG storage systems. It offers storage management tools accessible via a command-line interface, System Manager, and remote management devices like Service Processor (SP) and Remote LAN Module (RLM).

- The DG Series will use new ONTAP bundles: Unified Complete and Unified Essential.
- The DG Series will also use a new license key for unlocking the ONTAP bundles.

Note: DG systems will recognize DM TLC drives, but these drives will not be supported. DM systems will not work with QLC drives.

DM / DG storage - TLC vs QLC SSDs

DM storage supports TLC SSD drives, while DG storage supports QLC SSD drives.

- TLC = triple-level cell – eight different charge levels
- QLC = quad-level cell – 16 different charge levels
- **Cost** – QLC drives are more cost-effective because they allow more data storage in the same NAND flash space.
- **Performance** – QLC drives will be slower due to the longer processing time required for the 16 different charge levels.
  - DM storage uses PM1733a TLC SSDs with a sequential read speed of 7000 MB/s and a sequential write speed of 3800 MB/s
  - DG storage uses BM1733a QLC SSDs with a sequential read speed of 3200 MB/s and a sequential write speed of 920 MB/s
- **Endurance** – Due to the additional eight charge levels, QLC drives support fewer write cycles.
  - DM storage uses PM1733a TLC SSDs, which support 1 DWPD (drive writes per day)
  - DG storage uses BM1733a QLC SSDs, which support 0.18 DWPD