



Installation Guide

Ultrastar Serv60+8

Regulatory Model H4060-S

Document D018-000252-000

Revision 01

September 2021

Western Digital.

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Revision History

Date	Revision	Comment
June 2018	1.0	Initial release
August 2018	1.1	Updated the following sections: <ul style="list-style-type: none"> List of Customer Replaceable Units (CRUs) (topic removed)
December 2018	1.2	Updated the following section: <ul style="list-style-type: none"> List of Compatible Drives (page 10)
March 2019	1.3	Updated the following sections: <ul style="list-style-type: none"> Installation (page 44)
July 2019	1.4	<ul style="list-style-type: none"> Updated servicing image to correct length values and rail servicing extension in Ultrastar Serv60+8 Rack Requirements (page 7) section. Updated the Installation Overview (page 45) section to include cable management options. Updated Installation (page 44) section to combine instructions for CMA Standard and CMA Lite where applicable. Updated Cable Configuration for CMA Lite (page 66) section. Updated revision history to remove broken links to topics no longer in this document.
November 2019	1.5	Updated images of chassis cover screws throughout
December 2019	1.6	Rebranded document to WD design
April 2020	1.7	<ul style="list-style-type: none"> Replaced references to He12 drives with Ultrastar DC HC520 in List of Compatible Drives (page 10) Updated images of chassis cover screws throughout Updated drive installation order in the Installation (page 44) Added note about minimum time between removing and reapplying power in Power Connections (page 35)
December 2020	1.8	Added UK Import Representation Contact
April 2021	1.9	<ul style="list-style-type: none"> Added Ultrastar DC HC650 drives to List of Compatible Drives (page 10) Updated Installation (page 44) to include instructions for screw plate Removed Mexico from Country Certifications (page 32)
August 2021	1.10	<ul style="list-style-type: none"> Added table of enclosure LED behaviors during initial power-up to Installation (page 44)

Date	Revision	Comment
		<ul style="list-style-type: none">Separated installation procedure into individual tasks by component in Installation (page 44)
September 2021	01	Changed document number from 1ET1114 to D018-000252-000

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Email:

support@wdc.com

Website:

<https://portal.wdc.com/Support/s/>

UK Import Representation Contact

Western Digital UK Limited Hamilton House, Regent Park, Kingston Road Leatherhead, Surrey KT22 7PL, GB, United Kingdom

Telephone: +44 1372 366000

1.1 Product Label Information

The following product information is required for technical support requests:

- Part Number (P/N)
- Serial Number (S/N)
- Product Name and/or Model Number (MODEL)

This information may be found on the product label, which is affixed to an exterior, non-removable surface of the chassis. The following is an example label with the applicable information fields highlighted:

P/N: 1ESXXXX **REV:** XX

S/N: CCMMM0WYYPPXXXX

##v~ ##A ##/## Hz (2x)

MODEL: XXXXX-X

Nemko **VCI**

NOM **NYCE** **Segurança** **INMETRO** **IEEx** **OCP 0064** **1003**

MANUFACTURED BY: **Western Digital.**

EAC **CE** **RoHS** **1005 15**

001 **D33373** **RoHS**

IS 13252 (PART1)
IEC 60950-1

R-41042056

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:
(1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

CAN ICES-3 (A)/NMB-3(A)

この装置は、クラスA情報技術装置です。この装置を家庭環境で使用すると電波妨害を引き起こすことがあります。この場合には使用者が適切な対策を講ずるよう要求されることがあります。 **VCCI-A**

警告使用者: 此為甲類資訊技術設備，於居住環境中使用時，可能會造成射頻擾動，在此種情況下，使用者會被要求採取某些適當的對策。

Laite on liitettävä suojamaadoituskoskettimilla varustettuun pistorasiaan
Apparatet må tilkoples jordnet stikkontakt
Apparaten skall anslutas till jordat uttag

Electric shock hazard! Disconnect (2) power supply cords before servicing.

DATE CODE: MMDDYYYY
COO

Overview

This section provides a high level overview of the features of the Ultrastar Serv60+8 .

In This Chapter:

- Ultrastar Serv60+8 Description.....2
- Ultrastar Serv60+8 Layout.....3
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- Electrical Specifications..... 5
- Mechanical Specifications..... 6
- Performance Specifications.....6
- Ultrastar Serv60+8 Rack Requirements.....7
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1.1 Ultrastar Serv60+8 Description

Figure 2: Ultrastar Serv60+8



The Ultrastar Serv60+8 is a 4U form factor, high density, rack-mounted storage enclosure that is capable of hosting up to 60 HDD SAS or SATA drives. The maximum data storage capacity of the Ultrastar Serv60+8 is 901TB using 14TB Ultrastar® HC530 drives plus an additional 61.44TB using Ultrastar® SS300 SSDs in the system SSD slots. (For a full list of compatible drives and total storage capacities, see the [List of Compatible Drives \(page 10\)](#).) The Ultrastar Serv60+8 also integrates an Intel Skylake or Cascade Lake based server front end. The server is built around an Intel Sawtooth Pass S2600ST motherboard and supports 2 LGA3647-0 (Socket P) processor sockets CPUs, 16 (8 per CPU) slots of DDR4 ECC DIMM memory, and leverages an AST2500 BMC for out-of-band management of the server subsystem. The enclosure runs on an input voltage of 200 - 240 VAC and consumes ~1800W of power under typical conditions. It requires a maximum of ~2000W at full load.

The system contains three externally facing Half-Height, Half-Length (HHHL) PCIe x16 slots, and 3 externally facing HHHL PCIe x8 slots.

It is designed to fit within a 4U rack space and requires 1200 mm (47.24in.) of usable rack space, frame to frame. A fully loaded system will add 95.25 kg / 210 lbs. of static load when fully loaded with drives.

- 4U Storage Server
- Supports up to 60 HDD Drives
- Can support 3.5" drives and 2.5" SSD drives (2.5" requires an adapter) in the 60 available drive bays. Supports an additional 8 2.5" drives in the system SSD slots located in the center channel
- Up to 12W per drive slot for the 60 HDD data storage drives (Cannot exceed 85A on the 5V rail) and 25W per slot for the 8 system SSD slots
- House and control six (6) N+1 redundant 80mm fans
- Supports High Line (220-240 VAC) Input Power
- Powered by two (2) redundant 2000W PSUs (High Line only)
- Toolless replacement of all Customer Replaceable Units (CRUs)
- Fits within a standard EIA-310 rack including all necessary cable management (see [Compatible Rack Hardware Configuration \(page 8\)](#))
- Dual Skylake LGA3647 Socket Processors
- 16 DDR4 ECC DIMM slots

- ASPEED AST2500 BMC
- Lewisburg PCH C624 Chipset

1.2 Ultrastar Serv60+8 Layout

Figure 3: Front and Rear Product Layout

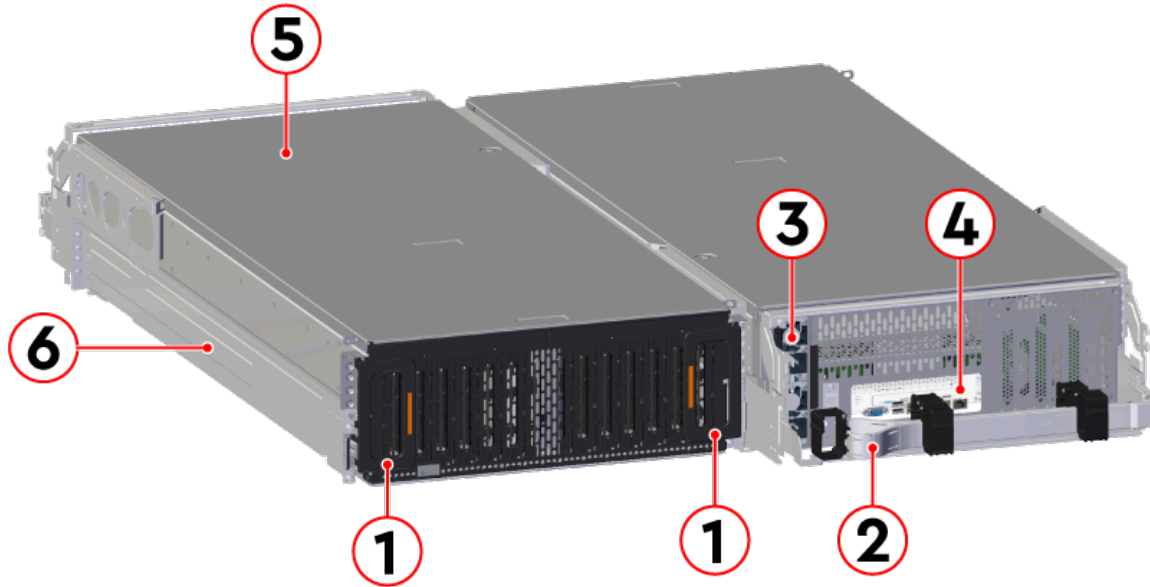


Table 1: Front and Rear Component Identification

Number	Component
1	Enclosure Handles
2	CMA
3	PSUs (Delta PSUs shown)
4	Rear IO Ports
5	Chassis Cover
6	Rails (includes rear cover alignment brackets)

The following is an image of the layout of the major system components inside the Ultrastar Serv60+8 .

Figure 4: Component Layout

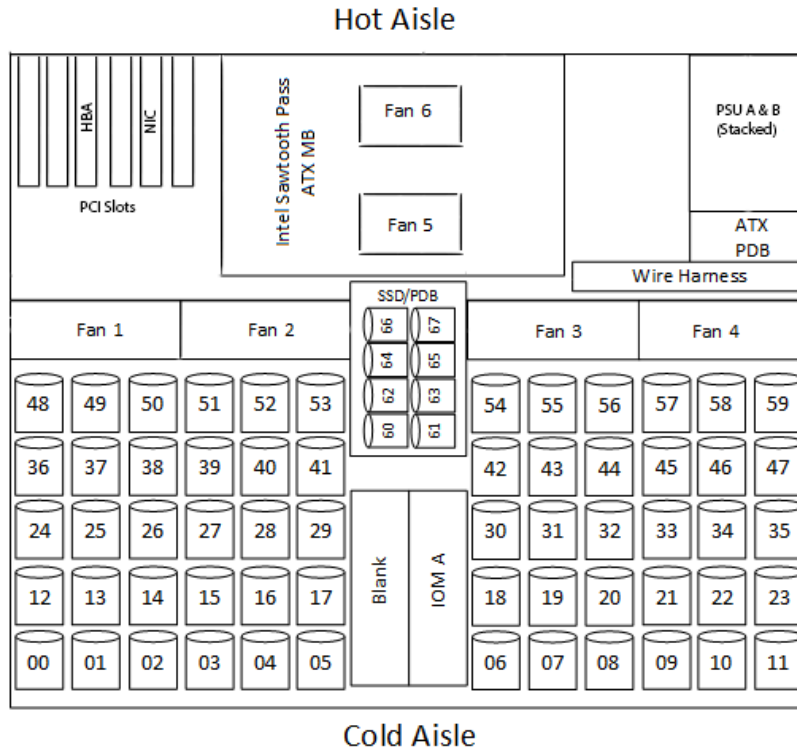
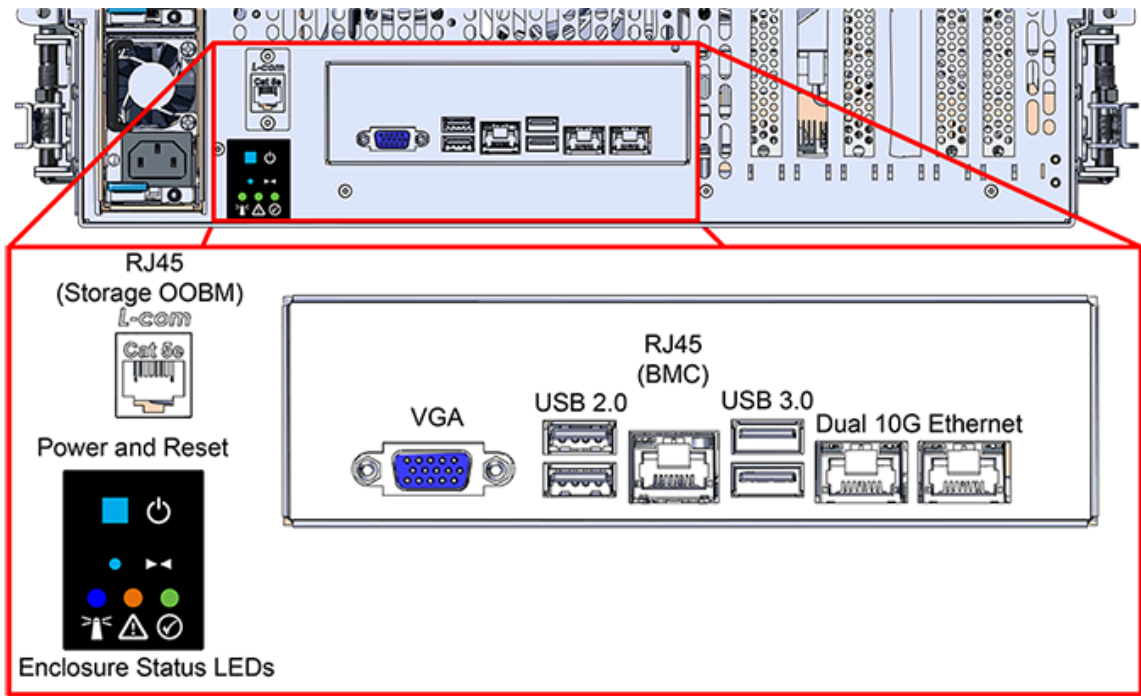


Figure 5: Rear IO Ports



1.3 Environmental Specifications

Table 2: Environmental Specification Summary

Specification	Non-Operational	Operational
Temperature	-40°C to 70°C	5°C to 35°C
Temperature Gradient	30°C per hour maximum	20°C per hour maximum
Temperature De-rating	1°C per 300m above 3000m	1°C per 300m above 900m
Relative Humidity	8-90% Non-Condensing	8-90% Non-Condensing
Relative Humidity Gradient	30% per hour maximum	30% per hour maximum
Altitude	-300m to 12,000m / -984 ft. to 39,370 ft	-300m to 3048m / -984 ft. to 10,000 ft.

1.4 Electrical Specifications

Table 3: Electrical Specifications

Specification	Value
Max Power Consumption	~2000W

Specification	Value
Typical Power Consumption ¹	~1800W
Input Voltage	200 - 240 VAC
PSU Connector Type	C14
PSU Efficiency	80 PLUS Platinum
Inrush Current Maximum (per PSU)	AC line inrush current shall not exceed 35A peak measured per IPC-9592B(L) Appendix C-4.1.
Inrush Current Typical (per PSU)	15A



Caution: The Ultrastar Serv60+8 can only be plugged into high line (200 - 240 VAC) power. If the unit is plugged into low line (110-127 VAC), the PSU will report a "Critical" state when status pages are queried using SES. In this case, the enclosure will power up, but the drives will not.

1.5 Mechanical Specifications

Table 4: Mechanical Specifications

Specification	Non-Operational	Operational
Shock	10G, 0 - peak, 11ms half sine; 3 positive and 3 negative pulses in each axis shock	5G, 0 - peak, 11ms half sine; 3 positive and 3 negative pulses in each axis - minimum 6 seconds between shocks to allow for write/read recovery
Vibration	0.75G, 0 - peak swept sine; 5 -500Hz; 1 complete sweep @ 1/2 octave per minute	0.10G, 0 - peak swept sine; 5 -500Hz; 1 complete sweep @ 1/2 octave per minute
Weight	95.25 kg / 210 lbs.	
Enclosure Dimensions	W: 447mm x L: 1030mm x H: 175mm / W: 17.6in. x L: 40.6in. x H: 6.89in.	
Length of Enclosure w/ CMA	CMA Standard: 1182mm / 46.5in. CMA Lite: 1148mm / 45.2in.	
Required Rack Width	450mm (17.72in.) minimum width with 465mm (18.31in.) ± 1.5mm nominal hole spacing and W1 is 492mm minimum. See EIA-310 Rack Standard	
Required Rack Depth	1200 mm (47.24in.) of usable rack space, frame to frame	
Rack Units (U)	4U	
Vertical Rack Rail Spacing	812.8mm - 914.4mm / 32 in. - 36 in.	

1.6 Performance Specifications

1. Max and typical power consumption values represent the output power to the system. Input power will vary depending on the PSU efficiency and load sharing between PSUs.

Table 5: Performance Specifications

Specification	Value
Mother Board	Intel Sawtooth Pass S2600ST
Processor Type	Intel Skylake or Cascade Lake
Socket	LGA3647-0 (Socket P) processor sockets
Number of Processors	2
Chipset	Lewisburg PCH C624 Chipset
Memory Type	DDR4 ECC DIMM
Number of Memory Slots	16 (8 per CPU)
Graphics	Integrated
Server BMC Chip	AST2500
Number of Drive Slots	60 HDD / 8 SSD
Data Transfer Rates	12Gbps SAS / 6Gbps SATA
Max Raw Data Storage Capacity	901TB using 14TB Ultrastar® HC530 drives / 61.44TB using Ultrastar® SS300 SSDs

1.7 Ultrastar Serv60+8 Rack Requirements

The Ultrastar Serv60+8 is designed to be installed into a rack that meets the EIA-310 standard at a minimum 1200 mm (47.24in.) of usable rack space, frame to frame. The vertical rack rails must be set between 812.8mm - 914.4mm / 32 in. - 36 in. to support the enclosure. It requires 4U of rack space, and it should be installed into the rack at the lowest possible U height to keep the load on the rack balanced.

Table 6: Required Rack Specifications

Parameter	Requirement
Rack Depth	1200 mm (47.24in.) of usable rack space, frame to frame
Rack Width	450mm (17.72in.) minimum width with 465mm (18.31in.) ± 1.5mm nominal hole spacing and W1 is 492mm minimum. See EIA-310 Rack Standard
Rack Units (U)	4U
Vertical Rack Rail Spacing	812.8mm - 914.4mm / 32 in. - 36 in.
Static Load Rating	1360.7 kg. / 3000 lbs.
Dynamic Load Rating	1020.5 kg. / 2250 lbs.



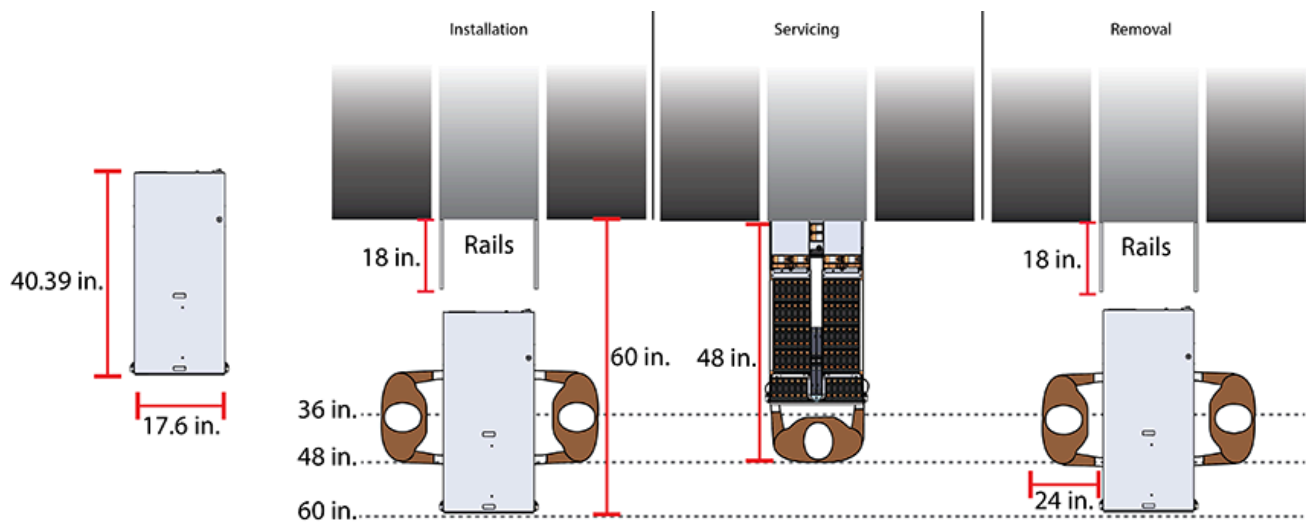
Warning: When extended out of the rack on the rail system, the Ultrastar Serv60+8 will be ~950 mm / 37.4in. extended outward. This may be a potential tipping hazard depending on the configuration of the rack. Ensure that leveling feet, anti-tilt, and any other safety features recommended by the specific rack manufacturers have been deployed before servicing.

The following section provides specific information necessary to install, service, and remove the Ultrastar Serv60+8 . The installation of the Ultrastar Serv60+8 requires two people and a space of 1524mm / 60in. in front of the installation space. The servicing of the enclosure requires one person and a minimum of 1219.2mm / 48in. of space in front of the installation space. The removal of the enclosure requires two people, 1371mm / 54in. of space in front of the installation space, and 24in. on either side of the enclosure for two people to remove the enclosure.



Warning: The handles on the front of the chassis are not intended to be used to support the weight of the Ultrastar Serv60+8 . Lifting the unit by the chassis handles or trying to support the unit on the handles can cause them to fail. This can cause serious damage to the unit or serious bodily harm to those handling the unit. Always team lift the chassis by gripping the underside of the unit, and never try to lift a chassis that is filled with drives.

Figure 6: Installation, Servicing, and Removal



Attention: Do not install or remove the enclosure while it is populated with drives. The fully populated enclosure exceeds the amount of weight that a team of two should lift.

1.7.1 Compatible Rack Hardware Configuration

The following table(s) list the approved rack hardware configurations for the Ultrastar Serv60+8 :

Table 7: Compatible Hardware Configuration 1

Parameter	Rack	PDU (Vertical)	PDU Mounting Bracket	Additional Mounting Bracket Hardware
Vendor	CRENLO/EMCOR	Server Technology	Server Technology	Various
Part Number	AS-160099-03 (Drawing Number EMCOR 526121 Rev 5)	412-0761-11_STV-4501 412-0761-20_STV-4502 412-0761-23_STV-4503	KIT-MBVPT-1B (one kit per PDU)	4 x M6 x 16 Hex Cap Screws 8 x M6 Fender Washers

Parameter	Rack	PDU (Vertical)	PDU Mounting Bracket	Additional Mounting Bracket Hardware
				4 x M6 Hex Nut with Nylon Lock
Quantity	1	2	2	Varies

Table 8: Compatible Hardware Configuration 2

Parameter	Rack	PDU (Vertical)	PDU Mounting Bracket	Additional Mounting Bracket Hardware
Vendor	AFCO/Legrand	Server Technology	Server Technology	Various
	Options:	412-0761-11_STV-4501	KIT-MB-40	None
	42RU – WEDIT605	412-0761-20_STV-4502		
	45RU – WEDIT604	412-0761-23_STV-4503		
	48RU – WEDIT603			
	51RU – WEDIT606			
Part Number				
Quantity	1 rack	2	1	N/A

Table 9: Compatible Hardware Configuration 3

Parameter	Rack	PDU (Vertical)	PDU Mounting Bracket	Additional Mounting Bracket Hardware
Vendor	TRIPP LITE	Server Technology	Server Technology	Various
	Options:	412-0761-11_STV-4501	KIT-MBVPT-1B	None
	SR42UBDP (Rack)	412-0761-20_STV-4502		
	SREXTENDER 25U (Rack Extension)	412-0761-23_STV-4503		
	SREXTENDER 42U (Rack Extension)			
	SREXTENDER 48U (Rack Extension)			
Part Number				
Quantity	1 rack	2	1	N/A

Table 10: Compatible Hardware Configuration 4

Parameter	Rack	PDU (Vertical)	PDU Mounting Bracket	Additional Mounting Bracket Hardware
Vendor	APC/Schneider	Server Technology	Server Technology	Various
Part Number	AR3300W	412-0761-11_STV-4501 412-0761-20_STV-4502 412-0761-23_STV-4503	KIT-MBVPT-1B (one kit per PDU)	4 x M6 x 16 Hex Cap Screws 8 x M6 Fender Washers 4 x M6 Hex Nut with Nylon Lock
Quantity	1 rack	2	2	Varies

1.8 List of Compatible Drives

HDD with 3.5-inch Drive Carrier

Table 11: Western Digital Ultrastar DC HC310

Drive	Type	Interface	Sector Size	Encryption	Volume	Part Number
Ultrastar DC HC310 w/ 3.5 in. drive carrier	HDD	SATA 6Gb/s	512e	SE	6TB	1EX1189
Ultrastar DC HC310 w/ 3.5 in. drive carrier	HDD	SATA 6Gb/s	512e	TCG	6TB	1EX1188
Ultrastar DC HC310 w/ 3.5 in. drive carrier	HDD	SATA 6Gb/s	4Kn	SE	6TB	1EX1187
Ultrastar DC HC310 w/ 3.5 in. drive carrier	HDD	SATA 6Gb/s	4Kn	TCG	6TB	1EX1186
Ultrastar DC HC310 w/ 3.5 in. drive carrier	HDD	SAS 12Gb/s	512e	SE	6TB	1EX1185
Ultrastar DC HC310 w/ 3.5 in. drive carrier	HDD	SAS 12Gb/s	512e	TCG	6TB	1EX1184
Ultrastar DC HC310 w/ 3.5 in. drive carrier	HDD	SAS 12Gb/s	512e	TCG-FIPS	6TB	1EX1853
Ultrastar DC HC310 w/ 3.5 in. drive carrier	HDD	SAS 12Gb/s	4Kn	SE	6TB	1EX1183
Ultrastar DC HC310 w/ 3.5 in. drive carrier	HDD	SAS 12Gb/s	4Kn	TCG	6TB	1EX1182
Ultrastar DC HC310 w/ 3.5 in. drive carrier	HDD	SAS 12Gb/s	4Kn	TCG-FIPS	6TB	1EX1852

Table 12: Western Digital Ultrastar DC HC320

Drive	Type	Interface	Sector Size	Encryption	Volume	Part Number
Ultrastar DC HC320 w/ 3.5 in. drive carrier	HDD	SATA 6Gb/s	512e	SE	8TB	1EX1227
Ultrastar DC HC320 w/ 3.5 in. drive carrier	HDD	SATA 6Gb/s	512e	SED	8TB	1EX1226
Ultrastar DC HC320 w/ 3.5 in. drive carrier	HDD	SATA 6Gb/s	4Kn	SE	8TB	1EX1225
Ultrastar DC HC320 w/ 3.5 in. drive carrier	HDD	SATA 6Gb/s	4Kn	TCG	8TB	1EX1224
Ultrastar DC HC320 w/ 3.5 in. drive carrier	HDD	SAS 12Gb/s	512e	SE	8TB	1EX1223
Ultrastar DC HC320 w/ 3.5 in. drive carrier	HDD	SAS 12Gb/s	512e	TCG	8TB	1EX1222
Ultrastar DC HC320 w/ 3.5 in. drive carrier	HDD	SAS 12Gb/s	512e	TCG-FIPS	8TB	1EX1343
Ultrastar DC HC320 w/ 3.5 in. drive carrier	HDD	SAS 12Gb/s	4Kn	SE	8TB	1EX1221
Ultrastar DC HC320 w/ 3.5 in. drive carrier	HDD	SAS 12Gb/s	4Kn	TCG	8TB	1EX1220
Ultrastar DC HC320 w/ 3.5 in. drive carrier	HDD	SAS 12Gb/s	4Kn	TCG-FIPS	8TB	1EX1342

Table 13: Western Digital Ultrastar DC HC510

Drive	Type	Interface	Sector Size	Encryption	Volume	Part Number
Ultrastar DC HC510 w/ 3.5 in. drive carrier	HDD	SATA 6Gb/s	512e	SE	10TB	1EX0499
Ultrastar DC HC510 w/ 3.5 in. drive carrier	HDD	SATA 6Gb/s	512e	ISE	10TB	1EX0497
Ultrastar DC HC510 w/ 3.5 in. drive carrier	HDD	SATA 6Gb/s	512e	SED	10TB	1EX0498
Ultrastar DC HC510 w/ 3.5 in. drive carrier	HDD	SATA 6Gb/s	4Kn	SE	10TB	1EX0496
Ultrastar DC HC510 w/ 3.5 in. drive carrier	HDD	SATA 6Gb/s	4Kn	ISE	10TB	1EX0494
Ultrastar DC HC510 w/ 3.5 in. drive carrier	HDD	SATA 6Gb/s	4Kn	SED	10TB	1EX0495
Ultrastar DC HC510 w/ 3.5 in. drive carrier	HDD	SAS 12Gb/s	512e	SE	10TB	1EX0487
Ultrastar DC HC510	HDD	SAS 12Gb/s	512e	ISE	10TB	1EX0485

Drive	Type	Interface	Sector Size	Encryption	Volume	Part Number
w/ 3.5 in. drive carrier						
Ultrastar DC HC510 w/ 3.5 in. drive carrier	HDD	SAS 12Gb/s	512e	TCG	10TB	1EX0486
Ultrastar DC HC510 w/ 3.5 in. drive carrier	HDD	SAS 12Gb/s	512e	TCG-FIPS	10TB	1EX1341
Ultrastar DC HC510 w/ 3.5 in. drive carrier	HDD	SAS 12Gb/s	4Kn	SE	10TB	1EX0484
Ultrastar DC HC510 w/ 3.5 in. drive carrier	HDD	SAS 12Gb/s	4Kn	ISE	10TB	1EX0482
Ultrastar DC HC510 w/ 3.5 in. drive carrier	HDD	SAS 12Gb/s	4Kn	TCG	10TB	1EX0483
Ultrastar DC HC510 w/ 3.5 in. drive carrier	HDD	SAS 12Gb/s	4Kn	TCG-FIPS	10TB	1EX1340

Table 14: Western Digital Ultrastar DC HC520

Drive	Type	Interface	Sector Size	Encryption	Volume	Part Number
Ultrastar DC HC520 w/ 3.5 in. drive carrier	HDD	SATA 6Gb/s	512e	SE	12TB	1EX1015
Ultrastar DC HC520 w/ 3.5 in. drive carrier	HDD	SATA 6Gb/s	512e	ISE	12TB	1EX1013
Ultrastar DC HC520 w/ 3.5 in. drive carrier	HDD	SATA 6Gb/s	512e	SED	12TB	1EX1014
Ultrastar DC HC520 w/ 3.5 in. drive carrier	HDD	SATA 6Gb/s	4Kn	SE	12TB	1EX1012
Ultrastar DC HC520 w/ 3.5 in. drive carrier	HDD	SATA 6Gb/s	4Kn	ISE	12TB	1EX1010
Ultrastar DC HC520 w/ 3.5 in. drive carrier	HDD	SATA 6Gb/s	4Kn	SED	12TB	1EX1011
Ultrastar DC HC520 w/ 3.5 in. drive carrier	HDD	SAS 12Gb/s	512e	SE	12TB	1EX1009
Ultrastar DC HC520 w/ 3.5 in. drive carrier	HDD	SAS 12Gb/s	512e	ISE	12TB	1EX1007
Ultrastar DC HC520 w/ 3.5 in. drive carrier	HDD	SAS 12Gb/s	512e	TCG	12TB	1EX1008
Ultrastar DC HC520 w/ 3.5 in. drive carrier	HDD	SAS 12Gb/s	512e	TCG-FIPS	12TB	1EX1338
Ultrastar DC HC520 w/ 3.5 in. drive carrier	HDD	SAS 12Gb/s	4Kn	SE	12TB	1EX1006
Ultrastar DC HC520 w/ 3.5 in. drive carrier	HDD	SAS 12Gb/s	4Kn	ISE	12TB	1EX1004

Drive	Type	Interface	Sector Size	Encryption	Volume	Part Number
Ultrastar DC HC520 w/ 3.5 in. drive carrier	HDD	SAS 12Gb/s	4Kn	TCG	12TB	1EX1005
Ultrastar DC HC520 w/ 3.5 in. drive carrier	HDD	SAS 12Gb/s	4Kn	TCG-FIPS	12TB	1EX1339

Table 15: Western Digital Ultrastar DC HC530

Drive	Type	Interface	Sector Size	Encryption	Volume	Part Number
Ultrastar DC HC530 w/ 3.5 in. drive carrier	HDD	SATA 6Gb/s	512e	SE	14TB	1EX1793
Ultrastar DC HC530 w/ 3.5 in. drive carrier	HDD	SATA 6Gb/s	512e	SED	14TB	1EX1794
Ultrastar DC HC530 w/ 3.5 in. drive carrier	HDD	SATA 6Gb/s	4Kn	SE	14TB	1EX1790
Ultrastar DC HC530 w/ 3.5 in. drive carrier	HDD	SAS 12Gb/s	512e	SE	14TB	1EX1791
Ultrastar DC HC530 w/ 3.5 in. drive carrier	HDD	SAS 12Gb/s	512e	ISE	14TB	1EX1583
Ultrastar DC HC530 w/ 3.5 in. drive carrier	HDD	SAS 12Gb/s	512e	TCG	14TB	1EX1792
Ultrastar DC HC530 w/ 3.5 in. drive carrier	HDD	SAS 12Gb/s	512e	TCG-FIPS	14TB	1EX1855
Ultrastar DC HC530 w/ 3.5 in. drive carrier	HDD	SAS 12Gb/s	4Kn	SE	14TB	1EX1788
Ultrastar DC HC530 w/ 3.5 in. drive carrier	HDD	SAS 12Gb/s	4Kn	TCG	14TB	1EX1789
Ultrastar DC HC530 w/ 3.5 in. drive carrier	HDD	SAS 12Gb/s	4Kn	TCG-FIPS	14TB	1EX1854

Table 16: Western Digital Ultrastar DC HC550

Drive	Type	Interface	Sector Size	Encryption	Volume	Part Number
Ultrastar DC HC550 w/ 3.5 in. drive carrier	HDD	SATA 6Gb/s	512e	SE	16TB	1EX2476
Ultrastar DC HC550 w/ 3.5 in. drive carrier	HDD	SATA 6Gb/s	512e	SED	16TB	1EX2477
Ultrastar DC HC550 w/ 3.5 in. drive carrier	HDD	SAS 12Gb/s	512e	SE	16TB	1EX2473
Ultrastar DC HC550 w/ 3.5 in. drive carrier	HDD	SAS 12Gb/s	512e	TCG	16TB	1EX2474
Ultrastar DC HC550	HDD	SAS 12Gb/s	512e	TCG-FIPS	16TB	1EX2475

Drive	Type	Interface	Sector Size	Encryption	Volume	Part Number
w/ 3.5 in. drive carrier						
Ultrastar DC HC550 w/ 3.5 in. drive carrier	HDD	SATA 6Gb/s	512e	SE	18TB	1EX2481
Ultrastar DC HC550 w/ 3.5 in. drive carrier	HDD	SATA 6Gb/s	512e	SED	18TB	1EX2482
Ultrastar DC HC550 w/ 3.5 in. drive carrier	HDD	SAS 12Gb/s	512e	SE	18TB	1EX2478
Ultrastar DC HC550 w/ 3.5 in. drive carrier	HDD	SAS 12Gb/s	512e	TCG	18TB	1EX2479
Ultrastar DC HC550 w/ 3.5 in. drive carrier	HDD	SAS 12Gb/s	512e	TCG-FIPS	18TB	1EX2480



Caution: Ultrastar DC HC650 drives are only compatible with the OSs and HBAs listed in the following table.

Table 17: Western Digital Ultrastar DC HC650

OS	Kernel	HBA	HBA FW	HBA Driver
Ubuntu 18.04	4.15.0-76-generic	9400-8e	15.00.01.00	34.00.00.00
		9405-16e		
Ubuntu 20.04	5.4.0-47-generic	9400-8e		
		9405-16e		

Drive	Type	Interface	Sector Size	Encryption	Volume	Part Number
Ultrastar DC HC650 w/ 3.5 in. drive carrier	HDD	SATA 6Gb/s	4Kn	SE	20TB	1EX2719
Ultrastar DC HC650 w/ 3.5 in. drive carrier	HDD	SATA 6Gb/s	4Kn	SED	20TB	1EX2720
Ultrastar DC HC650 w/ 3.5 in. drive carrier	HDD	SAS 12Gb/s	4Kn	SE	20TB	1EX2716
Ultrastar DC HC650 w/ 3.5 in. drive carrier	HDD	SAS 12Gb/s	4Kn	TCG	20TB	1EX2717

SSD with 2.5-inch Drive Carrier

Table 18: Western Digital Ultrastar SS200

Drive	Type	Interface	Drive Writes	Encryption	Volume	Part Number
Ultrastar SS200 w/ 2.5 in. drive carrier	SSD	SAS 12Gb/s	RI-3DW/D	SE	400GB	No longer available
Ultrastar SS200 w/ 2.5 in. drive carrier	SSD	SAS 12Gb/s	RI-3DW/D	ISE	400GB	No longer available
Ultrastar SS200 w/ 2.5 in. drive carrier	SSD	SAS 12Gb/s	RI-3DW/D	TCG	400GB	No longer available
Ultrastar SS200 w/ 2.5 in. drive carrier	SSD	SAS 12Gb/s	RI-3DW/D	SE	800GB	No longer available
Ultrastar SS200 w/ 2.5 in. drive carrier	SSD	SAS 12Gb/s	RI-3DW/D	ISE	800GB	No longer available
Ultrastar SS200 w/ 2.5 in. drive carrier	SSD	SAS 12Gb/s	RI-3DW/D	TCG	800GB	No longer available
Ultrastar SS200 w/ 2.5 in. drive carrier	SSD	SAS 12Gb/s	RI-3DW/D	SE	1.6TB	No longer available
Ultrastar SS200 w/ 2.5 in. drive carrier	SSD	SAS 12Gb/s	RI-3DW/D	ISE	1.6TB	No longer available
Ultrastar SS200 w/ 2.5 in. drive carrier	SSD	SAS 12Gb/s	RI-3DW/D	TCG	1.6TB	No longer available
Ultrastar SS200 w/ 2.5 in. drive carrier	SSD	SAS 12Gb/s	ME-10DW/D	SE	1.6TB	No longer available
Ultrastar SS200 w/ 2.5 in. drive carrier	SSD	SAS 12Gb/s	ME-10DW/D	ISE	1.6TB	No longer available
Ultrastar SS200 w/ 2.5 in. drive carrier	SSD	SAS 12Gb/s	ME-10DW/D	TCG	1.6TB	No longer available

Table 19: Western Digital Ultrastar SS300

Drive	Type	Interface	Drive Writes	Encryption	Volume	Part Number
Ultrastar SS300 w/ 2.5 in. drive carrier	SSD	SAS 12Gb/s	RI-3DW/D	SE	400GB	No longer available
Ultrastar SS300 w/ 2.5 in. drive carrier	SSD	SAS 12Gb/s	RI-3DW/D	ISE	400GB	No longer available
Ultrastar SS300 w/ 2.5 in. drive carrier	SSD	SAS 12Gb/s	RI-3DW/D	TCG	400GB	No longer available
Ultrastar SS300 w/ 2.5 in. drive carrier	SSD	SAS 12Gb/s	RI-3DW/D	TCG-FIPS	400GB	No longer available
Ultrastar SS300 w/ 2.5 in. drive carrier	SSD	SAS 12Gb/s	ME-10DW/D	SE	400GB	No longer available

Drive	Type	Interface	Drive Writes	Encryption	Volume	Part Number
Ultrastar SS300 w/ 2.5 in. drive carrier	SSD	SAS 12Gb/s	ME-10DW/D	ISE	400GB	No longer available
Ultrastar SS300 w/ 2.5 in. drive carrier	SSD	SAS 12Gb/s	ME-10DW/D	TCG	400GB	No longer available
Ultrastar SS300 w/ 2.5 in. drive carrier	SSD	SAS 12Gb/s	ME-10DW/D	TCG-FIPS	400GB	No longer available
Ultrastar SS300 w/ 2.5 in. drive carrier	SSD	SAS 12Gb/s	RI-3DW/D	SE	800GB	No longer available
Ultrastar SS300 w/ 2.5 in. drive carrier	SSD	SAS 12Gb/s	RI-3DW/D	ISE	800GB	No longer available
Ultrastar SS300 w/ 2.5 in. drive carrier	SSD	SAS 12Gb/s	RI-3DW/D	TCG	800GB	No longer available
Ultrastar SS300 w/ 2.5 in. drive carrier	SSD	SAS 12Gb/s	RI-3DW/D	TCG-FIPS	800GB	No longer available
Ultrastar SS300 w/ 2.5 in. drive carrier	SSD	SAS 12Gb/s	ME-10DW/D	SE	800GB	No longer available
Ultrastar SS300 w/ 2.5 in. drive carrier	SSD	SAS 12Gb/s	ME-10DW/D	ISE	800GB	No longer available
Ultrastar SS300 w/ 2.5 in. drive carrier	SSD	SAS 12Gb/s	ME-10DW/D	TCG	800GB	No longer available
Ultrastar SS300 w/ 2.5 in. drive carrier	SSD	SAS 12Gb/s	ME-10DW/D	TCG-FIPS	800GB	No longer available
Ultrastar SS300 w/ 2.5 in. drive carrier	SSD	SAS 12Gb/s	RI-3DW/D	ISE	1.6TB	No longer available
Ultrastar SS300 w/ 2.5 in. drive carrier	SSD	SAS 12Gb/s	RI-3DW/D	TCG-FIPS	1.6TB	No longer available
Ultrastar SS300 w/ 2.5 in. drive carrier	SSD	SAS 12Gb/s	ME-10DW/D	TCG-FIPS	1.6TB	No longer available

Table 20: Western Digital Ultrastar SS530

Drive	Type	Interface	Drive Writes	Encryption	Volume	Part Number
Ultrastar SS530 w/ 2.5 in. drive carrier	SSD	SAS 12Gb/s	RI-3DW/D	SE	400GB	1EX2000
Ultrastar SS530 w/ 2.5 in. drive carrier	SSD	SAS 12Gb/s	RI-3DW/D	ISE	400GB	1EX2001
Ultrastar SS530 w/ 2.5 in. drive carrier	SSD	SAS 12Gb/s	RI-3DW/D	TCG	400GB	1EX2077
Ultrastar SS530 w/ 2.5 in. drive carrier	SSD	SAS 12Gb/s	ME-10DW/D	SE	400GB	1EX1994
Ultrastar SS530	SSD	SAS 12Gb/s	ME-10DW/D	ISE	400GB	1EX1995

Drive	Type	Interface	Drive Writes	Encryption	Volume	Part Number
w/ 2.5 in. drive carrier						
Ultrastar SS530 w/ 2.5 in. drive carrier	SSD	SAS 12Gb/s	ME-10DW/D	TCG	400GB	1EX2074
Ultrastar SS530 w/ 2.5 in. drive carrier	SSD	SAS 12Gb/s	RI-1DW/D	SE	480GB	1EX2006
Ultrastar SS530 w/ 2.5 in. drive carrier	SSD	SAS 12Gb/s	RI-1DW/D	ISE	480GB	1EX2007
Ultrastar SS530 w/ 2.5 in. drive carrier	SSD	SAS 12Gb/s	RI-1DW/D	TCG	480GB	1EX2080
Ultrastar SS530 w/ 2.5 in. drive carrier	SSD	SAS 12Gb/s	RI-3DW/D	SE	800GB	1EX2002
Ultrastar SS530 w/ 2.5 in. drive carrier	SSD	SAS 12Gb/s	RI-3DW/D	ISE	800GB	1EX2003
Ultrastar SS530 w/ 2.5 in. drive carrier	SSD	SAS 12Gb/s	RI-3DW/D	TCG	800GB	1EX2078
Ultrastar SS530 w/ 2.5 in. drive carrier	SSD	SAS 12Gb/s	ME-10DW/D	SE	800GB	1EX1996
Ultrastar SS530 w/ 2.5 in. drive carrier	SSD	SAS 12Gb/s	ME-10DW/D	ISE	800GB	1EX1997
Ultrastar SS530 w/ 2.5 in. drive carrier	SSD	SAS 12Gb/s	ME-10DW/D	TCG	800GB	1EX2075
Ultrastar SS530 w/ 2.5 in. drive carrier	SSD	SAS 12Gb/s	RI-1DW/D	SE	960GB	1EX2008
Ultrastar SS530 w/ 2.5 in. drive carrier	SSD	SAS 12Gb/s	RI-1DW/D	ISE	960GB	1EX2009
Ultrastar SS530 w/ 2.5 in. drive carrier	SSD	SAS 12Gb/s	RI-1DW/D	TCG	960GB	1EX2081
Ultrastar SS530 w/ 2.5 in. drive carrier	SSD	SAS 12Gb/s	RI-3DW/D	SE	1.6TB	1EX2004
Ultrastar SS530 w/ 2.5 in. drive carrier	SSD	SAS 12Gb/s	RI-3DW/D	ISE	1.6TB	1EX2005
Ultrastar SS530 w/ 2.5 in. drive carrier	SSD	SAS 12Gb/s	RI-3DW/D	TCG	1.6TB	1EX2079
Ultrastar SS530 w/ 2.5 in. drive carrier	SSD	SAS 12Gb/s	ME-10DW/D	SE	1.6TB	1EX1998
Ultrastar SS530 w/ 2.5 in. drive carrier	SSD	SAS 12Gb/s	ME-10DW/D	ISE	1.6TB	1EX1999
Ultrastar SS530 w/ 2.5 in. drive carrier	SSD	SAS 12Gb/s	ME-10DW/D	TCG	1.6TB	1EX2076
Ultrastar SS530 w/ 2.5 in. drive carrier	SSD	SAS 12Gb/s	RI-1DW/D	SE	1.92TB	1EX2010

Drive	Type	Interface	Drive Writes	Encryption	Volume	Part Number
Ultrastar SS530 w/ 2.5 in. drive carrier	SSD	SAS 12Gb/s	RI-1DW/D	ISE	1.92TB	1EX2011
Ultrastar SS530 w/ 2.5 in. drive carrier	SSD	SAS 12Gb/s	RI-1DW/D	TCG	1.92TB	1EX2082
Ultrastar SS530 w/ 2.5 in. drive carrier	SSD	SAS 12Gb/s	RI-3DW/D	SE	3.2TB	1EX1810
Ultrastar SS530 w/ 2.5 in. drive carrier	SSD	SAS 12Gb/s	RI-3DW/D	ISE	3.2TB	1EX1811
Ultrastar SS530 w/ 2.5 in. drive carrier	SSD	SAS 12Gb/s	RI-3DW/D	TCG	3.2TB	1EX1812
Ultrastar SS530 w/ 2.5 in. drive carrier	SSD	SAS 12Gb/s	ME-10DW/D	SE	3.2TB	1EX1807
Ultrastar SS530 w/ 2.5 in. drive carrier	SSD	SAS 12Gb/s	ME-10DW/D	ISE	3.2TB	1EX1808
Ultrastar SS530 w/ 2.5 in. drive carrier	SSD	SAS 12Gb/s	ME-10DW/D	TCG	3.2TB	1EX1809
Ultrastar SS530 w/ 2.5 in. drive carrier	SSD	SAS 12Gb/s	RI-1DW/D	SE	3.84TB	1EX1816
Ultrastar SS530 w/ 2.5 in. drive carrier	SSD	SAS 12Gb/s	RI-1DW/D	ISE	3.84TB	1EX1817
Ultrastar SS530 w/ 2.5 in. drive carrier	SSD	SAS 12Gb/s	RI-1DW/D	TCG	3.84TB	1EX1818
Ultrastar SS530 w/ 2.5 in. drive carrier	SSD	SAS 12Gb/s	RI-3DW/D	SE	6.4TB	1EX1813
Ultrastar SS530 w/ 2.5 in. drive carrier	SSD	SAS 12Gb/s	RI-3DW/D	ISE	6.4TB	1EX1814
Ultrastar SS530 w/ 2.5 in. drive carrier	SSD	SAS 12Gb/s	RI-3DW/D	TCG	6.4TB	1EX1815
Ultrastar SS530 w/ 2.5 in. drive carrier	SSD	SAS 12Gb/s	RI-3DW/D	SE	7.68TB	1EX1819
Ultrastar SS530 w/ 2.5 in. drive carrier	SSD	SAS 12Gb/s	RI-3DW/D	ISE	7.68TB	1EX1820
Ultrastar SS530 w/ 2.5 in. drive carrier	SSD	SAS 12Gb/s	RI-3DW/D	TCG	7.68TB	1EX1821
Ultrastar SS530 w/ 2.5 in. drive carrier	SSD	SAS 12Gb/s	RI-3DW/D	SE	15.36TB	1EX1822
Ultrastar SS530 w/ 2.5 in. drive carrier	SSD	SAS 12Gb/s	RI-3DW/D	ISE	15.36TB	1EX1823
Ultrastar SS530 w/ 2.5 in. drive carrier	SSD	SAS 12Gb/s	RI-3DW/D	TCG	15.36TB	1EX1824

Table 21: Western Digital Ultrastar SS540

Drive	Type	Interface	Drive Writes	Encryption	Volume	Part Number
Ultrastar SS540 w/ 2.5 in. drive carrier	SSD	SAS 12Gb/s	RI-3DW/D	SE	800GB	1EX2550
Ultrastar SS540 w/ 2.5 in. drive carrier	SSD	SAS 12Gb/s	RI-3DW/D	ISE	800GB	1EX2551
Ultrastar SS540 w/ 2.5 in. drive carrier	SSD	SAS 12Gb/s	RI-3DW/D	TCG	800GB	1EX2552
Ultrastar SS540 w/ 2.5 in. drive carrier	SSD	SAS 12Gb/s	RI-3DW/D	TCG-FIPS	800GB	1EX2553
Ultrastar SS540 w/ 2.5 in. drive carrier	SSD	SAS 12Gb/s	RI-1DW/D	SE	960GB	1EX2570
Ultrastar SS540 w/ 2.5 in. drive carrier	SSD	SAS 12Gb/s	RI-1DW/D	ISE	960GB	1EX2571
Ultrastar SS540 w/ 2.5 in. drive carrier	SSD	SAS 12Gb/s	RI-1DW/D	TCG	960GB	1EX2572
Ultrastar SS540 w/ 2.5 in. drive carrier	SSD	SAS 12Gb/s	RI-1DW/D	TCG-FIPS	960GB	1EX2573
Ultrastar SS540 w/ 2.5 in. drive carrier	SSD	SAS 12Gb/s	RI-3DW/D	SE	1.6TB	1EX2546
Ultrastar SS540 w/ 2.5 in. drive carrier	SSD	SAS 12Gb/s	RI-3DW/D	ISE	1.6TB	1EX2547
Ultrastar SS540 w/ 2.5 in. drive carrier	SSD	SAS 12Gb/s	RI-3DW/D	TCG	1.6TB	1EX2548
Ultrastar SS540 w/ 2.5 in. drive carrier	SSD	SAS 12Gb/s	RI-3DW/D	TCG-FIPS	1.6TB	1EX2549
Ultrastar SS540 w/ 2.5 in. drive carrier	SSD	SAS 12Gb/s	RI-1DW/D	SE	1.92TB	1EX2566
Ultrastar SS540 w/ 2.5 in. drive carrier	SSD	SAS 12Gb/s	RI-1DW/D	ISE	1.92TB	1EX2567
Ultrastar SS540 w/ 2.5 in. drive carrier	SSD	SAS 12Gb/s	RI-1DW/D	TCG	1.92TB	1EX2568
Ultrastar SS540 w/ 2.5 in. drive carrier	SSD	SAS 12Gb/s	RI-1DW/D	TCG-FIPS	1.92TB	1EX2569
Ultrastar SS540 w/ 2.5 in. drive carrier	SSD	SAS 12Gb/s	RI-3DW/D	SE	3.2TB	1EX2542
Ultrastar SS540 w/ 2.5 in. drive carrier	SSD	SAS 12Gb/s	RI-3DW/D	ISE	3.2TB	1EX2543
Ultrastar SS540 w/ 2.5 in. drive carrier	SSD	SAS 12Gb/s	RI-3DW/D	TCG	3.2TB	1EX2544
Ultrastar SS540	SSD	SAS 12Gb/s	RI-3DW/D	TCG-FIPS	3.2TB	1EX2545

Drive	Type	Interface	Drive Writes	Encryption	Volume	Part Number
w/ 2.5 in. drive carrier						
Ultrastar SS540 w/ 2.5 in. drive carrier	SSD	SAS 12Gb/s	RI-1DW/D	SE	3.84TB	1EX2562
Ultrastar SS540 w/ 2.5 in. drive carrier	SSD	SAS 12Gb/s	RI-1DW/D	ISE	3.84TB	1EX2563
Ultrastar SS540 w/ 2.5 in. drive carrier	SSD	SAS 12Gb/s	RI-1DW/D	TCG	3.84TB	1EX2564
Ultrastar SS540 w/ 2.5 in. drive carrier	SSD	SAS 12Gb/s	RI-1DW/D	TCG-FIPS	3.84TB	1EX2565
Ultrastar SS540 w/ 2.5 in. drive carrier	SSD	SAS 12Gb/s	RI-3DW/D	SE	6.4TB	1EX2538
Ultrastar SS540 w/ 2.5 in. drive carrier	SSD	SAS 12Gb/s	RI-3DW/D	ISE	6.4TB	1EX2539
Ultrastar SS540 w/ 2.5 in. drive carrier	SSD	SAS 12Gb/s	RI-3DW/D	TCG	6.4TB	1EX2540
Ultrastar SS540 w/ 2.5 in. drive carrier	SSD	SAS 12Gb/s	RI-3DW/D	TCG-FIPS	6.4TB	1EX2541
Ultrastar SS540 w/ 2.5 in. drive carrier	SSD	SAS 12Gb/s	RI-1DW/D	SE	7.68TB	1EX2558
Ultrastar SS540 w/ 2.5 in. drive carrier	SSD	SAS 12Gb/s	RI-1DW/D	ISE	7.68TB	1EX2559
Ultrastar SS540 w/ 2.5 in. drive carrier	SSD	SAS 12Gb/s	RI-1DW/D	TCG	7.68TB	1EX2560
Ultrastar SS540 w/ 2.5 in. drive carrier	SSD	SAS 12Gb/s	RI-1DW/D	TCG-FIPS	7.68TB	1EX2561
Ultrastar SS540 w/ 2.5 in. drive carrier	SSD	SAS 12Gb/s	RI-1DW/D	SE	15.36TB	1EX2554
Ultrastar SS540 w/ 2.5 in. drive carrier	SSD	SAS 12Gb/s	RI-1DW/D	ISE	15.36TB	1EX2555
Ultrastar SS540 w/ 2.5 in. drive carrier	SSD	SAS 12Gb/s	RI-1DW/D	TCG	15.36TB	1EX2556
Ultrastar SS540 w/ 2.5 in. drive carrier	SSD	SAS 12Gb/s	RI-1DW/D	TCG-FIPS	15.36TB	1EX2557

Table 22: Western Digital Ultrastar SA620

Drive	Type	Interface	Drive Writes	Encryption	Volume	Part Number
Ultrastar SA620 w/ 2.5 in. drive carrier	SSD	SATA 6Gb/s	RI-0.6DW/D	SE	480GB	No longer available
Ultrastar SA620 w/ 2.5 in. drive carrier	SSD	SATA 6Gb/s	RI-0.6DW/D	ISE	480GB	No longer available

Drive	Type	Interface	Drive Writes	Encryption	Volume	Part Number
Ultrastar SA620 w/ 2.5 in. drive carrier	SSD	SATA 6Gb/s	RI-1.8DW/D	SE	400GB	No longer available
Ultrastar SA620 w/ 2.5 in. drive carrier	SSD	SATA 6Gb/s	RI-1.8DW/D	ISE	400GB	No longer available
Ultrastar SA620 w/ 2.5 in. drive carrier	SSD	SATA 6Gb/s	RI-1.8DW/D	SE	800GB	No longer available
Ultrastar SA620 w/ 2.5 in. drive carrier	SSD	SATA 6Gb/s	RI-1.8DW/D	ISE	800GB	No longer available
Ultrastar SA620 w/ 2.5 in. drive carrier	SSD	SATA 6Gb/s	RI-0.6DW/D	SE	960GB	No longer available
Ultrastar SA620 w/ 2.5 in. drive carrier	SSD	SATA 6Gb/s	RI-0.6DW/D	ISE	960GB	No longer available
Ultrastar SA620 w/ 2.5 in. drive carrier	SSD	SATA 6Gb/s	RI-1.8DW/D	SE	1.6TB	1EX1685
Ultrastar SA620 w/ 2.5 in. drive carrier	SSD	SATA 6Gb/s	RI-1.8DW/D	ISE	1.6TB	No longer available
Ultrastar SA620 w/ 2.5 in. drive carrier	SSD	SATA 6Gb/s	RI-0.6DW/D	SE	1.92TB	No longer available
Ultrastar SA620 w/ 2.5 in. drive carrier	SSD	SATA 6Gb/s	RI-0.6DW/D	ISE	1.92TB	No longer available

SSD with 3.5-inch to 2.5-inch Drive Carrier

Table 23: Western Digital Ultrastar SS200

Drive	Type	Interface	Drive Writes	Encryption	Volume	Part Number
Ultrastar SS200 w/ 3.5 in. to 2.5 in. drive carrier	SSD	SAS 12Gb/s	RI-3DW/D	SE	400GB	No longer available
Ultrastar SS200 w/ 3.5 in. to 2.5 in. drive carrier	SSD	SAS 12Gb/s	RI-3DW/D	ISE	400GB	No longer available
Ultrastar SS200 w/ 3.5 in. to 2.5 in. drive carrier	SSD	SAS 12Gb/s	RI-3DW/D	TCG	400GB	No longer available
Ultrastar SS200 w/ 3.5 in. to 2.5 in. drive carrier	SSD	SAS 12Gb/s	RI-3DW/D	TCG-FIPS	400GB	No longer available
Ultrastar SS200 w/ 3.5 in. to 2.5 in. drive carrier	SSD	SAS 12Gb/s	RI-1DW/D	TCG	480GB	No longer available
Ultrastar SS200 w/ 3.5 in. to 2.5 in. drive carrier	SSD	SAS 12Gb/s	RI-3DW/D	SE	800GB	No longer available
Ultrastar SS200 w/ 3.5 in. to 2.5 in. drive carrier	SSD	SAS 12Gb/s	RI-3DW/D	ISE	800GB	No longer available

Drive	Type	Interface	Drive Writes	Encryption	Volume	Part Number
Ultrastar SS200 w/ 3.5 in. to 2.5 in. drive carrier	SSD	SAS 12Gb/s	RI-3DW/D	TCG	800GB	No longer available
Ultrastar SS200 w/ 3.5 in. to 2.5 in. drive carrier	SSD	SAS 12Gb/s	RI-1DW/D	TCG	960GB	No longer available
Ultrastar SS200 w/ 3.5 in. to 2.5 in. drive carrier	SSD	SAS 12Gb/s	RI-3DW/D	SE	1.6TB	No longer available
Ultrastar SS200 w/ 3.5 in. to 2.5 in. drive carrier	SSD	SAS 12Gb/s	RI-3DW/D	ISE	1.6TB	No longer available
Ultrastar SS200 w/ 3.5 in. to 2.5 in. drive carrier	SSD	SAS 12Gb/s	RI-3DW/D	TCG	1.6TB	No longer available
Ultrastar SS200 w/ 3.5 in. to 2.5 in. drive carrier	SSD	SAS 12Gb/s	RI-1DW/D	TCG	1.92TB	No longer available
Ultrastar SS200 w/ 3.5 in. to 2.5 in. drive carrier	SSD	SAS 12Gb/s	RI-3DW/D	ISE	3.2TB	No longer available
Ultrastar SS200 w/ 3.5 in. to 2.5 in. drive carrier	SSD	SAS 12Gb/s	RI-1DW/D	ISE	3.84TB	No longer available
Ultrastar SS200 w/ 3.5 in. to 2.5 in. drive carrier	SSD	SAS 12Gb/s	RI-1DW/D	SE	7.68TB	No longer available

Table 24: Western Digital Ultrastar SS300

Drive	Type	Interface	Drive Writes	Encryption	Volume	Part Number
Ultrastar SS300 w/ 3.5 in. to 2.5 in. drive carrier	SSD	SAS 12Gb/s	RI-3DW/D	SE	400GB	No longer available
Ultrastar SS300 w/ 3.5 in. to 2.5 in. drive carrier	SSD	SAS 12Gb/s	RI-3DW/D	ISE	400GB	No longer available
Ultrastar SS300 w/ 3.5 in. to 2.5 in. drive carrier	SSD	SAS 12Gb/s	RI-3DW/D	TCG	400GB	No longer available
Ultrastar SS300 w/ 3.5 in. to 2.5 in. drive carrier	SSD	SAS 12Gb/s	ME-10DW/D	SE	400GB	No longer available
Ultrastar SS300 w/ 3.5 in. to 2.5 in. drive carrier	SSD	SAS 12Gb/s	ME-10DW/D	ISE	400GB	No longer available
Ultrastar SS300 w/ 3.5 in. to 2.5 in. drive carrier	SSD	SAS 12Gb/s	ME-10DW/D	TCG	400GB	No longer available
Ultrastar SS300 w/ 3.5 in. to 2.5 in. drive carrier	SSD	SAS 12Gb/s	ME-10DW/D	TCG-FIPS	400GB	No longer available
Ultrastar SS300 w/ 3.5 in. to 2.5 in. drive carrier	SSD	SAS 12Gb/s	RI-3DW/D	SE	800GB	No longer available
Ultrastar SS300 w/ 3.5 in. to 2.5 in. drive carrier	SSD	SAS 12Gb/s	RI-3DW/D	ISE	800GB	No longer available

Drive	Type	Interface	Drive Writes	Encryption	Volume	Part Number
Ultrastar SS300 w/ 3.5 in. to 2.5 in. drive carrier	SSD	SAS 12Gb/s	RI-3DW/D	TCG	800GB	No longer available
Ultrastar SS300 w/ 3.5 in. to 2.5 in. drive carrier	SSD	SAS 12Gb/s	RI-3DW/D	TCG-FIPS	800GB	No longer available
Ultrastar SS300 w/ 3.5 in. to 2.5 in. drive carrier	SSD	SAS 12Gb/s	ME-10DW/D	SE	800GB	No longer available
Ultrastar SS300 w/ 3.5 in. to 2.5 in. drive carrier	SSD	SAS 12Gb/s	ME-10DW/D	ISE	800GB	No longer available
Ultrastar SS300 w/ 3.5 in. to 2.5 in. drive carrier	SSD	SAS 12Gb/s	ME-10DW/D	TCG	800GB	No longer available
Ultrastar SS300 w/ 3.5 in. to 2.5 in. drive carrier	SSD	SAS 12Gb/s	ME-10DW/D	TCG-FIPS	800GB	No longer available
Ultrastar SS300 w/ 3.5 in. to 2.5 in. drive carrier	SSD	SAS 12Gb/s	RI-3DW/D	SE	1.6TB	No longer available
Ultrastar SS300 w/ 3.5 in. to 2.5 in. drive carrier	SSD	SAS 12Gb/s	RI-3DW/D	ISE	1.6TB	No longer available
Ultrastar SS300 w/ 3.5 in. to 2.5 in. drive carrier	SSD	SAS 12Gb/s	RI-3DW/D	TCG	1.6TB	No longer available
Ultrastar SS300 w/ 3.5 in. to 2.5 in. drive carrier	SSD	SAS 12Gb/s	RI-3DW/D	TCG-FIPS	1.6TB	No longer available
Ultrastar SS300 w/ 3.5 in. to 2.5 in. drive carrier	SSD	SAS 12Gb/s	RI-10DW/D	SE	1.6TB	No longer available
Ultrastar SS300 w/ 3.5 in. to 2.5 in. drive carrier	SSD	SAS 12Gb/s	RI-10DW/D	ISE	1.6TB	No longer available
Ultrastar SS300 w/ 3.5 in. to 2.5 in. drive carrier	SSD	SAS 12Gb/s	RI-10DW/D	TCG	1.6TB	No longer available
Ultrastar SS300 w/ 3.5 in. to 2.5 in. drive carrier	SSD	SAS 12Gb/s	ME-10DW/D	TCG-FIPS	1.6TB	No longer available
Ultrastar SS300 w/ 3.5 in. to 2.5 in. drive carrier	SSD	SAS 12Gb/s	RI-3DW/D	SE	3.2TB	No longer available
Ultrastar SS300 w/ 3.5 in. to 2.5 in. drive carrier	SSD	SAS 12Gb/s	RI-3DW/D	ISE	3.2TB	No longer available

Table 25: Western Digital Ultrastar SS530

Drive	Type	Interface	Drive Writes	Encryption	Volume	Part Number
Ultrastar SS530 w/ 3.5 in. to 2.5 in. drive carrier	SSD	SAS 12Gb/s	RI-3DW/D	SE	400GB	1EX2020
Ultrastar SS530 w/ 3.5 in. to 2.5 in. drive carrier	SSD	SAS 12Gb/s	RI-3DW/D	ISE	400GB	1EX2021
Ultrastar SS530	SSD	SAS 12Gb/s	RI-3DW/D	TCG	400GB	1EX2087

Drive	Type	Interface	Drive Writes	Encryption	Volume	Part Number
w/ 3.5 in. to 2.5 in. drive carrier						
Ultrastar SS530 w/ 3.5 in. to 2.5 in. drive carrier	SSD	SAS 12Gb/s	ME-10DW/D	SE	400GB	1EX2012
Ultrastar SS530 w/ 3.5 in. to 2.5 in. drive carrier	SSD	SAS 12Gb/s	ME-10DW/D	ISE	400GB	1EX2013
Ultrastar SS530 w/ 3.5 in. to 2.5 in. drive carrier	SSD	SAS 12Gb/s	ME-10DW/D	TCG	400GB	1EX2083
Ultrastar SS530 w/ 3.5 in. to 2.5 in. drive carrier	SSD	SAS 12Gb/s	RI-1DW/D	SE	480GB	1EX2030
Ultrastar SS530 w/ 3.5 in. to 2.5 in. drive carrier	SSD	SAS 12Gb/s	RI-1DW/D	ISE	480GB	1EX2031
Ultrastar SS530 w/ 3.5 in. to 2.5 in. drive carrier	SSD	SAS 12Gb/s	RI-1DW/D	TCG	480GB	1EX2092
Ultrastar SS530 w/ 3.5 in. to 2.5 in. drive carrier	SSD	SAS 12Gb/s	RI-3DW/D	SE	800GB	1EX2022
Ultrastar SS530 w/ 3.5 in. to 2.5 in. drive carrier	SSD	SAS 12Gb/s	RI-3DW/D	ISE	800GB	1EX2023
Ultrastar SS530 w/ 3.5 in. to 2.5 in. drive carrier	SSD	SAS 12Gb/s	RI-3DW/D	TCG	800GB	1EX2088
Ultrastar SS530 w/ 3.5 in. to 2.5 in. drive carrier	SSD	SAS 12Gb/s	ME-10DW/D	SE	800GB	1EX2014
Ultrastar SS530 w/ 3.5 in. to 2.5 in. drive carrier	SSD	SAS 12Gb/s	ME-10DW/D	ISE	800GB	1EX2015
Ultrastar SS530 w/ 3.5 in. to 2.5 in. drive carrier	SSD	SAS 12Gb/s	ME-10DW/D	TCG	800GB	1EX2084
Ultrastar SS530 w/ 3.5 in. to 2.5 in. drive carrier	SSD	SAS 12Gb/s	RI-1DW/D	SE	960GB	1EX2032
Ultrastar SS530 w/ 3.5 in. to 2.5 in. drive carrier	SSD	SAS 12Gb/s	RI-1DW/D	ISE	960GB	1EX2033
Ultrastar SS530 w/ 3.5 in. to 2.5 in. drive carrier	SSD	SAS 12Gb/s	RI-1DW/D	TCG	960GB	1EX2093
Ultrastar SS530 w/ 3.5 in. to 2.5 in. drive carrier	SSD	SAS 12Gb/s	RI-3DW/D	SE	1.6TB	1EX2024
Ultrastar SS530 w/ 3.5 in. to 2.5 in. drive carrier	SSD	SAS 12Gb/s	RI-3DW/D	ISE	1.6TB	1EX2025
Ultrastar SS530 w/ 3.5 in. to 2.5 in. drive carrier	SSD	SAS 12Gb/s	RI-3DW/D	TCG	1.6TB	1EX2089
Ultrastar SS530 w/ 3.5 in. to 2.5 in. drive carrier	SSD	SAS 12Gb/s	ME-10DW/D	SE	1.6TB	1EX2016
Ultrastar SS530 w/ 3.5 in. to 2.5 in. drive carrier	SSD	SAS 12Gb/s	ME-10DW/D	ISE	1.6TB	1EX2017

Drive	Type	Interface	Drive Writes	Encryption	Volume	Part Number
Ultrastar SS530 w/ 3.5 in. to 2.5 in. drive carrier	SSD	SAS 12Gb/s	ME-10DW/D	TCG	1.6TB	1EX2085
Ultrastar SS530 w/ 3.5 in. to 2.5 in. drive carrier	SSD	SAS 12Gb/s	RI-1DW/D	SE	1.92TB	1EX2034
Ultrastar SS530 w/ 3.5 in. to 2.5 in. drive carrier	SSD	SAS 12Gb/s	RI-1DW/D	ISE	1.92TB	1EX2035
Ultrastar SS530 w/ 3.5 in. to 2.5 in. drive carrier	SSD	SAS 12Gb/s	RI-1DW/D	TCG	1.92TB	1EX2094
Ultrastar SS530 w/ 3.5 in. to 2.5 in. drive carrier	SSD	SAS 12Gb/s	RI-3DW/D	SE	3.2TB	1EX2026
Ultrastar SS530 w/ 3.5 in. to 2.5 in. drive carrier	SSD	SAS 12Gb/s	RI-3DW/D	ISE	3.2TB	1EX2027
Ultrastar SS530 w/ 3.5 in. to 2.5 in. drive carrier	SSD	SAS 12Gb/s	RI-3DW/D	TCG	3.2TB	1EX2090
Ultrastar SS530 w/ 3.5 in. to 2.5 in. drive carrier	SSD	SAS 12Gb/s	ME-10DW/D	SE	3.2TB	1EX2018
Ultrastar SS530 w/ 3.5 in. to 2.5 in. drive carrier	SSD	SAS 12Gb/s	ME-10DW/D	ISE	3.2TB	1EX2019
Ultrastar SS530 w/ 3.5 in. to 2.5 in. drive carrier	SSD	SAS 12Gb/s	ME-10DW/D	TCG	3.2TB	1EX2086
Ultrastar SS530 w/ 3.5 in. to 2.5 in. drive carrier	SSD	SAS 12Gb/s	RI-1DW/D	SE	3.84TB	1EX2036
Ultrastar SS530 w/ 3.5 in. to 2.5 in. drive carrier	SSD	SAS 12Gb/s	RI-1DW/D	ISE	3.84TB	1EX2037
Ultrastar SS530 w/ 3.5 in. to 2.5 in. drive carrier	SSD	SAS 12Gb/s	RI-1DW/D	TCG	3.84TB	1EX2095
Ultrastar SS530 w/ 3.5 in. to 2.5 in. drive carrier	SSD	SAS 12Gb/s	RI-3DW/D	SE	6.4TB	1EX2028
Ultrastar SS530 w/ 3.5 in. to 2.5 in. drive carrier	SSD	SAS 12Gb/s	RI-3DW/D	ISE	6.4TB	1EX2029
Ultrastar SS530 w/ 3.5 in. to 2.5 in. drive carrier	SSD	SAS 12Gb/s	RI-3DW/D	TCG	6.4TB	1EX2091
Ultrastar SS530 w/ 3.5 in. to 2.5 in. drive carrier	SSD	SAS 12Gb/s	RI-1DW/D	SE	7.68TB	1EX2038
Ultrastar SS530 w/ 3.5 in. to 2.5 in. drive carrier	SSD	SAS 12Gb/s	RI-1DW/D	ISE	7.68TB	1EX2039
Ultrastar SS530 w/ 3.5 in. to 2.5 in. drive carrier	SSD	SAS 12Gb/s	RI-1DW/D	TCG	7.68TB	1EX2096
Ultrastar SS530 w/ 3.5 in. to 2.5 in. drive carrier	SSD	SAS 12Gb/s	RI-1DW/D	SE	15.36TB	1EX2040
Ultrastar SS530	SSD	SAS 12Gb/s	RI-1DW/D	ISE	15.36TB	1EX2041

Drive	Type	Interface	Drive Writes	Encryption	Volume	Part Number
w/ 3.5 in. to 2.5 in. drive carrier						
Ultrastar SS530 w/ 3.5 in. to 2.5 in. drive carrier	SSD	SAS 12Gb/s	RI-1DW/D	TCG	15.36TB	1EX2097

Table 26: Western Digital Ultrastar SS540

Drive	Type	Interface	Drive Writes	Encryption	Volume	Part Number
Ultrastar SS540 w/ 3.5 in. to 2.5 in. drive carrier	SSD	SAS 12Gb/s	RI-3DW/D	SE	800GB	1EX2672
Ultrastar SS540 w/ 3.5 in. to 2.5 in. drive carrier	SSD	SAS 12Gb/s	RI-3DW/D	ISE	800GB	1EX2673
Ultrastar SS540 w/ 3.5 in. to 2.5 in. drive carrier	SSD	SAS 12Gb/s	RI-3DW/D	TCG	800GB	1EX2674
Ultrastar SS540 w/ 3.5 in. to 2.5 in. drive carrier	SSD	SAS 12Gb/s	RI-3DW/D	TCG-FIPS	800GB	1EX2675
Ultrastar SS540 w/ 3.5 in. to 2.5 in. drive carrier	SSD	SAS 12Gb/s	RI-1DW/D	SE	960GB	1EX2692
Ultrastar SS540 w/ 3.5 in. to 2.5 in. drive carrier	SSD	SAS 12Gb/s	RI-1DW/D	ISE	960GB	1EX2693
Ultrastar SS540 w/ 3.5 in. to 2.5 in. drive carrier	SSD	SAS 12Gb/s	RI-1DW/D	TCG	960GB	1EX2694
Ultrastar SS540 w/ 3.5 in. to 2.5 in. drive carrier	SSD	SAS 12Gb/s	RI-1DW/D	TCG-FIPS	960GB	1EX2695
Ultrastar SS540 w/ 3.5 in. to 2.5 in. drive carrier	SSD	SAS 12Gb/s	RI-3DW/D	SE	1.6TB	1EX2668
Ultrastar SS540 w/ 3.5 in. to 2.5 in. drive carrier	SSD	SAS 12Gb/s	RI-3DW/D	ISE	1.6TB	1EX2669
Ultrastar SS540 w/ 3.5 in. to 2.5 in. drive carrier	SSD	SAS 12Gb/s	RI-3DW/D	TCG	1.6TB	1EX2670
Ultrastar SS540 w/ 3.5 in. to 2.5 in. drive carrier	SSD	SAS 12Gb/s	RI-3DW/D	TCG-FIPS	1.6TB	1EX2671
Ultrastar SS540 w/ 3.5 in. to 2.5 in. drive carrier	SSD	SAS 12Gb/s	RI-1DW/D	SE	1.92TB	1EX2688
Ultrastar SS540 w/ 3.5 in. to 2.5 in. drive carrier	SSD	SAS 12Gb/s	RI-1DW/D	ISE	1.92TB	1EX2689
Ultrastar SS540 w/ 3.5 in. to 2.5 in. drive carrier	SSD	SAS 12Gb/s	RI-1DW/D	TCG	1.92TB	1EX2690
Ultrastar SS540 w/ 3.5 in. to 2.5 in. drive carrier	SSD	SAS 12Gb/s	RI-1DW/D	TCG-FIPS	1.92TB	1EX2691
Ultrastar SS540 w/ 3.5 in. to 2.5 in. drive carrier	SSD	SAS 12Gb/s	RI-3DW/D	SE	3.2TB	1EX2664

Drive	Type	Interface	Drive Writes	Encryption	Volume	Part Number
Ultrastar SS540 w/ 3.5 in. to 2.5 in. drive carrier	SSD	SAS 12Gb/s	RI-3DW/D	ISE	3.2TB	1EX2665
Ultrastar SS540 w/ 3.5 in. to 2.5 in. drive carrier	SSD	SAS 12Gb/s	RI-3DW/D	TCG	3.2TB	1EX2666
Ultrastar SS540 w/ 3.5 in. to 2.5 in. drive carrier	SSD	SAS 12Gb/s	RI-3DW/D	TCG-FIPS	3.2TB	1EX2667
Ultrastar SS540 w/ 3.5 in. to 2.5 in. drive carrier	SSD	SAS 12Gb/s	RI-1DW/D	SE	3.84TB	1EX2684
Ultrastar SS540 w/ 3.5 in. to 2.5 in. drive carrier	SSD	SAS 12Gb/s	RI-1DW/D	ISE	3.84TB	1EX2685
Ultrastar SS540 w/ 3.5 in. to 2.5 in. drive carrier	SSD	SAS 12Gb/s	RI-1DW/D	TCG	3.84TB	1EX2686
Ultrastar SS540 w/ 3.5 in. to 2.5 in. drive carrier	SSD	SAS 12Gb/s	RI-1DW/D	TCG-FIPS	3.84TB	1EX2687
Ultrastar SS540 w/ 3.5 in. to 2.5 in. drive carrier	SSD	SAS 12Gb/s	RI-3DW/D	SE	6.4TB	1EX2660
Ultrastar SS540 w/ 3.5 in. to 2.5 in. drive carrier	SSD	SAS 12Gb/s	RI-3DW/D	ISE	6.4TB	1EX2661
Ultrastar SS540 w/ 3.5 in. to 2.5 in. drive carrier	SSD	SAS 12Gb/s	RI-3DW/D	TCG	6.4TB	1EX2662
Ultrastar SS540 w/ 3.5 in. to 2.5 in. drive carrier	SSD	SAS 12Gb/s	RI-3DW/D	TCG-FIPS	6.4TB	1EX2663
Ultrastar SS540 w/ 3.5 in. to 2.5 in. drive carrier	SSD	SAS 12Gb/s	RI-1DW/D	SE	7.68TB	1EX2680
Ultrastar SS540 w/ 3.5 in. to 2.5 in. drive carrier	SSD	SAS 12Gb/s	RI-1DW/D	ISE	7.68TB	1EX2681
Ultrastar SS540 w/ 3.5 in. to 2.5 in. drive carrier	SSD	SAS 12Gb/s	RI-1DW/D	TCG	7.68TB	1EX2682
Ultrastar SS540 w/ 3.5 in. to 2.5 in. drive carrier	SSD	SAS 12Gb/s	RI-1DW/D	TCG-FIPS	7.68TB	1EX2683
Ultrastar SS540 w/ 3.5 in. to 2.5 in. drive carrier	SSD	SAS 12Gb/s	RI-1DW/D	SE	15.36TB	1EX2676
Ultrastar SS540 w/ 3.5 in. to 2.5 in. drive carrier	SSD	SAS 12Gb/s	RI-1DW/D	ISE	15.36TB	1EX2677
Ultrastar SS540 w/ 3.5 in. to 2.5 in. drive carrier	SSD	SAS 12Gb/s	RI-1DW/D	TCG	15.36TB	1EX2678
Ultrastar SS540 w/ 3.5 in. to 2.5 in. drive carrier	SSD	SAS 12Gb/s	RI-1DW/D	TCG-FIPS	15.36TB	1EX2679

Table 27: Western Digital Ultrastar SA620

Drive	Type	Interface	Drive Writes	Encryption	Volume	Part Number
Ultrastar SA620 w/ 3.5 in. to 2.5 in. drive carrier	SSD	SATA 6Gb/s	RI-1.8DW/D	SE	400GB	No longer available
Ultrastar SA620 w/ 3.5 in. to 2.5 in. drive carrier	SSD	SATA 6Gb/s	RI-1.8DW/D	ISE	400GB	No longer available
Ultrastar SA620 w/ 3.5 in. to 2.5 in. drive carrier	SSD	SATA 6Gb/s	RI-0.6DW/D	SE	480GB	No longer available
Ultrastar SA620 w/ 3.5 in. to 2.5 in. drive carrier	SSD	SATA 6Gb/s	RI-0.6DW/D	ISE	480GB	No longer available
Ultrastar SA620 w/ 3.5 in. to 2.5 in. drive carrier	SSD	SATA 6Gb/s	RI-1.8DW/D	SE	800GB	No longer available
Ultrastar SA620 w/ 3.5 in. to 2.5 in. drive carrier	SSD	SATA 6Gb/s	RI-1.8DW/D	ISE	800GB	No longer available
Ultrastar SA620 w/ 3.5 in. to 2.5 in. drive carrier	SSD	SATA 6Gb/s	RI-0.6DW/D	SE	960GB	No longer available
Ultrastar SA620 w/ 3.5 in. to 2.5 in. drive carrier	SSD	SATA 6Gb/s	RI-0.6DW/D	ISE	960GB	No longer available
Ultrastar SA620 w/ 3.5 in. to 2.5 in. drive carrier	SSD	SATA 6Gb/s	RI-1.8DW/D	SE	1.6TB	No longer available
Ultrastar SA620 w/ 3.5 in. to 2.5 in. drive carrier	SSD	SATA 6Gb/s	RI-1.8DW/D	ISE	1.6TB	No longer available
Ultrastar SA620 w/ 3.5 in. to 2.5 in. drive carrier	SSD	SATA 6Gb/s	RI-0.6DW/D	SE	1.92TB	No longer available
Ultrastar SA620 w/ 3.5 in. to 2.5 in. drive carrier	SSD	SATA 6Gb/s	RI-0.6DW/D	ISE	1.92TB	No longer available

M.2**Table 28:** Western Digital Ultrastar SA210

Drive	Type	Form Factor	Interface	Encryption	Volume	Part Number
Ultrastar SA210 M.2	SSD	M.2 2280	SATA 6Gb/s	SED	120GB	1EX1143
Ultrastar SA210 M.2	SSD	M.2 2280	SATA 6Gb/s	SED	240GB	1EX1354
Ultrastar SA210 M.2	SSD	M.2 2280	SATA 6Gb/s	SED	480GB	1EX1579
Ultrastar SA210 M.2	SSD	M.2 2280	SATA 6Gb/s	SED	960GB	1EX1580
Ultrastar SA210 M.2	SSD	M.2 2280	SATA 6Gb/s	SED	1.92TB	1EX1581

Table 29: Sandisk X600

Drive	Type	Form Factor	Interface	Encryption	Volume	Part Number
Sandisk X600 M.2	SSD	M.2 2280	SATA 6Gb/s	—	128GB	1EX1569

Drive	Type	Form Factor	Interface	Encryption	Volume	Part Number
Sandisk X600 M.2	SSD	M.2 2280	SATA 6Gb/s	SED	128GB	1EX1574
Sandisk X600 M.2	SSD	M.2 2280	SATA 6Gb/s	—	256GB	1EX1570
Sandisk X600 M.2	SSD	M.2 2280	SATA 6Gb/s	SED	256GB	1EX1575
Sandisk X600 M.2	SSD	M.2 2280	SATA 6Gb/s	—	512GB	1EX1571
Sandisk X600 M.2	SSD	M.2 2280	SATA 6Gb/s	SED	512GB	1EX1576
Sandisk X600 M.2	SSD	M.2 2280	SATA 6Gb/s	—	1TB	1EX1572
Sandisk X600 M.2	SSD	M.2 2280	SATA 6Gb/s	SED	1TB	1EX1577
Sandisk X600 M.2	SSD	M.2 2280	SATA 6Gb/s	—	2TB	1EX1573
Sandisk X600 M.2	SSD	M.2 2280	SATA 6Gb/s	SED	2TB	1EX1578

Disclaimers

Learn about the Regulatory, Safety, and Electromagnetic standards for which this product is compliant.

The following chapter describes the Regulatory Statement of Compliance, Safety Compliance, and Electromagnetic Compatibility Agency Requirements for the Ultrastar Serv60+8 .

In This Chapter:

- Restricted Access Location..... 31
- Safety Compliance.....31
- Electromagnetic Compatibility (EMC) Class A Compliance..... 31
- Country Certifications..... 32

2.1 Restricted Access Location

The Ultrastar Serv60+8 is intended for installation in a server room or computer room where at least one of the following conditions apply:

- access can only be gained by **service persons** or by **users** who have been instructed about the restrictions applied to the location and about any precautions that shall be taken and/or
- access is through the use of a **tool** or lock and key, or other means of security, and is controlled by the authority responsible for the location.

2.2 Safety Compliance

Product Name: **Ultrastar Serv60+8**

Regulatory Model: **H4060-S**

Electromagnetic Compatibility Emissions: **Class A**

This product has been tested and evaluated as Information Technology Equipment (ITE) at accredited third-party laboratories for all safety, emissions and immunity testing required for the countries and regions where the product is marketed and sold. The product has been verified as compliant with the latest applicable standards, regulations and directives for those regions/countries. The suitability of this product for other product categories other than ITE may require further evaluation.

The product is labeled with a unique regulatory model that is printed on the label and affixed to every unit. The label will provide traceability to the regulatory approvals listed in this document. The document applies to any product that bears the regulatory model and type names including marketing names other than those listed in this document.

2.3 Electromagnetic Compatibility (EMC) Class A Compliance

The **H4060-S** complies with and conforms to the latest international standards as applicable:

Emissions

- FCC CFR 47 Part 15, Subpart B
- ICES-003
- EN 55032
- CISPR 32
- CE – EMC Directive 2014/30/EU
- VCCI V-3
- BSMI CNS14338
- KN32
- AS/NZS CISPR 32
- TR CU 020/2011

Immunity

- EN 61000-3-2 Harmonic Current Emissions
- EN 61000-3-3 Voltage Fluctuations and Flicker
- EN 55024
- KN35
- EN 61000-4-2 ESD

- EN 61000-4-3 Radiated Immunity
- EN 61000-4-4 EFT
- EN 61000-4-5 Surge
- EN 61000-4-6 RF Common Mode
- EN 61000-4-8 Power Frequency Magnetic Field
- EN 61000-4-11 Voltage Dips and Interruptions

2.4 Country Certifications

Table 30: Country Certifications

Country/Region	Authority or Mark
North America (Canada, USA)	Nemko
European Union	CE
Japan	VCCI
Korea	MSIP
Taiwan	BSMI
Australia/New Zealand	RCM
Russia, Kazakhstan, Belarus, Armenia	CU EAC
Ukraine	Ukrsepro
Israel	SII
South Africa	SABS
India	BIS

Safety

The following chapter provides safety and regulatory information for the Ultrastar Serv60+8 .

In This Chapter:

- Safety Warnings and Cautions.....34
- Electrostatic Discharge.....34
- Optimizing Location.....34
- Power Connections..... 35
- Power Cords..... 35
- Rackmountable Systems.....35
- Safety and Service..... 36

3.1 Safety Warnings and Cautions

To avoid personal injury or property damage, before you begin installing the product, read, observe, and adhere to all of the following safety instructions and information. The following safety symbols may be used throughout the documentation and may be marked on the product and/or the product packaging.

CAUTION Indicates the presence of a hazard that may cause minor personal injury or property damage if the CAUTION is ignored.

WARNING Indicates the presence of a hazard that may result in serious personal injury if the WARNING is ignored.



Indicates potential hazard if indicated information is ignored.



Indicates shock hazards that result in serious injury or death if safety instructions are not followed.



Indicates do not touch fan blades, may result in injury.



Indicates disconnect all power sources before servicing.

3.2 Electrostatic Discharge



CAUTION

Electrostatic discharge can harm delicate components inside Western Digital products.

Electrostatic discharge (ESD) is a discharge of stored static electricity that can damage equipment and impair electrical circuitry. It occurs when electronic components are improperly handled and can result in complete or intermittent failures.

Wear an ESD wrist strap for installation, service and maintenance to prevent damage to components in the product. Ensure the antistatic wrist strap is attached to a chassis ground (any unpainted metal surface). If possible, keep one hand on the frame when you install or remove an ESD-sensitive part.

Before moving ESD-sensitive parts place them in ESD static-protective bags until you are ready to install the part.

3.3 Optimizing Location

Failure to recognize the importance of optimally locating your product and failure to protect against electrostatic discharge (ESD) when handling your product can result in lowered system performance or system failure.

Do not position the unit in an environment that has extreme high temperatures or extreme low temperatures. Be aware of the proximity of the unit to heaters, radiators, and air conditioners.

Position the unit so that there is adequate space around it for proper cooling and ventilation. Consult the product documentation for spacing information.

Keep the unit away from direct strong magnetic fields, excessive dust, and electronic/electrical equipment that generate electrical noise.

3.4 Power Connections

Be aware of the ampere limit on any power supply or extension cables being used. The total ampere rating being pulled on a circuit by all devices combined should not exceed 80% of the maximum limit for the circuit.

CAUTION The power outlet must be easily accessible close to the unit.



Always use properly grounded, unmodified electrical outlets and cables. Ensure all outlets and cables are rated to supply the proper voltage and current.



This unit has more than one power supply connection; both power cords must be removed from the power supplies to completely remove power from the unit. There is no switch or other disconnect device.

When power cycling the unit, wait 10 seconds before re-applying power. Failure to do so may cause the enclosure to boot up in an inaccessible state. If this is encountered, remove power, wait 10 seconds, and then reapply power.

3.5 Power Cords



Use only tested and approved power cords to connect to properly grounded power outlets or insulated sockets of the rack's internal power supply.

If an AC power cord was not provided with your product, purchase one that is approved for use in your country or region.

CAUTION To avoid electrical shock or fire, check the power cord(s) that will be used with the product as follows:

- The power cord must have an electrical rating that is greater than that of the electrical current rating marked on the product.
- Do not attempt to modify or use the AC power cord(s) if they are not the exact type required to fit into the grounded electrical outlets.
- The power supply cord(s) must be plugged into socket-outlet(s) that is / are provided with a suitable earth ground.
- The power supply cord(s) is / are the main disconnect device to AC power. The socket outlet(s) must be near the equipment and readily accessible for disconnection.

3.6 Rackmountable Systems

CAUTION

Always install rack rails and storage enclosure according to Ultrastar Serv60+8 product documentation. Follow all cautions, warnings, labels, and instructions provided within the rackmount instructions.

Reliable grounding of rack-mounted equipment should be maintained.

If installed in a closed or multi-unit rack assembly, the operating ambient temperature of the rack environment may be greater than room ambient. Therefore, consideration should be given to installing the equipment in an environment compatible with the maximum ambient temperature (T_{ma}) specified by the manufacturer.

Observe the maximum rated ambient temperature, which is specified in the product documentation.

For safe operation of the equipment, installation of the equipment in a rack should be such that the amount of air flow is not impeded so that the safe operation of the equipment is not compromised.

3.7 Safety and Service



All maintenance and service actions appropriate to the end-users are described in the product documentation. All other servicing should be referred to a Western Digital-authorized service technician.



To avoid shock hazard, turn off power to the unit by unplugging both power cords before servicing the unit. Use extreme caution around the chassis because potentially harmful voltages are present.



When replacing a hot-plug power supply, unplug the power cord to the power supply being replaced before removing it from the Ultrastar Serv60+8 .



The power supply in this product contains no user-serviceable parts. Do not open the power supply. Hazardous voltage, current and energy levels are present inside the power supply. Return to manufacturer for servicing.



Use caution when accessing part of the product that are labeled as potential shock hazards, hazardous access to moving parts such as fan blades.

Packaging

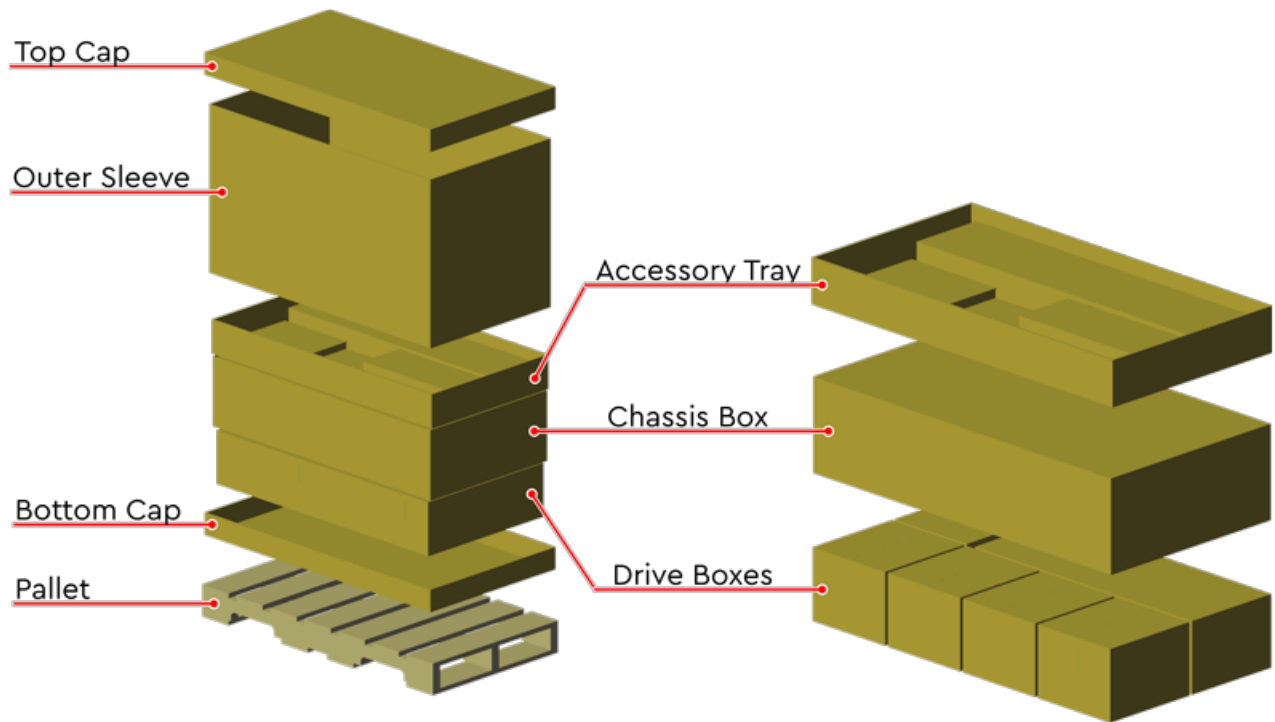
The following chapter provides information about how the Ultrastar Serv60+8 is packaged and instructions for unpacking it.

In This Chapter:

- Ultrastar Serv60+8 Packaging Overview.....38
- Ultrastar Serv60+8 Unpacking Procedure.....41

4.1 Ultrastar Serv60+8 Packaging Overview

Figure 7: Outer Packaging



The Ultrastar Serv60+8 is shipped in protective outer packaging that consists of cardboard caps on the top and bottom and an outer sleeve surrounding the sides. Plastic banding surrounds the packaging and secures it all to the shipping pallet.

The inner contents of the Ultrastar Serv60+8 packaging consists of three layers: the accessory tray (top), the chassis box (middle), and the drive boxes (bottom). The contents of each layer are detailed in the following sections.

Accessory Tray

The accessory tray contains boxes for the CMA arm, the Rails, and the Top Cover Alignment Brackets, as well as plastic bags containing the cables and necessary hardware.

Figure 8: Accessory Tray Contents

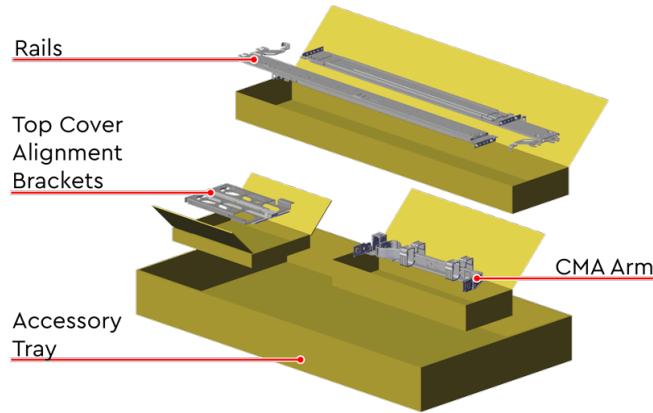


Table 31: Accessory Tray Contents

Container	Contents
CMA Box	1 CMA arm
Rails Box	<ul style="list-style-type: none"> • 2 Rails (each containing 1 inner-rail & 1 outer-rail) • Cross-bar
Brackets Box	2 Top Cover Alignment Brackets
Accessory Tray	<ul style="list-style-type: none"> • 2 Rack Latch Brackets (1 left, 1 right) • Screws & Nuts <ul style="list-style-type: none"> ◦ 10 M5 cagenuts ◦ 30 M5 x 12, T15 Torx screws ◦ 2 M5 x 12 Philips panhead screws (for cover retention) ◦ 16 custom round washers • Cables <ul style="list-style-type: none"> ◦ 2 C13 to C14 power cables (3m)

Chassis Box

The Chassis is boxed in the middle layer and protected by foam padding. It comes with pre-installed System Fans, PSUs, and an IOM .

Figure 9: Chassis Box Contents

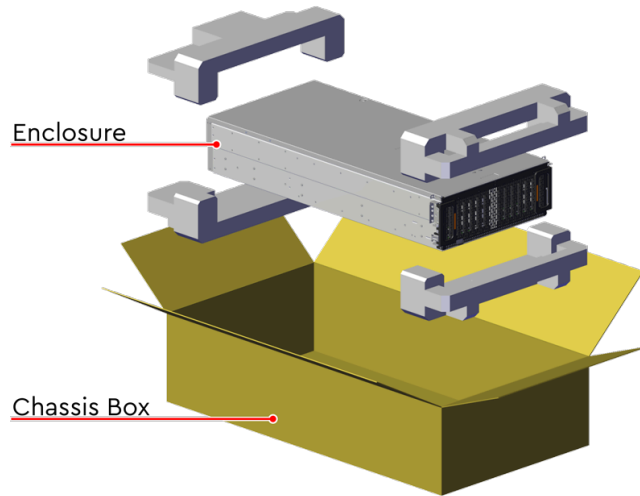


Table 32: Chassis Box Contents

Container	Contents
Chassis box	1 Chassis w/ all internal components pre-installed (except HDDs and SSDs): <ul style="list-style-type: none"> • 2 PSUs • 1 IOM • 4 System Fans

Drive Boxes

On the bottom layer are four boxes holding fourteen HDD assemblies each, and one box that holds four HDD assemblies and eight SSD assemblies.

Figure 10: Drive Box Contents

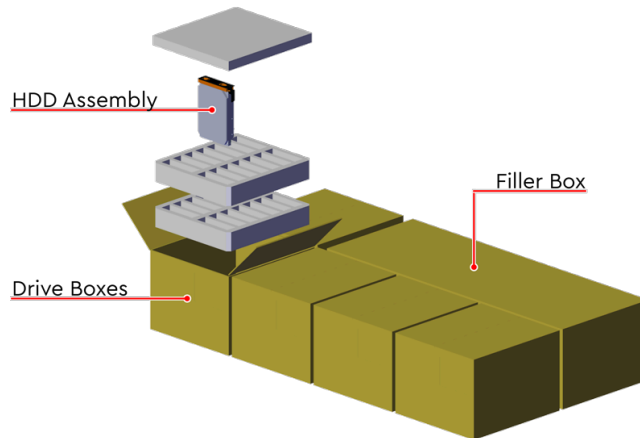


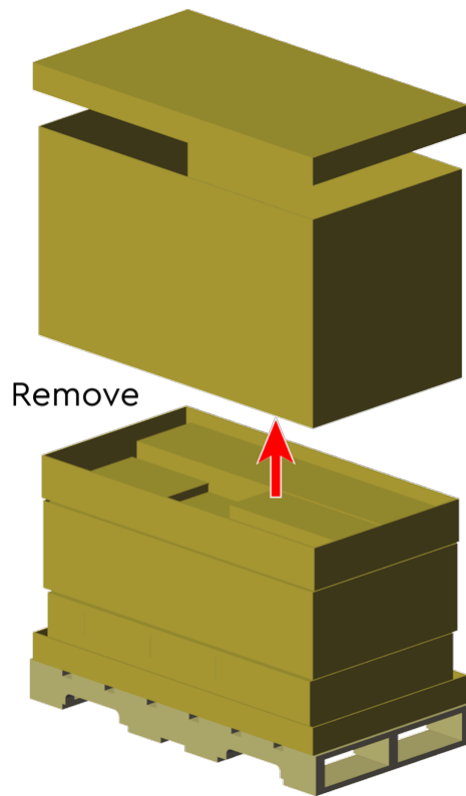
Table 33: Drive Box Contents

Container	Contents
4 boxes:	14 HDDs each
1 box:	4 HDDs & 8 SSDs
(total of 5 boxes)	(total of 60 HDD assemblies and 8 SSD assemblies)

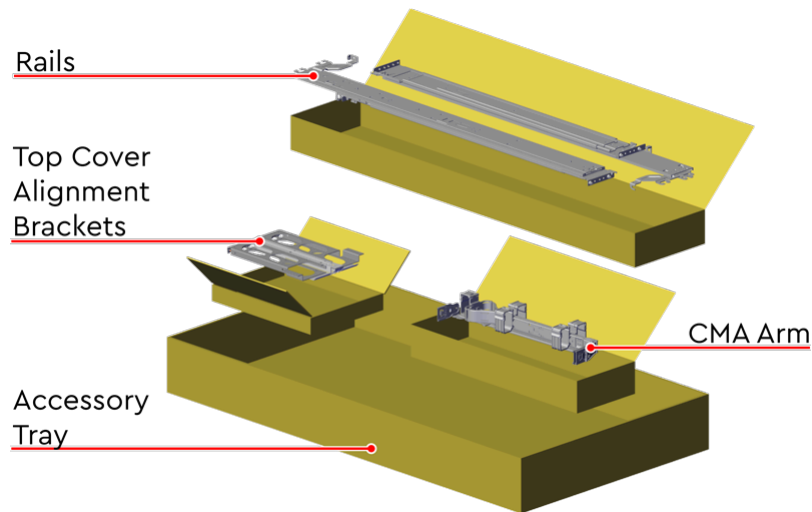
4.2 Ultrastar Serv60+8 Unpacking Procedure

- Step 1:** Make sure that all of the necessary parts and equipment are available, including any equipment necessary to support the enclosure during installation. To verify the list of necessary parts, see [Ultrastar Serv60+8 Packaging Overview \(page 38\)](#).
- Step 2:** Using a box cutter, cut the straps that secure the packaging to the pallet.
- Step 3:** Remove and discard the top cap and the outer sleeve.

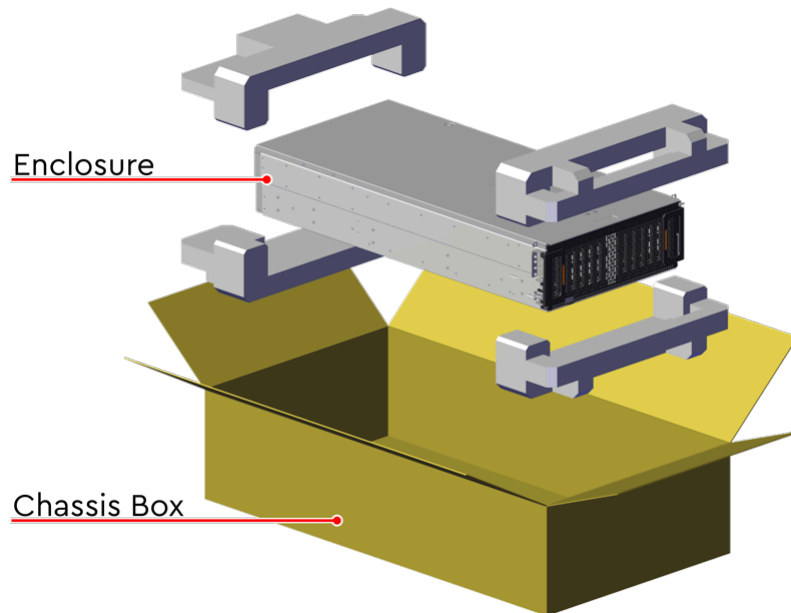
Figure 11: Top Cap and Sleeve Removal



- Step 4:** From the accessory tray, open the boxes for the rails, CMA arm, and top cover alignment brackets. Remove these parts and set them aside.

Figure 12: Unpack Accessory Tray Contents

Step 5: Open the chassis box and remove the top cushions from the front and rear of the chassis.

Figure 13: Unpack Chassis Box Contents

Step 6: With assistance, and without using the system handles, remove the chassis from the chassis box and set it aside.



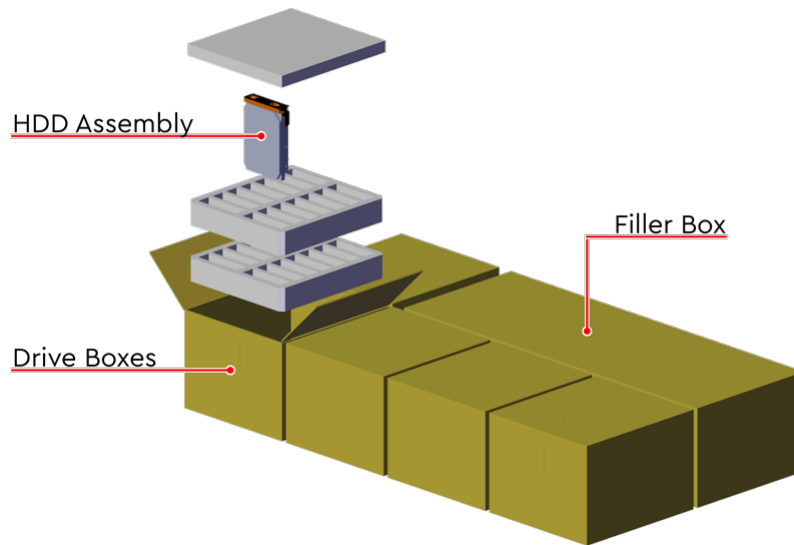
Warning: The chassis weight without drives is 40.82 kg / 90 lbs. To avoid injury, the chassis should be team lifted.



Caution: Do not lift the chassis by the system handles. The handles are designed only for sliding the enclosure out of the rack on its rails.

Step 7: Open the drive boxes and verify their contents. Depending on the version of the Ultrastar Serv60+8 being unpacked, four boxes should contain fourteen drive assemblies (in the form of HDDs, SSDs, or blanks), one box should contain four drive assemblies, and one box should contain eight SSD assemblies. Once the contents are verified, leave them in the boxes. This will protect them from damage until they are installed in the enclosure.

Figure 14: Verify Drives and Drive Blanks





Installation

In This Chapter:

- Installation Overview..... 45
- Rails Installation..... 46
- Chassis Installation..... 57
- CMA Installation..... 60
- Cable Installation..... 62
- Top Cover Installation and Extension
Test..... 66
- Drive Installation..... 68
- Shipping Screws Installation..... 73
- Enclosure Power On..... 74

5.1 Installation Overview

Procedure Info

Required Tools	Required Parts	# of People Required	Time Required
<ul style="list-style-type: none"> Long T15 Torx Screwdriver # 2 Philips Screwdriver Long T10 Torx Screwdriver Tape Measure Level 	<ul style="list-style-type: none"> Option 1: M5 x 12mm T15 Flat Head Torx screws and included washers Option 2: Screw plate M5 x 12mm Phillips Pan Head screws (to secure top cover) Low-Profile M4 x 3.2mm Philips screws (included with rail assembly) 10 M5 cage nuts Zip Tie (from CMA box) 	3 Total (2 for Team Lifting Purposes and 1 to Guide and Spot)	45 min.

Torque Specifications for Screws

Screw Type	Torque Value
M5 x 12mm T15 Flat Head Torx screws or screw plate	3.38-3.61 Nm / 30-32 in-lbf
M5 x 12mm Phillips Pan Head screws	3.38-3.61 Nm / 30-32 in-lbf
Low-Profile M4 x 3.2mm Philips screws	.90-1.12 Nm / 8-10 in-lbf
Captive M5 Torx chassis cover thumb screws	3.38-3.61 Nm / 30-32 in-lbf

Cable Management

There are two different options for cable management in Ultrastar Serv60+8 : CMA Standard and CMA Lite. Each of these options has a different installation, configuration, and purpose. The standard CMA configuration manages and protects the full cable load during normal operation of the Ultrastar Serv60+8 . If a fully-configured Ultrastar Serv60+8 is not necessary, CMA Lite provides a better management and protection solution for a lighter cable load, with a more compact hardware footprint. Utilizing front spacer brackets that shift the enclosure forward, and narrower basket clips for tighter cable management, CMA Lite allows the enclosure to fit within shallower racks and/or those with front and rear doors. The following information provides a list of the features of each cable management option:

CMA Standard:

- Enables use of all I/O connections
- Manages and protects full set of cables during installation, operation, and servicing
- Easy cable routing with the open-top cable baskets

- Toolless installation

CMA Lite:

- Smaller rack footprint for shallower racks and/or racks with doors
- Manages and protects a lighter cable load (with only one CMA arm) during installation, operation, and servicing
- Easy cable routing with the open-top cable baskets
- Toolless installation

CMA and CMA Lite in the Installation Procedure

The installation procedure for the Ultrastar Serv60+8 includes instructions for both CMA Standard and CMA Lite. These instructions are labeled, in-line, to notify the user when a step or part of a step is used for one option or the other. These options occur during the steps for **rail installation**, **CMA installation**, **cabling**, and **securing the enclosure to the rack**.



Attention: The CMA Lite replacement package includes a CMA arm and spacer brackets. Replacing the CMA arm can be done with the enclosure in place in the rack. To replace the spacer brackets, the enclosure must be removed from the rack.

5.2 Rails Installation

This procedure provides instructions for installing the rails for an Ultrastar Serv60+8 .



Note: For CMA Lite only: Ensure that the rack has about 2.5in. of extra space in front of the vertical rack rails. The intent of CMA Lite is to reposition the enclosure closer to the front of the rack to create a more centered enclosure.

Table 34: Installation Requirements

Tool(s): # 2 Philips Screwdriver with torque measurement capability

Long T15 Torx Screwdriver

Part(s): Rails Kit 1EX0435 (CMA Standard), or 1EX1601 (CMA Lite)

Low-Profile M4 x 3.2mm Philips screws

M5 x 12mm T15 Flat Head Torx screws

Screw plate (optional)

M5 cage nuts (CMA Standard)

Person(s): 1

Time: 30 minutes

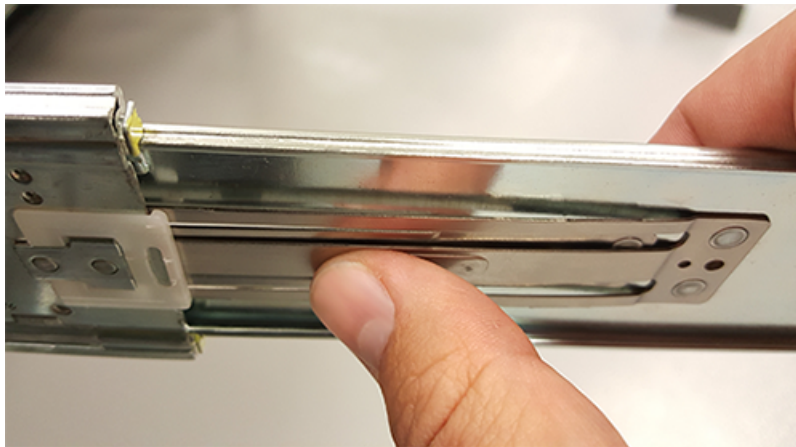
Step 1: Remove the inner rail that is nested inside the rack rails.



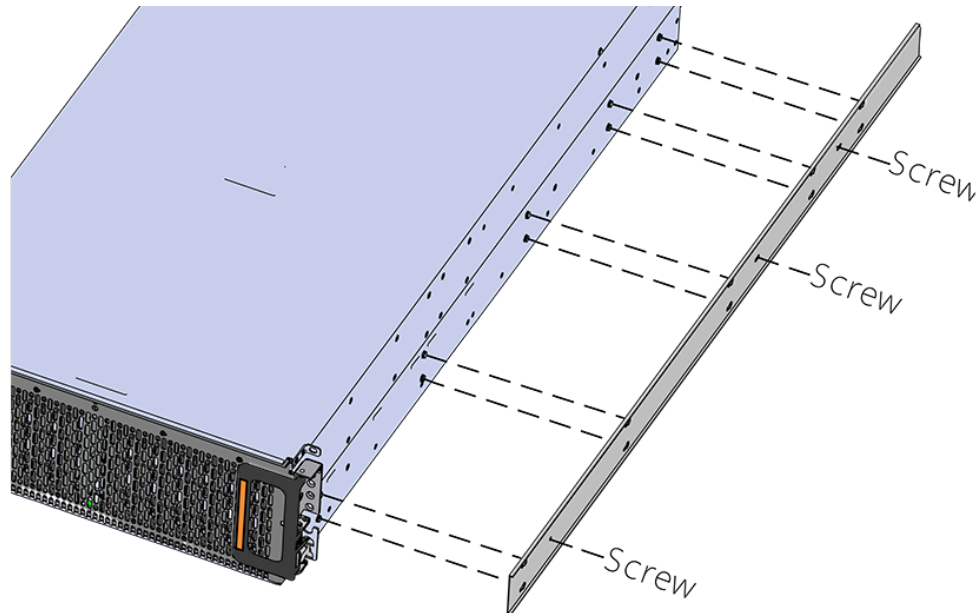
Note: There are Right and Left rails and they must be installed as a set. Each inner rail will read "R" for the right or "L" for the left embossed on the inside. Each outer rail will read "R-Front" for the right or "L-Front" for the left. Right and Left refer to when you are facing the front of the rack.

- a. Start by sliding the inner rail out of the outer/rack rail until the safety latch engages and the inner rail will not extend further. It will only slide one way.
- b. Press on the safety latch release spring located on the side of the rail and slide the inner rail out the rest of the way.

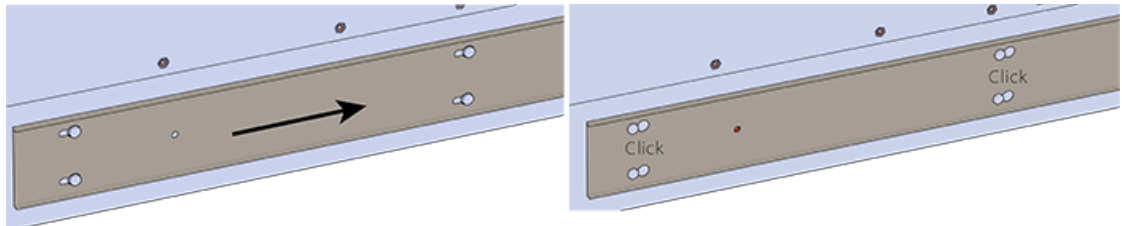
Figure 15: Rail Safety Latch




- Step 2:** Install the inner rail onto the chassis making sure they are installed on the correct side. Each inner rail will read "R" for the right or "L" for the left embossed on the side that faces away from the chassis. Right and Left are with reference to looking at the front of the enclosure.
- a. Orient the inner rails so that the flat side is facing the enclosure and the side with the grooves is facing away from the enclosure.
 - b. Align the keyholes on the inner rail to the mounting pegs on the side of the enclosure and press the inner rail flush against the chassis. If the keyholes don't line up with the pegs, flip the rail length-wise to see if this will align them.

Figure 16: Inner Rail Attachment

- c. Slide the inner rail toward the rear of the chassis to lock it in place. There will be an audible click and the mounting pegs will cover the front part of the keyhole.

Figure 17: Slide Inner Rail

- d.  **Caution:** When installing the inner rail onto the chassis, make sure to only use the special Low-Profile M4 x 3.2mm Philips screws provided in the accessory kit with the CMA. These screws should be tightened to .90-1.12 Nm / 8-10 in-lbf using a # 2 Philips Screwdriver. These screws are specially designed for this purpose. Using unapproved screws could cause damage to the slides inside the rail.

Install the three special low-profile M4 x 3.2mm Philips screws provided to secure the inner rail to the chassis.

- e. Follow these steps for the second inner rail on the opposite side of the enclosure.

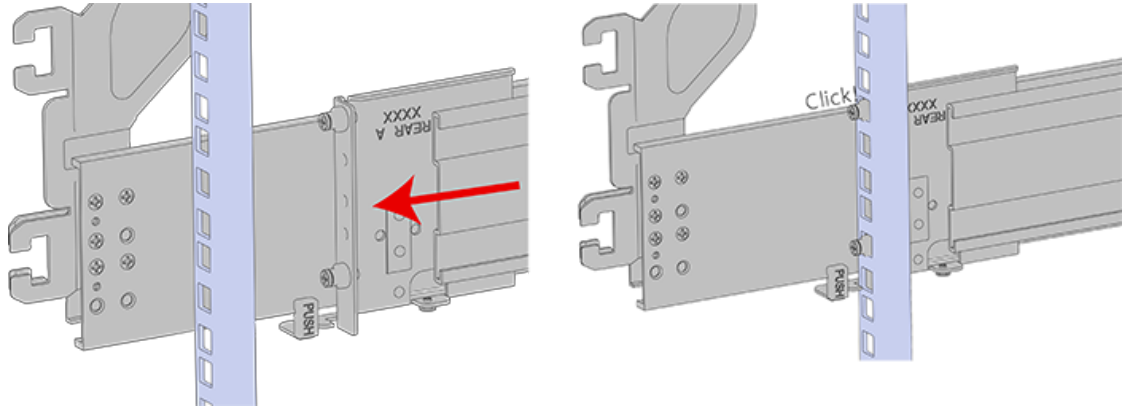
Step 3: Set the vertical rack rail depth to between 32" and 36".



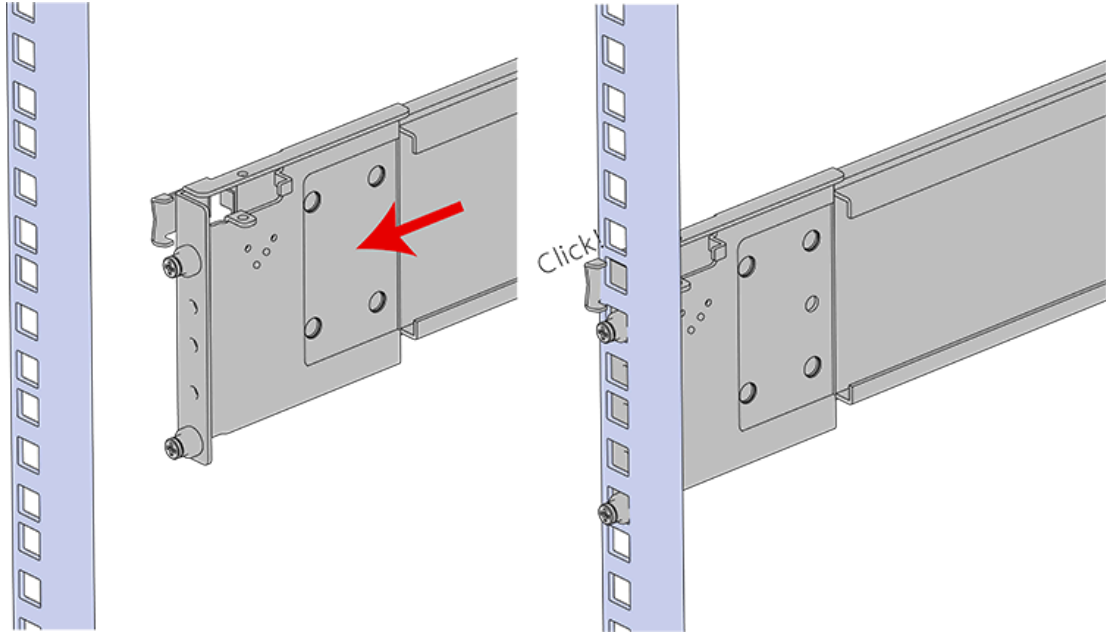
Note: Ensure that all of the vertical rails are set to the same depth using a tape measure.

- Step 4:** Install the outer rails into the rack. Pay special attention to which side is being installed. The embossed R is for the right side and L is for the left side. Right and Left refer to when you are facing the front of the rack.
- Move to the rear of the rack.
 - Orient the rail so that the word "REAR" that is embossed into the metal of the rail is at the rear end of the rack, and the release latch is facing the inside of the rack posts as shown in the following image.

Figure 18: Rear Rail Latch Release Latch



- Align the rail on the rack posts at the U-height desired for installation. The bottom of the rail will be the lower most U of the total 4U height.
- Pull the rail toward the rack post until the toolless latching mechanism engages the rack. The latching mechanism may need to be pulled open to get around the rack post.
- Move to the front of the rack.
- Align the front of the rail with the holes on the rack posts that will receive the rails and pull the rail toward the holes until the toolless latching mechanism engages the rack.

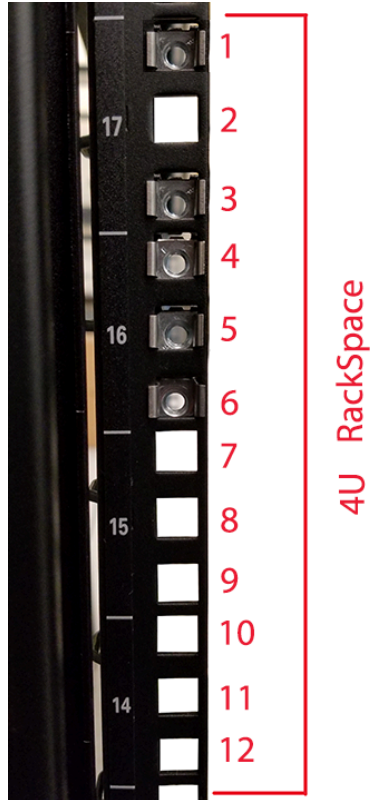
Figure 19: Front Rail Release Clip Operation

- g. Use a level to make sure that the rails are aligned properly.
- h. Follow these steps for the other outer rail.

Step 5: Install the rail mounting hardware, starting with the uppermost rack mounting hole of the 4U space on the front of the rack.

CMA Standard:

- a. Install one cagenut at the uppermost mounting hole of the 4U space that the enclosure will occupy.
- b. If the Ultrastar Serv60+8 will be installed in a rack for shipping purposes, install four more M5 cage nuts in the holes 3-6 of the 4U space. These will receive the M5 x 12mm T15 Flat Head Torx screws that secure the enclosure to the rack with the shipping bracket.

Figure 20: Cage Nut Spacing**CMA Lite:**

- a. Line the spacer bracket up with the bottom of rack unit location of the installed outer rails. The bottom of the spacer bracket will rest on top of the bottom outer rail pin.

Figure 21: Spacer Bracket Orientation

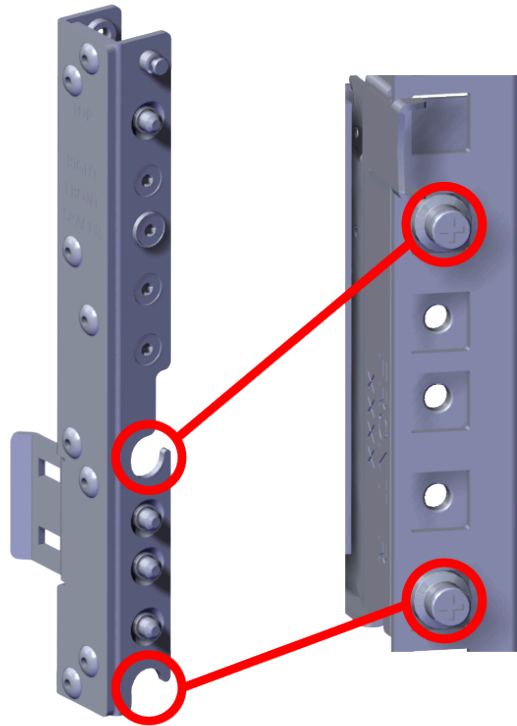
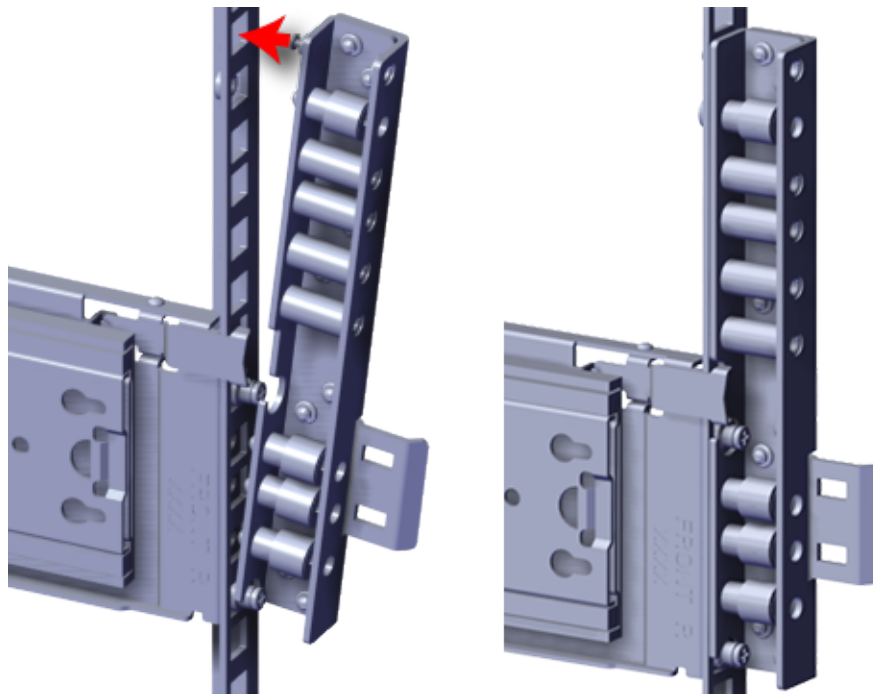
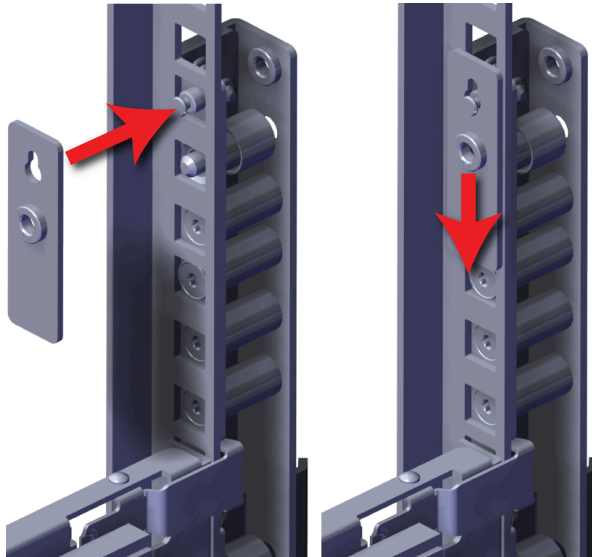


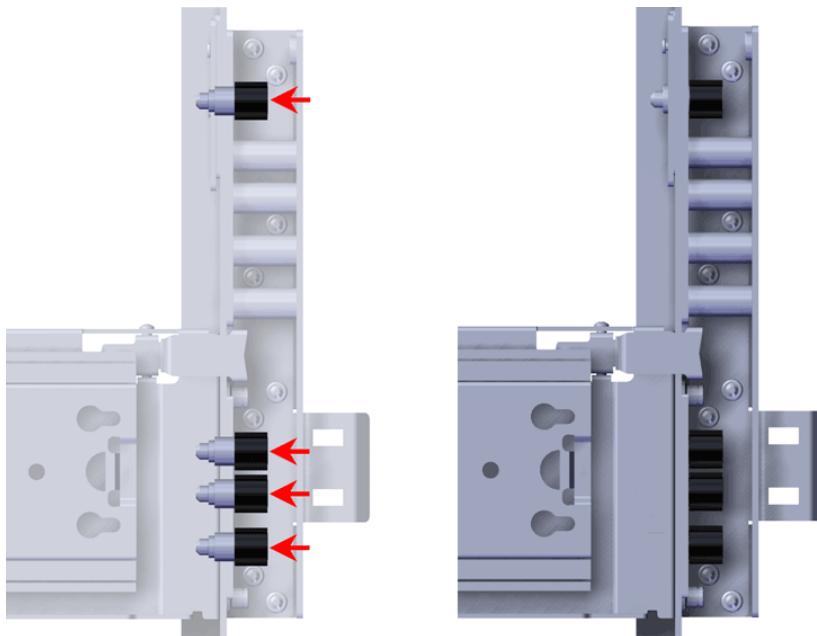
Figure 22: Spacer Bracket Placement



- b. Slide the nut plate down over the mounting pin on the back of the spacer bracket.

Figure 23: Rack Spacer Nut Plate Installation

- c. Using a T15 Torx screwdriver, tighten the top captive screw to secure the mounting plate in place. Tighten the remaining captive screws at the bottom of the spacer bracket, and torque all four of the captive screws to 3.38-3.61 Nm / 30-32 in-lbf.

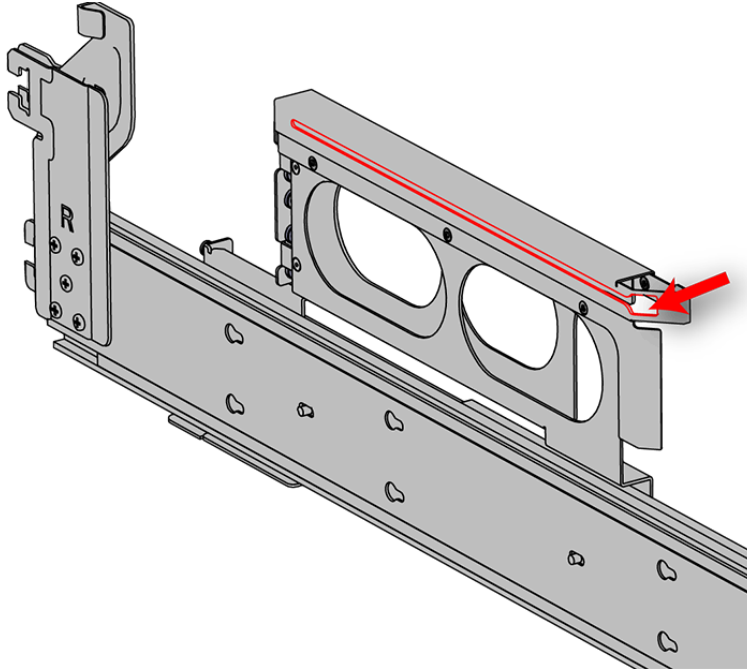
Figure 24: Captive Screws

- d. Repeat these steps to install the remaining rack spacer.

Step 6: Install the rear cover alignment brackets and secure the rear rails.

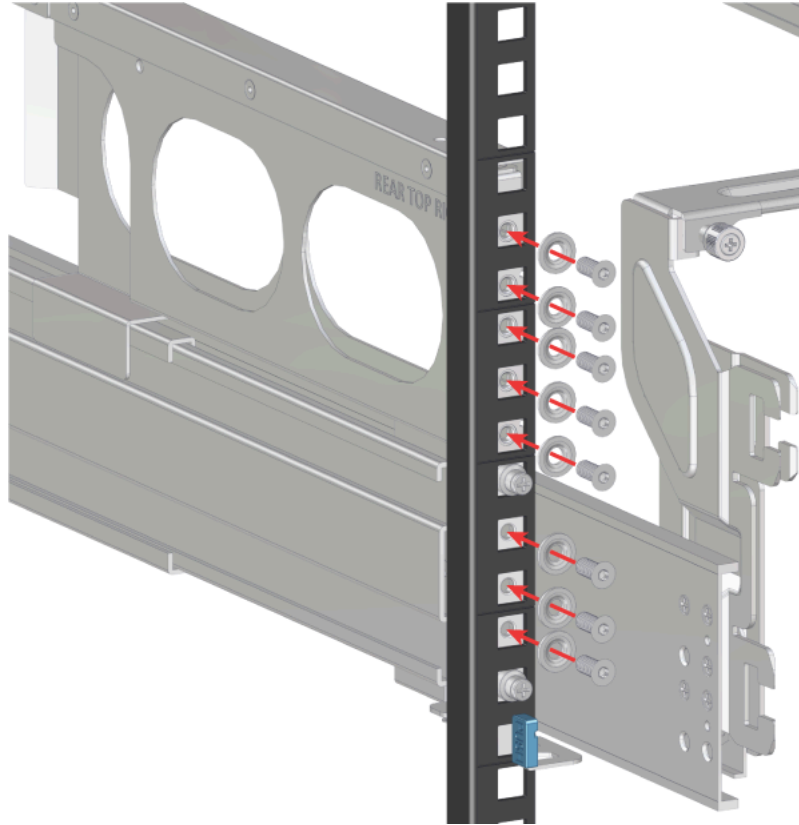
- a. From the rear of the rack, orient the alignment brackets so that the groove that will catch the cover is facing the inside of the rack.

Figure 25: Alignment Bracket Groove (highlighted in red)



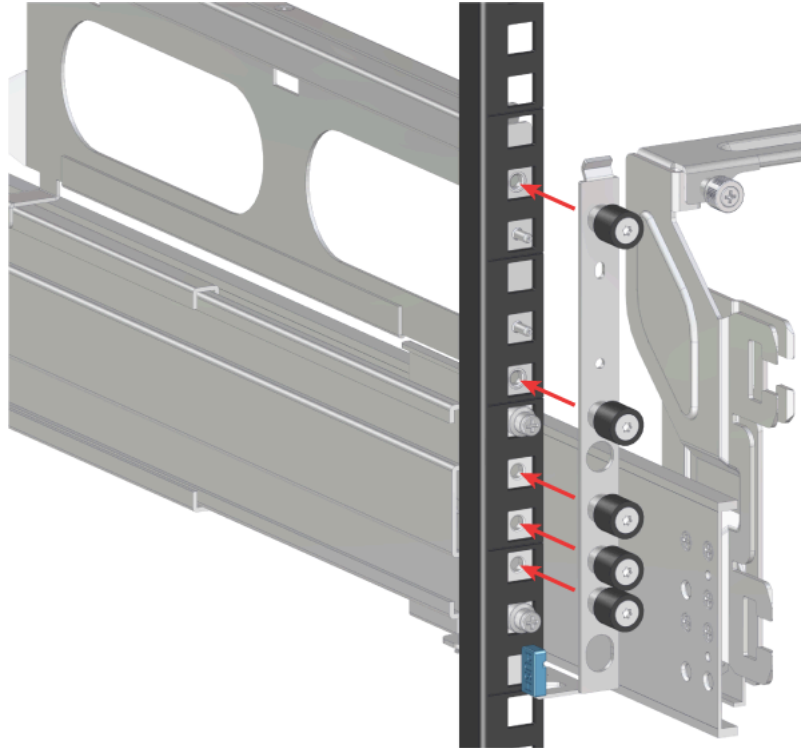
- b. Attach the rear cover alignment bracket and rear rail to the vertical rack rail. The following examples show two methods for securing the bracket and rail to the rack: individual screws (with washers) or a screw plate.

Option 1: Using a Long T15 Torx Screwdriver, install M5 x 12mm T15 Flat Head Torx screws (with washers) to attach the rear cover alignment bracket. The number of required screws will vary depending on the bracket type. Install additional M5 x 12mm T15 Flat Head Torx screws (with washers) to attach the rear rail to the rack posts. Screw locations are shown in the following image. Tighten the rails screws to 3.38-3.61 Nm / 30-32 in-lbf.

Figure 26: Rear Screws Installation

Caution: Be careful to set the screws properly in the cover alignment bracket and rail to prevent crossthreading.

Option2: Using a Long T15 Torx Screwdriver, install the screw plate to attach the rear cover alignment bracket and the rear rail to the rack posts. The screw locations are shown in the following image. Tighten the rail screws to 3.38-3.61 Nm / 30-32 in-lbf.

Figure 27: Screw Plate Installation

Step 7: CMA Standard: Install the two rack latch brackets at the front of the rack.

- a. Orient the brackets so that the screw holes are between the two pins supporting the outer rails as shown in the following image. There is a left and a right. Use the image below as a guide for how to orient this bracket and mirror it for the other side. Notice the increased distance between the top two screw holes and the lower screwholes and the flange being oriented on the outside.

Figure 28: Rack Latch Bracket Installed

- b. Use 6 of the included M5 x 12mm screws and the T15 Torx screwdriver to install each bracket, 3 screws per bracket.

What to do next: The rails are now installed. Proceed to [Chassis Installation](#) (page 57).

5.3 Chassis Installation

This procedure provides instructions for installing the chassis of an Ultrastar Serv60+8 .

Before you begin: Complete the instructions in [Rails Installation](#) (page 46).

Table 35: Installation Requirements

Tool(s): N/A

Part(s): N/A

Person(s): 2 for team-lifting, plus 1 to guide and spot (total of 3)

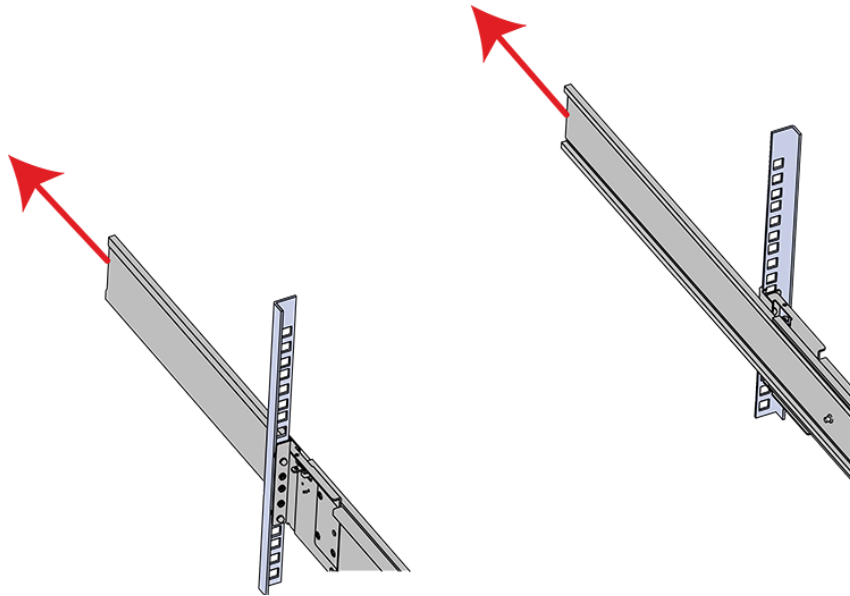
Time: 10 minutes



Caution: Always install the top cover onto the enclosure before installing the chassis into a rack. Not having the top cover installed may damage the alignment brackets.

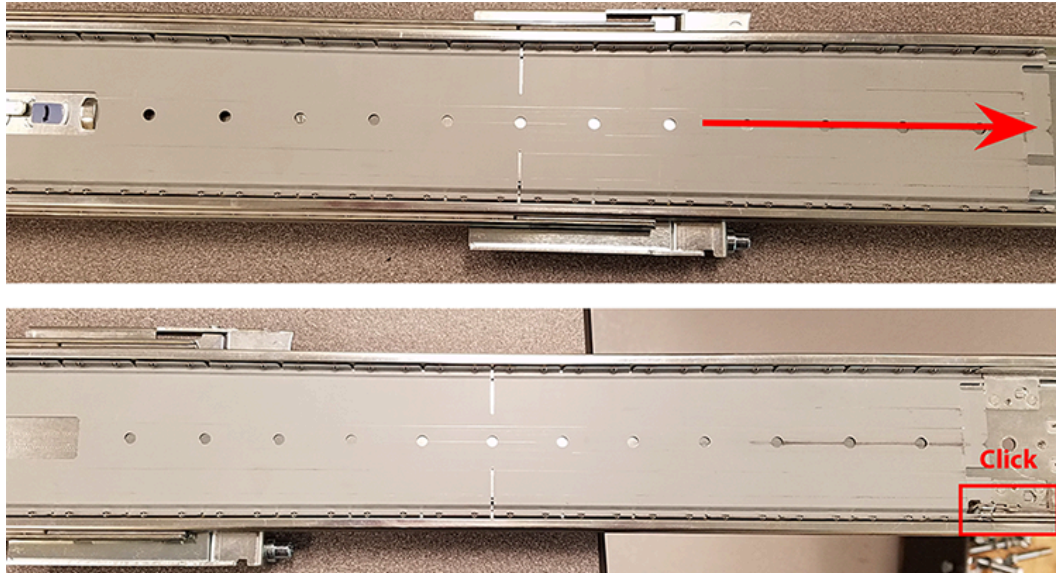
Step 1: Extend the mid-rails out of the rack so that they are protruding from the front of the rack and the safety latches engage.


Figure 29: Extend Mid-Rails



Step 2: Install the chassis into the rails.

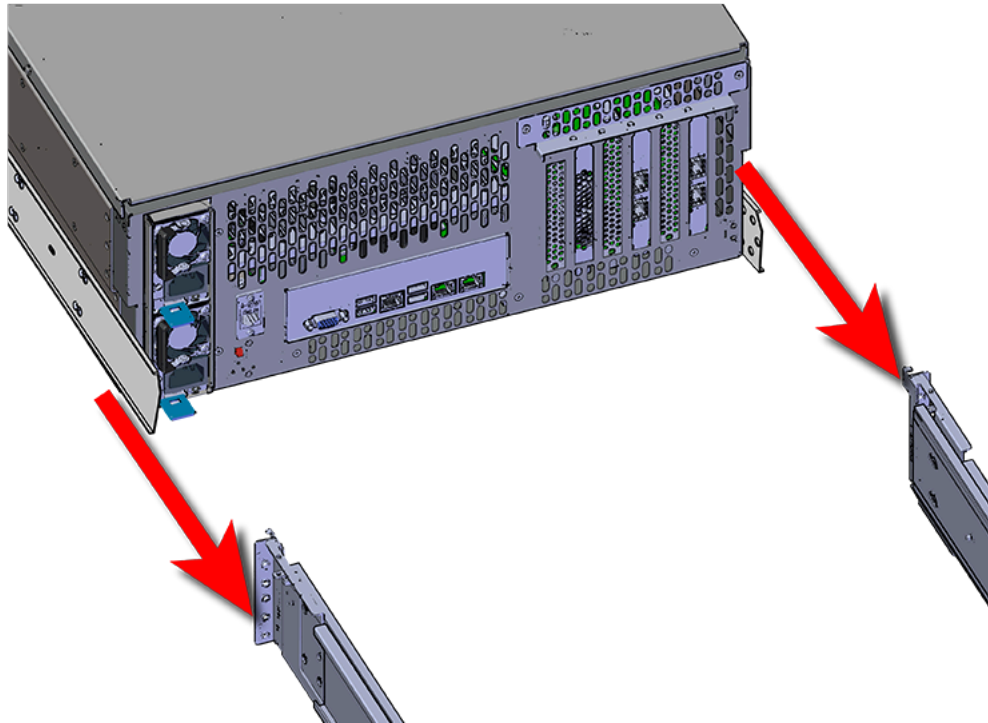
- a. Extend the bearing plates on the inside of the mid-rails until they are fully forward (detent has engaged). This prevents potential damage due to improper mating of the rails.

Figure 30: Bearing Plate

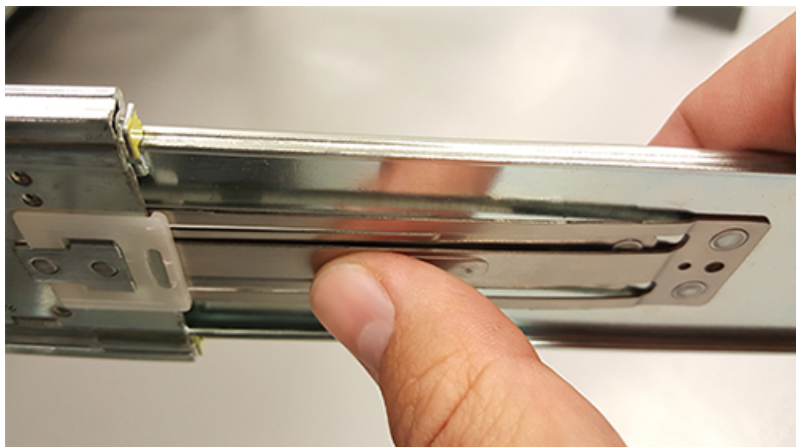
- b.  **Caution:** This step in the installation requires a minimum of 3 individuals to install safely, two to lift and one to guide the others who may have difficulty seeing because the enclosure is in the way. Ensure that the appropriate measures are taken to safely support the enclosure during installation. The enclosure **MUST** have no drives installed and requires a two person team lift to install. **Do not attempt to lift the system if it is fully populated with drives.** The only case in which the system may be installed or removed with the drives populated is if the facility has a lift that is rated to handle the maximum weight of the fully loaded system.

In preparation to perform a team lift, position one individual on each side of the enclosure (to lift) and a third individual standing at the protruding rack rails (to guide the chassis to mate with rack rails).

- c. Team-lift the enclosure until the inner rails (which are attached to the chassis) align with the extended mid-rails (which are attached to the rack), and guide the inner rails on the chassis to mate with the rack rails.

Figure 31: Installing the Chassis

- d. Once the rails are mated properly, slide the enclosure into the rack until it is stopped by the safety catch on the rails. Push the release lever on the safety latch (located on the side of each of the rails), and push the enclosure the rest of the way into the rack.

Figure 32: Safety Latch Release

- e. As the chassis is slid into the rack, position one installer at the rear of the rack to ensure that the pegs on the sides of the cover will slide correctly into the rear cover alignment brackets on both sides of the rack. If the chassis does not install smoothly or snags, check that the rear cover alignment brackets are not interfering with the chassis sidewalls, and try again.

What to do next: The chassis is now installed. Proceed to [CMA Installation \(page 60\)](#).

5.4 CMA Installation

This procedure provides instructions for installing the cable management assembly for an Ultrastar Serv60+8.

Before you begin: Complete the instructions in [Chassis Installation](#) (page 57).

Table 36: Installation Requirements

Tool(s): N/A
Part(s): CMA Standard Arm 1EX1174 (single) CMA Lite Arm 1EX1834 (2U baskets) or 1EX1602 (1U baskets)
Person(s): 1
Time: 10 minutes

Step 1: Install the crossbar onto the CMA mounting bracket.

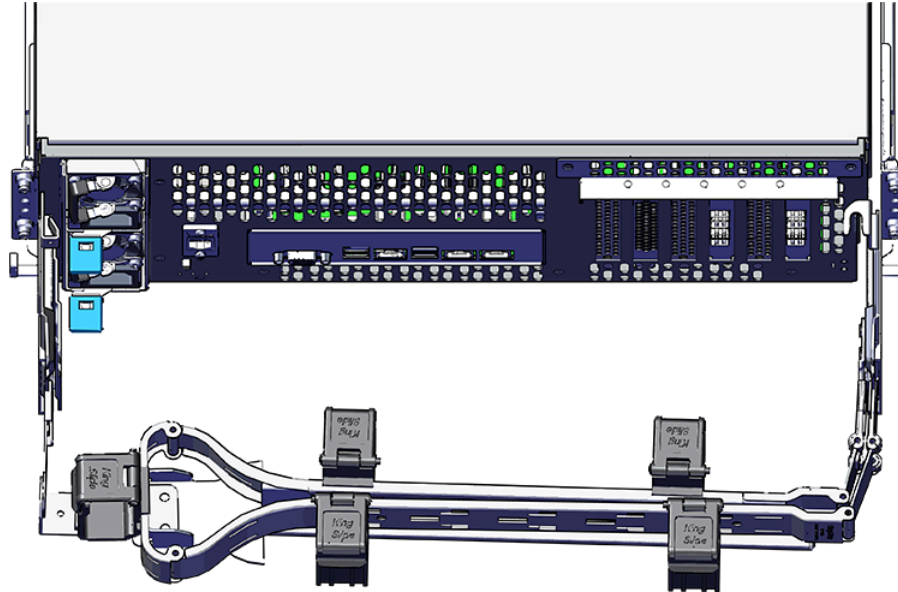
- a. Align the crossbar with the mounting peg facing down and pointing toward the CMA mounting bracket.
- b. Insert the peg on the underside of the crossbar into the slot on the CMA mounting bracket.
- c. Swing the crossbar so that the thumbscrew lines up with the mounting hole on the opposite side of the enclosure.
- d. Press the crossbar against the CMA mounting bracket and secure the crossbar in place by pressing and turning the thumbscrew clockwise until snug.
- a. Check that the crossbar is fully secured to the CMA mounting bracket by pulling on the bar to ensure it does not move.

Step 2: Install the CMA(s).



Note: CMA has one arm, to be installed at the lower position. This arm should have the elbow on the left side.

- a. Orient the CMA so that the elbow is on the left hand side.
- b. Attach all three of the connectors to the brackets on the rails. There should be one at the elbow side and two at the other end.

Figure 33: CMA Orientation

- c. Slowly slide the enclosure forward to ensure the arm is operating properly, then slide it back into the rack.

What to do next: The cable management assembly is now installed. Proceed to [Cable Installation](#) (page 62).

5.5 Cable Installation

This procedure provides instructions for installing the data and power cables for an Ultrastar Serv60+8 .

Before you begin: Complete the instructions in [CMA Installation](#) (page 60).

Table 37: Installation Requirements

Tool(s): N/A

Part(s): Power cable(s) 1EX1530

Data cable(s) - quantity and type will vary by configuration

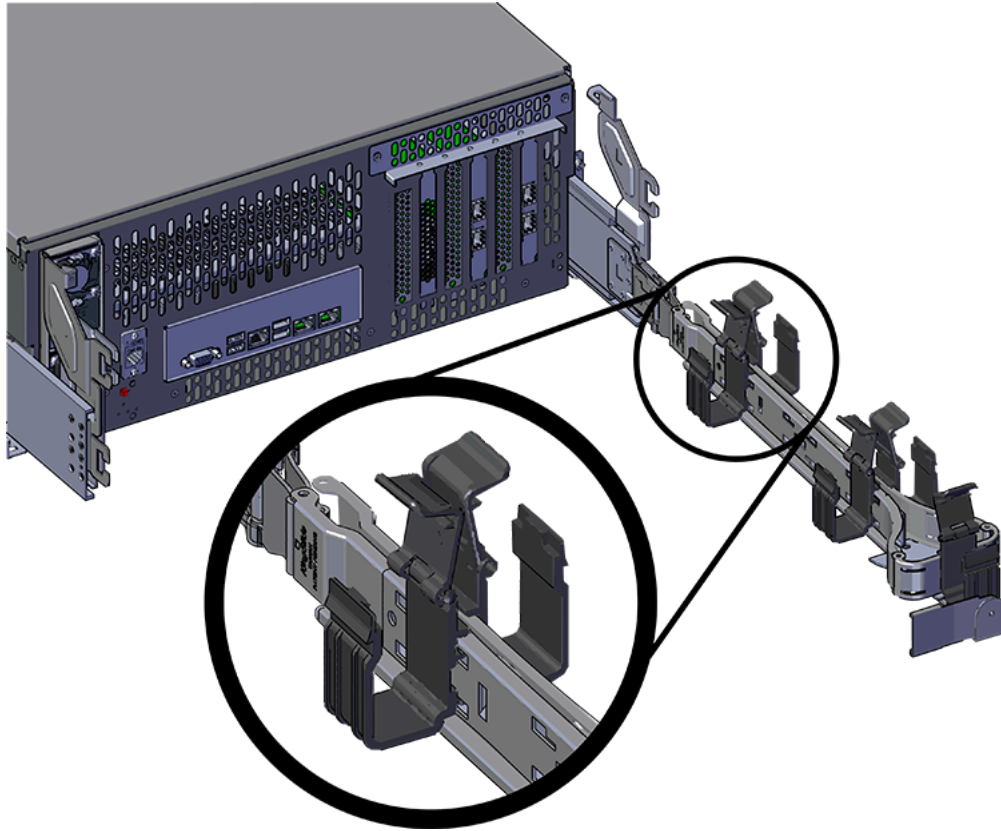
Person(s): 1

Time: 30 minutes

Step 1: Cable the CMA(s).

CMA Standard:

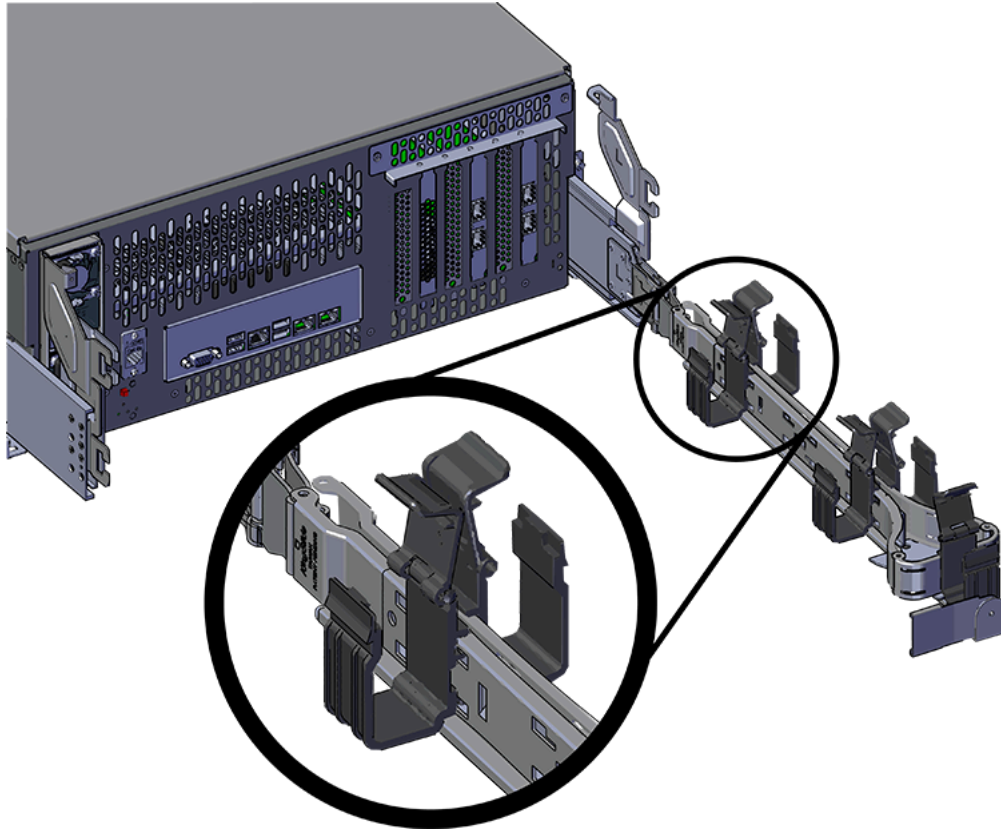
- a. Unlatch the elbow side of the arm(s) by pressing the blue button labeled "push," and then swing the arm(s) open.
- b. Open all of the baskets.

Figure 34: Open Baskets

- c. Route all of the cables being connected to the enclosure through the open baskets.
- d. Close all of the baskets.
- e. If the Ultrastar Serv60+8 is being installed in a rack and will subsequently be transported inside that rack, it is important to use the included cable tie to wrap the CMA bundle to ensure it does not get damaged during transport. If the Ultrastar Serv60+8 is instead being installed where it will be operated, skip this step. Remember to remove the cable ties after the enclosure has reached its final operational location.
- f. Reconnect the arm at the elbow to the connectors on the rail.

CMA Lite:

- a. Press the blue latch button labeled "push" to unlatch the elbow side of the CMA arm, and then swing the arm open.
- b. Open all of the baskets.

Figure 35: Open Baskets

- c. Gather the SAS, power, and Ethernet cables for installation.



Note: Route all cables to IOM A (left hand side looking at the rear).

- d. Route all of the cables being connected to the enclosure through the open baskets.
- e. Close all of the baskets.
- f. If the Ultrastar Serv60+8 is being installed in a rack and will subsequently be transported inside that rack, it is important to use the included cable tie to wrap the CMA bundle to ensure it does not get damaged during transport. If the Ultrastar Serv60+8 is instead being installed where it will operated, skip this step. Remember to remove the cable ties after the enclosure has reached its final operational location.
- g. Reconnect the arm to the rail by the connector at the elbow.

Step 2: Make sure the CMA(s) is in operational position by folding the arm(s) in toward the enclosure and attaching the elbow end(s) to the connector(s) attached to the rail. Verify that all of the cabling is in functional order and does not bind or catch.

Step 3: Test for binding in the extension of the arm by gently pulling the enclosure out of the rack, ensuring the cables extend properly and that the system doesn't bind at all. If it does, examine the point at which the binding occurred and adjust the seating of cables in the baskets, check the connections to the rails, and examine the joints of the arm to ensure that they are all functioning properly.

What to do next: The data and power cables are now installed. Proceed to [Top Cover Installation and Extension Test](#) (page 66).

5.5.1 Cabling for CMA Standard and CMA Lite

5.5.1.1 Before You Begin

The cable configurations detailed in this section are intended to provide the optimal setup for your specific configuration. During the cabling of the CMA, the HD Mini-SAS and SFP+ cables should be installed into the CMA first, followed by Ethernet cables, and finally the power cables on top.

How to Use the Service Loop Dimension Figure and Table

This section uses the concept of service loops to inform the user on how to prepare HD mini-SAS cables for installation into either the CMA Standard or CMA Lite. The power and Ethernet cables do not need to be added to the Service Loop bundle. This concept utilizes measurements that begin at the connector end of the cable and along the cable itself. The Service Loop Dimensions figure and the Service Loop Dimensions table are paired together to communicate the length in which connectors, velcro, and the CMA cage must be set at to avoid binding or snagging.



Note: The measurement provided in this section are only suggested values based on product testing. Your specific situation may vary. Adjust the measurement as necessary to avoid cable binding or sagging below the rear of the enclosure.

1. Identify the configuration that is needed for the particular setup and locate the Service Loop Dimension table related to that configuration.
2. Take the first measurement (letter A) and measure that length from the connector on the cable to the edge of where the first velcro strip will go. Apply the velcro strip.
3. Repeat this action for the B and C values until the table has been completed.

Here is an example of the Service Loop Dimension Figure and Table:

Figure 36: Service Loop Dimension Figure

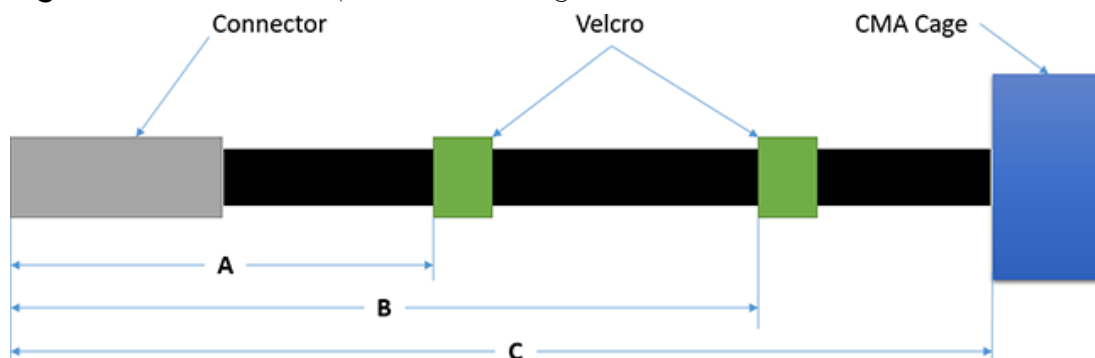


Table 38: Example Service Loop Dimension Table

A	B	C
6in.	N/A	12in.

In this case, the first measurement from the tip of the cable to the first velco strip is 6in. Followed by a 12in. measurement to the CMA cage. There is no need for a B value due how short this configuration is.

5.5.1.2 Cable Configuration for CMA Lite

5.5.1.2.1 Maximum HD Mini-SAS Configuration

This configuration includes the use of up to **two** HD Mini-SAS cables, **two** Ethernet cables, and **two** power cables installed into a CMA Lite arm.

Figure 37: Service Loop Diagram

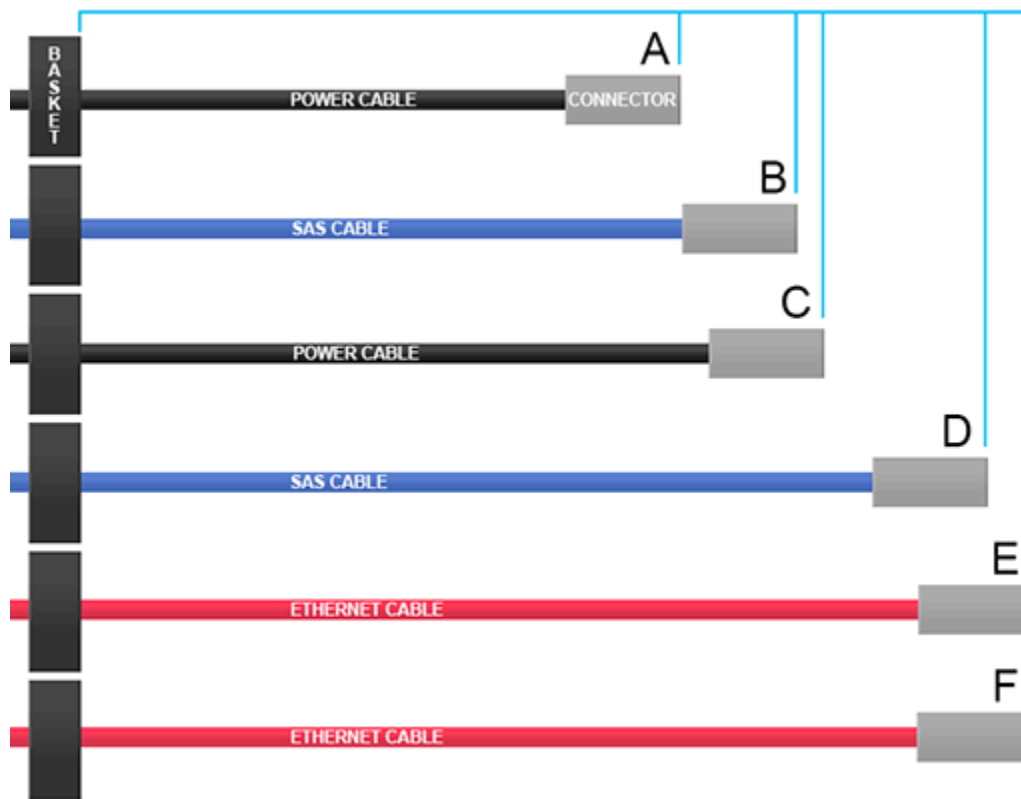


Table 39: Service Loop Lengths

Cable Identifier	Length to First Basket Clip
A	16 in / 406 mm
B	18 in / 457 mm
C	19 in / 483 mm
D	22 in / 559 mm
E	23 in / 584 mm
F	23 in / 584 mm

5.6 Top Cover Installation and Extension Test

This procedure provides instructions for installing the top cover and performing an enclosure extension test for an Ultrastar Serv60+8 .

Before you begin: Complete the instructions in [Cable Installation](#) (page 62).

Table 40: Installation Requirements

Tool(s): Long T15 Torx Screwdriver

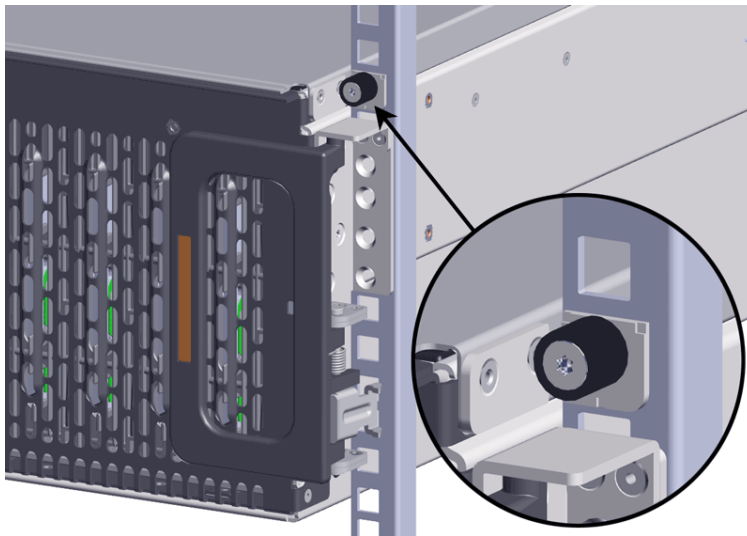
Part(s): N/A

Person(s): 1

Time: 5 minutes

Step 1: Secure the chassis top cover to the rack using the captive M5 thumb-screws as shown in the following image. Use a T15 Torx screwdriver, and tighten the screws to 3.38-3.61 Nm / 30-32 in-lbf.

Figure 38: Cover Retention Screws

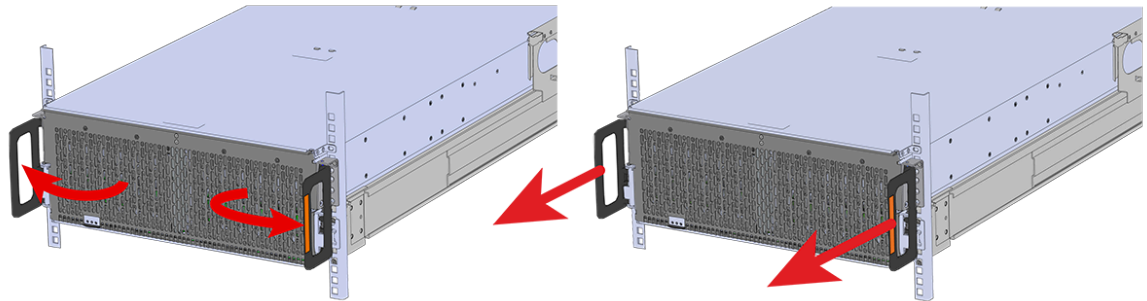


Step 2: Now that the chassis is installed, test the installation by sliding the enclosure in and out of the rack a minimum of three times. If the enclosure binds, catches, or displays any incorrect motion or behavior repeat the installation.



Note: Adjustments of the vertical rack rails may be required to fix any issues that may occur.

Step 3: Grasp both handles at the front of the enclosure and pull with even pressure to extend the chassis out of the rack until it is stopped by the safety latches. The safety latches will prevent the enclosure from coming out of the rack completely and the cover will remain in the rack attached to the rear alignment brackets.

Figure 39: Chassis Handle Operation

Step 4: Perform this same action two more times without the drives loaded to make sure the rail kits are installed properly.

What to do next: The top cover is now installed, and extension of the enclosure for servicing has been tested. Proceed to [Drive Installation \(page 68\)](#).

5.7 Drive Installation

This procedure provides instructions for installing drives in an Ultrastar Serv60+8 .

Before you begin: Complete the instructions in [Top Cover Installation and Extension Test \(page 66\)](#).

Table 41: Installation Requirements

Tool(s): Long T15 Torx Screwdriver

Part(s): 3.5in HDD Assembly and/or 2.5in SSD Assembly

Person(s): 1

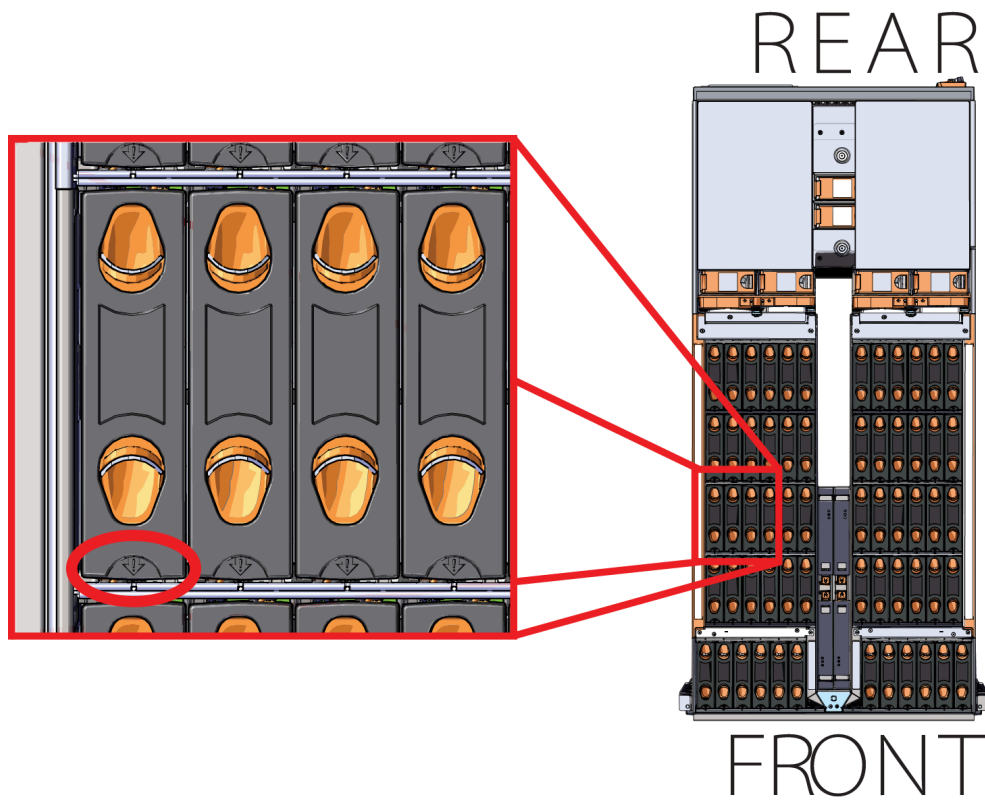
Time: 30 minutes

Step 1: Install the 3.5in HDD Assembly.

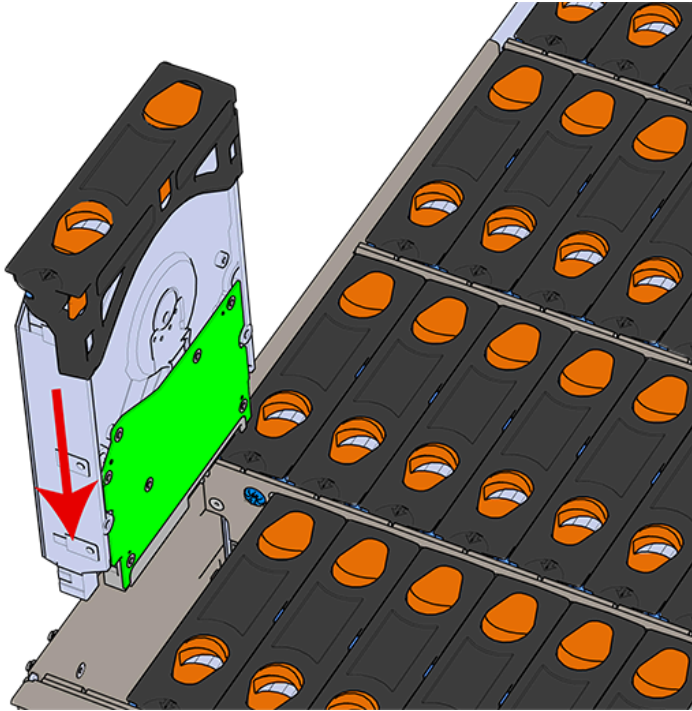


Note: The 2.5in SSD Assembly is installed in the same manner as the 3.5in HDD Assembly. For instructions on assembling the 2.5in SSD Assembly, see [Operating the 2.5" Drive Carrier \(page 71\)](#).

- a. Ensure that the enclosure has been pulled out of the rack until the rail latches engage.
- b. Find the LED pointer on the top of the drive carrier. This pointer should point toward the front of the unit as shown in the following image.

Figure 40: LED Pointer Orientation

- c. Align the drive with the empty slot that will receive it. Lower it into the slot, making sure it stays level and does not snag.

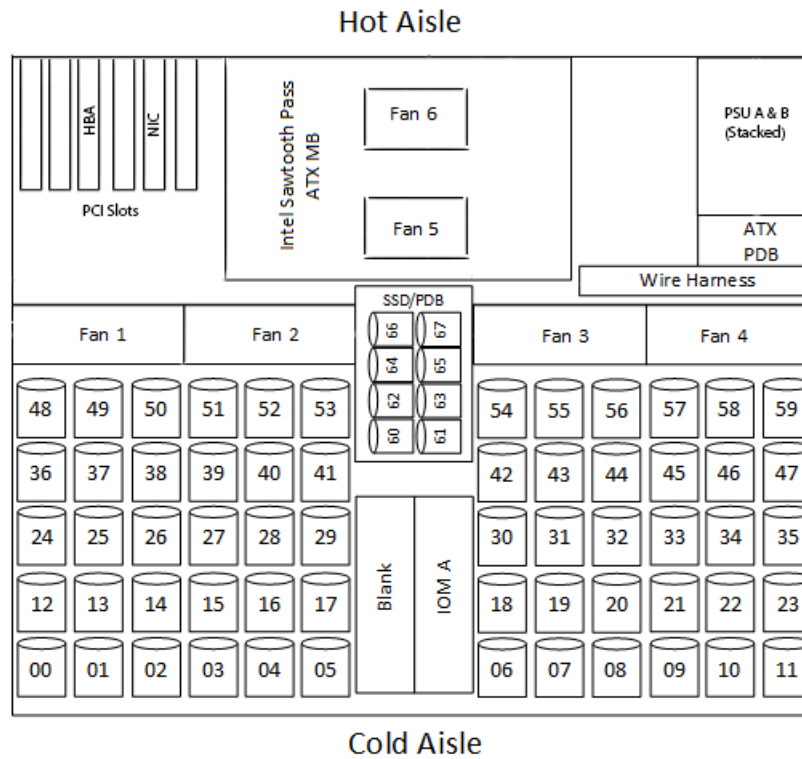
Figure 41: Installing a 3.5in HDD Assembly

- d. Pinch the latch release and carefully press downward to seat the 3.5in HDD Assembly the rest of the way.

Step 2: Repeat the preceding steps to install each subsequent drive assembly using the same method as the first, populating the enclosure from left-to-right, rear-to-front.

For example, begin with slot 48 (as shown in the following diagram), continue through 59, then proceed with 36 through 47, and so on:

Figure 42: Drive Layout



Caution: To ensure proper airflow for enclosure cooling, all drive slots must be populated with either drives or drive blanks.

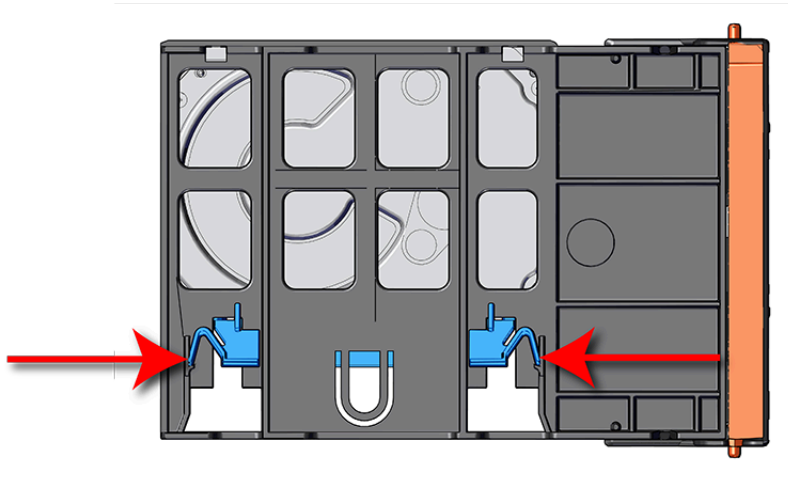
Step 3: Now that the drives are installed into the chassis, test the installation by sliding the enclosure in and out of the rack a minimum of three times. If the enclosure binds, catches, or displays any incorrect motion or behavior retry the installation of the drives and chassis.

What to do next: The drives are now installed. Proceed to [Shipping Screws Installation \(page 73\)](#).

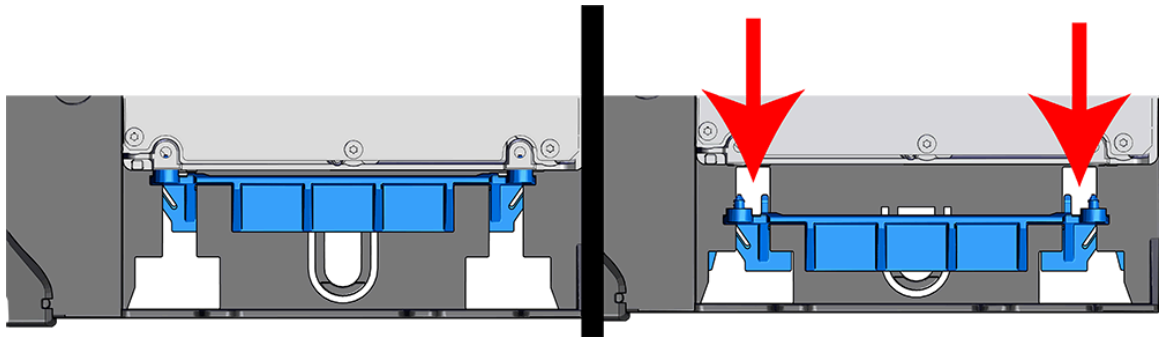
5.7.1 Operating the 2.5" Drive Carrier

Follow these steps to operate the clamping mechanism and install a 2.5" drive in the carrier.

Step 1: Locate the release clips on the rear and press them inward to release the clamp.

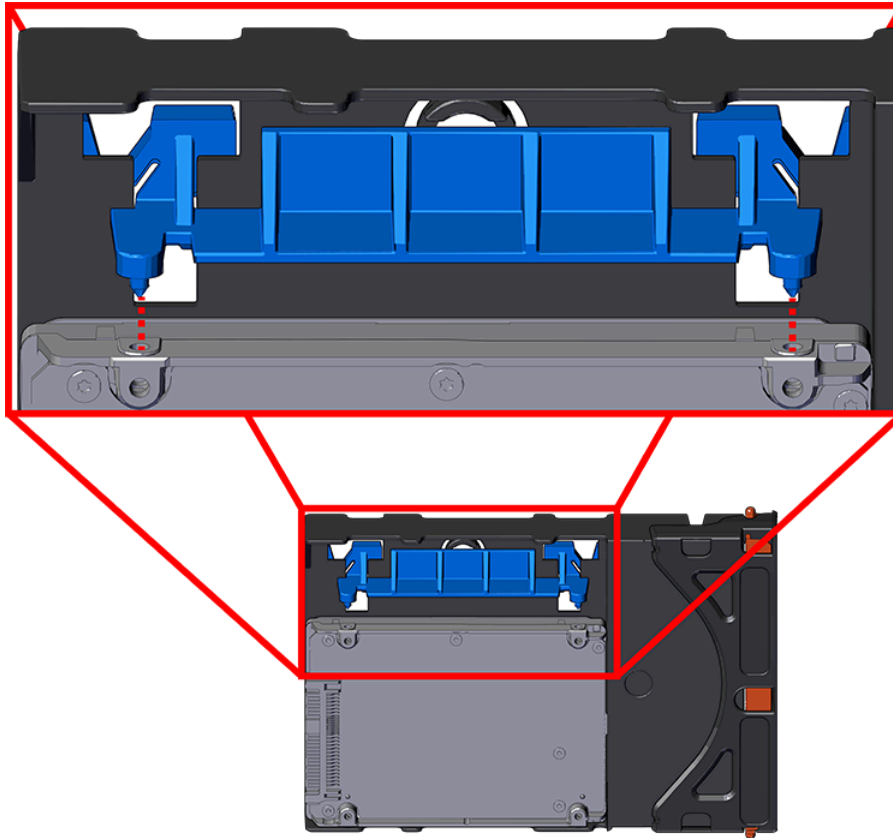
Figure 43: Clamp Release (clamp shown in blue for visual clarity)

Step 2: Slide the clamp in the direction shown in the following image to loosen it from the drive. Be sure not to slide too far as this will allow the clamp to fall from the carrier body and it will have to be reinstalled.

Figure 44: Clamp Slide (clamp shown in blue for visual clarity)

Step 3: Insert the 2.5" drive into the drive slot so that it is snug into the corner.

Step 4: Slide the clamp back toward the drive making sure that the two plastic pins on the side of the drive properly install into the drive screwholes. If these pins are not seated properly, unlatch the clamp and retry.

Figure 45: Clamp Pins (clamp shown in blue for visual clarity)

5.8 Shipping Screws Installation

This procedure provides instructions for securing an Ultrastar Serv60+8 to the rack for shipping.

Before you begin: Complete the instructions in [Drive Installation](#) (page 68).

Table 42: Installation Requirements

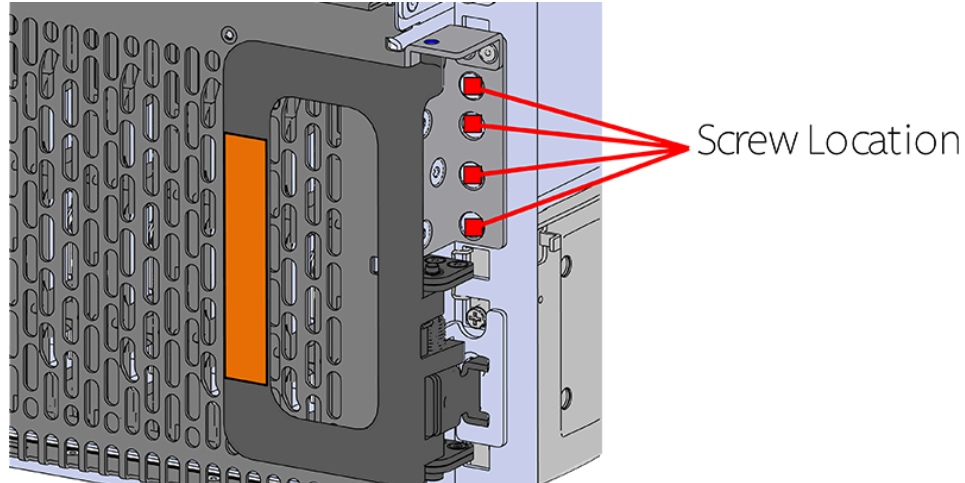
Tool(s): Long T15 Torx Screwdriver

Part(s): M5 x 12mm T15 Flat Head Torx screws

Person(s): 1

Time: 5 minutes

Step 1: If the chassis is being installed into a rack that will be shipped fully assembled, you **must** install eight (four per side) of the included M5 x 12mm T15 Flat Head Torx screws into the two brackets at the front of the chassis in the following locations. These screws should be tightened to 3.38-3.61 Nm / 30-32 in-lbf using a Long T15 Torx Screwdriver. If this chassis will not be installed into a rack for shipping purposes, skip this step and move on to the next one.

Figure 46: Shipping Bracket Screw Locations**Figure 47:** Shipping Bracket Screw Locations (CMA Lite)

What to do next: The shipping screws are now installed. Proceed to [Enclosure Power On \(page 74\)](#).

5.9 Enclosure Power On

This procedure provides instructions for powering on an Ultrastar Serv60+8 .

Before you begin: Complete the instructions in [Shipping Screws Installation \(page 73\)](#).

Table 43: Installation Requirements

Tool(s): N/A

Part(s): N/A**Person(s):** 1**Time:** 5 minutes**Step 1:** Plug the enclosure power cords into a PDU.**Caution:** The Ultrastar Serv60+8 can only be plugged into high line (200 - 240 VAC) power. If the unit is plugged into low line (110-127 VAC), the PSU will report a "Critical" state when status pages are queried using SES. In this case, the enclosure will power up, but the drives will not.**Step 2:** Press the power button at the back of the enclosure to power it up.**Step 3:** Double check the power indicators and other LEDs to ensure that the system is booting.

See the following table for details on LED status during power-up:

Table 44: LED Status During Power-Up

LED	At Power-Up	After Primary Expander Booted (1-3 min.)
Identify	On	Off
Fault	On	Off
Power	On	On

**Note:** If the connected SAS cables do not display activity (green LED), the enclosure Fault LED may remain on after the primary expander is booted.**What to do next:** The enclosure is now installed and ready for operation. For instructions on how to operate the enclosure, please refer to the Ultrastar Serv60+8 User Guide.