



Western Digital®

EcoDesign Disclosures

Ultrastar® Data102

Regulatory Model H4102-J
Document D018-000238-000
Revision 02
September 2022

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Revision History

Date	Revision	Comment
February 2020	1.0	Initial release
March 2020	1.1	Updated the Notices section
September 2021	01	Changed document number from 1ET2152 to D018-000238-000
September 2022	02	Updated document branding

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EU EcoDesign Disclosures

This document provides information and instructions related to the 's disclosures for the EU's ecodesign requirements.

In This Chapter:

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1.1 EcoDesign Overview

This document provides information about the Ultrastar Data102 related to its manufacturing and operation, and instructions for secure data deletion and disassembly.

1.2 Ultrastar Data102 EcoDesign Specifications

Product Type	Online Data Storage Product
Manufacturer's Name	Western Digital
Manufacturer's Registered Trade Name	Western Digital®
Manufacturer's Registered Trade Address	5601 Great Oaks Parkway San Jose, CA 95119 USA
Product Model Number	H4102-J
Starting Year of Manufacture	2018 ¹
PSU efficiency at 20%, 50%, 100% of rated output power	20% load = 90% 50% load = 94% 100% load = 91%
Power Factor at 50% Rated Load Level	Minimum Power Factor = 0.95
Declared Operating Condition Class	A2
Neodymium Content in HDDs	5g to 25g (for drive models HC310, HC320, HC510, HC520, and HC530)
Cobalt Content in Batteries	N/A

1.3 Instant Secure Erase / Secure Erase

This section provides conceptual information and instructions for using the Instant Secure Erase (ISE) or Secure Erase (SE) features included with Western Digital drives.

Data Erasure Options

Western Digital provides several options for securely erasing data from its drives. The appropriate method depends upon many factors, including the following:

- Erase Configuration (ISE or SE)
- Drive Type (HDD or SSD)
- Interface Type (SAS, SATA, or NVMe™)
- Encryption (none, TCG, or FIPS)

1. This value is the original date of product manufacture. For the specific manufacture date of your platform, check the agency label attached to the platform. There will be a 4 digit date code on that label.

For more information on the **sanitize** command for specific drive models, please see the drive model's specification, contact Western Digital technical support, or download the following whitepaper for details: https://documents.westerndigital.com/content/dam/doc-library/en_us/assets/public/western-digital/collateral/tech-brief/tech-brief-instant-secure-erase....

ISE / SE Overview

Instant Secure Erase (ISE) is Western Digital's implementation of the industry standard T10 (SAS)/T13 (SATA) **sanitize** command, allowing users to instantly erase both user-accessible data and hidden user data from Western Digital drives.

The **sanitize** command supports three options:

1. **Crypto Scramble (SATA) / Crypto Erase (SAS)**: deletes the encryption key of a self-encrypting drive.
2. **Overwrite (HDDs)**: overwrites the data on the drive with a supplied value.
3. **Block Erase (SSDs)**: electrically erases each storage element by modifying their voltage levels.

Secure Erase (SE) is a subset of ISE, where the **Crypto Scramble / Erase** option has been disabled, allowing only the **Overwrite** or **Block Erase** options.

Requirements

To perform secure deletion, the following versions are the minimal recommended/supported utilities for each drive interface required on the host. For other versions, please verify the arguments/parameters in the appropriate man pages.

- **SAS**: sg_sanitize version 1.00 20151219 (included in sg3_utils 1.42²)
- **SATA**: hdparm version 9.58
- **NVMe**: nvme-cli version 1.13

Erase Methods

The following methods cover all erasure options and storage technologies for Western Digital drives. For more information on the **sanitize** command for specific drive models, please see the drive model's specification.



Note: If a RAID adapter or software is in use, remove the drives from a RAID set before erasure.



Note: If a drive is encrypted (TCG or FIPS), unlock the drive before executing any **sanitize** commands.



Note: In the following commands, replace the generic reference of **<dev>** with the specific device reference appropriate for your operating system (i.e. **sgX** for Linux®, **SCSI:X,X,X** for Windows).

SAS



Note: In the following **sg_sanitize** commands, the **--quick** option starts the deletion immediately. If the **--quick** option is not specified, the drive's **inquiry** response strings are printed in case the wrong device has been specified, and the user is given 15 seconds to reconsider whether they wish to erase all the data on the drive.

2. For details on how to use the sg3_utils v1.42 utility, visit <http://sg.danny.cz/>.

- ISE - Crypto Erase - HDD/SSD:

```
# sg_sanitize --crypto --quick <dev>
```

- SE - Overwrite - HDD:

```
# sg_sanitize --overwrite --quick --zero <dev>
```

- Block Erase - SSD:

```
# sg_sanitize --block --quick <dev>
```

SATA

- ISE - Crypto Erase - HDD/SSD:

```
# hdparm --yes-i-know-what-i-am-doing --sanitize-crypto-scramble <dev>
```

- SE - Overwrite - HDD:

```
# hdparm --yes-i-know-what-i-am-doing --sanitize-overwrite hex:11111111 <dev>
```

- Block Erase SSD:

```
# hdparm --yes-i-know-what-i-am-doing --sanitize-block-erase <dev>
```

NVMe

- ```
nvme format -s <option> /dev/<nvme_namespace>
```



**Note:** The -s option triggers Secure Erase mode.

| Value | Definition                                                                                                                                                                                                                                                                                |
|-------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 0     | No secure erase operation requested                                                                                                                                                                                                                                                       |
| 1     | User Data Erase: All user data shall be erased, contents of the user data after the erase is indeterminate (e.g., the user data may be zero filled, one filled, etc). The controller may perform a cryptographic erase when a User Data Erase is requested if all user data is encrypted. |
| 2     | Cryptographic Erase: All user data shall be erased cryptographically. This is accomplished by deleting the encryption key.                                                                                                                                                                |

# 1.4 Ultrastar Data102 Disassembly

This task provides instructions for disassembling an Ultrastar Data102 .

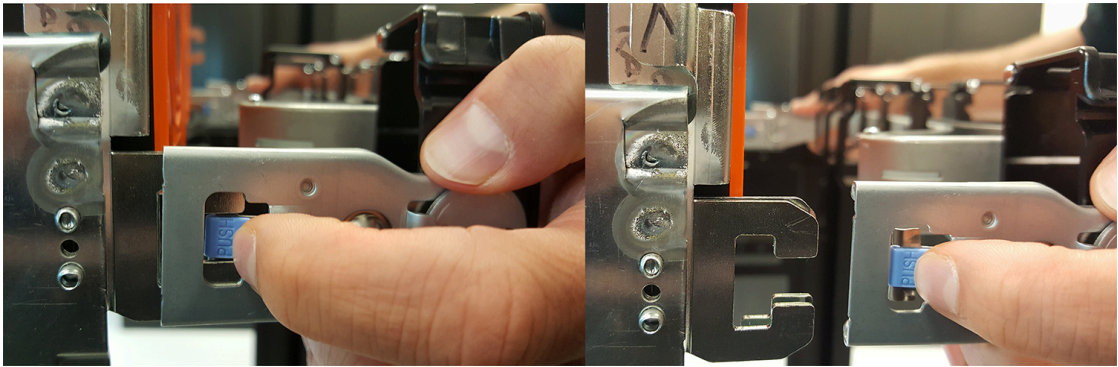
Table 3: Procedure Requirements

| Required Tools                                             | # of People Required | Time Required |
|------------------------------------------------------------|----------------------|---------------|
| T7, T8, & T10 Torx Screwdrivers<br>#2 Phillips Screwdriver | Two <sup>3</sup>     | 2 hours       |

## Opening the CMA(s)

- Step 1:** Place the CMA(s) into service position.
- a. Unlatch the CMA(s) from the rail at the elbow connector by pressing the blue release button.

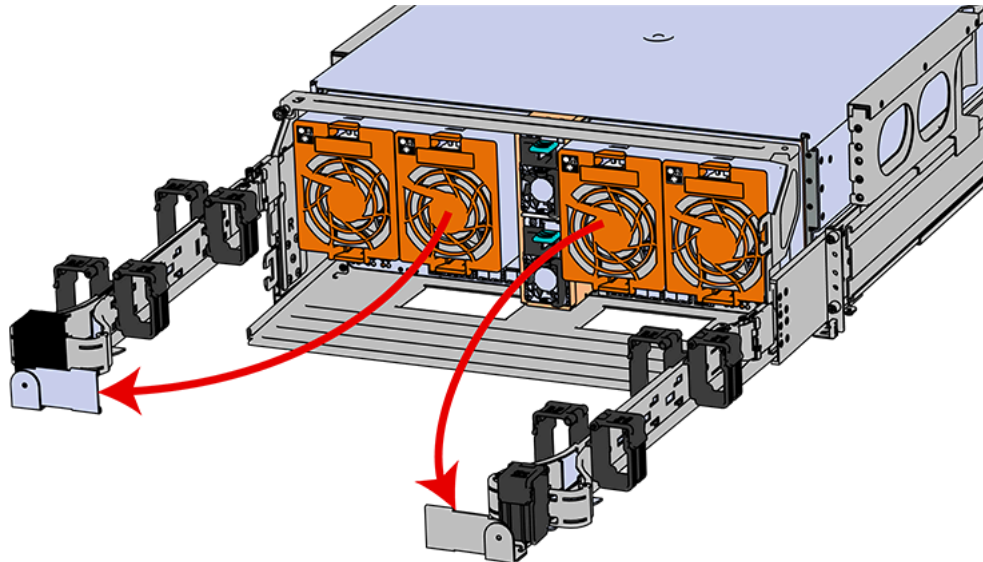
Figure 1: Unlatching a CMA Connector



- b. Swing the CMA(s) away from the enclosure.
- c. The arm(s) should be extended away from the enclosure as shown in the following example.

3. Two people required for lifting enclosure; only 1 required for disassembly

Figure 2: CMA(s) in service position (Cables not shown)

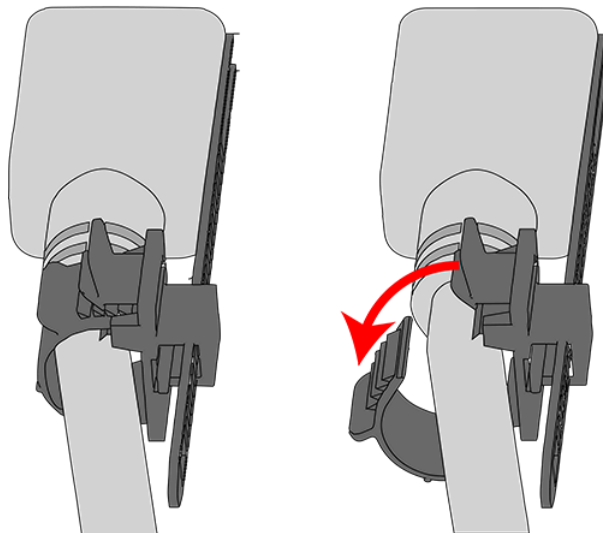


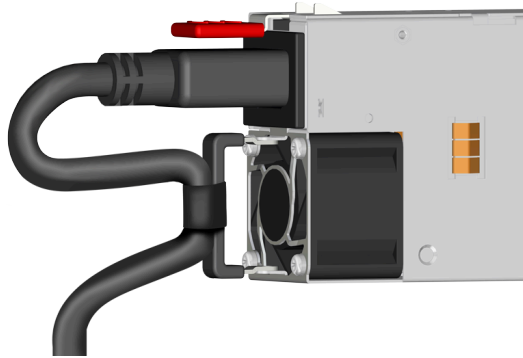
## Powering Down the Enclosure

**Step 2:** Disconnect the Enclosure from power.

- a. Locate the redundant PSUs at the rear of the enclosure.
- b. Detach the cable retention mechanism from both power cords.

Figure 3: Clip-Style Cable Retention

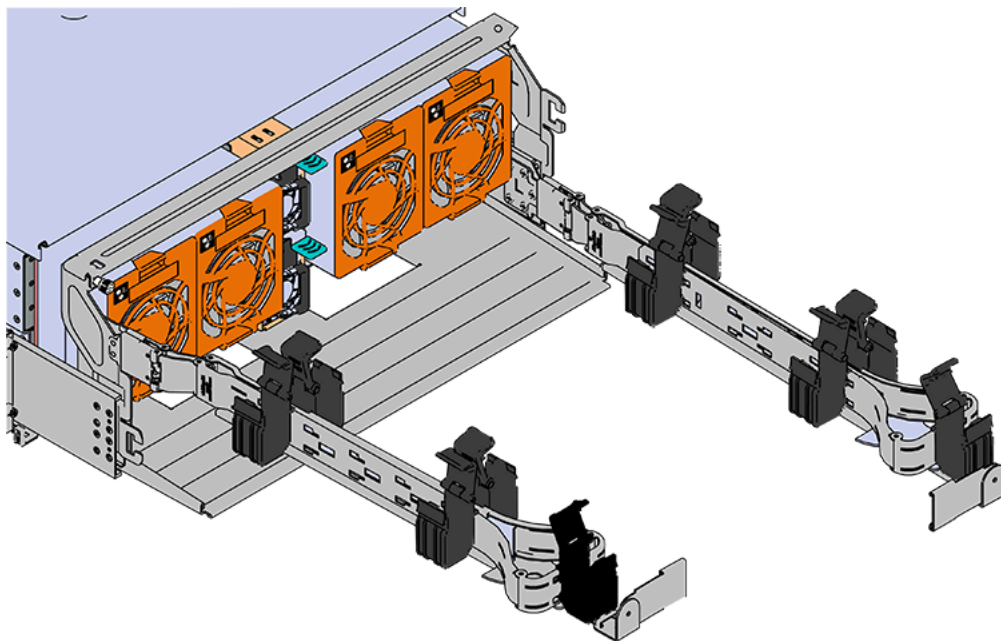


*Figure 4: Strap-Style Cable Retention*

- c. Power down the enclosure by disconnecting both power cables, one from each PSU.

### Removing the Cables

- Step 3:** Disconnect the HD Mini-SAS cables from the rear of the enclosure by pulling (don't jerk) on the blue tab that is extending outward from the connector. This will free the cable from the port. Make sure each cable is labeled or label them yourself to ensure that they will be plugged back into the same location.
- Step 4:** Unplug the Ethernet cables from the out-of-band management ports.
- Step 5:** Uncable the CMA(s).
  - a. Open all of the basket clips on the CMA(s).

*Figure 5: Open Baskets*

- b. Remove one cable at a time from the arm, making sure not to put too much strain on the arm.

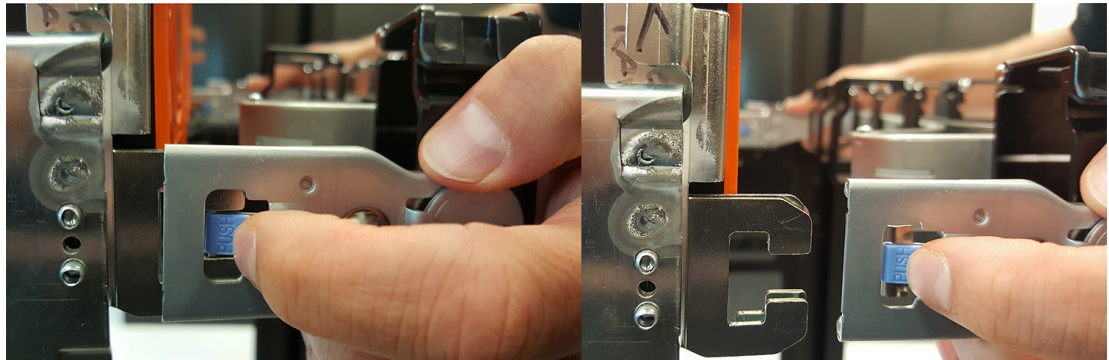


## Removing the CMA(s)

**Step 6:** Remove the CMA(s).

- a. Release all of the connectors that attach the CMA(s) to the enclosure and the rail.  
There are three total connections that need to be released, one at the elbow and two at the opposite end.
- b. To release a connector, press the blue latch release button and pull the connector free.

*Figure 6: Unlatching a CMA Connector*

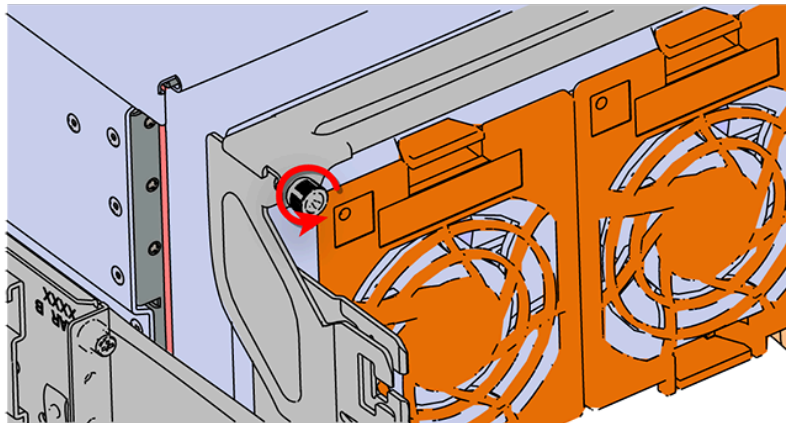


## Removing the Crossbar

**Step 7:** Uninstall the crossbar from the CMA mounting bracket.

- a. Locate the crossbar thumbscrew that secures the crossbar to the CMA mounting brackets and unscrew it.

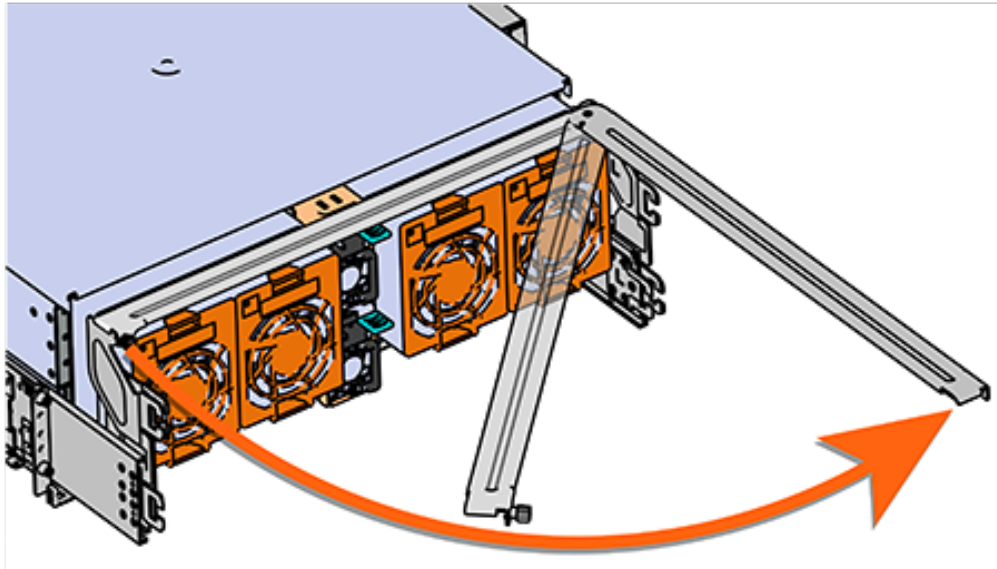
*Figure 7: Unscrew Thumbscrew*



- b. Swing the crossbar away from the enclosure.



Figure 8: Crossbar Swinging Out



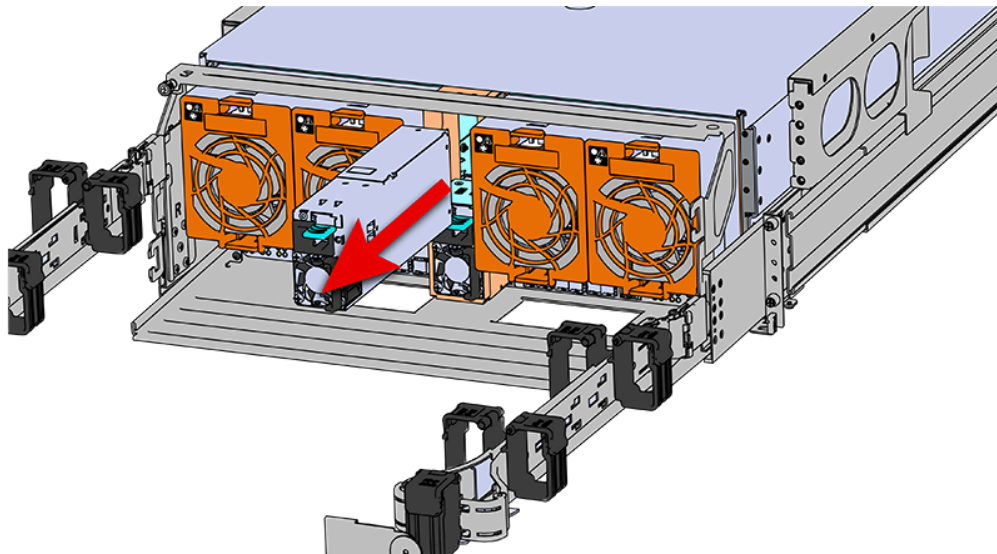
- c. Once the crossbar is straight it should easily come free from the mounting bracket.

## Uninstalling the PSUs

**Step 8:** Uninstall the PSU.

- Grasp the PSU handle and release lever in a downward pinching motion to release the latching mechanism.
- Pull the PSU straight out with even pressure.

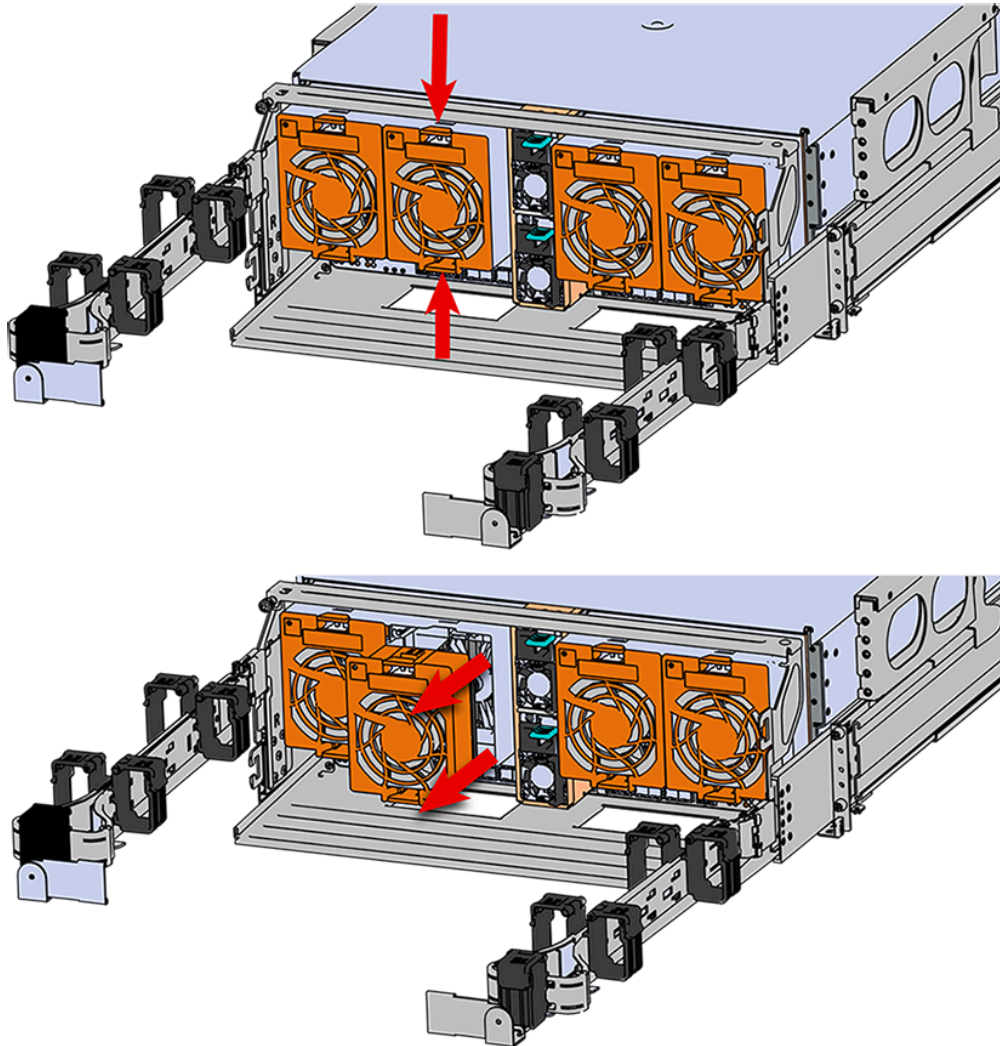
Figure 9: Uninstalling the PSU (Delta PSU shown)



## Uninstalling the Rear Fans

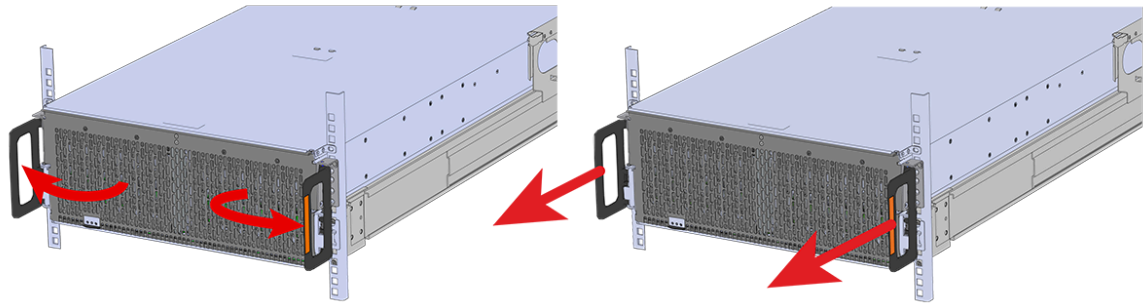
**Step 9:** To unlatch the rear fan from the fan housing, use one hand to press the clip at the top and bottom of the fan and pull to free it from the chassis and remove it.

*Figure 10: Uninstalling the Rear Fan*



## Extending the Enclosure

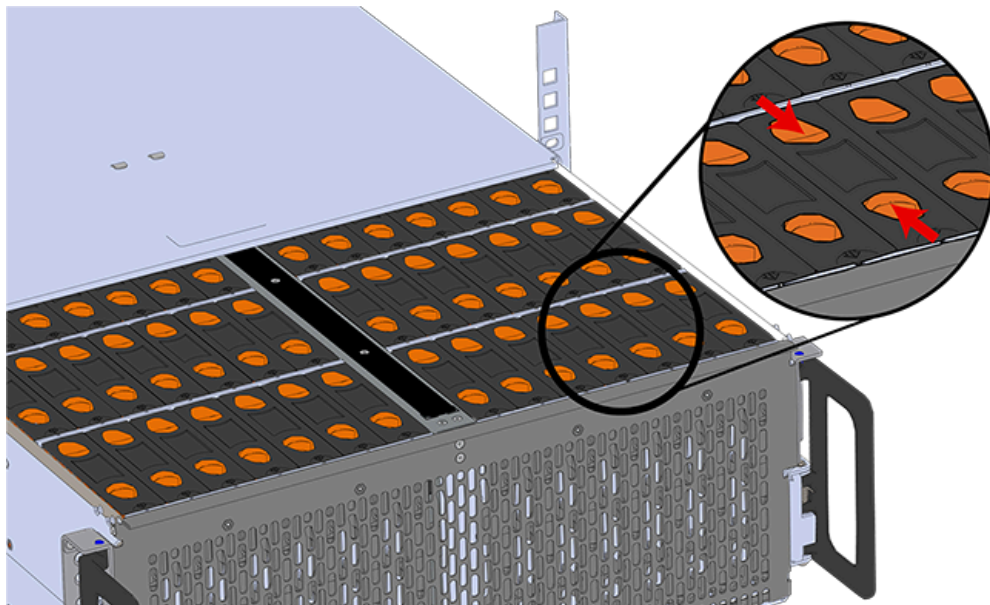
**Step 10:** Grasp both handles at the front of the enclosure and pull with even pressure to extend the chassis out of the rack until it is stopped by the safety latches. The safety latches will prevent the enclosure from coming out of the rack completely and the cover will remain in the rack attached to the rear alignment brackets.

*Figure 11: Chassis Handle Operation*

## Removing the Drives

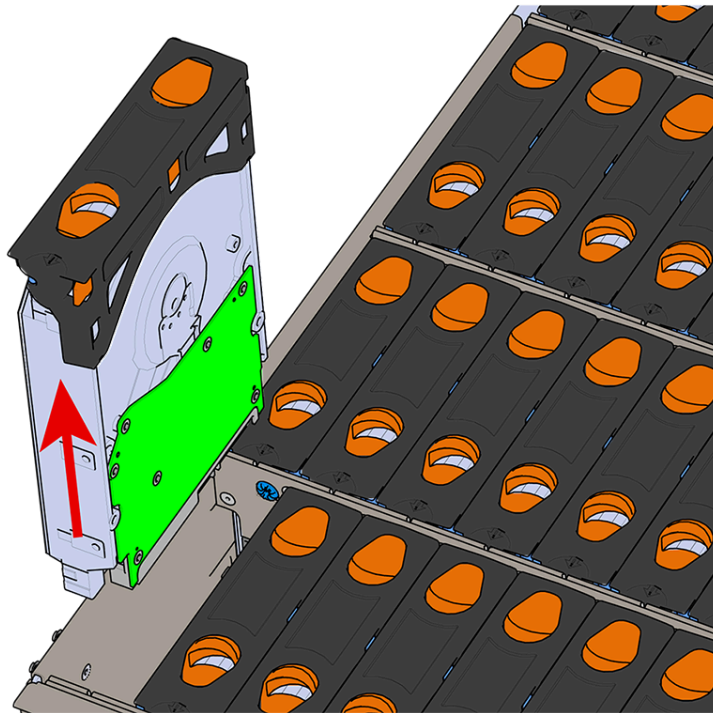
**Step 11:** Follow these steps to remove a 3.5in HDD Assembly.

- Find the latch release mechanism on the 3.5in HDD Assembly being removed.
- Insert a finger and a thumb into the latch release and pinch to unlatch the 3.5in HDD Assembly.

*Figure 12: Unlatch Drive Carrier (IOM Not Shown)*

- Lift the 3.5in HDD Assembly free from the enclosure.

Figure 13: Removing 3.5in HDD Assembly



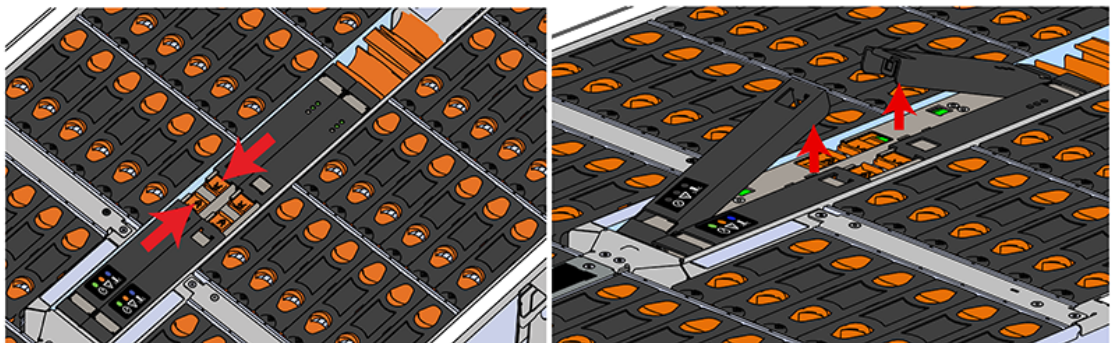
**Step 12:** Repeat these steps to remove all the drive assemblies from the enclosure.

### Removing the IOMs

**Step 13:** Uninstall the IOM(s).

- a. Locate the latch release on the IOM and press it in the direction shown in the following image.

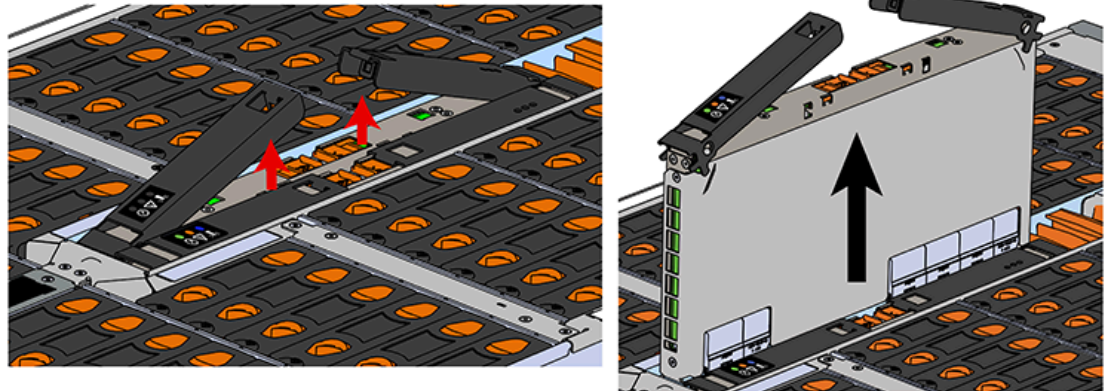
Figure 14: Unlatching the IOM



- b. Grasp both handles, one handle in each hand, and lift evenly with both hands to ensure the IOM comes out straight. This will prevent any damage to the pins on the internal connectors.



Figure 15: Removing IOM

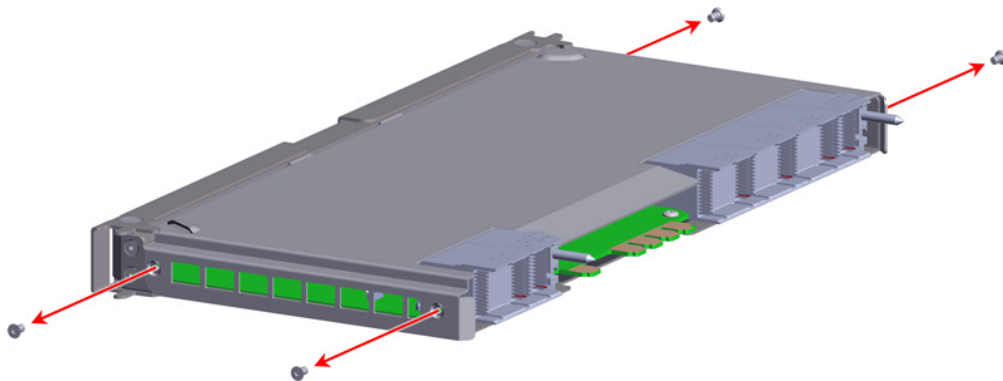


**Step 14:** Repeat these steps to remove the remaining IOM from the enclosure.

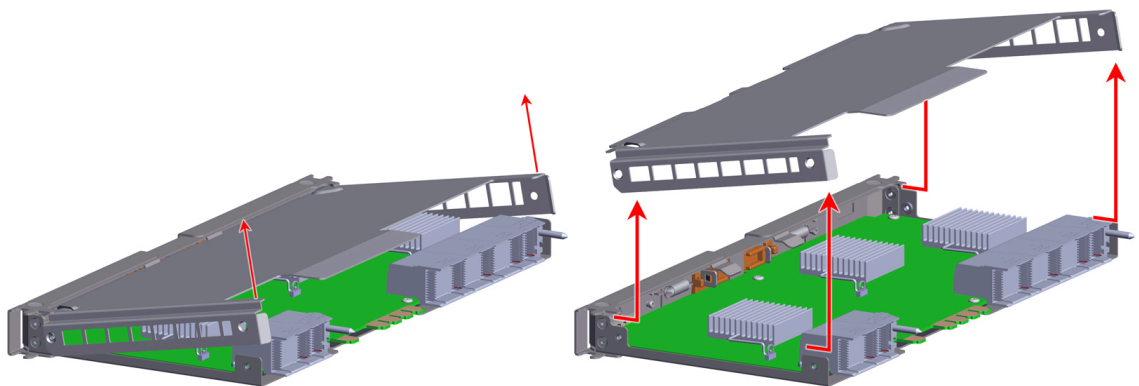
### Disassembling the IOMs

**Step 15:** Lay one of the IOMs on its side.

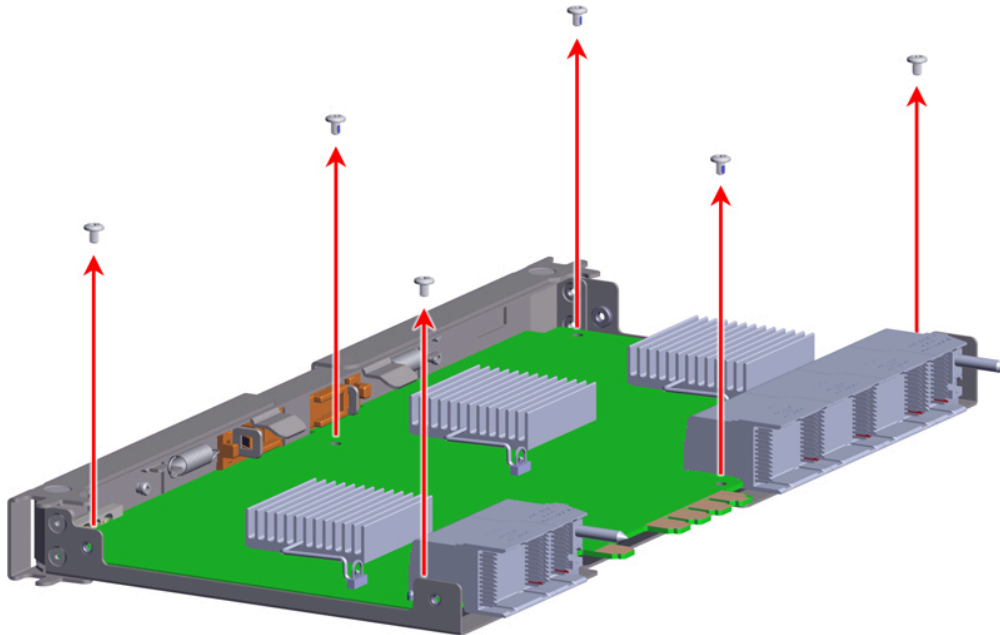
**Step 16:** Using a T7 Torx screwdriver, remove the four (4) M3 6mm screws from the ends of the IOM:



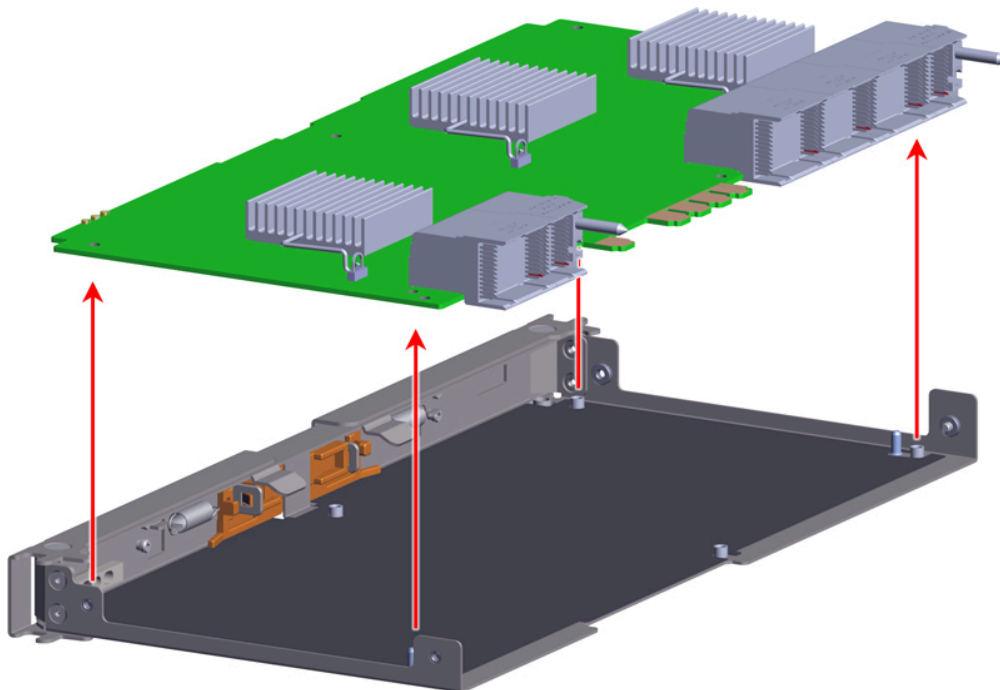
**Step 17:** Lift the bottom edge of the side-panel. Then slide the panel toward the bottom of the IOM before lifting it upward to remove it from the IOM:



**Step 18:** Using a T10 Torx screwdriver, remove the six (6) M3 4mm pan-head screws securing the circuit board to the other side-panel:



**Step 19:** Pull the circuit board upward to remove it from the IOM:



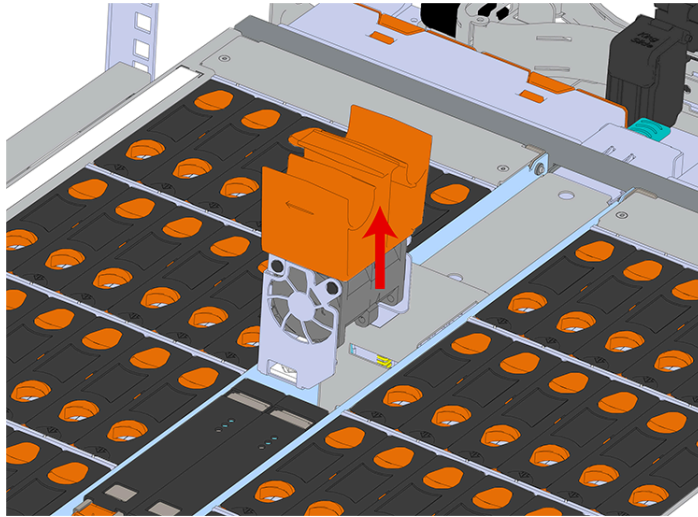
**Step 20:** If applicable, repeat these steps to remove the circuit board from the other IOM.

## Removing the IOM Fan

**Step 21:** Remove the IOM Fan.

- a. With one hand, grasp around the center square of the fan housing as shown in the following image.
- b. Pinch the IOM fan housing to release the latching mechanism and pull it straight out from the chassis.

*Figure 20: Removing IOM Fan*



## Releasing the Chassis Cover From the Rack

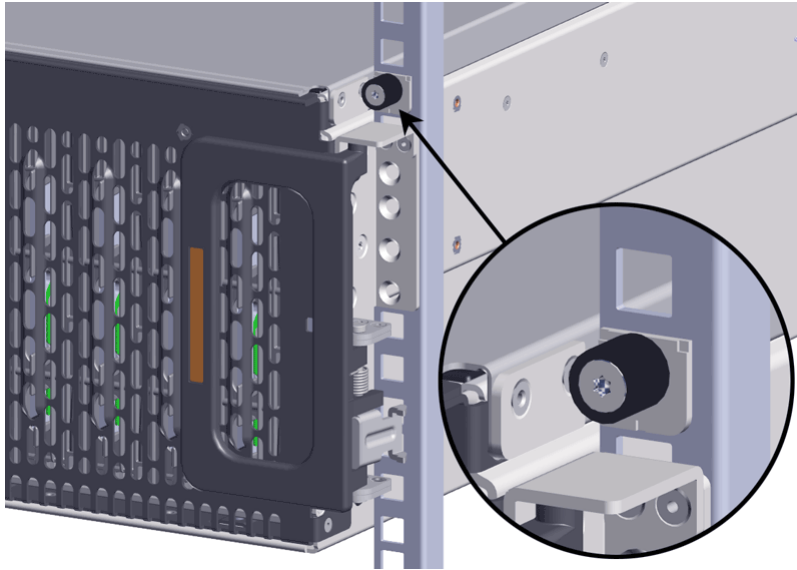
**Step 22:** Release the safety latch on the inner rails on each side of the chassis as shown in the following image.

*Figure 21: Inner Rail Safety Latch Release*



**Step 23:** Push the chassis back into the rack.

**Step 24:** Locate the M5 thumb-screws on the top cover of the enclosure that keep it in place when the drawer is extended, and unscrew them using a T15 Torx screwdriver. This will allow the top cover to move freely with the enclosure when the enclosure is removed.



### Removing the Enclosure from the Rack

**Step 25:** 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. Make sure that the top cover comes with the chassis as it is extended out of the rack. The safety latches will prevent the enclosure from coming out of the rack completely.

**Step 26:** Remove the chassis from the rack.

- a. Be prepared to support the enclosure once it is free of the rails by having a second person or a lift to support the enclosure
- b. Grasp both handles at the front of the enclosure and pull with even pressure until the enclosure will not extend further.



**Warning:** The handles on the front of the chassis are not intended to be used to support the weight of the Ultrastar Data102. 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.

- c. Locate the safety catches on the inner rails attached to the enclosure.



Figure 23: Safety Latch Release



- d. Depress the latch release lever for the safety latches on the rail and push the chassis very slightly forward. The chassis is now unsecured from the rack.
- e. Ensure that you have the proper support mechanism to hold the chassis in position, whether that be a team lifting partner or an appropriate lift.



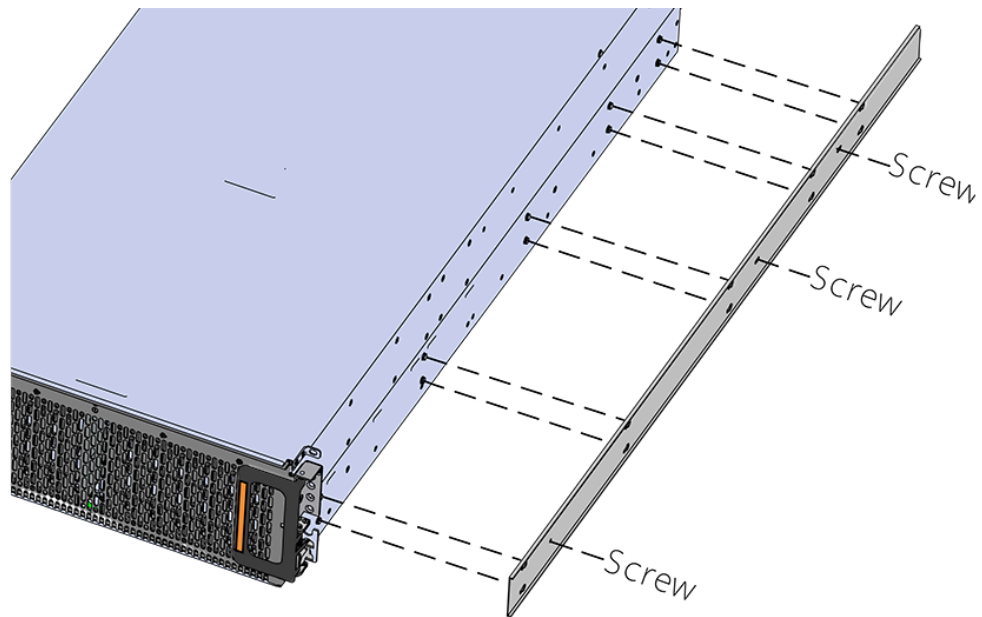
**Warning:** Do not lift the chassis by the Cable Tray while removing the chassis from the rack OR while installing it into a rack. This can cause serious damage to the unit or serious bodily harm to those handling the unit. Always team lift the chassis by gripping the underside of the unit, and never try to lift a chassis that is filled with drives.

- f. Slide the chassis forward to free it from the rails. Place the chassis in a safe location to avoid damage.

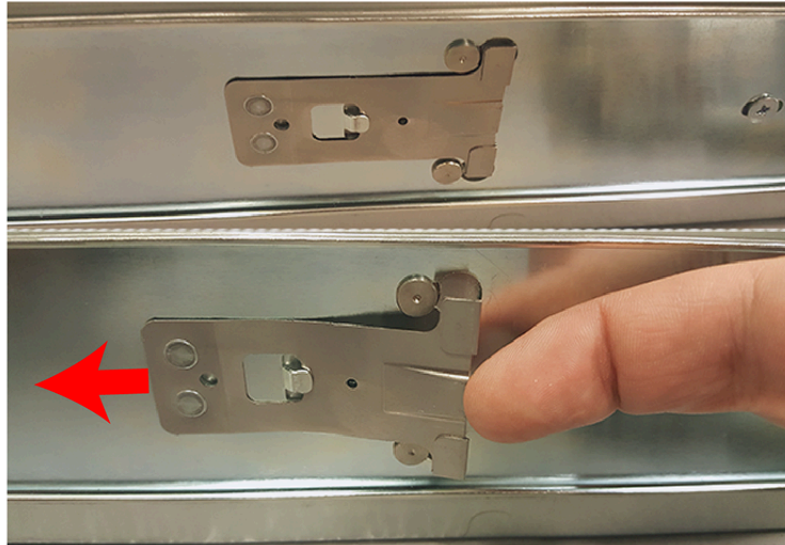
## Removing the Chassis Rails

**Step 27:** Uninstall the inner rails from the sides of the chassis.

- a. Unscrew the three Low-Profile M4 x 3.2mm Philips screws that attach the inner rails to the chassis using a #2 Philips head screwdriver.

*Figure 24: Remove Inner Rail*

- b.** Locate and unlatch the springlock on the side of the inner rail.

*Figure 25: Inner Rail Spring Latch*

- c.** Slide the inner rail toward the front of the enclosure to unlock it from the pegs that secure it to the sidewall and pull it free.

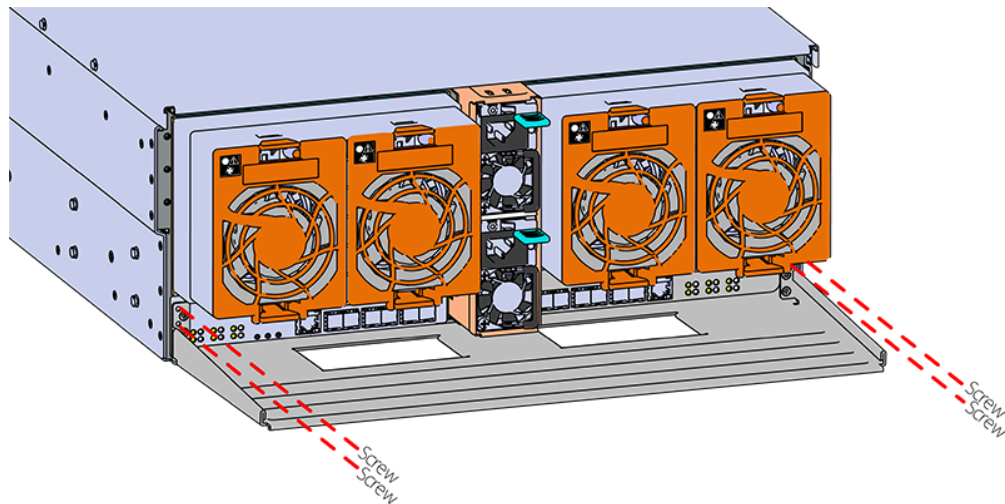
## Removing the Cable Tray



**Note:** Only follow this step if the cable tray is installed.

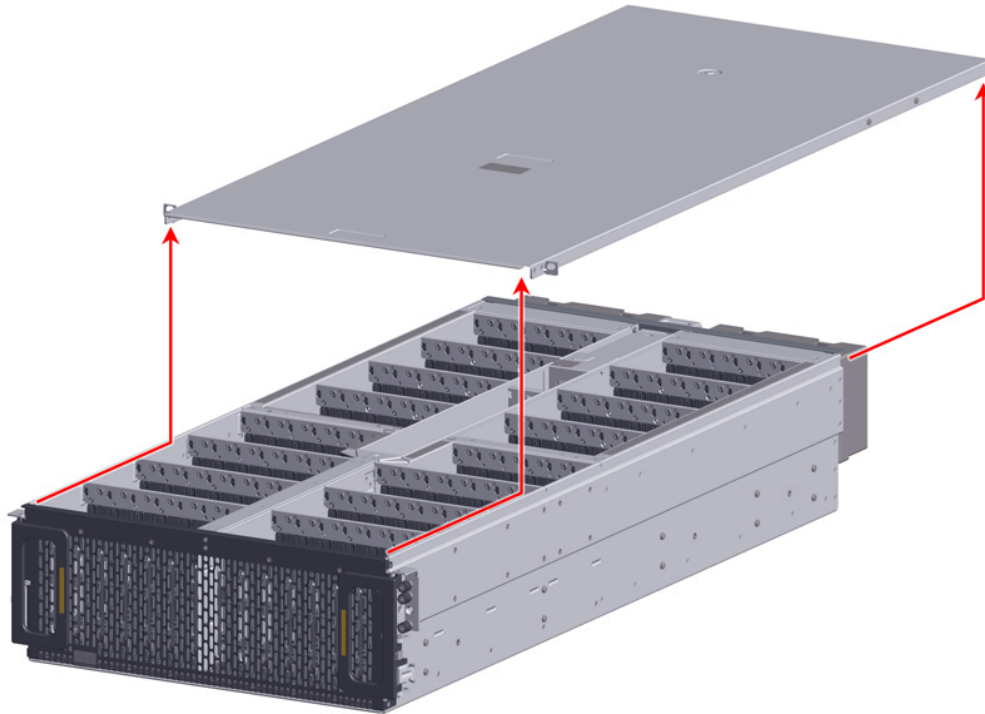
**Step 28:** Uninstall the Cable Tray by removing the M3 x 8mm screws using the long T10 Torx head screwdriver.

*Figure 26: Uninstalling the Cable Tray*



## Removing the Chassis Cover from the Enclosure

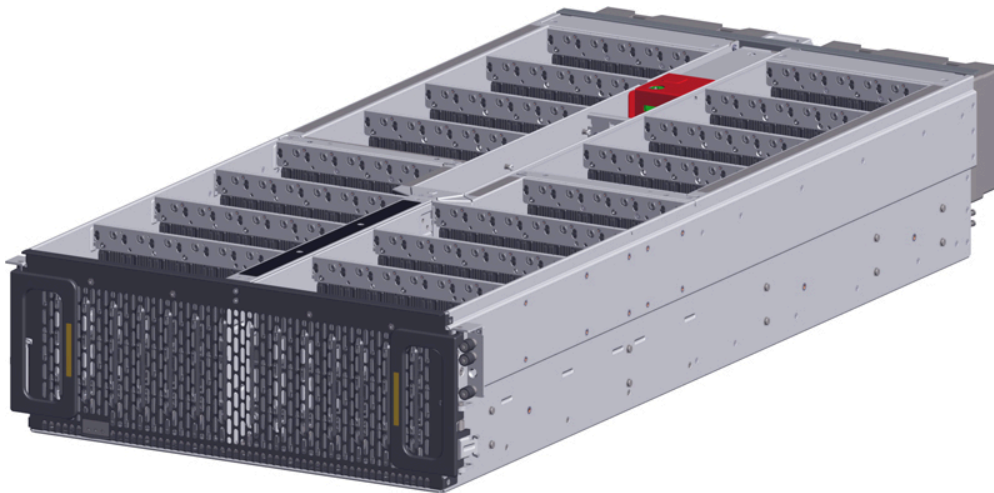
**Step 29:** Slide the chassis cover toward the rear of the enclosure. Then lift it up to remove it from the chassis:



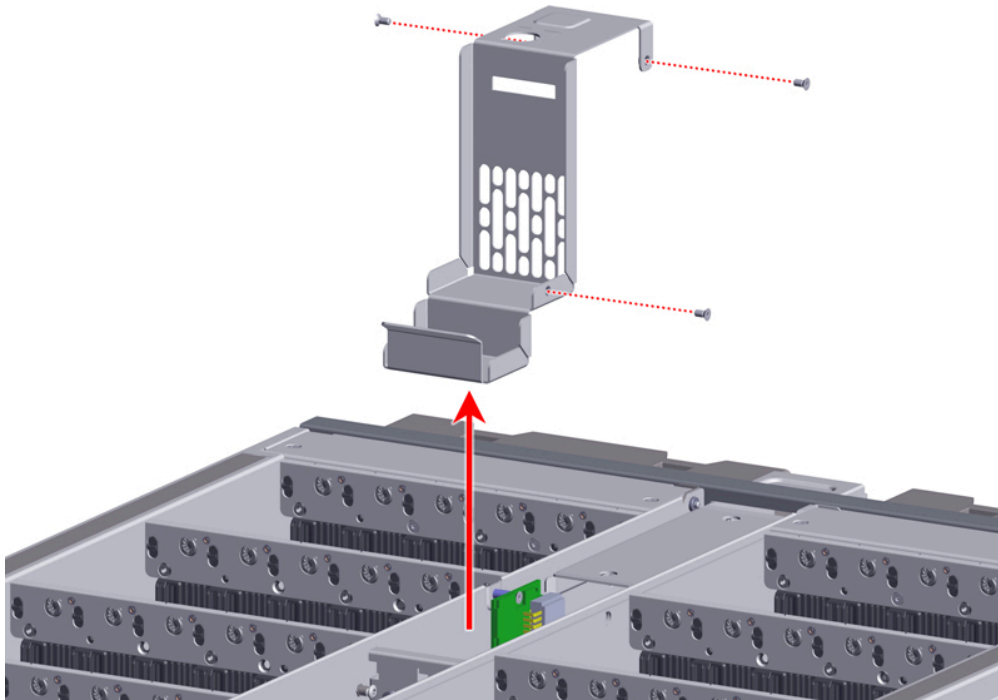
### Removing the PDB Cover

The following image shows the PDB cover in red (for identification purposes only):

*Figure 28: PDB Cover Location*



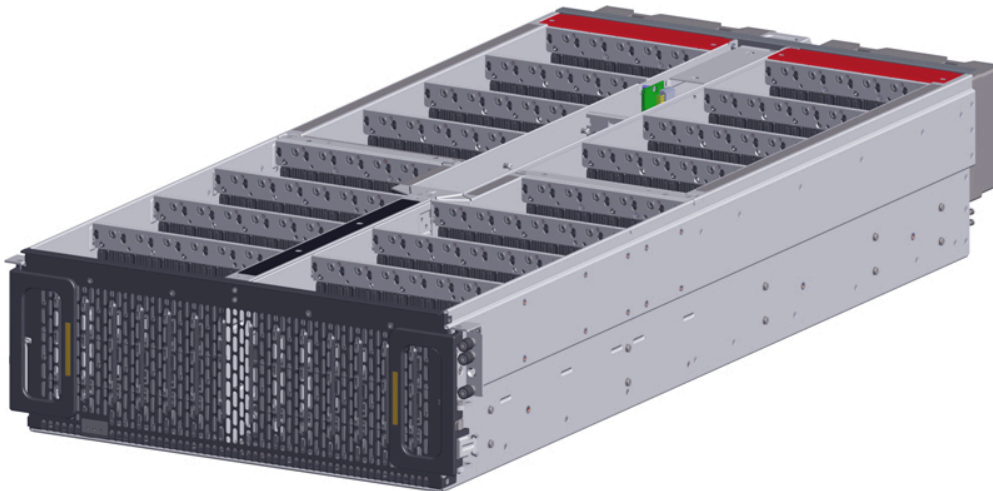
**Step 30:** Use a T7 Torx screwdriver to remove the three (3) M3 6mm screws securing the PDB cover to the left and right rear drive housings. Then pull the PDB cover upward to remove it from the chassis:



### Removing the Plenum Covers

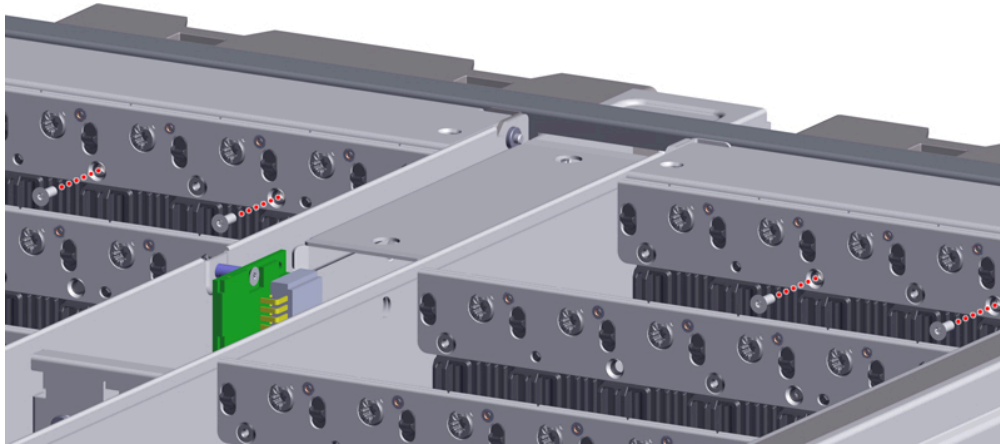
The following image shows the plenum covers in red (for identification purposes only):

*Figure 30: Plenum Covers Location*

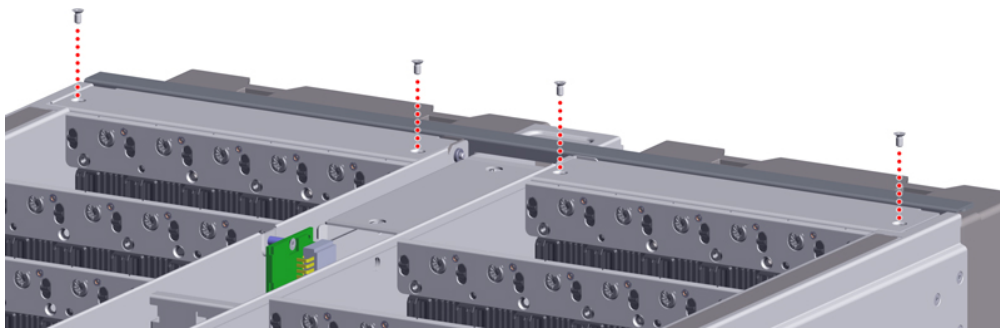


**Step 31:** Use a T7 Torx screwdriver to remove the four (4) M3 7mm screws securing the plenum covers to the left and right rear drive housings:

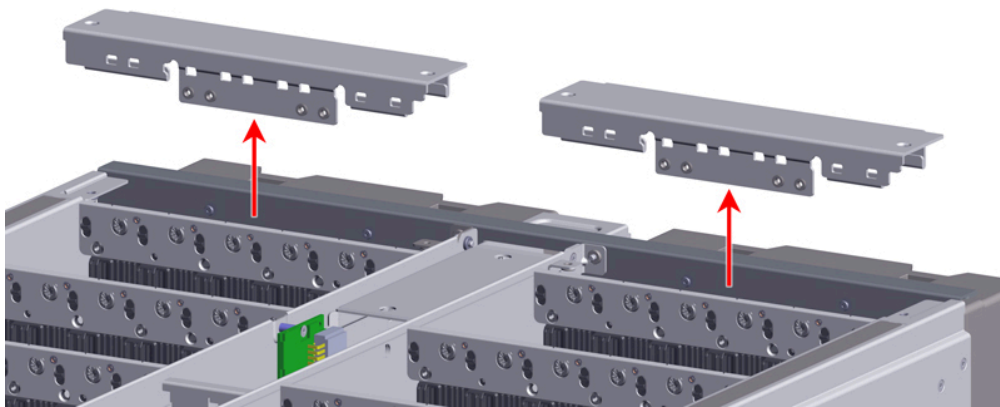




**Step 32:** Remove the four (4) M3 6mm screws securing the plenum covers to the fan housing:



**Step 33:** Pull the plenum covers upward to remove them from the chassis:

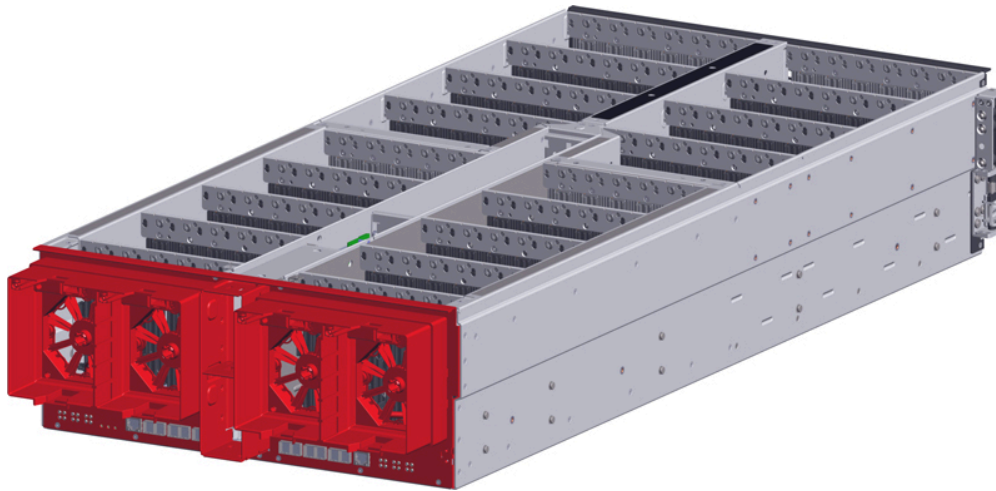


### Removing the Fan Housing Assembly

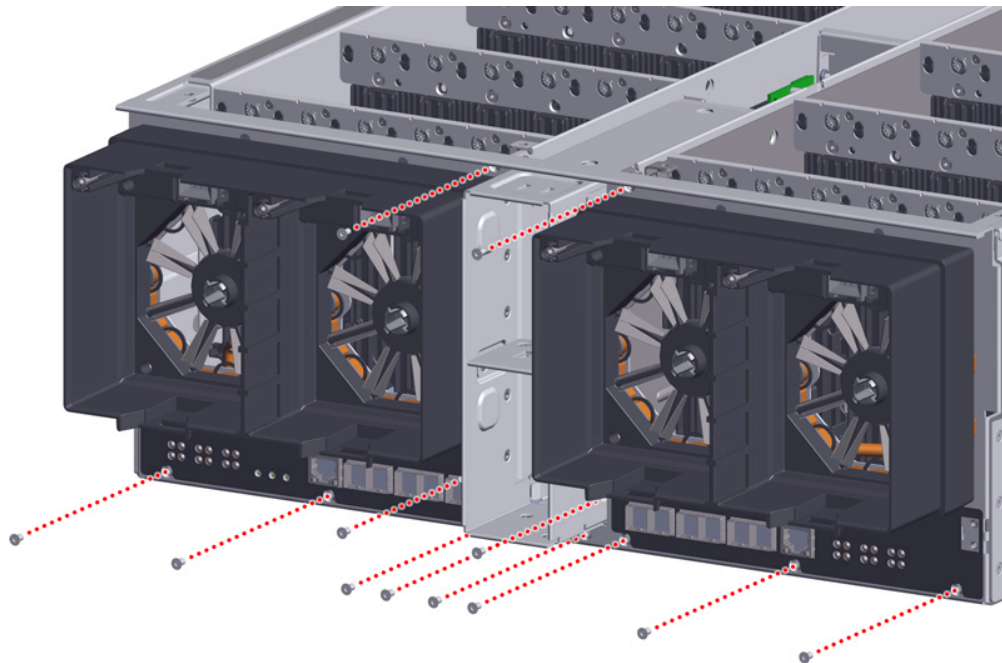
The following image shows the fan housing assembly in red (for identification purposes only):



Figure 34: Fan Housing Assembly Location

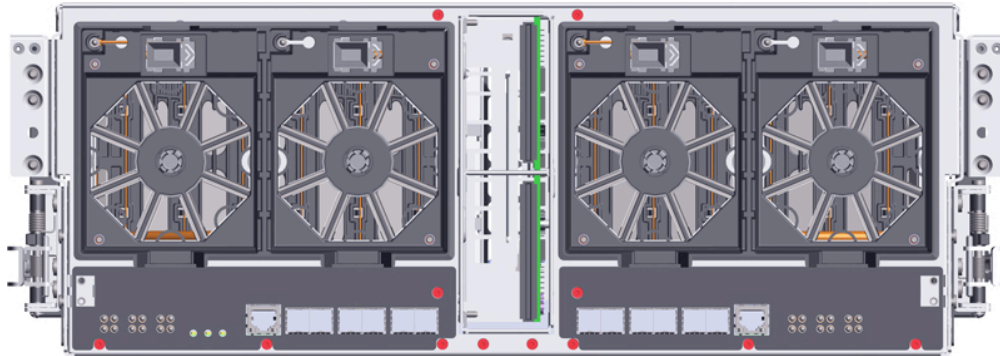


**Step 34:** Use a T7 Torx screwdriver to remove the twelve (12) M3 6mm screws securing the fan housing assembly to the rear of the chassis:



The following image shows the screws in red (for identification purposes only):

*Figure 36: Fan Housing Screw Locations, As Viewed from the Rear*



**Step 35:** Use a T7 Torx screwdriver to remove the twelve (12) M3 6mm screws securing the fan housing assembly to the sides of the chassis:

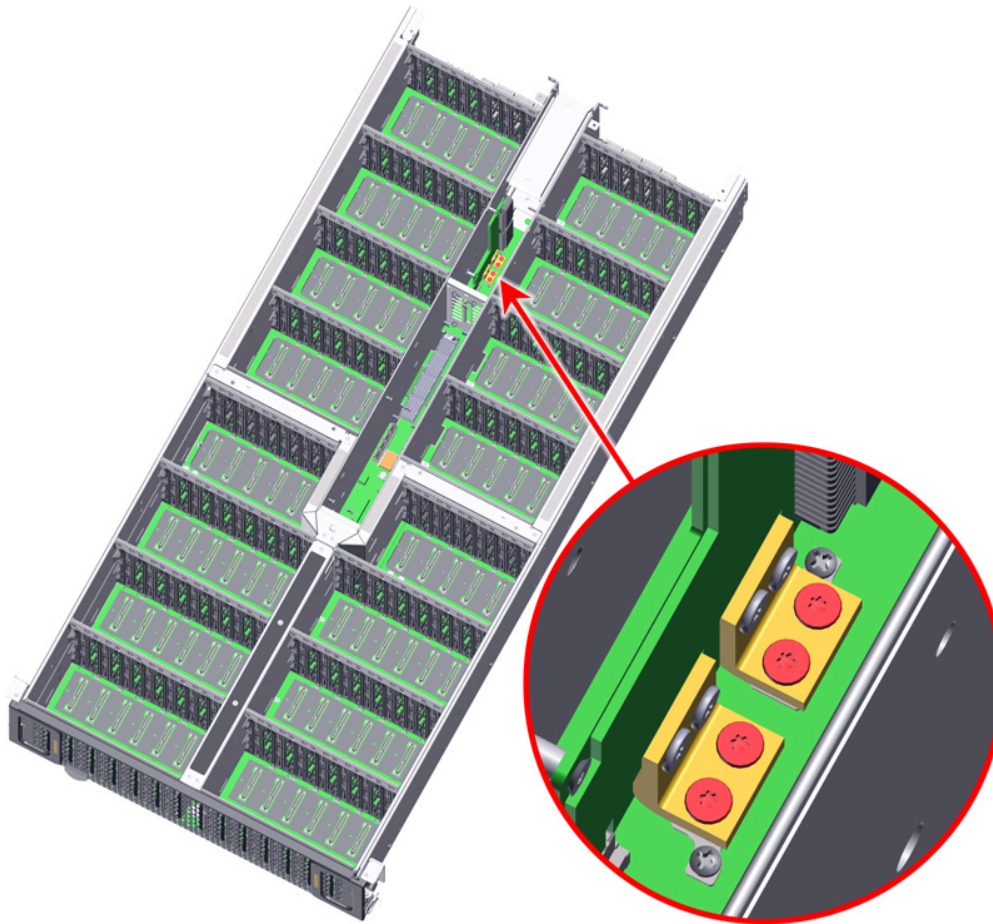


**Step 36:** Pull the fan housing assembly away from the chassis, just far enough to unplug the fan cable connectors from their receptacles on the baseboard. The fan cable connectors and receptacles are shown in red in the following image:

This diagram illustrates the removal of the front door from the server chassis. Red arrows indicate the removal of the top door hinge, the front door, and the bottom door hinge.

The following image shows the PDB bus-bar screws in red (for identification purposes only):

Figure 40: PDB Bus-Bar Screws Location, As Viewed from the Front Top-Right



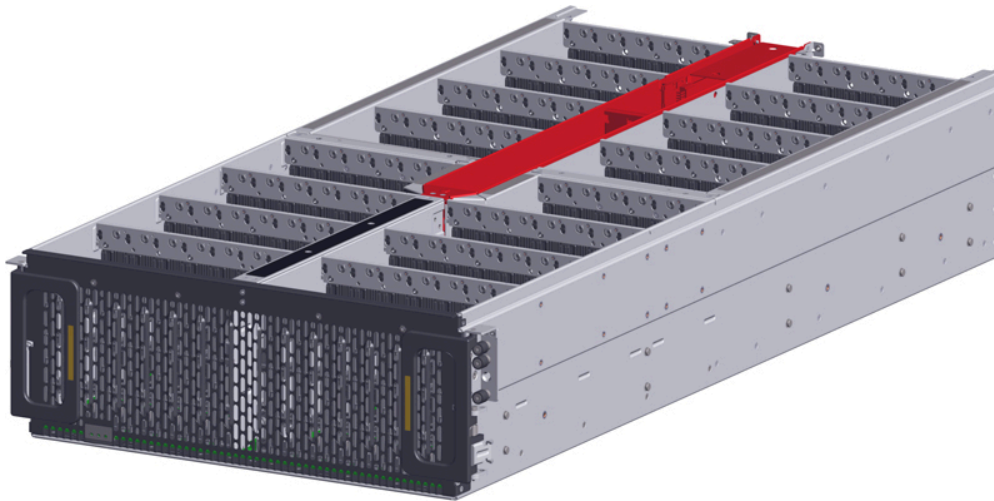
**Step 38:** Use a T8 Torx screwdriver to remove the four (4) M3 6mm screws securing the PDB to the baseboard.

### Removing the IOM Housing

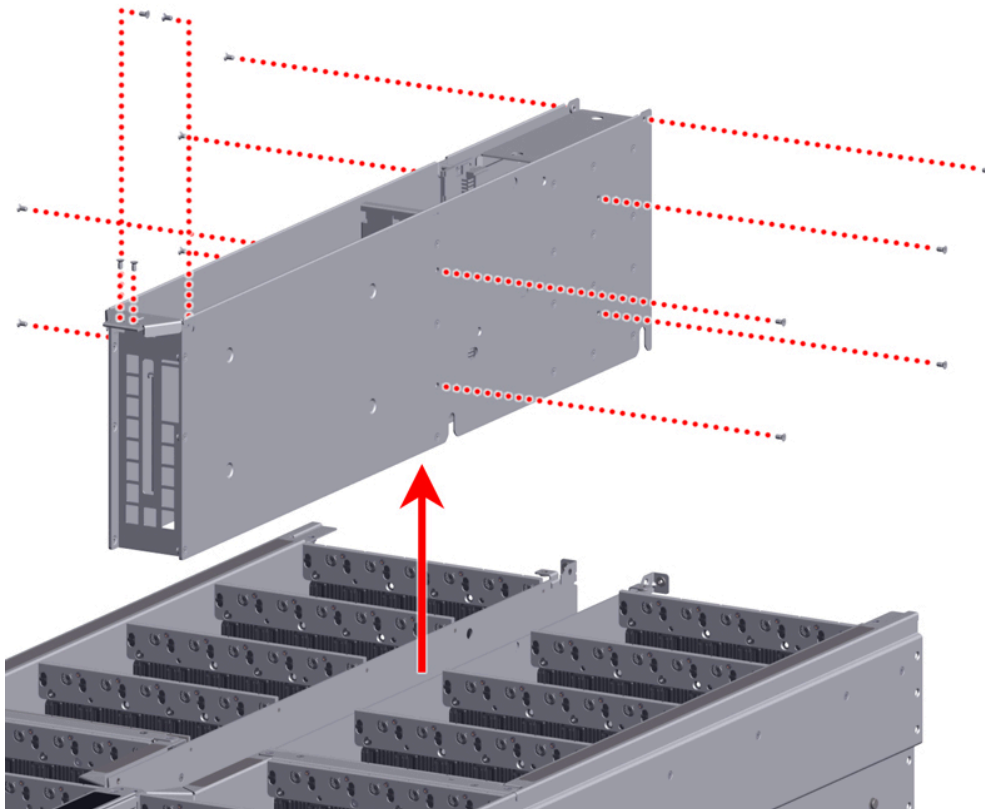
The following image shows the IOM housing in red (for identification purposes only):



Figure 41: IOM Housing Location



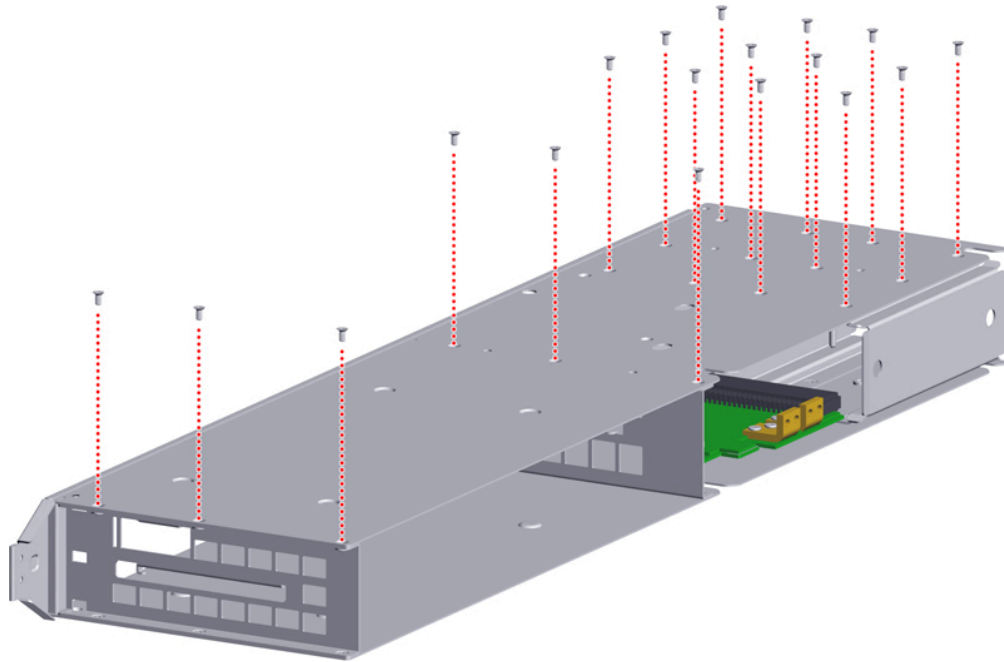
**Step 39:** Use a T7 Torx screwdriver to remove the fourteen (14) M3 6mm screws securing the IOM housing to the drive housings. Then pull the IOM housing upward to remove it from the chassis:



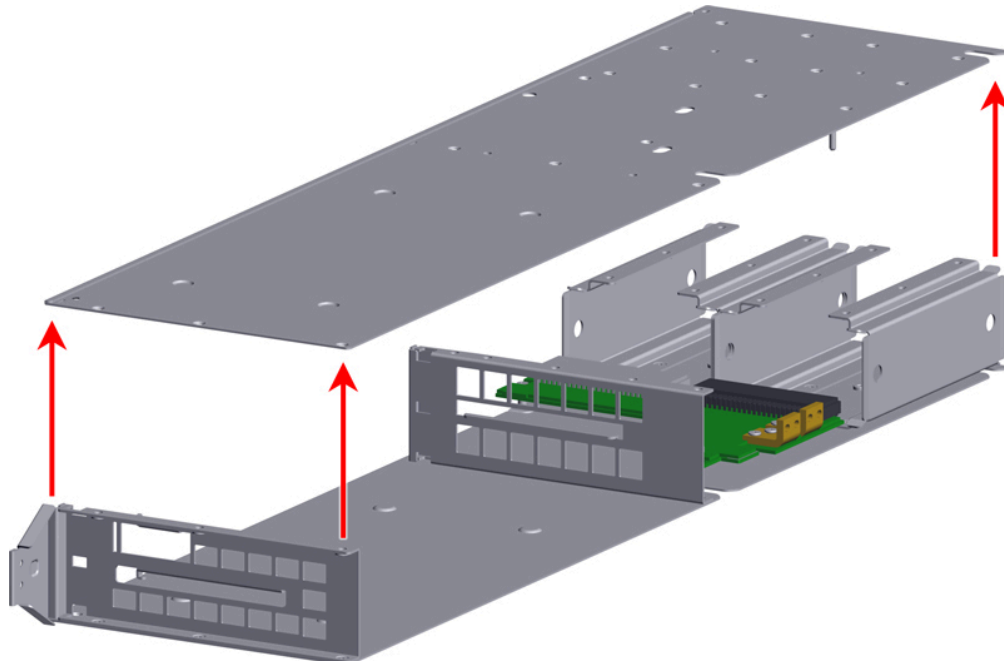
### Removing the PDB from the IOM Housing

**Step 40:** Lay the IOM housing on its side.

**Step 41:** Use a T7 Torx screwdriver to remove the eighteen (18) M3 6mm screws securing the right side-panel of the IOM housing:

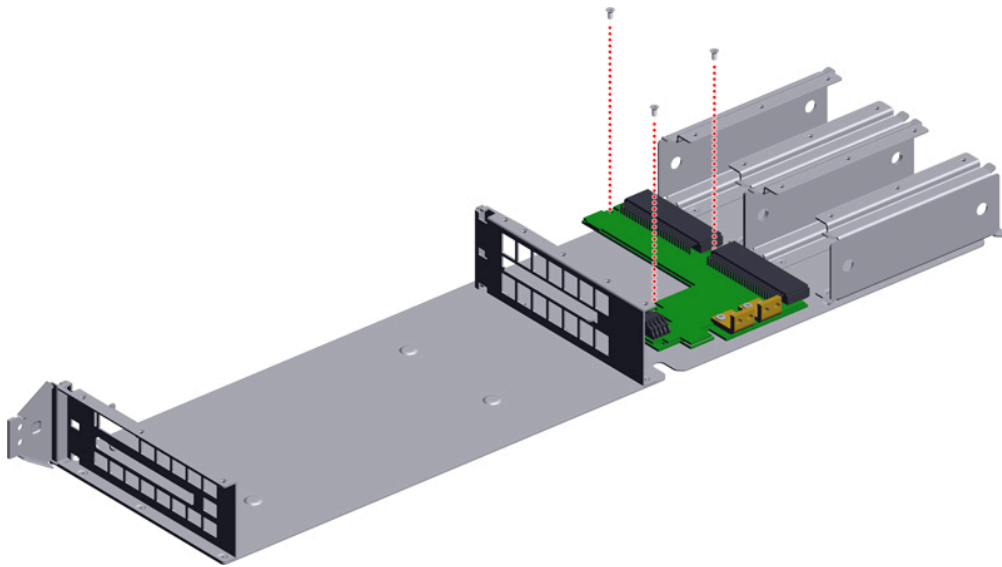


**Step 42:** Pull the right side-panel upward to remove it from the IOM housing:

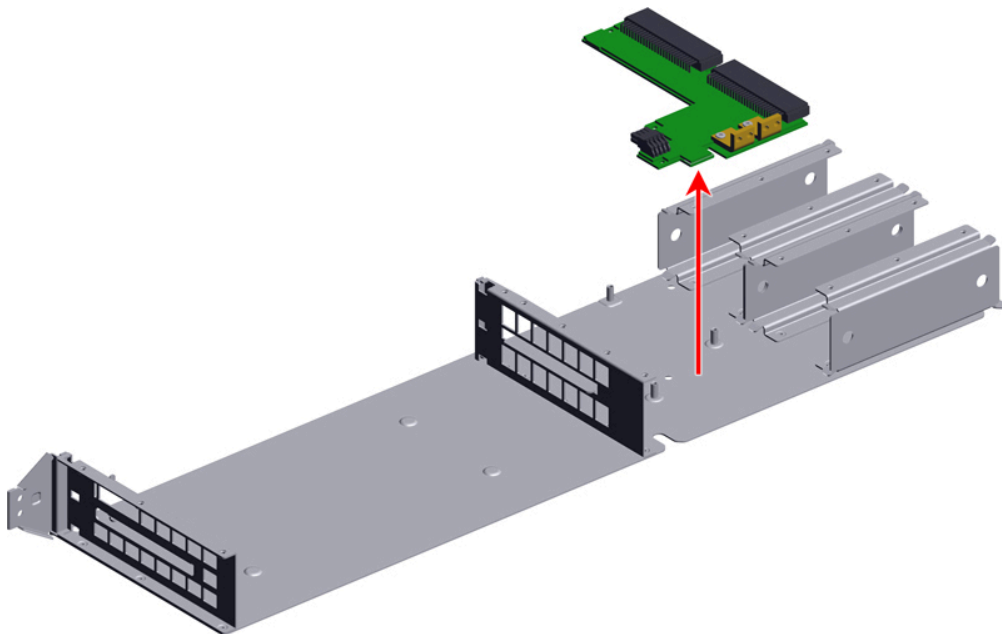


**Step 43:** Use a T7 Torx screwdriver to remove the three (3) M3 6mm screws securing the PDB to the left side-panel of the IOM housing:





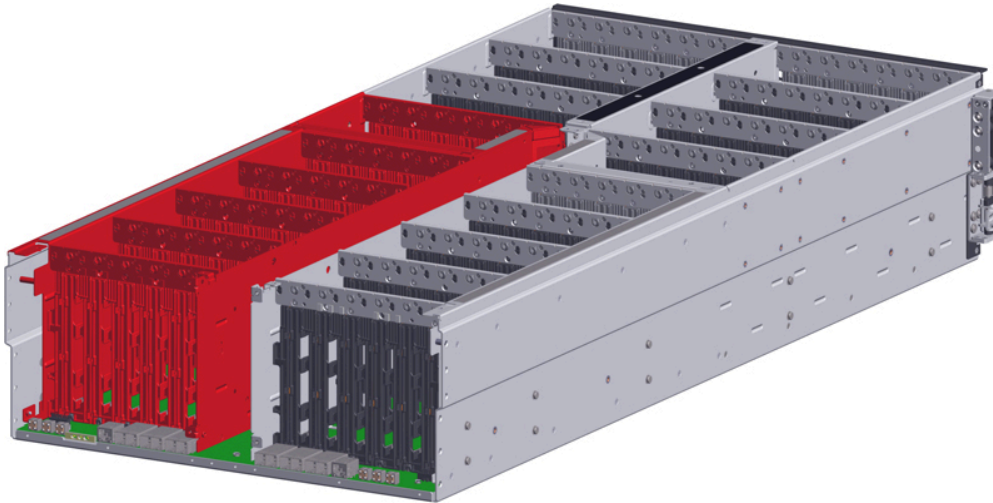
**Step 44:** Pull the PDB upward to remove it from the IOM housing:



### Removing the Rear Drive Housings

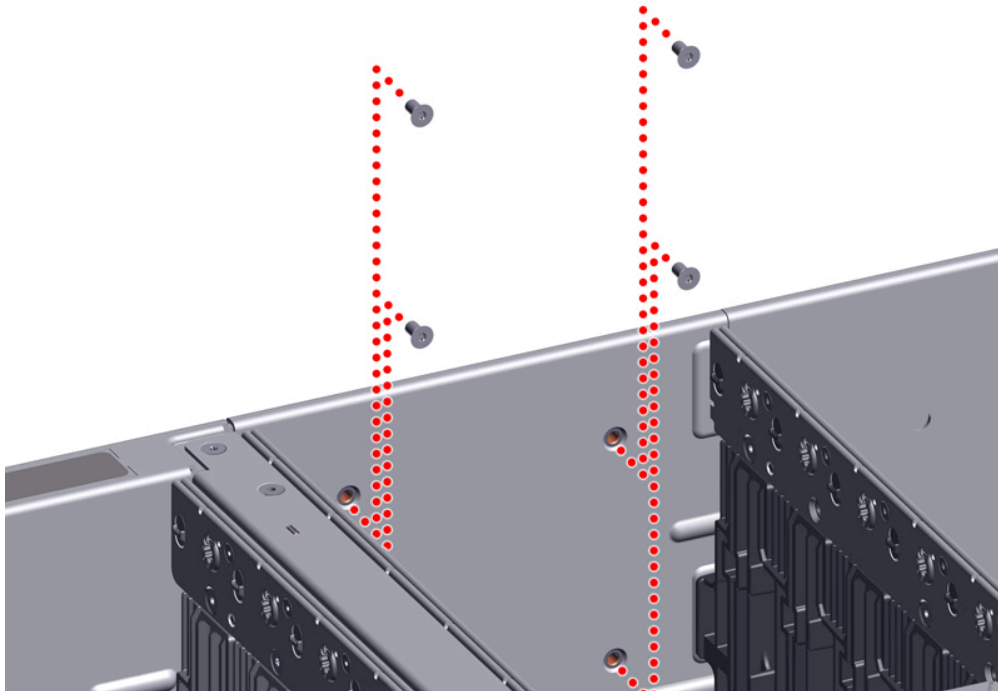
The following image shows the rear-right drive housing in red (for identification purposes only), as viewed from the rear of the enclosure:

Figure 47: Rear-Right Drive Housing Location, As Viewed from Rear-Left-Top



**Step 45:** At the front of the rear-right drive housing, use a T7 Torx screwdriver to remove the four (4) M3 6mm screws securing the drive housing to the side-panel of the chassis:

Figure 48: Inside of Rear-Right Drive Housing, As Viewed from Left-Rear-Top



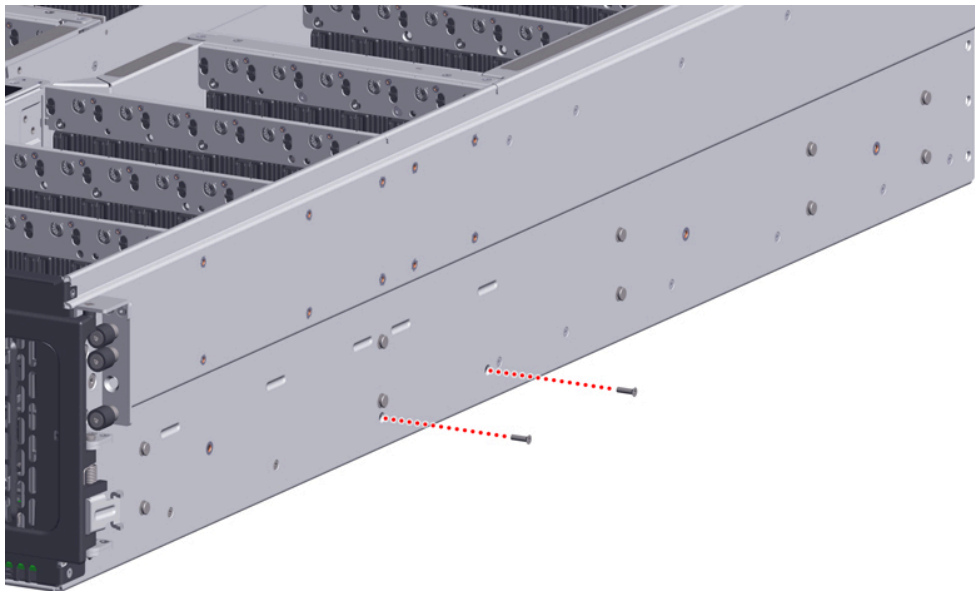
**Step 46:** Inside the drive bays of the rear-right drive housing, use a T7 Torx screwdriver to remove the four (4) M3 6mm screws securing the drive housing to the baseboard:

Figure 49: Rear-Right Drive Bays, As Viewed from Right-Front-Top



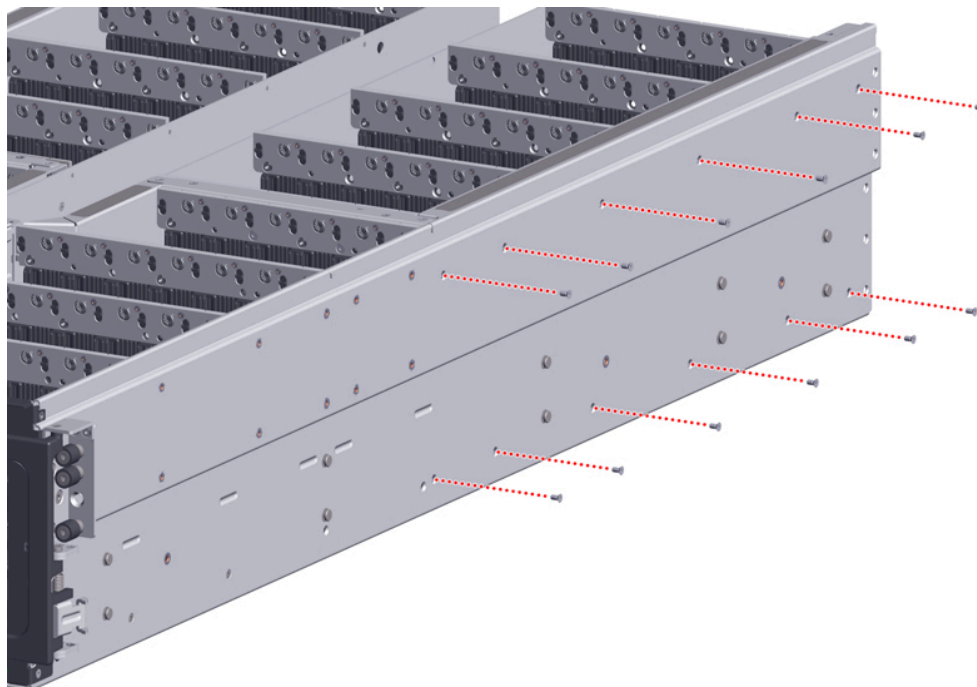
**Step 47:** On the outside of the chassis, at the front of the rear-right drive housing, use a T8 Torx screwdriver to remove the two (2) K30 10mm screws securing the drive housing to the side of the chassis:

Figure 50: Outside-Right of Enclosure, As Viewed from Front-Top

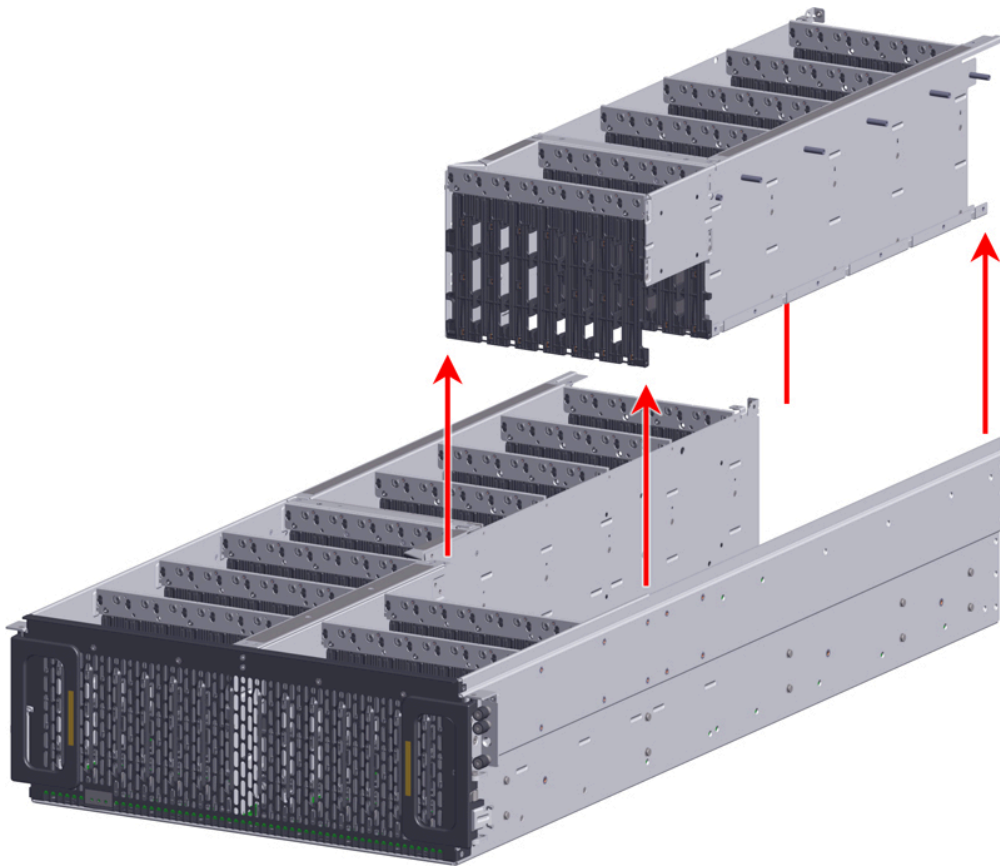


**Step 48:** On the outside of the chassis, use a T7 Torx screwdriver to remove the twelve (12) M3 6mm screws securing the drive housing to the side of the chassis:

Figure 51: Right-Front Corner, As Viewed from Right-Front-Top



**Step 49:** Pull upward on the rear-right drive housing to remove it from the chassis:

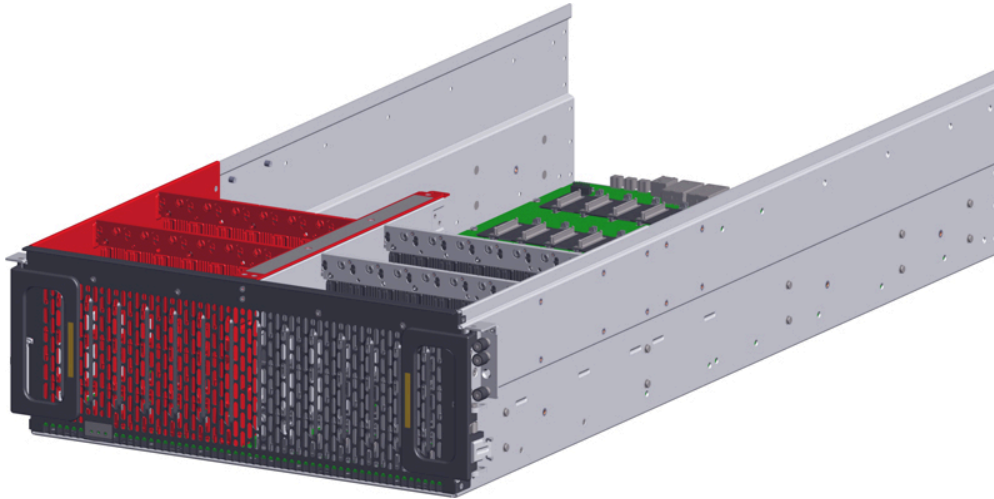


**Step 50:** Repeat these steps to remove the rear-left drive housing.

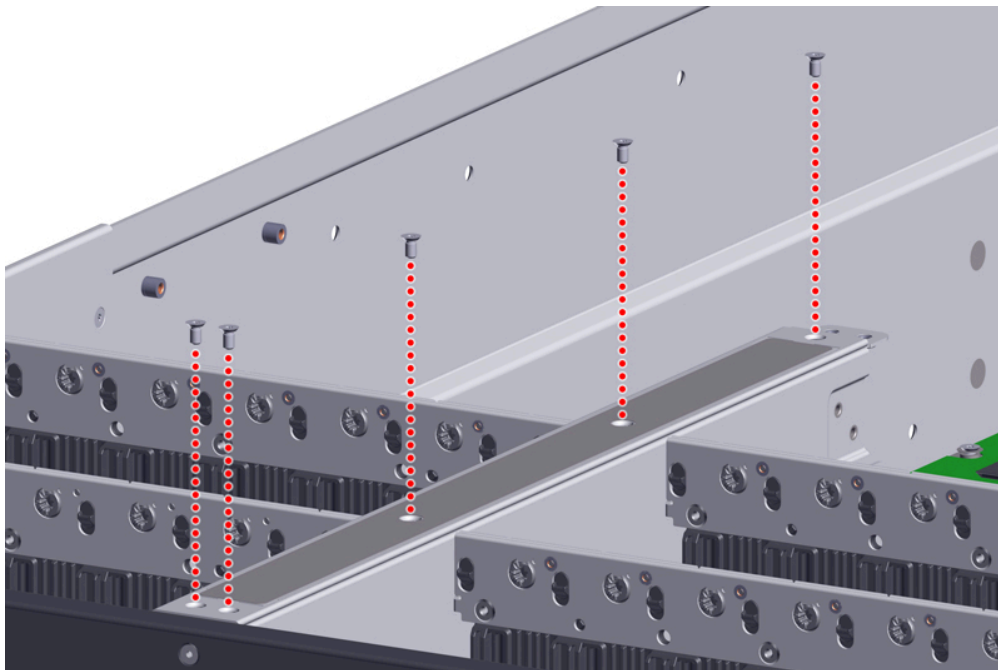
### Removing the Front Drive Housings

The following image shows the front-left drive housing in red (for identification purposes only), as viewed from the front of the enclosure:

Figure 53: Front-Left Drive Housing Location, As Viewed from Front-Right-Top



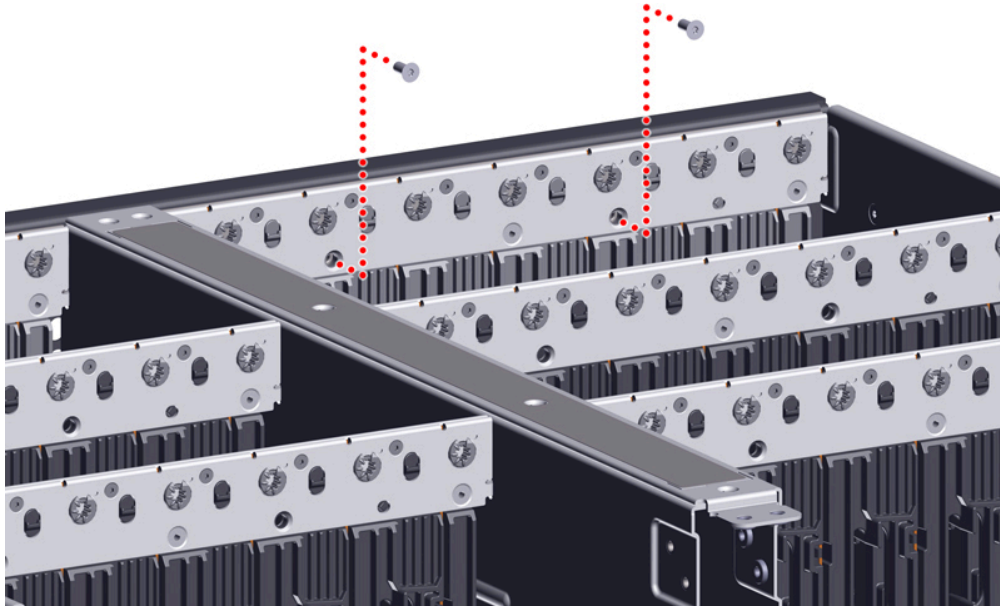
**Step 51:** At the junction between both front drive housings, remove the five (5) M3 6mm screws holding them together:



**Step 52:** At the front of the chassis, use a T7 Torx screwdriver to remove the two (2) M3 7mm screws securing the front-left drive housing to the front of the chassis:

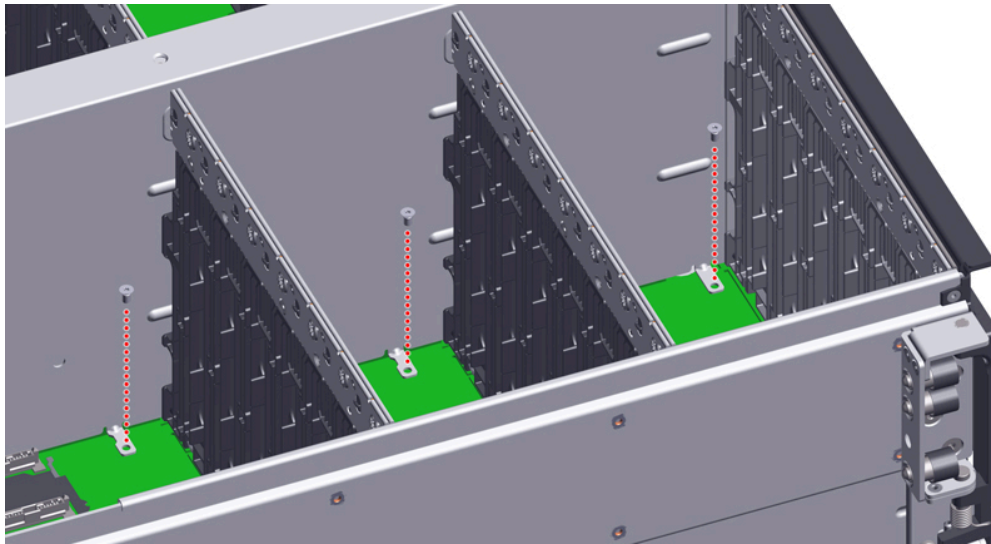


Figure 55: Front-Left Corner, As Viewed from Right-Rear-Top



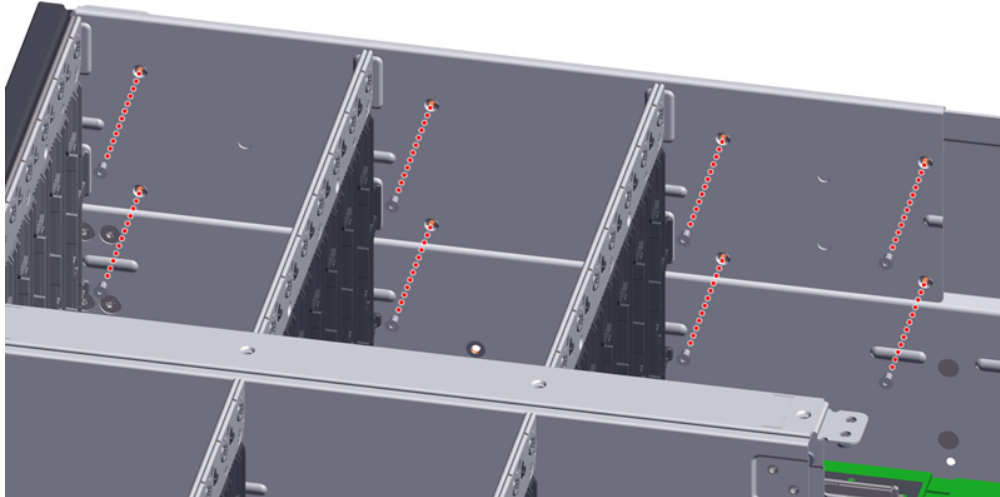
**Step 53:** Inside the drive bays of the front-left drive housing, use a T7 Torx screwdriver to remove the three (3) M3 6mm screws securing the drive housing to the baseboard:

Figure 56: Front-Left Corner, As Viewed from Left-Rear-Top



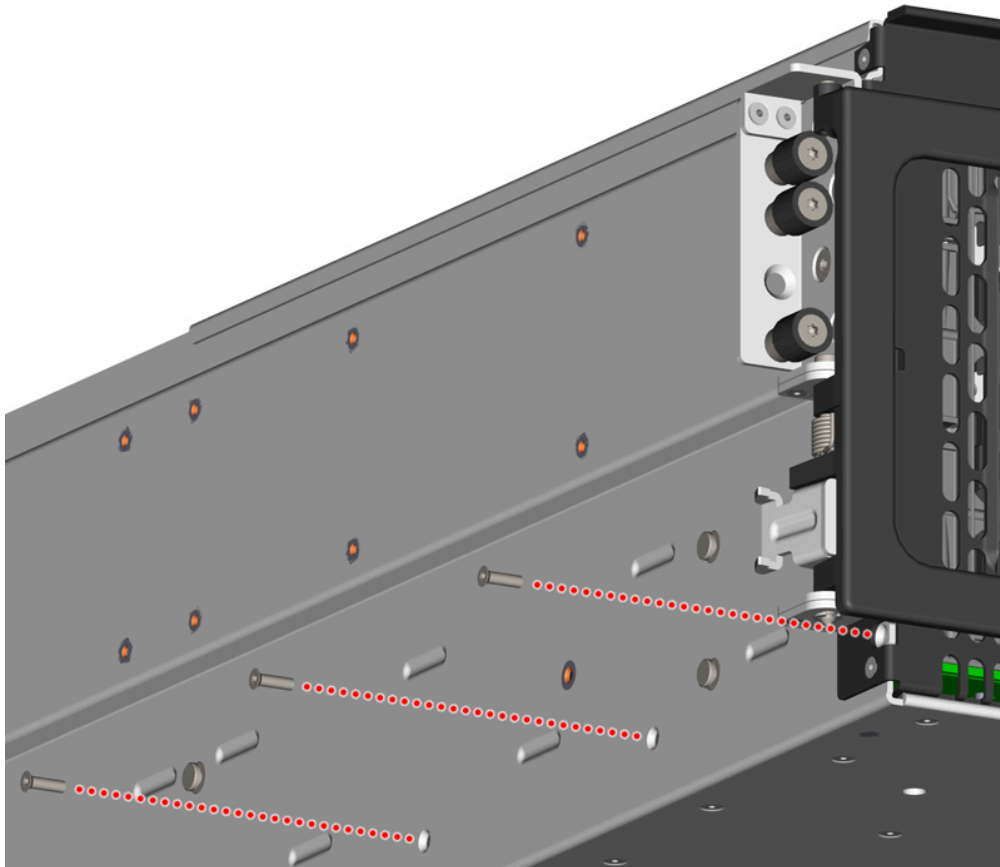
**Step 54:** Inside the drive bays of the front-left drive housing, use a T7 Torx screwdriver to remove the eight (8) screws securing the drive housing to the sidewall of the chassis:

*Figure 57: Front-Left Corner, As Viewed from Right-Rear-Top*

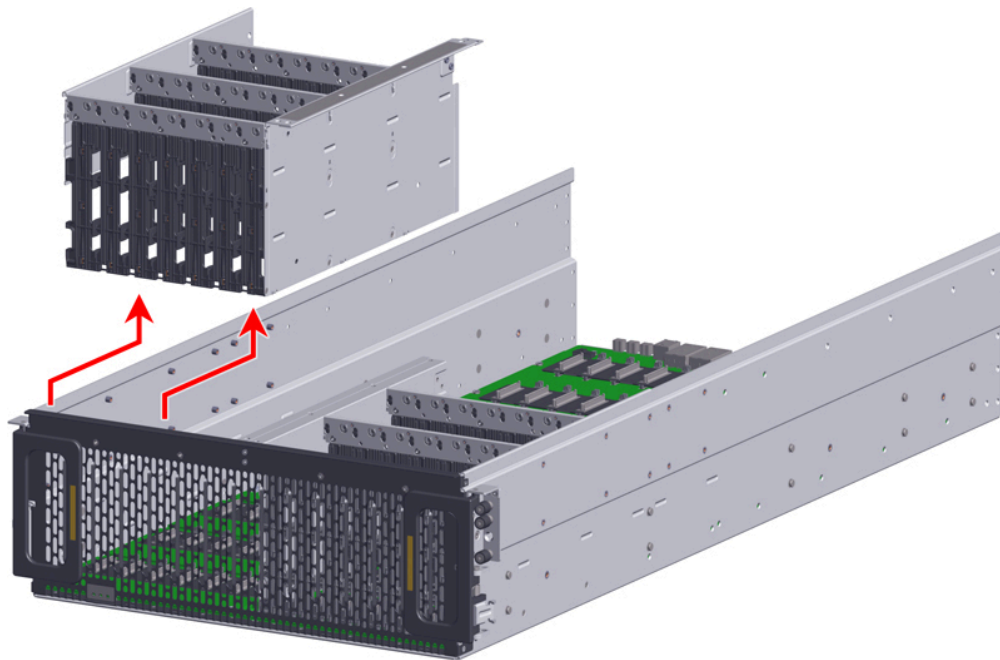


**Step 55:** On the outside of the chassis, use a T8 Torx screwdriver to remove the three (3) K30 10mm screws securing the housing to the chassis:

*Figure 58: Front-Left Corner, As Viewed from Front-Left-Bottom*



**Step 56:** Lift the front-left drive housing, then slide it rearward to remove it from the chassis:

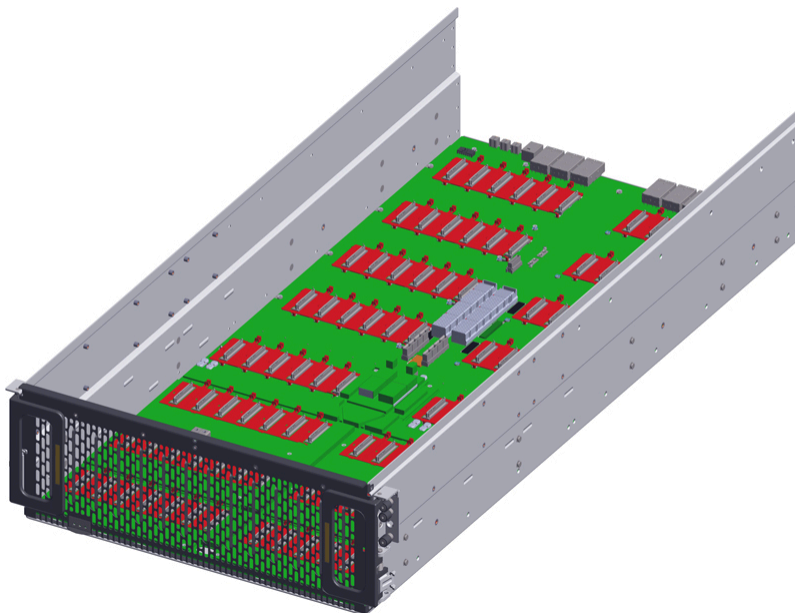


**Step 57:** Repeat these steps to remove the right-front drive housing.

### Removing the HDD Limiters

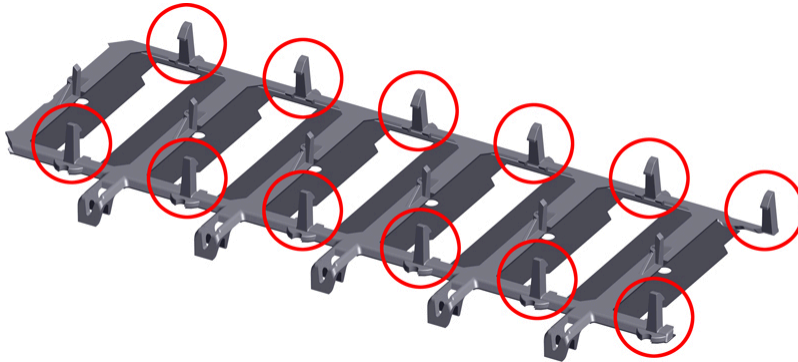
The following image shows the HDD limiters in red (for identification purposes only):

*Figure 60: HDD Limiter Locations*

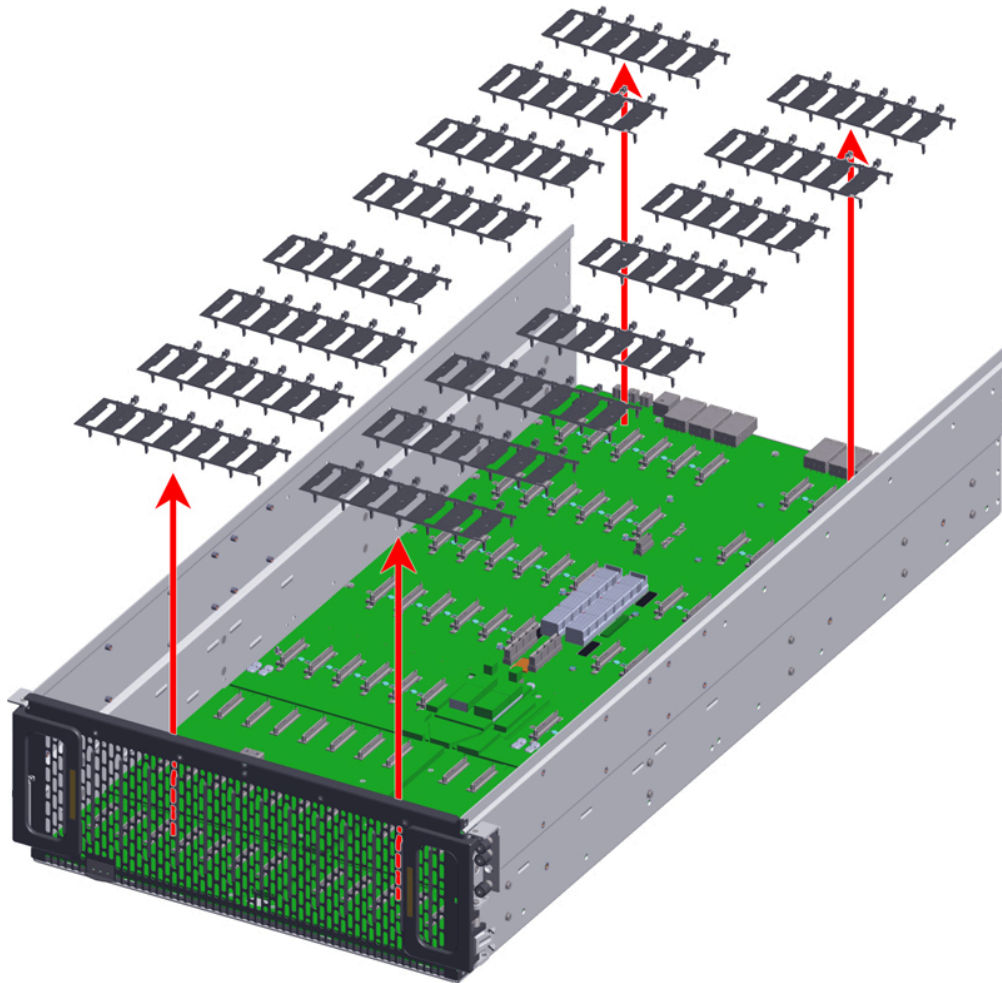


The bottom side of each limiter has either twelve (12) or fourteen (14) clips that hold it to the baseboard; these clips must be disengaged from the baseboard in order to remove the limiter:

Figure 61: 12-Clip HDD Limiter, Bottom Side

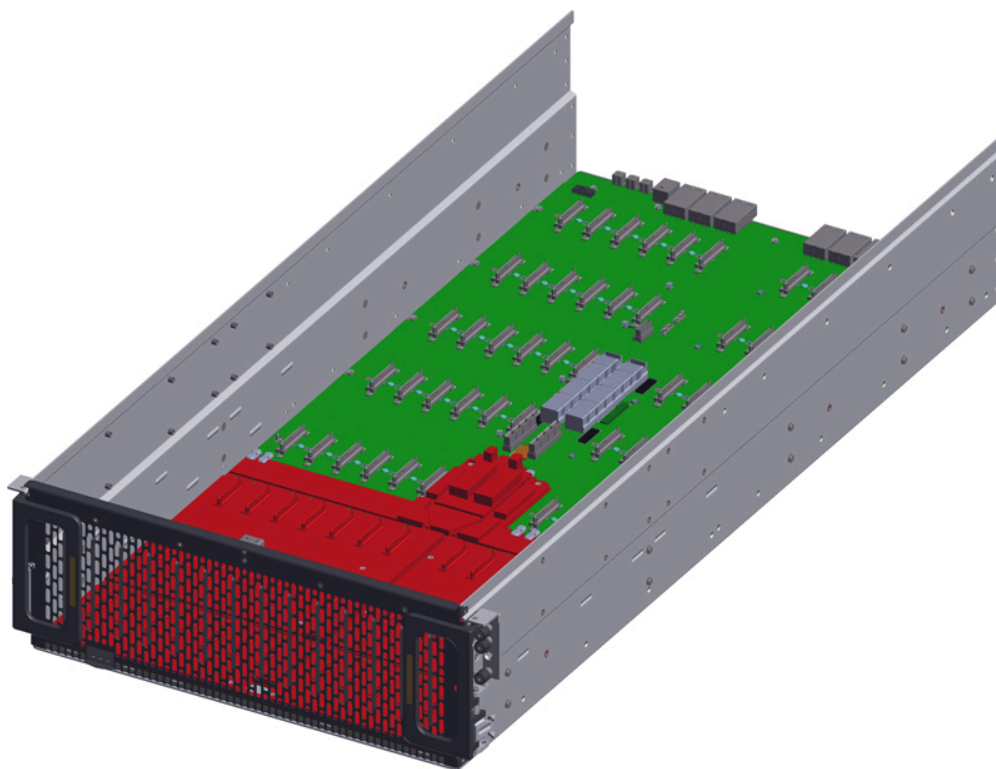


**Step 58:** Use your fingers—or a flat object—to pry up the HDD limiters at their clip locations, and remove the limiters from the baseboard:



### Removing the Front Baseboard

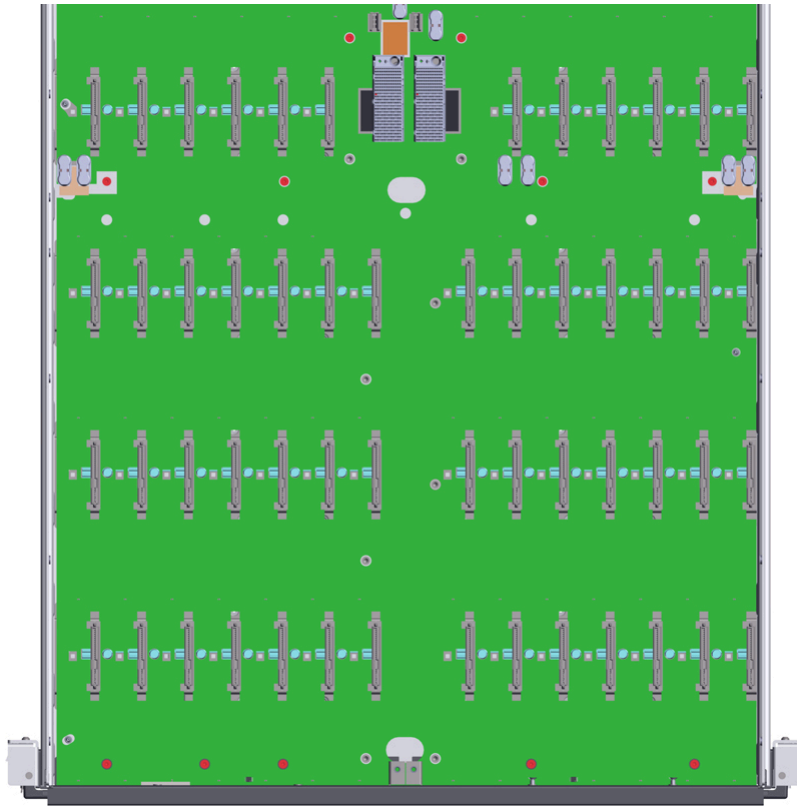
The following image shows the front baseboard in red (for identification purposes only):





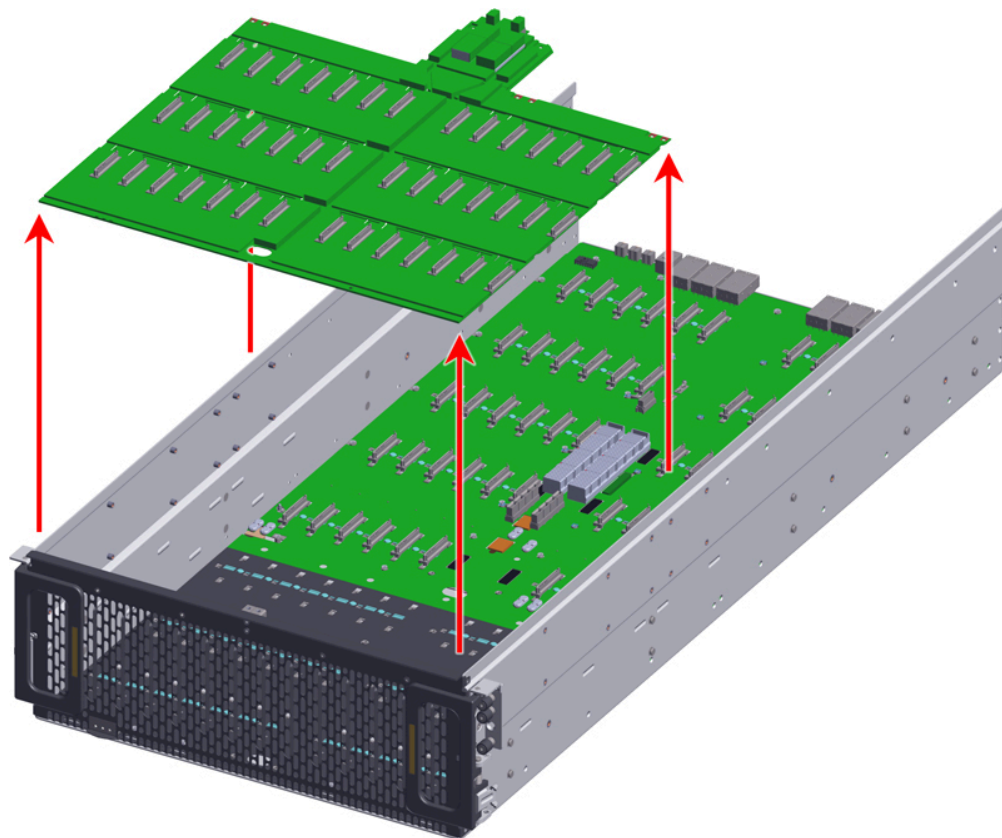
**Step 59:** Use a T7 Torx screwdriver to remove the eleven (11) M3 6mm screws securing the smaller, front baseboard to the chassis. The screws are shown in red in the following image:

*Figure 64: Front Baseboard Screw Locations, As Viewed from the Front-Top*



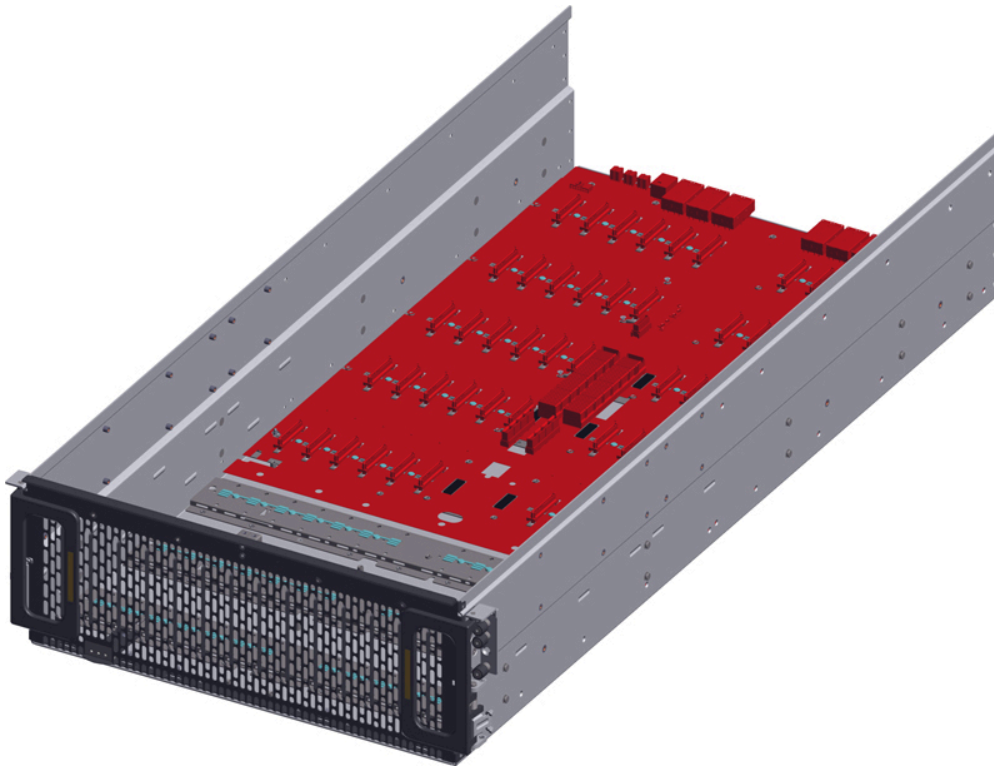
**Step 60:** Pull the smaller, front baseboard upward to remove it from the chassis:

Figure 65: Front Baseboard, As Viewed from the Right-Front-Top



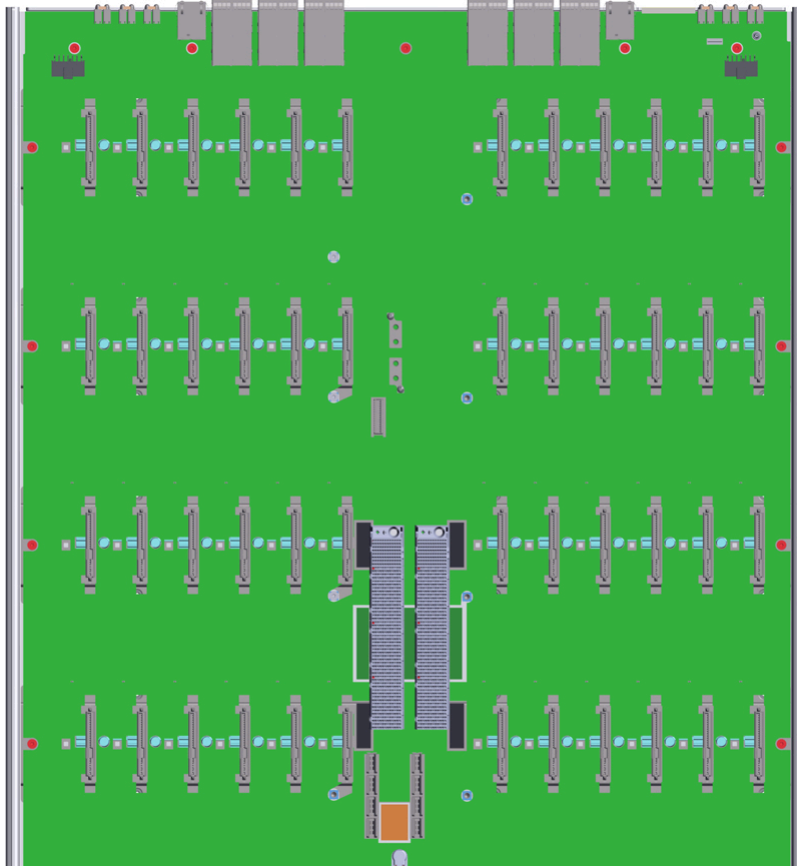
### Removing the Rear Baseboard

The following image shows the rear baseboard in red (for identification purposes only):



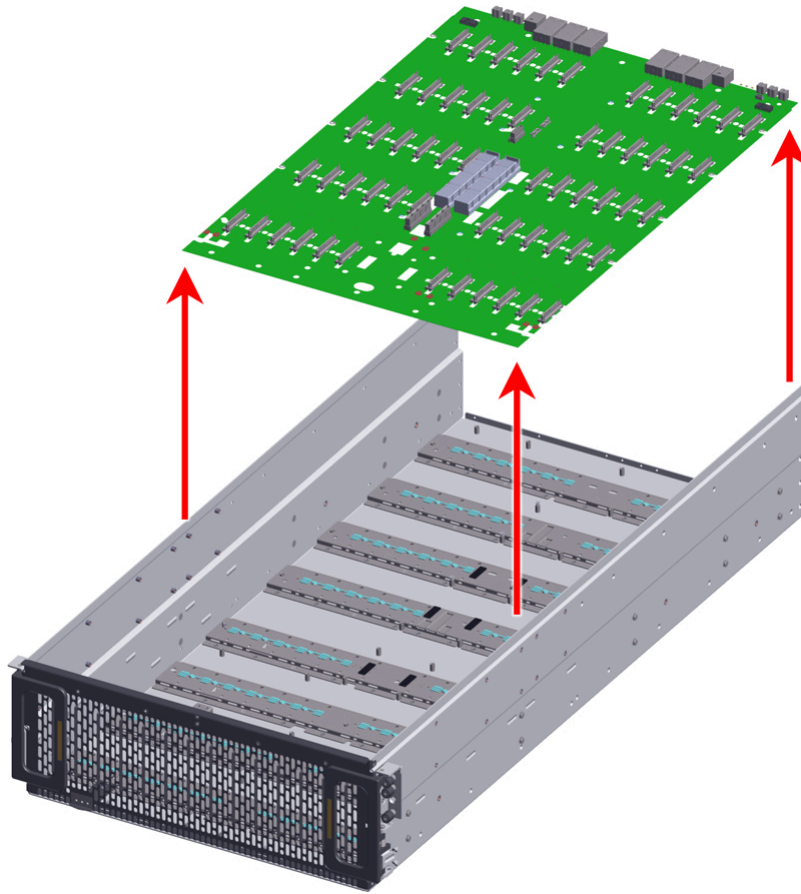
**Step 61:** Use a T7 Torx screwdriver to remove the thirteen (12) M3 6mm screws securing the larger, rear baseboard to the chassis. The screws are shown in red in the following image:

*Figure 67: Rear Baseboard Screw Locations, As Viewed from the Front-Top*



**Step 62:** Pull the larger, rear baseboard upward to remove it from the chassis:

Figure 68: Rear Baseboard, As Viewed from the Right-Rear-Top



**Result:** The disassembly is now complete.