Compatibility Matrix

Ultrastar® Data60

Firmware 4011-005 (SEP), 4.0.111 (OOBM)

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Revision 21
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The Western Digital System Integration Lab tested the Ultrastar Data60 for the following hardware components and operating systems to demonstrate functional compatibility. Other combinations of hardware and software are expected to function with this product family but have not been evaluated.

Newly qualified device models are listed by category on the right. To use this document, click on the provided link to be taken to a detailed listing of the compatibility information for that specific device type. Or scroll down to view details for all tested devices.

HBAs & RAID Adapters

- Adaptec® 1100-8e
- Adaptec® 1200-16e
- Adaptec® 3254-16e
- Areca® ARC-1886-8x, 1883x
- Broadcom® 9300-8e, -4i4e, -16e
- 9302-16e
- 9305-16e
- MegaRAID 9380-8e
- 9400-16e, -8i8e, -8e
- 9405w-16e
- MegaRAID 9480-8i8e
- 9500-8e, -16e
- MegaRAID 9580-8i8e
- 9600-16e
- 9600w-16e
- Oracle 9300-8e

Cables

- Active (Optical) – 2m, 3m 4m, 5m, 6m, 10m
- Passive (Copper) – 2m, 3m

Ultrastar Drives

- DC HC510 CMR 8TB, 10TB
- DC HC530 CMR 14TB
- DC HC550 CMR 16TB, 18TB
- DC HC555 CMR 12TB, 14TB, 16TB, 18TB, 20TB
- DC HC560 CMR 20TB
- DC HC570 CMR 22TB
- DC HC580 CMR 22TB, 24TB
- DC HC650 SMR 20TB
- DC HC590 CMR 24TB, 26TB
- DC HC670 SMR 26TB
- DC HC680 SMR 26TB
- DC HC690 SMR 30TB

1.1 Supported Operating Systems

Table 1: Compatible Operating Systems for CMR

OS Support	
Microsoft® Windows	**2012** R2 x64 Server
	2016 R1 x64 Server
	2019 R1 x64 Server
	2022 R1 x64 Server
CentOS/RedHat® Enterprise Linux (RHEL)	**7.2** (x86_64) Kernel: 3.10.0-327
	7.3 (x86_64) Kernel: 3.10.0-514
	7.4 (x86_64) Kernel: 3.10.0-693
	7.6 (x86_64) Kernel: 3.10.0-957
	8.0 (x86_64) Kernel: 4.18.0-80
	8.2 (x86_64) Kernel: 4.18.0-193
	8.3 (x86_64) Kernel: 4.18.0-240
	8.4 (x86_64) Kernel: 4.18.0-305
	8.6 (x86_64) Kernel: 4.18.0-372
	8.8 (x86_64) Kernel: 4.18.0-477
	9.0 (x86_64) Kernel: 5.14.0-70
	9.2 (x86_64) Kernel: 5.14.0-284
	9.3 (x86_64) Kernel: 5.14.0-362
	9.4 (x86_64) Kernel: 5.14.0-427
FreeBSD®	**13.2**
Ubuntu® Server	**14.04** Kernel: 3.13
	16.04 Kernel: 4.4
	18.04 Kernel: 4.15
	20.04 Kernel: 5.4
	22.04 Kernel: 5.15
Debian GNU/Linux	**8.10** Kernel: 3.16
	9.6 Kernel: 4.9
	9.8 Kernel: 4.9
	10 Kernel: 4.19
	11 Kernel: 5.10
SUSE® Linux Enterprise Server (SLES)	**12** SP3
	15 SP1

OS Support	
Oracle Linux (OL)	**7.9** Kernel: UEK r6

Table 2: Compatible Operating Systems for SMR

OS Support	
RedHat® Enterprise Linux (RHEL)	**9.0** (x86_64) Kernel: 5.14.0-70
	9.2 (x86_64) Kernel: 5.14.0-284
	9.3 (x86_64) Kernel: 5.14.0-362
Ubuntu® Server	**20.04** Kernel: 5.4
	22.04 Kernel: 5.15

1.2 HBA Compatibility for CMR HDDs

Adaptec 1100-8e

Table 3: Adaptec1100-8e Interoperability Notes

	Linux	Windows
Firmware	6.81	6.81
Driver	2.1.28-025	1010.96.0.1007
Operating System Support		
Microsoft® Windows	**2019** R1 x64 Server	Supported
	2022 R1 x64 Server	Supported
CentOS/RedHat® Enterprise Linux (RHEL)	**8.8** (x86_64) Kernel: 4.18.0-477	Not Tested
	9.0 (x86_64) Kernel: 5.14.0-70	Not Tested
	9.2 (x86_64) Kernel: 5.14.0-284	Not Tested
	9.3 (x86_64) Kernel: 5.14.0-362	Not Tested
Ubuntu® Server	**20.04** Kernel: 5.4	Supported
	22.04 Kernel: 5.15	Supported
Debian GNU/Linux	**9.8** Kernel: 4.9	Not Tested
	10 Kernel: 4.19	Not Tested
	11 Kernel: 5.10	Not Tested
Oracle Linux (OL)	**7.9** Kernel: UEK r6	Not Tested
FreeBSD®	**13.2**	Not Tested

Attention: For all HBAs using CentOS/RedHat® Enterprise Linux (RHEL), Ubuntu® Server, or Debian GNU/Linux . If the drives being used exceed 16TiB (equivalent to 16.37 TB) capacity, you must use the Ext4 or XFS file system. Using the Ext3 files system with a drive capacity higher than 16TiB (equivalent to 16.37 TB) will result in an **"too big to be expressed"** error message.

Adaptec 1200-16e

Table 4: Adaptec1200-16e Interoperability Notes

	Linux	Windows
Firmware	3.01.36.50	3.01.36.50
Driver	2.1.34-035	1016.18.0.1014
Operating System Support		
Microsoft® Windows	**2019** R1 x64 Server	Supported
	2022 R1 x64 Server	Supported

Operating System Support		
CentOS/RedHat® Enterprise Linux (RHEL)	**8.8** (x86_64) Kernel: 4.18.0-477	Not Tested
	9.0 (x86_64) Kernel: 5.14.0-70	Not Tested
	9.2 (x86_64) Kernel: 5.14.0-284	Not Tested
	9.3 (x86_64) Kernel: 5.14.0-362	Not Tested
Ubuntu® Server	**20.04** Kernel: 5.4	Supported
	22.04 Kernel: 5.15	Supported
Debian GNU/Linux	**9.8** Kernel: 4.9	Not Tested
	10 Kernel: 4.19	Not Tested
	11 Kernel: 5.10	Not Tested
Oracle Linux (OL)	**7.9** Kernel: UEK r6	Not Tested
FreeBSD®	**13.2**	Not Tested

Attention: For all HBAs using CentOS/RedHat® Enterprise Linux (RHEL), Ubuntu® Server, or Debian GNU/Linux . If the drives being used exceed 16TiB (equivalent to 16.37 TB) capacity, you must use the Ext4 or XFS file system. Using the Ext3 files system with a drive capacity higher than 16TiB (equivalent to 16.37 TB) will result in an **"too big to be expressed"** error message.

Adaptec 3254-16e

Table 5: Adaptec3254-16e Interoperability Notes

	Linux	Windows
Firmware	3.01.36.50	3.01.36.50
Driver	2.1.34-035	1016.18.0.1014
Operating System Support		
Microsoft® Windows	**2019** R1 x64 Server	Supported
	2022 R1 x64 Server	Supported
CentOS/RedHat® Enterprise Linux (RHEL)	**8.8** (x86_64) Kernel: 4.18.0-477	Not Tested
	9.0 (x86_64) Kernel: 5.14.0-70	Not Tested
	9.2 (x86_64) Kernel: 5.14.0-284	Not Tested
	9.3 (x86_64) Kernel: 5.14.0-362	Not Tested
Ubuntu® Server	**20.04** Kernel: 5.4	Supported
	22.04 Kernel: 5.15	Supported
Debian GNU/Linux	**9.8** Kernel: 4.9	Not Tested
	10 Kernel: 4.19	Not Tested
	11 Kernel: 5.10	Not Tested
Oracle Linux (OL)	**7.9** Kernel: UEK r6	Not Tested
FreeBSD®	**13.2**	Not Tested

Attention: For all HBAs using CentOS/RedHat® Enterprise Linux (RHEL), Ubuntu® Server, or Debian GNU/Linux . If the drives being used exceed 16TiB (equivalent to 16.37 TB) capacity, you must use the Ext4 or XFS file system. Using the Ext3 files system with a drive capacity higher than 16TiB (equivalent to 16.37 TB) will result in an **"too big to be expressed"** error message.

Areca ARC-1886-8x, 1883x

Table 6: ArecaARC-1886-8x, 1883x Interoperability Notes

	Linux	Windows
Firmware	1.58	1.58
Driver	1.50.0X.07	6.20.00.38
Operating System Support		
Microsoft® Windows	**2019** R1 x64 Server	Supported
	2022 R1 x64 Server	Supported
CentOS/RedHat® Enterprise Linux (RHEL)	**8.8** (x86_64) Kernel: 4.18.0-477	Supported
	9.0 (x86_64) Kernel: 5.14.0-70	Supported
	9.2 (x86_64) Kernel: 5.14.0-284	Supported
	9.3 (x86_64) Kernel: 5.14.0-362	Supported
Ubuntu® Server	**20.04** Kernel: 5.4	Not Tested
	22.04 Kernel: 5.15	Not Tested
Debian GNU/Linux	**9.8** Kernel: 4.9	Not Tested
	10 Kernel: 4.19	Not Tested
	11 Kernel: 5.10	Not Tested
Oracle Linux (OL)	**7.9** Kernel: UEK r6	Not Tested
FreeBSD®	**13.2**	Not Tested

Attention: For all HBAs using CentOS/RedHat® Enterprise Linux (RHEL), Ubuntu® Server, or Debian GNU/Linux . If the drives being used exceed 16TiB (equivalent to 16.37 TB) capacity, you must use the Ext4 or XFS file system. Using the Ext3 files system with a drive capacity higher than 16TiB (equivalent to 16.37 TB) will result in an **"too big to be expressed"** error message.

Broadcom 9300-8e, -4i4e, -16e

Table 7: Broadcom9300-8e, -4i4e, -16e Interoperability Notes

	Linux	Windows
Firmware	16.00.17.00	16.00.17.00
Driver	39.100.00.00 **CentOS/RHEL 8.0 and above**: 41.00.00.00-1	2.51.27.01
Operating System Support		
Microsoft® Windows	**2019** R1 x64 Server	Supported
	2022 R1 x64 Server	Supported
CentOS/RedHat® Enterprise Linux (RHEL)	**8.8** (x86_64) Kernel: 4.18.0-477	Supported
	9.0 (x86_64) Kernel: 5.14.0-70	Supported
	9.2 (x86_64) Kernel: 5.14.0-284	Supported
	9.3 (x86_64) Kernel: 5.14.0-362	Supported
Ubuntu® Server	**20.04** Kernel: 5.4	Supported
	22.04 Kernel: 5.15	Supported
Debian GNU/Linux	**9.8** Kernel: 4.9	Supported
	10 Kernel: 4.19	Supported
	11 Kernel: 5.10	Supported
Oracle Linux (OL)	**7.9** Kernel: UEK r6	Supported
FreeBSD®	**13.2**	Not Tested

Note: To increase the responsiveness of the topology during the event of a cable pull, IOM/ESM reset, or drive pull, use ScrutinyCLI (version 32 or later) to change the `Task Management Reset Type` on the HBA(s) from `Target Reset` to `I_T Nexus Reset`, and change the DMD settings on the HBA from 0 to 21 seconds. See **https://support-en.westerndigital.com/app/answers/detail/a_id/32058** for more details.

Important: Active Optical SAS cable support is limited to Broadcom 9300-, 9302-, 9305-, 9400-, 9500-, and 9600-series HBAs.

Attention: For all HBAs using CentOS/RedHat® Enterprise Linux (RHEL), Ubuntu® Server, or Debian GNU/Linux . If the drives being used exceed 16TiB (equivalent to 16.37 TB) capacity, you must use the Ext4 or XFS file system. Using the Ext3 files system with a drive capacity higher than 16TiB (equivalent to 16.37 TB) will result in an **"too big to be expressed"** error message.

Broadcom 9302-16e

Table 8: Broadcom9302-16e Interoperability Notes

	Linux	Windows
Firmware	16.00.17.00	16.00.17.00
Driver	39.100.00.00	2.51.27.01
Operating System Support		
Microsoft® Windows	**2019** R1 x64 Server	Supported
	2022 R1 x64 Server	Supported
CentOS/RedHat® Enterprise Linux (RHEL)	**8.8** (x86_64) Kernel: 4.18.0-477	Supported
	9.0 (x86_64) Kernel: 5.14.0-70	Supported
	9.2 (x86_64) Kernel: 5.14.0-284	Supported
	9.3 (x86_64) Kernel: 5.14.0-362	Supported
Ubuntu® Server	**20.04** Kernel: 5.4	Supported
	22.04 Kernel: 5.15	Supported
Debian GNU/Linux	**9.8** Kernel: 4.9	Not Tested
	10 Kernel: 4.19	Not Tested
	11 Kernel: 5.10	Not Tested
Oracle Linux (OL)	**7.9** Kernel: UEK r6	Not Tested
FreeBSD®	**13.2**	Not Tested

Note: To increase the responsiveness of the topology during the event of a cable pull, IOM/ESM reset, or drive pull, use ScrutinyCLI (version 32 or later) to change the `Task Management Reset Type` on the HBA(s) from `Target Reset` to `I_T Nexus Reset`, and change the DMD settings on the HBA from 0 to 21 seconds. See **https://support-en.westerndigital.com/app/answers/detail/a_id/32058** for more details.

Important: Active Optical SAS cable support is limited to Broadcom 9300-, 9302-, 9305-, 9400-, 9500-, and 9600-series HBAs.

Attention: For all HBAs using CentOS/RedHat® Enterprise Linux (RHEL), Ubuntu® Server, or Debian GNU/Linux . If the drives being used exceed 16TiB (equivalent to 16.37 TB) capacity, you must use the Ext4 or XFS file system. Using the Ext3 files system with a drive capacity higher than 16TiB (equivalent to 16.37 TB) will result in an **"too big to be expressed"** error message.

Broadcom 9305-16e

Table 9: Broadcom9305-16e Interoperability Notes

	Linux	Windows
Firmware	16.00.13.00	16.00.13.00
Driver	39.100.00.00	2.51.27.01
Operating System Support		
Microsoft® Windows	**2019** R1 x64 Server	Supported
	2022 R1 x64 Server	Supported
CentOS/RedHat® Enterprise Linux (RHEL)	**8.8** (x86_64) Kernel: 4.18.0-477	Supported
	9.0 (x86_64) Kernel: 5.14.0-70	Supported
	9.2 (x86_64) Kernel: 5.14.0-284	Supported
	9.3 (x86_64) Kernel: 5.14.0-362	Supported
Ubuntu® Server	**20.04** Kernel: 5.4	Supported
	22.04 Kernel: 5.15	Supported
Debian GNU/Linux	**9.8** Kernel: 4.9	Not Tested
	10 Kernel: 4.19	Not Tested
	11 Kernel: 5.10	Not Tested
Oracle Linux (OL)	**7.9** Kernel: UEK r6	Not Tested
FreeBSD®	**13.2**	Not Tested

Note: To increase the responsiveness of the topology during the event of a cable pull, IOM/ESM reset, or drive pull, use ScrutinyCLI (version 32 or later) to change the `Task Management Reset Type` on the HBA(s) from `Target Reset` to `I_T Nexus Reset`, and change the DMD settings on the HBA from 0 to 21 seconds. See **https://support-en.westerndigital.com/app/answers/detail/a_id/32058** for more details.

Important: Active Optical SAS cable support is limited to Broadcom 9300-, 9302-, 9305-, 9400-, 9500-, and 9600-series HBAs.

Attention: For all HBAs using CentOS/RedHat® Enterprise Linux (RHEL), Ubuntu® Server, or Debian GNU/Linux . If the drives being used exceed 16TiB (equivalent to 16.37 TB) capacity, you must use the Ext4 or XFS file system. Using the Ext3 files system with a drive capacity higher than 16TiB (equivalent to 16.37 TB) will result in an **"too big to be expressed"** error message.

Broadcom MegaRAID 9380-8e

Table 10: BroadcomMegaRAID 9380-8e Interoperability Notes

	Linux	Windows
Firmware	24.21.0-0159	24.21.0-0159
Driver	07.723.02.00	06.714.18.00
Operating System Support		
Microsoft® Windows	**2019** R1 x64 Server	Supported
	2022 R1 x64 Server	Supported
CentOS/RedHat® Enterprise Linux (RHEL)	**8.8** (x86_64) Kernel: 4.18.0-477	Supported
	9.0 (x86_64) Kernel: 5.14.0-70	Supported
	9.2 (x86_64) Kernel: 5.14.0-284	Supported
	9.3 (x86_64) Kernel: 5.14.0-362	Supported
Ubuntu® Server	**20.04** Kernel: 5.4	Supported
	22.04 Kernel: 5.15	Supported
Debian GNU/Linux	**9.8** Kernel: 4.9	Not Tested
	10 Kernel: 4.19	Not Tested
	11 Kernel: 5.10	Not Tested
Oracle Linux (OL)	**7.9** Kernel: UEK r6	Not Tested
FreeBSD®	**13.2**	Not Tested

Attention: For all HBAs using CentOS/RedHat® Enterprise Linux (RHEL), Ubuntu® Server, or Debian GNU/Linux . If the drives being used exceed 16TiB (equivalent to 16.37 TB) capacity, you must use the Ext4 or XFS file system. Using the Ext3 files system with a drive capacity higher than 16TiB (equivalent to 16.37 TB) will result in an **"too big to be expressed"** error message.

Broadcom 9400-16e, -8i8e, -8e

Table 11: Broadcom9400-16e, -8i8e, -8e Interoperability Notes

	Linux	Windows
Firmware	24.00.00.00	24.00.00.00
Driver	43.00.00.00-1	2.61.48.00
Operating System Support		
Microsoft® Windows	**2019** R1 x64 Server	Supported
	2022 R1 x64 Server	Supported
CentOS/RedHat® Enterprise Linux (RHEL)	**8.8** (x86_64) Kernel: 4.18.0-477	Supported
	9.0 (x86_64) Kernel: 5.14.0-70	Supported
	9.2 (x86_64) Kernel: 5.14.0-284	Supported
	9.3 (x86_64) Kernel: 5.14.0-362	Supported
Ubuntu® Server	**20.04** Kernel: 5.4	Supported
	22.04 Kernel: 5.15	Supported
Debian GNU/Linux	**9.8** Kernel: 4.9	Not Tested
	10 Kernel: 4.19	Supported
	11 Kernel: 5.10	Supported
Oracle Linux (OL)	**7.9** Kernel: UEK r6	Not Tested
FreeBSD®	**13.2**	Not Tested

Note: To increase the responsiveness of the topology during the event of a cable pull, IOM/ESM reset, or drive pull, use ScrutinyCLI (version 32 or later) to change the `Task Management Reset Type` on the HBA(s) from `Target Reset` to `I_T Nexus Reset`, and change the DMD settings on the HBA from 0 to 21 seconds. See **https://support-en.westerndigital.com/app/answers/detail/a_id/32058** for more details.

Attention: For all HBAs using CentOS/RedHat® Enterprise Linux (RHEL), Ubuntu® Server, or Debian GNU/Linux . If the drives being used exceed 16TiB (equivalent to 16.37 TB) capacity, you must use the Ext4 or XFS file system. Using the Ext3 files system with a drive capacity higher than 16TiB (equivalent to 16.37 TB) will result in an **"too big to be expressed"** error message.

Broadcom 9405w-16e

Table 12: Broadcom9405w-16e Interoperability Notes

	Linux	Windows
Firmware	24.00.00.00	24.00.00.00
Driver	43.00.00.00-1	2.61.48.00
Operating System Support		
Microsoft® Windows	**2019** R1 x64 Server	Supported
	2022 R1 x64 Server	Supported
CentOS/RedHat® Enterprise Linux (RHEL)	**8.8** (x86_64) Kernel: 4.18.0-477	Supported
	9.0 (x86_64) Kernel: 5.14.0-70	Supported
	9.2 (x86_64) Kernel: 5.14.0-284	Supported
	9.3 (x86_64) Kernel: 5.14.0-362	Supported
Ubuntu® Server	**20.04** Kernel: 5.4	Supported
	22.04 Kernel: 5.15	Supported
Debian GNU/Linux	**9.8** Kernel: 4.9	Not Tested
	10 Kernel: 4.19	Not Tested
	11 Kernel: 5.10	Not Tested
Oracle Linux (OL)	**7.9** Kernel: UEK r6	Not Tested
FreeBSD®	**13.2**	Not Tested

Note: To increase the responsiveness of the topology during the event of a cable pull, IOM/ESM reset, or drive pull, use ScrutinyCLI (version 32 or later) to change the `Task Management Reset Type` on the HBA(s) from `Target Reset` to `I_T Nexus Reset`, and change the DMD settings on the HBA from 0 to 21 seconds. See **https://support-en.westerndigital.com/app/answers/detail/a_id/32058** for more details.

Attention: For all HBAs using CentOS/RedHat® Enterprise Linux (RHEL), Ubuntu® Server, or Debian GNU/Linux . If the drives being used exceed 16TiB (equivalent to 16.37 TB) capacity, you must use the Ext4 or XFS file system. Using the Ext3 files system with a drive capacity higher than 16TiB (equivalent to 16.37 TB) will result in an **"too big to be expressed"** error message.

Broadcom MegaRAID 9480-8i8e

Table 13: BroadcomMegaRAID 9480-8i8e Interoperability Notes

	Linux	Windows
Firmware	51.23.0-4637	51.23.0-4637
Driver	07.724.02.00-1	07.724.02.00-1
Operating System Support		
Microsoft® Windows	**2019** R1 x64 Server	Supported
	2022 R1 x64 Server	Supported
CentOS/RedHat® Enterprise Linux (RHEL)	**8.8** (x86_64) Kernel: 4.18.0-477	Supported
	9.0 (x86_64) Kernel: 5.14.0-70	Supported
	9.2 (x86_64) Kernel: 5.14.0-284	Supported
	9.3 (x86_64) Kernel: 5.14.0-362	Supported
Ubuntu® Server	**20.04** Kernel: 5.4	Supported
	22.04 Kernel: 5.15	Supported
Debian GNU/Linux	**9.8** Kernel: 4.9	Not Tested
	10 Kernel: 4.19	Not Tested
	11 Kernel: 5.10	Not Tested
Oracle Linux (OL)	**7.9** Kernel: UEK r6	Not Tested
FreeBSD®	**13.2**	Not Tested

Attention: For all HBAs using CentOS/RedHat® Enterprise Linux (RHEL), Ubuntu® Server, or Debian GNU/Linux . If the drives being used exceed 16TiB (equivalent to 16.37 TB) capacity, you must use the Ext4 or XFS file system. Using the Ext3 files system with a drive capacity higher than 16TiB (equivalent to 16.37 TB) will result in an **"too big to be expressed"** error message.

Broadcom 9500-8e, -16e

Table 14: Broadcom9500-8e, -16e Interoperability Notes

	Linux	Windows	FreeBSD
Firmware	35.00.00.00	35.00.00.00	25.00.00.00
Driver	54.00.00.00-1	2.61.79.00	23.00.00.00
Operating System Support			
Microsoft® Windows		**2019** R1 x64 Server	Supported
		2022 R1 x64 Server	Supported
CentOS/RedHat® Enterprise Linux (RHEL)		**8.8** (x86_64) Kernel: 4.18.0-477	Supported
		9.0 (x86_64) Kernel: 5.14.0-70	Supported
		9.2 (x86_64) Kernel: 5.14.0-284	Supported
		9.3 (x86_64) Kernel: 5.14.0-362	Supported
		9.4 (x86_64) Kernel: 5.14.0-427	Supported
Ubuntu® Server		**20.04** Kernel: 5.4	Supported
		22.04 Kernel: 5.15	Supported
Debian GNU/Linux		**9.8** Kernel: 4.9	Not Tested
		10 Kernel: 4.19	Not Tested
		11 Kernel: 5.10	Not Tested
Oracle Linux (OL)		**7.9** Kernel: UEK r6	Supported
FreeBSD®		**13.2**	Supported[1]

Note: To increase the responsiveness of the topology during the event of a cable pull, IOM/ESM reset, or drive pull, use ScrutinyCLI (version 32 or later) to change the `Task Management Reset Type` on the HBA(s) from `Target Reset` to `I_T Nexus Reset`, and change the DMD settings on the HBA from 0 to 21 seconds. See **https://support-en.westerndigital.com/app/answers/detail/a_id/32058** for more details.

Attention: For all HBAs using CentOS/RedHat® Enterprise Linux (RHEL), Ubuntu® Server, or Debian GNU/Linux . If the drives being used exceed 16TiB (equivalent to 16.37 TB) capacity, you must use the Ext4 or XFS file system. Using the Ext3 files system with a drive capacity higher than 16TiB (equivalent to 16.37 TB) will result in an **"too big to be expressed"** error message.

1. WDDCS tool and sg_scan tool will not work in FreeBSD. Camcontrol tool, which has limited functionality, can be used.

Broadcom MegaRAID 9580-8i8e

Table 15: BroadcomMegaRAID 9580-8i8e Interoperability Notes

	Linux	Windows
Firmware	52.33.0-6168	52.33.0-6168
Driver	7.733.00.00-2	7.733.03.00
Operating System Support		
Microsoft® Windows	**2019** R1 x64 Server	Supported
	2022 R1 x64 Server	Supported
CentOS/RedHat® Enterprise Linux (RHEL)	**8.8** (x86_64) Kernel: 4.18.0-477	Supported
	9.0 (x86_64) Kernel: 5.14.0-70	Supported
	9.2 (x86_64) Kernel: 5.14.0-284	Supported
	9.3 (x86_64) Kernel: 5.14.0-362	Supported
	9.4 (x86_64) Kernel: 5.14.0-427	Supported
Ubuntu® Server	**20.04** Kernel: 5.4	Supported
	22.04 Kernel: 5.15	Supported
Debian GNU/Linux	**9.8** Kernel: 4.9	Not Tested
	10 Kernel: 4.19	Not Tested
	11 Kernel: 5.10	Not Tested
Oracle Linux (OL)	**7.9** Kernel: UEK r6	Not Tested
FreeBSD®	**13.2**	Not Tested

Attention: For all HBAs using CentOS/RedHat® Enterprise Linux (RHEL), Ubuntu® Server, or Debian GNU/Linux . If the drives being used exceed 16TiB (equivalent to 16.37 TB) capacity, you must use the Ext4 or XFS file system. Using the Ext3 files system with a drive capacity higher than 16TiB (equivalent to 16.37 TB) will result in an **"too big to be expressed"** error message.

Broadcom 9600-16e

Table 16: Broadcom9600-16e Interoperability Notes

	Linux	Windows
Firmware	8.13.1.0-00000-00001	8.13.1.0-00000-00001
Driver	8.13.1.0.0-1	8.13.06.00
Operating System Support		
Microsoft® Windows	**2019** R1 x64 Server	Supported
	2022 R1 x64 Server	Supported
CentOS/RedHat® Enterprise Linux (RHEL)	**8.8** (x86_64) Kernel: 4.18.0-477	Supported
	9.0 (x86_64) Kernel: 5.14.0-70	Supported
	9.2 (x86_64) Kernel: 5.14.0-284	Supported
	9.3 (x86_64) Kernel: 5.14.0-362	Supported
	9.4 (x86_64) Kernel: 5.14.0-427	Supported
Ubuntu® Server	**20.04** Kernel: 5.4	Supported
	22.04 Kernel: 5.15	Supported
Debian GNU/Linux	**9.8** Kernel: 4.9	Not Tested
	10 Kernel: 4.19	Not Tested
	11 Kernel: 5.10	Not Tested
Oracle Linux (OL)	**7.9** Kernel: UEK r6	Not Tested
FreeBSD®	**13.2**	Not Tested

Attention: For all HBAs using CentOS/RedHat® Enterprise Linux (RHEL), Ubuntu® Server, or Debian GNU/Linux . If the drives being used exceed 16TiB (equivalent to 16.37 TB) capacity, you must use the Ext4 or XFS file system. Using the Ext3 files system with a drive capacity higher than 16TiB (equivalent to 16.37 TB) will result in an **"too big to be expressed"** error message.

Broadcom 9600w-16e

Table 17: Broadcom9600w-16e Interoperability Notes

	Linux	Windows
Firmware	8.13.1.0-00000-00001	8.13.1.0-00000-00001
Driver	8.13.1.0.0-1	8.13.06.00
Operating System Support		
Microsoft® Windows	**2019** R1 x64 Server	Supported
	2022 R1 x64 Server	Supported
CentOS/RedHat® Enterprise Linux (RHEL)	**8.8** (x86_64) Kernel: 4.18.0-477	Supported
	9.0 (x86_64) Kernel: 5.14.0-70	Supported
	9.2 (x86_64) Kernel: 5.14.0-284	Supported
	9.3 (x86_64) Kernel: 5.14.0-362	Supported
	9.4 (x86_64) Kernel: 5.14.0-427	Supported
Ubuntu® Server	**20.04** Kernel: 5.4	Supported
	22.04 Kernel: 5.15	Supported
Debian GNU/Linux	**9.8** Kernel: 4.9	Not Tested
	10 Kernel: 4.19	Not Tested
	11 Kernel: 5.10	Not Tested
Oracle Linux (OL)	**7.9** Kernel: UEK r6	Not Tested
FreeBSD®	**13.2**	Not Tested

Attention: For all HBAs using CentOS/RedHat® Enterprise Linux (RHEL), Ubuntu® Server, or Debian GNU/Linux . If the drives being used exceed 16TiB (equivalent to 16.37 TB) capacity, you must use the Ext4 or XFS file system. Using the Ext3 files system with a drive capacity higher than 16TiB (equivalent to 16.37 TB) will result in an **"too big to be expressed"** error message.

Oracle 9300-8e

Table 18: Oracle 9300-8e Interoperability Notes

	Linux	Windows
Firmware	16.00.08.00	N/A
Driver	39.100.00.00	N/A
Operating System Support		
Microsoft® Windows	**2019** R1 x64 Server	Not Tested
	2022 R1 x64 Server	Not Tested
CentOS/RedHat® Enterprise Linux (RHEL)	**8.8** (x86_64) Kernel: 4.18.0-477	Supported
	9.0 (x86_64) Kernel: 5.14.0-70	Supported
	9.2 (x86_64) Kernel: 5.14.0-284	Supported
	9.3 (x86_64) Kernel: 5.14.0-362	Supported
Ubuntu® Server	**20.04** Kernel: 5.4	Supported
	22.04 Kernel: 5.15	Supported
Debian GNU/Linux	**9.8** Kernel: 4.9	Not Tested
	10 Kernel: 4.19	Not Tested
	11 Kernel: 5.10	Not Tested
Oracle Linux (OL)	**7.9** Kernel: UEK r6	Supported
FreeBSD®	**13.2**	Not Tested

Attention: For all HBAs using CentOS/RedHat® Enterprise Linux (RHEL), Ubuntu® Server, or Debian GNU/Linux . If the drives being used exceed 16TiB (equivalent to 16.37 TB) capacity, you must use the Ext4 or XFS file system. Using the Ext3 files system with a drive capacity higher than 16TiB (equivalent to 16.37 TB) will result in an **"too big to be expressed"** error message.

1.3 HBA Compatibility for SMR HDDs

Adaptec 1200-16e

Table 19: Adaptec1200-16e Interoperability Notes

	Linux	
Firmware	3.01.36.50	
Driver	2.1.34-035	
Operating System Support		
RedHat® Enterprise Linux (RHEL)	**9.0** (x86_64) Kernel: 5.14.0-70	Supported
	9.2 (x86_64) Kernel: 5.14.0-284	Supported
	9.3 (x86_64) Kernel: 5.14.0-362	Supported
Ubuntu® Server	**20.04** Kernel: 5.4	Supported
	22.04 Kernel: 5.15	Supported

Broadcom 9500-8e, -16e

Table 20: Broadcom9500-8e, -16e Interoperability Notes

	Linux	
Firmware	35.00.00.00	
Driver	54.00.00.00-1	
Operating System Support		
RedHat® Enterprise Linux (RHEL)	**9.0** (x86_64) Kernel: 5.14.0-70	Supported
	9.2 (x86_64) Kernel: 5.14.0-284	Supported
	9.3 (x86_64) Kernel: 5.14.0-362	Supported
Ubuntu® Server	**20.04** Kernel: 5.4	Supported
	22.04 Kernel: 5.15	Supported

Note: To increase the responsiveness of the topology during the event of a cable pull, IOM/ESM reset, or drive pull, use ScrutinyCLI (version 32 or later) to change the `Task Management Reset Type` on the HBA(s) from `Target Reset` to `I_T Nexus Reset`, and change the DMD settings on the HBA from 0 to 21 seconds. See **https://support-en.westerndigital.com/app/answers/detail/a_id/32058** for more details.

Attention: For all HBAs using CentOS/RedHat® Enterprise Linux (RHEL), Ubuntu® Server, or Debian GNU/Linux . If the drives being used exceed 16TiB (equivalent to 16.37 TB) capacity, you must use the Ext4 or XFS file system. Using the Ext3 files system with a drive capacity higher than 16TiB (equivalent to 16.37 TB) will result in an **"too big to be expressed"** error message.

Broadcom 9600-16e

Table 21: Broadcom9600-16e Interoperability Notes

	Linux	
Firmware	8.13.1.0-00000-00001	
Driver	8.13.1.0.0-1	
Operating System Support		
RedHat® Enterprise Linux (RHEL)	**9.0** (x86_64) Kernel: 5.14.0-70	Supported
	9.2 (x86_64) Kernel: 5.14.0-284	Supported
	9.3 (x86_64) Kernel: 5.14.0-362	Supported
Ubuntu® Server	**20.04** Kernel: 5.4	Supported
	22.04 Kernel: 5.15	Supported

Attention: For all HBAs using CentOS/RedHat® Enterprise Linux (RHEL), Ubuntu® Server, or Debian GNU/Linux . If the drives being used exceed 16TiB (equivalent to 16.37 TB) capacity, you must use the Ext4 or XFS file system. Using the Ext3 files system with a drive capacity higher than 16TiB (equivalent to 16.37 TB) will result in an **"too big to be expressed"** error message.

Broadcom 9600w-16e

Table 22: Broadcom9600w-16e Interoperability Notes

	Linux	
Firmware	8.13.1.0-00000-00001	
Driver	8.13.1.0.0-1	
Operating System Support		
RedHat® Enterprise Linux (RHEL)	**9.0** (x86_64) Kernel: 5.14.0-70	Supported
	9.2 (x86_64) Kernel: 5.14.0-284	Supported
	9.3 (x86_64) Kernel: 5.14.0-362	Supported
Ubuntu® Server	**20.04** Kernel: 5.4	Supported
	22.04 Kernel: 5.15	Supported

Attention: For all HBAs using CentOS/RedHat® Enterprise Linux (RHEL), Ubuntu® Server, or Debian GNU/Linux . If the drives being used exceed 16TiB (equivalent to 16.37 TB) capacity, you must use the Ext4 or XFS file system. Using the Ext3 files system with a drive capacity higher than 16TiB (equivalent to 16.37 TB) will result in an **"too big to be expressed"** error message.

1.4 Cable Compatibility

Active (Optical) Cables

Active cables can be used for both direct (host-to-enclosure) and daisy-chain (enclosure-to-enclosure) connections.

Important: Active Optical SAS cable support is limited to Broadcom 9300-, 9302-, 9305-, 9400-, 9500-, and 9600-series HBAs.

Note: MegaRAID adapters do not support the use of active SAS cables. If your configuration requires the use of MegaRAID adapters, passive cables must be used.

Table 23: Approved Active Optical HD Mini-SAS to HD Mini-SAS Cables

Length	Manufacturer	Vendor Part Number
2m	JPC Connectivity (Jess-Link)	P5388FC3002M-1[2]
3m	Amphenol ICC (FCI)	FOHHB23P00003[3]
	JPC Connectivity (Jess-Link)	P5388FC3003M-1
	Molex	106415-2103
4m	Amphenol ICC (FCI)	FOHHB23P00004
	JPC Connectivity (Jess-Link)	P5388FC3004M-1
	JPC Connectivity (Jess-Link)	P5388FC3004M-3
5m	Amphenol ICC (FCI)	FOHHB23P00005
	Molex	106415-2105
6m	Amphenol ICC (FCI)	FOHHB23P00006
	JPC Connectivity (Jess-Link)	P5388FC3006M-1
10m	Molex	106415-2110

2. Listed JPC P5388FC300xxx cables are compatible, beginning with firmware version 4008-020 and later.

3. Listed FOHHB23P00xxx cables are compatible, beginning with firmware version 2052-020 and later.

Passive (Copper) Cables

Passive cables should only be used for direct (host-to-enclosure) connections.

Table 24: Approved Passive HD Mini-SAS to HD Mini-SAS Cables

Length	Manufacturer	Vendor Part Number
1m	Amphenol ICC (FCI)	10112041-2010LF
2m	Amphenol ICC (FCI)	601760006
		10117949-2020LF
		10112041-2020LF
	CS Electronics	12G-HD-4444/2M
	Data Storage Cables (DSC)	C5555-2M
	Molex	1110751002
	The Mate Company (TMC)	C5555-2M
3m	Amphenol ICC (FCI)	601760008
		10117949-4030LF
		10112041-2030LF
	CS Electronics	12G-HD-4444/3M
	Molex	1110751003

1.5 HDD Compatibility

Ultrastar DC HC310 CMR, 6TB HDD with 3.5" Drive Carrier

Table 25: DC HC310 Part / Model Numbers

Sector Size	SATA		SAS		
	SE	TCG	SE	TCG	TCG-FIPS
512e	1EX1189 / HUS726T6TAL-E604	1EX1188 / HUS726T6TAL-E601	1EX1185 / HUS726T6TAL-5204	1EX1184 / HUS726T6TAL-5201	1EX1853 / HUS726T6TAL-5205
4Kn	1EX1187 / HUS726T6TAL-N604	1EX1186 / HUS726T6TAL-N601	1EX1183 / HUS726T6TAL-4204	1EX1182 / HUS726T6TAL-4201	1EX1852 / HUS726T6TAL-4205

Ultrastar DC HC320 CMR, 8TB HDD with 3.5" Drive Carrier

Table 26: DC HC320 Part / Model Numbers

Sector Size	SATA			SAS		
	SE	SED	TCG	SE	TCG	TCG-FIPS
512e	1EX1227 / HUS728T8TAL-E604	1EX1226 / HUS728T8TAL-E601		1EX1223 / HUS728T8TAL-5204	1EX1222 / HUS728T8TAL-5201	1EX1343 / HUS728T8TAL-5205
4Kn	1EX1225 / HUS728T8TAL-N604		1EX1224 / HUS728T8TAL-N601	1EX1221 / HUS728T8TAL-4204	1EX1220 / HUS728T8TAL-4201	1EX1342 / HUS728T8TAL-4205

Ultrastar DC HC330 CMR, 10TB HDD with 3.5" Drive Carrier

Table 27: DC HC330 Part / Model Numbers

Sector Size	SATA		SAS		
	SE	SED	SE	TCG	TCG-FIPS
512e	1EX2440 / WUS721010AL-E604	1EX2441 / WUS721010AL-E601	1EX2435 / WUS721010AL-5204	1EX2436 / WUS721010AL-5201	1EX2437 / WUS721010AL-5205
4Kn	1EX2438 / WUS721010AL-N604	1EX2439 / WUS721010AL-N601	1EX2432 / WUS721010AL-4204	1EX2433 / WUS721010AL-4201	1EX2434 / WUS721010AL-4205

Ultrastar DC HC510 CMR, 8TB HDD with 3.5" Drive Carrier

Table 28: DC HC510 Part / Model Numbers

Sector Size	SAS
	ISE
512e	1EX0392 / HUH721008AL-5200

Ultrastar DC HC510 CMR, 10TB HDD with 3.5" Drive Carrier

Table 29: DC HC510 Part / Model Numbers

Sector Size	SATA			SAS			
	SE	ISE	SED	SE	ISE	TCG	TCG-FIPS
512e	1EX0499 / HUH721010AL-E604	1EX0497 / HUH721010AL-E600	1EX0498 / HUH721010AL-E601	1EX0487 / HUH721010AL-5204	1EX0485 / HUH721010AL-5200	1EX0486 / HUH721010AL-5201	1EX1341 / HUH721010AL-5205
4Kn	1EX0496 / HUH721010AL-N604	1EX0494 / HUH721010AL-N600	1EX0495 / HUH721010AL-N601	1EX0484 / HUH721010AL-4204	1EX0482 / HUH721010AL-4200	1EX0483 / HUH721010AL-4201	1EX1340 / HUH721010AL-4205

Ultrastar DC HC520 CMR, 12TB HDD with 3.5" Drive Carrier

Table 30: DC HC520 Part / Model Numbers

Sector Size	SATA			SAS			
	SE	ISE	SED	SE	ISE	TCG	TCG-FIPS
512e	1EX1015* / HUH721212AL-E604	1EX1013* / HUH721212AL-E600	1EX1014 / HUH721212AL-E601	1EX1009* / HUH721212AL-5204	1EX1007* / HUH721212AL-5200	1EX1008* / HUH721212AL-5201	1EX1338* / HUH721212AL-5205
4Kn	1EX1012* / HUH721212AL-N604	1EX1010* / HUH721212AL-N600	1EX1011 / HUH721212AL-N601	1EX1006* / HUH721212AL-4204	1EX1004* / HUH721212AL-4200	1EX1005* / HUH721212AL-4201	1EX1339* / HUH721212AL-4205

** This part number is no longer available.*

Ultrastar DC HC530 CMR, 14TB HDD with 3.5" Drive Carrier

Attention: Lower performance observed for multiple (2, 4, and 8) write streams when using I/O Queue Depths of less than 4 on Ultrastar DC HC530 14TB SAS drives.

Table 31: DC HC530 Part / Model Numbers

Sector Size	SATA		SAS			
	SE	SED	SE	ISE	TCG	TCG-FIPS
512e	1EX1793* / WUH721414AL-E604	1EX1794* / WUH721414AL-E6L1	1EX1791* / WUH721414AL-5204	1EX1583 / WUH721414AL-5200	1EX1792* / WUH721414AL-5201	1EX1855 / WUH721414AL-5205
4Kn	1EX1790* / WUH721414AL-N604		1EX1788* / WUH721414AL-4204		1EX1789* / WUH721414AL-4201	1EX1854 / WUH721414AL-4205

** This part number is no longer available.*

Ultrastar DC HC550 CMR, 14TB HDD with 3.5" Drive Carrier

Table 32: DC HC550 Part / Model Numbers

Sector Size	SATA		SAS			
	SE	SED	SE	ISE	TCG	TCG-FIPS
512e	1EX3046* / WUH721814AL-E6L4		1EX3045* / WUH721814AL-5204		1EX3217* / WUH721814AL-5205	

** This part number is no longer available.*

Ultrastar DC HC550 CMR, 16TB HDD with 3.5" Drive Carrier

Table 33: DC HC550 Part / Model Numbers

Sector Size	SATA		SAS		
	SE	SED	SE	TCG	TCG-FIPS
512e	1EX2476* / WUH721816AL-E604	1EX2477* / WUH721816AL-E601	1EX2473* / WUH721816AL-5204	1EX2474* / WUH721816AL-5201	1EX2475* / WUH721816AL-5205
4Kn			1EX2980* / WUH721816AL-4204		

** This part number is no longer available.*

Ultrastar DC HC550 CMR, 18TB HDD with 3.5" Drive Carrier

Table 34: DC HC550 Part / Model Numbers

Sector Size	SATA		SAS		
	SE	SED	SE	TCG	TCG-FIPS
512e	1EX2481* / WUH721818AL-E604	1EX2482* / WUH721818AL-E601	1EX2478* / WUH721818AL-5204	1EX2479* / WUH721818AL-5201	1EX2480* / WUH721818AL-5205

** This part number is no longer available.*

Ultrastar DC HC555 CMR, 12TB HDD with 3.5" Drive Carrier

Table 35: DC HC555 Part / Model Numbers

Sector Size	SATA	SAS	
	SE	SE	TCG
512e	1EX3306 / WUH722012CL-E604	1EX3305 / WUH722012CL-5204	1EX3307 / WUH722012CL-5201

Ultrastar DC HC555 CMR, 14TB HDD with 3.5" Drive Carrier

Table 36: DC HC555 Part / Model Numbers

Sector Size	SATA	SAS	
	SE	SE	TCG
512e	1EX3309 / WUH722014CL-E604	1EX3308 / WUH722014CL-5204	1EX3310 / WUH722014CL-5201

Ultrastar DC HC555 CMR, 16TB HDD with 3.5" Drive Carrier

Table 37: DC HC555 Part / Model Numbers

Sector Size	SATA	SAS	
	SE	SE	TCG
512e	1EX3312 / WUH722016CL-E604	1EX3311 / WUH722016CL-5204	1EX3313 / WUH722016CL-5201

Ultrastar DC HC555 CMR, 18TB HDD with 3.5" Drive Carrier

Table 38: DC HC555 Part / Model Numbers

Sector Size	SATA	SAS	
	SE	SE	TCG
512e	1EX3315 / WUH722018CL-E604	1EX3314 / WUH722018CL-5204	1EX3316 / WUH722018CL-5201

Ultrastar DC HC555 CMR, 20TB HDD with 3.5" Drive Carrier

Table 39: DC HC555 Part / Model Numbers

Sector Size	SATA	SAS	
	SE	SE	TCG
512e	1EX3318 / WUH722020CL-E604	1EX3317 / WUH722020CL-5204	1EX3319 / WUH722020CL-5201

Ultrastar DC HC560 CMR, 20TB HDD with 3.5" Drive Carrier

Table 40: DC HC560 Part / Model Numbers

Sector Size	SATA		SAS	
	SE	SED	SE	TCG
512e	1EX2909 / WUH722020BL-E604	1EX2910 / WUH722020BL-E601	1EX2906 / WUH722020BL-5204	1EX2907 / WUH722020BL-5201

Ultrastar DC HC570 CMR, 22TB HDD with 3.5" Drive Carrier

Table 41: DC HC570 Part / Model Numbers

Sector Size	SATA		SAS	
	SE	SED	SE	TCG
512e	1EX2966 / WUH722222AL-E604	1EX2967 / WUH722222AL-E601	1EX2963 / WUH722222AL-5204	1EX2964 / WUH722222AL-5201

Ultrastar DC HC580 CMR, 22TB HDD with 3.5" Drive Carrier

Table 42: DC HC580 Part / Model Numbers

Sector Size	SATA	SAS
	SE	SE
512e	1EX3169 / WUH722422AL-5201	1EX3168 / WUH722424AL-5201

Sector Size	SATA		SAS	
	SE	SED	SE	TCG
512e	1EX2966 / WUH722222AL-E604	1EX2967 / WUH722222AL-E601	1EX2963 / WUH722222AL-5204	1EX2964 / WUH722222AL-5201

Ultrastar DC HC580 CMR, 24TB HDD with 3.5" Drive Carrier

Table 44: DC HC580 Part / Model Numbers

Sector Size	SATA	SAS	
	SE	SE	TCG
512e	1EX3171 / WUH722424AL-E6L4	1EX3170 / WUH722424AL5204	
4Kn			1EX3230 / WUH722424AL5201

Ultrastar DC HC650 SMR, 20TB HDD with 3.5" Drive Carrier

Table 45: DC HC650 Part / Model Numbers

Sector Size	SATA		SAS	
	SE	SED	SE	TCG
4Kn	1EX2719 / WSH722020AL-N604	1EX2720 / WSH722020AL-N601	1EX2716 / WSH722020AL-4204	1EX2717 / WSH722020AL-4201

Ultrastar DC HC590 CMR, 24TB HDD with 3.5" Drive Carrier

Table 46: DC HC590 Part / Model Numbers

Sector Size	SATA	SAS	
	SE	SE	TCG
512e	1EX3268 / WUH722624ALN604	1EX3267 / WUH722624AL4204	1EX3327 / WUH722624AL4201

Ultrastar DC HC590 CMR, 26TB HDD with 3.5" Drive Carrier

Table 47: DC HC590 Part / Model Numbers

Sector Size	SATA	SAS	
	SE	SE	TCG
512e	1EX3270 / WUH722626ALN604	1EX3269 / WUH722626AL4204	1EX3328 / WUH722626AL4201

Ultrastar DC HC670 SMR, 26TB HDD with 3.5" Drive Carrier

Table 48: DC HC670 Part / Model Numbers

Sector Size	SATA		SAS	
	SE	SED	SE	TCG
4Kn	1EX3013 / WSH722626ALN604	1EX3014 / WSH722626ALN601	1EX3010 / WSH722626AL4204	1EX3011 / WSH722626AL4201

Ultrastar DC HC680 SMR, 26TB HDD with 3.5" Drive Carrier

Table 49: DC HC680 Part / Model Numbers

Sector Size	SATA
	SE
4Kn	1EX3172 / WSH722860ALN6L4

Ultrastar DC HC680 SMR, 27TB HDD with 3.5" Drive Carrier

Table 50: DC HC680 Part / Model Numbers

Sector Size	SATA
	SE
4Kn	1EX3173 / WSH722870ALN6L4

Ultrastar DC HC680 SMR, 28TB HDD with 3.5" Drive Carrier

Table 51: DC HC680 Part / Model Numbers

Sector Size	SATA
	SE
4Kn	1EX3174 / WSH722880ALN6L4

Ultrastar DC HC690 SMR, 30TB HDD with 3.5" Drive Carrier

Table 52: DC HC690 Part / Model Numbers

Sector Size	SATA	SAS	
	SE	SE	TCG
4Kn	1EX3272 / WSH723200ALN604	1EX3271 / WSH723200AL4204	1EX3329 / WSH723200AL4201

1.6 Compatible SSDs

Attention: All drives have been tested with version 4011-005 enclosure firmware.

Device	Volume	Encryption	Drive Firmware	Manufacturer Part Number
Kioxia SAS PM7-M/V/R Series SSD	Up to 3.84TB	SE	0101	KPM7XRUG3T84

Device	Volume	Encryption	Drive Firmware	Manufacturer Part Number
Samsung SAS PM1653A SSD	Up to 3.84TB	SE	GXG3	MZILG3T8HCLS-00A07

Note: Ultrastar Data60 supports third-party device features that are within SAS specification as mandatory. Any third-party drive features that are vendor specific are not guaranteed to function.

1.7 Non-TAA SKUs for Fully Populated Configurations

Table 54: Fully Populated Configurations

Capacity	Drive Type	Sector Size	SATA			SAS			
			SE	SED	ISE	SE	ISE	TCG	TCG-FIPS
1800TB	HC690	4Kn	1ES2746			1ES2743		1ES2870	
1560TB	HC590	512e	1ES2751			1ES2749		1ES2876	
1440TB	HC590	512e	1ES2757			1ES2755		1ES2873	
	HC580		1ES2526						
			1ES2540						
1320TB	HC580	512e	1ES2522						
	HC570		1ES2203	1ES2204		1ES2063		1ES2198	
			1ES2536						
1200TB	HC560	512e	1ES2135	1ES2136		1ES2143		1ES2144	
	HC555		1ES2852			1ES2850		1ES2856	
1080TB	HC555	512e	1ES2843			1ES2841		1ES2847	
	HC550		1ES1871* 1ES2307*	1ES1872*		1ES1865* 1ES2072* 1ES2308*		1ES1866* 1ES2666	1ES1867*
960TB	HC555	512e	1ES2834			1ES2832		1ES2838	
	HC550		1ES1881* 1ES2311*	1ES1882*		1ES1875* 1ES2073* 1ES2312*		1ES1876*	1ES1877*
840TB	HC555	512e	1ES2825			1ES2823		1ES2829	
	HC550		1ES2345*			1ES2344*			
			1ES2347*			1ES2346*			
			1ES2351*			1ES2350*		1ES2665*	
	HC530		1ES1466*	1ES1467*		1ES1464*		1ES1465*	1ES1947*
		4Kn	1ES1463*			1ES1461*		1ES1462*	
720TB	HC555	512e	1ES2816			1ES2814		1ES2820	
	HC520		1ES0370*		1ES0368*	1ES0364*	1ES0362*	1ES0363* 1ES2664*	
		4Kn	1ES0367*		1ES0365*	1ES0361*	1ES0359*	1ES0360*	
600TB	HC330	512e	1ES1835	1ES1834		1ES1827		1ES1822	
		4Kn	1ES1836	1ES1837		1ES1824		1ES1825	
480TB	HC320	512e	1ES1241	1ES1240		1ES1237		1ES1236	
		4Kn	1ES1239	1ES1238		1ES1235		1ES1234	

Capacity	Drive Type	Sector Size	SATA			SAS			
			SE	SED	ISE	SE	ISE	TCG	TCG-FIPS
360TB	HC320	512e	1ES1164	1ES1163		1ES1160		1ES1159	
		4Kn	1ES1162	1ES1161		1ES1158		1ES1157	
240TB	HC310	512e				1ES1645		1ES1646	1ES1647
		4Kn				1ES1560		1ES1643	1ES1644

** This part number is no longer available.*

1.8 Non-TAA SKUs for Partially Populated Configurations

Table 55: Partially Populated Configurations

Capacity	Drive Type	Sector Size	SATA			SAS			
			SE	SED	ISE	SE	ISE	TCG	TCG-FIPS
720TB	HC690	4Kn	1ES2747			1ES2744		1ES2871	
624TB	HC590	512e	1ES2752			1ES2750		1ES2877	
576TB	HC590	512e	1ES2758			1ES2756		1ES2874	
	HC580		1ES2527						
			1ES2541						
528TB	HC580	512e	1ES2523						
			1ES2537						
	HC570		1ES2205	1ES2206		1ES2200		1ES2201	
480TB	HC560	512e	1ES2146	1ES2147		1ES2148		1ES2149	
	HC555		1ES2853			1ES2851		1ES2857	
432TB	HC555	512e	1ES2844			1ES2842		1ES2848	
	HC550		1ES1873* 1ES2309*	1ES1874*		1ES1868* 1ES2310*		1ES1869*	1ES1870*
384TB	HC555	512e	1ES2835			1ES2833		1ES2839	
	HC550		1ES1883* 1ES2313*	1ES1884*		1ES1878* 1ES2314*		1ES1879*	1ES1880*
336TB	HC555	512e	1ES2826			1ES2824		1ES2830	
	HC550		1ES2349*			1ES2348*			
			1ES2353*			1ES2352*			
	HC530	512e	1ES1473*	1ES1474*		1ES1471*		1ES1472*	1ES1948*
		4Kn	1ES1470*			1ES1468*		1ES1469*	
288TB	HC555	512e	1ES2817			1ES2815		1ES2821	
	HC520		1ES0400*		1ES0398*	1ES0394*	1ES0392*	1ES0393*	
		4Kn	1ES0397*		1ES0395*	1ES0391*	1ES0389*	1ES0390*	
240TB	HC330	512e	1ES1838	1ES1839		1ES1828		1ES1829	
		4Kn	1ES1840	1ES1841		1ES1831		1ES1832	
192TB	HC320	512e	1ES1249	1ES1248		1ES1245		1ES1244	
		4Kn	1ES1247	1ES1246		1ES1243		1ES1242	
144TB	HC310	512e	1ES1173	1ES1172		1ES1169		1ES1168	
		4Kn	1ES1171	1ES1170		1ES1167		1ES1166	
96TB	HC310	512e				1ES1651		1ES1652	1ES1653

Capacity	Drive Type	Sector Size	SATA			SAS			
			SE	SED	ISE	SE	ISE	TCG	TCG-FIPS
		4Kn				1ES1648		1ES1649	1ES1650

** This part number is no longer available.*

1.9 TAA SKUs for Fully Populated Configurations

Table 56: Fully Populated Configurations

Capacity	Drive Type	Sector Size	SATA			SAS			
			SE	SED	ISE	SE	ISE	TCG	TCG-FIPS
1800TB	HC690	4Kn	1ES2748			1ES2745		1ES2872	
1560TB	HC590	512e	1ES2754			1ES2753		1ES2878	
1440TB	HC590	512e	1ES2760			1ES2759		1ES2875	
	HC580		1ES2551						
			1ES2558						
1320TB	HC580	512e	1ES2549						
			1ES2556						
	HC570		1ES2223	1ES2209		1ES2224		1ES2207	
1200TB	HC560	512e	1ES2225	1ES2183		1ES2226		1ES2181	
	HC555		1ES2855			1ES2854		1ES2858	
1080TB	HC555	512e	1ES2846			1ES2845		1ES2849	
	HC550		1ES2227*	1ES2098*		1ES2228*		1ES2096*	1ES2097*
960TB	HC555	512e	1ES2837			1ES2836		1ES2840	
	HC550		1ES2229*	1ES2095*		1ES2230*		1ES2093*	1ES2094*
840TB	HC555	512e	1ES2828			1ES2827		1ES2831	
	HC530		1ES2231*	1ES2092*		1ES2232*		1ES2090*	1ES2091*
720TB	HC555	512e	1ES2819			1ES2818		1ES2822	
	HC520		1ES2233*	1ES2127*		1ES2234*		1ES2124*	1ES2125*

** This part number is no longer available.*

1.10 Non-TAA SKUs for Scale-Up Modules

Table 57: 12-Pack nTAA Scale-Up Modules

Capacity	Drive Type	Sector Size	SATA			SAS			
			SE	SED	ISE	SE	ISE	TCG	TCG-FIPS
420TB	HC690	4Kn	1EX3260			1EX3259		1EX3323	
364TB	HC590	512e	1EX3258			1EX3257		1EX3322	
360TB	HC690	4Kn	1EX3266			1EX3265		1EX3326	
336TB	HC590	512e	1EX3256			1EX3255		1EX3321	
312TB	HC670	4Kn	1EX3008	1EX3009		1EX3005		1EX3006	
	HC590	512e	1EX3264			1EX3263		1EX3325	
288TB	HC590	512e	1EX3262			1EX3261		1EX3324	
	HC580		1EX3164						
264TB	HC580	512e	1EX3162						
	HC570		1EX2961	1EX2962		1EX2958		1EX2959	
240TB	HC560	512e	1EX2904	1EX2905		1EX2901		1EX2902	
	HC555		1EX3303			1EX3302		1EX3304	
216TB	HC555	512e	1EX3300			1EX3299		1EX3301	
	HC550		1EX2491*	1EX2492*		1EX2488*		1EX2489*	1EX2490*
		4Kn				1EX2785			
192TB	HC555	512e	1EX3297			1EX3296		1EX3298	
	HC550		1EX2486*	1EX2487*		1EX2483*		1EX2484*	1EX2485*
168TB	HC555	512e	1EX3294			1EX3293		1EX3295	
	HC550		1EX3044*			1EX3043*			
	HC530		1EX1847*	1EX1848*		1EX1845*		1EX1846*	
		4Kn	1EX1844*			1EX1842*		1EX1843*	
144TB	HC555	512e	1EX3291			1EX3290		1EX3292	
	HC520		1EX0553*		1EX0551*	1EX0547*	1EX0545*	1EX0546*	
		4Kn	1EX0550*		1EX0548*	1EX0544*	1EX0542*	1EX0543*	
120TB	HC330	512e	1EX2460	1EX2461		1EX2455		1EX2456	
		4Kn	1EX2458	1EX2459		1EX2452		1EX2453	
96TB	HC320	512e	1EX1243	1EX1242		1EX1239		1EX1238	
		4Kn	1EX1241	1EX1240		1EX1237		1EX1236	
72TB	HC310	512e	1EX1213	1EX1212		1EX1209		1EX1208	
		4Kn	1EX1211	1EX1210		1EX1207		1EX1206	

Capacity	Drive Type	Sector Size	SATA			SAS			
			SE	SED	ISE	SE	ISE	TCG	TCG-FIPS
48TB	HC310	512e				1EX2250		1EX2251	1EX2252
		4Kn				1EX2247		1EX2248	1EX2249

** This part number is no longer available.*

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1.12 Points of Contact

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