



HYPER—UNIFIED STORAGE

Nexsan Unity

Hardware Maintenance Guide

Firmware Version Unity v. 6.0

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About this document

This *Hardware Maintenance Guide* provides information and detailed procedures for the removal and replacement of these Nexsan Unity hardware systems:

- Nexsan Unity2200™ Storage System
- Nexsan Unity4400™ Storage System
- Nexsan Unity6900™ Storage System
- Nexsan US2200™ Storage Expansion
- Nexsan US224™ Storage Expansion
- Nexsan US316™ Storage Expansion
- Nexsan US424™ Storage Expansion
- Nexsan U2G460™ Storage Expansion
- Nexsan US460™ Storage Expansion

The replacement procedures are considered either Customer-Replaceable Units (CRUs) or support-assisted Field-Replaceable Units (FRUs). CRUs can be performed without any assistance whereas support-assisted FRUs always require help from Nexsan Technical Support. All procedures are rated based on the associated risk to the system should the procedure not be followed correctly. Class 1 procedures have the lowest associated risk and Class 3 procedures have the highest associated risk. Below are the classes used in this manual to group procedures:

- CRU: Class 1
- CRU: Class 2
- CRU: Class 3 (highest risk)
- FRU: Class 1
- FRU: Class 2
- FRU: Class 3 (highest risk)

Contact Nexsan Support for assistance if you identify issues with any of the following components:

- HBA cards
- CPUs
- DIMMs
- NVDIMMs

Audience

This guide has been prepared for the following audience:

- Any qualified NST/Unity administrator.

Conventions

Here is a list of text conventions used in this document:

Convention	Description
<u>underlined blue</u>	Cross-references, hyperlinks, URLs, and email addresses.
boldface	Text that refers to labels on the physical unit or interactive items in the graphical user interface (GUI).
monospace	Text that is displayed in the command-line interface (CLI) or text that refers to file or directory names.
monospace bold	Text strings that must be entered by the user in the command-line interface or in text fields in the graphical user interface (GUI).
<i>italics</i>	System messages and non-interactive items in the graphical user interface (GUI) References to Software User Guides

Notes, Tips, Cautions, and Warnings

Note Notes contain important information, present alternative procedures, or call attention to certain items.

Tip Tips contain handy information for end-users, such as other ways to perform an action.



CAUTION: In hardware manuals, cautions alert the user to items or situations which may cause damage to the unit or result in mild injury to the user, or both. In software manuals, cautions alert the user to situations which may cause data corruption or data loss.



WARNING: Warnings alert the user to items or situations which may result in severe injury or death to the user.

Contacting Nexsan

For questions about Nexsan products, please visit the [Nexsan support](#) Web page, and the [Nexsan Unity Documents & Online Help](#) page. If you are unable to find the answer to your question there, please see our contact information below.

Service and support

Nexsan's Technical Services Group provides worldwide assistance with installation, configuration, software support, warranty, and repair for all Nexsan products. A variety of service and support programs are available to provide you with the level of coverage and availability your operation requires.

Nexsan Unity Documentation & Online Help page:

https://helper.nexsansupport.com/unt_downloads.html

Unity Online Help page:

https://helper.nexsansupport.com/unt_onlinehelp.html

Contact Nexsan Unity support:

https://helper.nexsansupport.com/unt_support

Worldwide Web site:

www.nexsan.com

Related documentation

The following Nexsan product manuals contain related information:

- Nexsan Unity Online Help
- *Nexsan Unity Hardware Reference Guide*
- *Nexsan Unity Hardware Maintenance Guide, Unity Next Generation*
- *Nexsan Unity Software User Guide*
- *Nexsan Unity nxadmin Command-line Interface Reference Guide*
- *Nexsan Unity nxcmd Command-line Interface Reference Guide*
- *Nexsan Unity Snapshots and Replication Guide*
- *Nexsan Unity Storage Expansion Reference Guide*
- *Nexsan Unity VMware Best Practices Guide*
- *Nexsan Unity NFS Interoperability*
- *Nexsan Unity Networking Best Practices Guide*
- *Nexsan Unity Performance Best Practices Guide*
- *Nexsan Unity Microsoft Best Practices Guide*

Safety notices

Always observe the following precautions to reduce the risk of injury and equipment damage:

- Computer components and disk drives are sensitive to static discharge. Take precautions to discharge any electrostatic charge from your person before and while handling components with your hands or any tools. Use an anti-static wrist-strap.
- The system only be installed in a clean, dry environment. The operating temperature is 10° to 35° C (50° to 95° F), with operating relative humidity at 20 to 95%, non-condensing.
- Do not install hardware in an enclosed cabinet or other small area without ventilation.
- Ensure correct lifting methods are used when handling hardware. Special care should be taken when removing hardware from its packaging and positioning it into its required location. When lifting hardware, two people at either end should lift slowly with their feet spread out to distribute the weight. Always keep your back straight and lift with your legs.
- When installing the system as a rack-mounted component, ensure that all Nexsan-supplied mounting fixtures are secure. All bolts and screws should be fully tightened. Failure to comply with this may result in the unit not being fully supported in the rack and could lead to the product falling from the rack causing personal injury or falling onto other rack components.
- Ensure that the rack is sufficiently stable by having wall anchors and/or stabilizing legs, and that the floor supporting the rack has sufficient strength for the overall weight loading.
- Only a fully-trained Service Engineer is authorized to disassemble any other part of the hardware, and then only when the hardware is powered off.
- The system has multiple power connections; as a result, you must remove all power leads to completely isolate the power and always use the IEC power cords which are supplied with the system.



CAUTION: All Nexsan Unity Storage Systems are hot-pluggable. However, new expansions must be powered on AFTER you connect it to the existing system.

Chapter 1

Customer-Replaceable Units: Class 1

Class 1 CRUs - The following components of the Nexsan Unity Storage Systems are replaceable by the customer without assistance from Technical Support and have little associated risk of causing a complete or partial system failure if the documented replacement procedure is followed correctly. However, if you are unsure about a specific step or process, please contact Nexsan Support for assistance.

This chapter contains the following sections:

ESD protection	10
Disk drives	11
Power supply units (PSUs)	25
SFPs	33

ESD protection

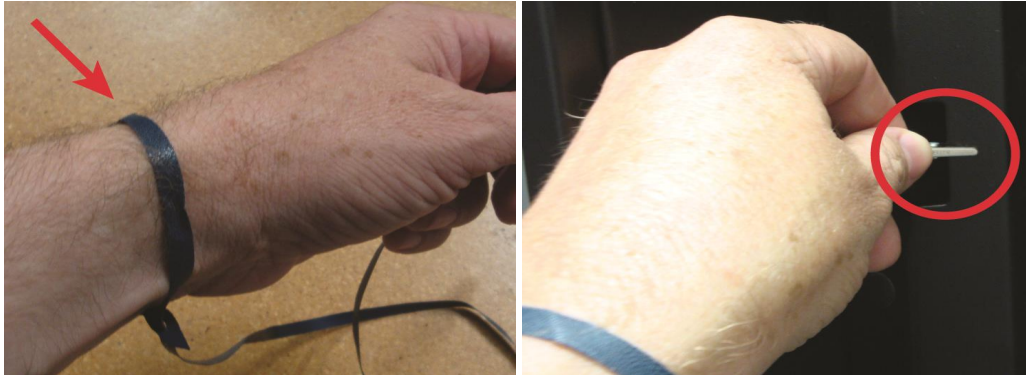


CAUTION: Computer components and disk drives are sensitive to electrostatic discharge (ESD). Follow all appropriate anti-static procedures to prevent damage to your equipment or components.

▶ **To prevent ESD damage:**

- Use the anti-static wrist-strap shipped with Unity whenever you are performing maintenance on the Unity Storage System.

Figure 1-1: Using the anti-static wrist strap



- Before touching components with your hands or with any tools, and before removing any components from their anti-static bags, ground any electrostatic charge from your person by touching a grounded metal object.
- Handle printed circuit boards by their edges only. Do NOT touch any of a board's components, chips, modules, or contacts.
- When handling replaceable components, do NOT touch any exposed pins or contacts.
- Place components and modules into their anti-static bags when they are not in use.

Disk drives

Disk drives (either data drives or FASTier drives) are mounted in drive carriers to simplify their installation and removal from the chassis.



CAUTION: Disk drive carriers help promote proper airflow for drives. For this reason, even empty carriers without disk drives installed **MUST** remain in the chassis.

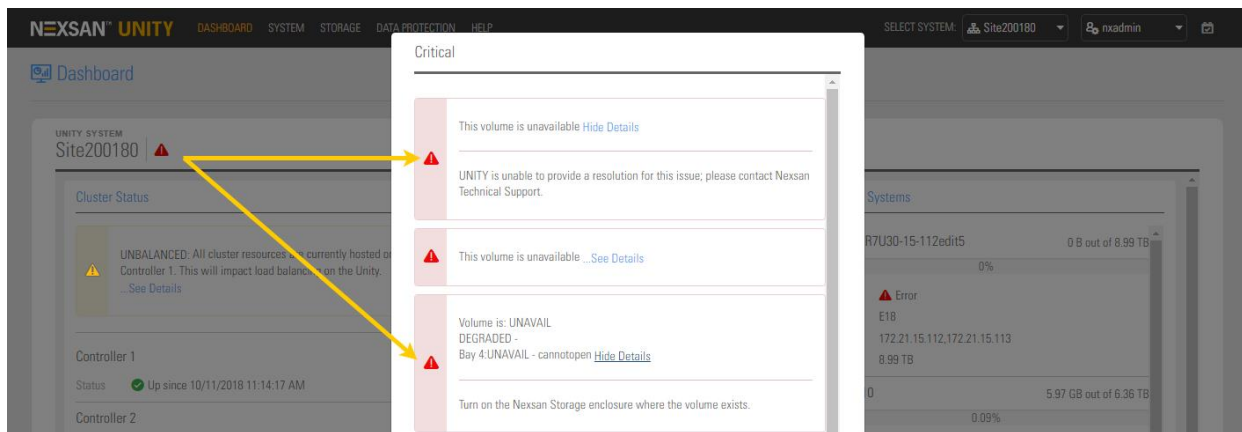
Identifying failed disk drives

If a disk drive fails, the Unity Storage System software interfaces and enclosures display the appropriate warnings.

Data disk failures

Firstly, when a disk fails, a warning is displayed on the Unity Storage System Dashboard panel.

Figure 1-2: Data disk failure error popup



Also, one of two other indicators appears:

- If a spare disk is available, the Tasks in Progress dialog [displays](#) a “resilvering” process, which means that the spare disk is being configured as a replacement for the failed disk.

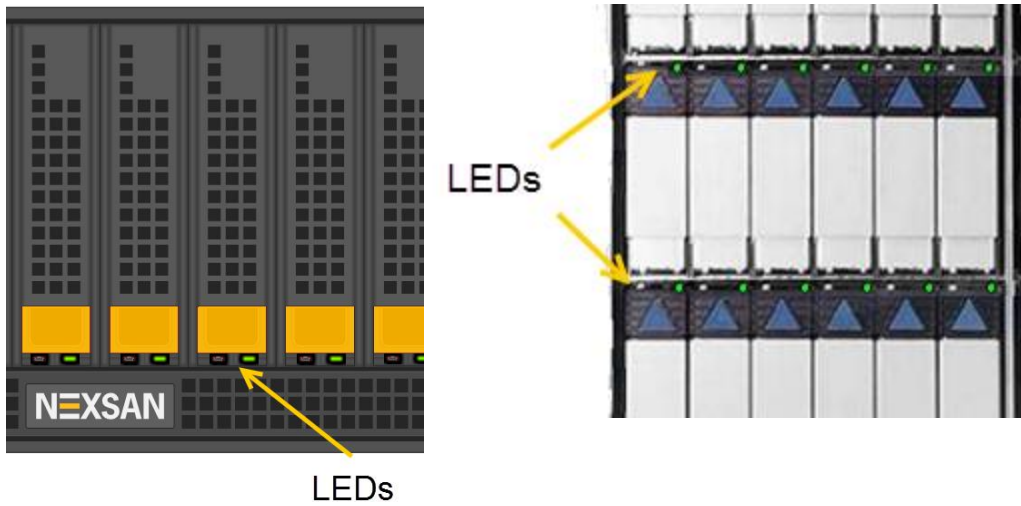
Note It can take several hours to several days for the disk resilvering process to complete, depending on how much data needs to be copied to the spare disk.

- If there is no spare disk available, the **Storage Pool** node also displays a failure icon.

Secondly, the disk LEDs on the front of the Unity Storage System indicate which disk has failed.

- A steady red LED on a drive indicates failure.

Figure 1-3: Example drive LEDs: Unity2200 (left) and US460



► **For more information about a failed data disk:**

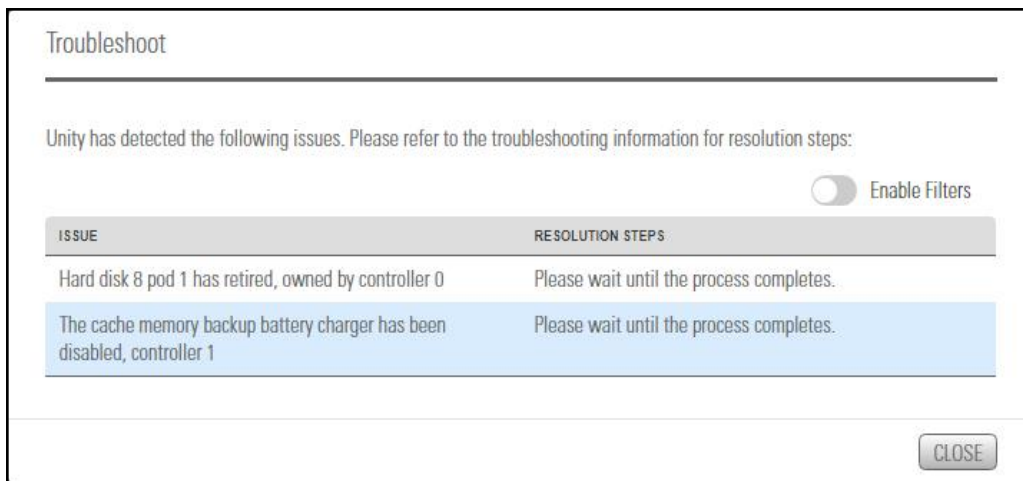
Do one or more of the following:

- If there is a failure icon on the **Storage Pools** node, click the node, then click the unit beneath it, then review the Properties panel, which contains additional information.

► **Troubleshooting**

- On the **Unity navigation bar**, click **System > Troubleshoot** to display the troubleshooting popup, which contains more information about each **Issue** that the Unity System is currently experiencing, and **resolution steps**.

Figure 1-4: Troubleshooting information



► **Check Event Viewer**

- On the **Unity navigation bar**, click **System > Event Viewer**. The Event Viewer includes Critical, Warning, Error, and optionally Information events. Click a link to an event to display a popup of the information.

Figure 1-5: Event log entry for failed disk

The screenshot shows the Nexsan Unity Event Viewer interface. A warning event is highlighted in the event log, and its details are shown in a pop-up dialog. The event details are as follows:

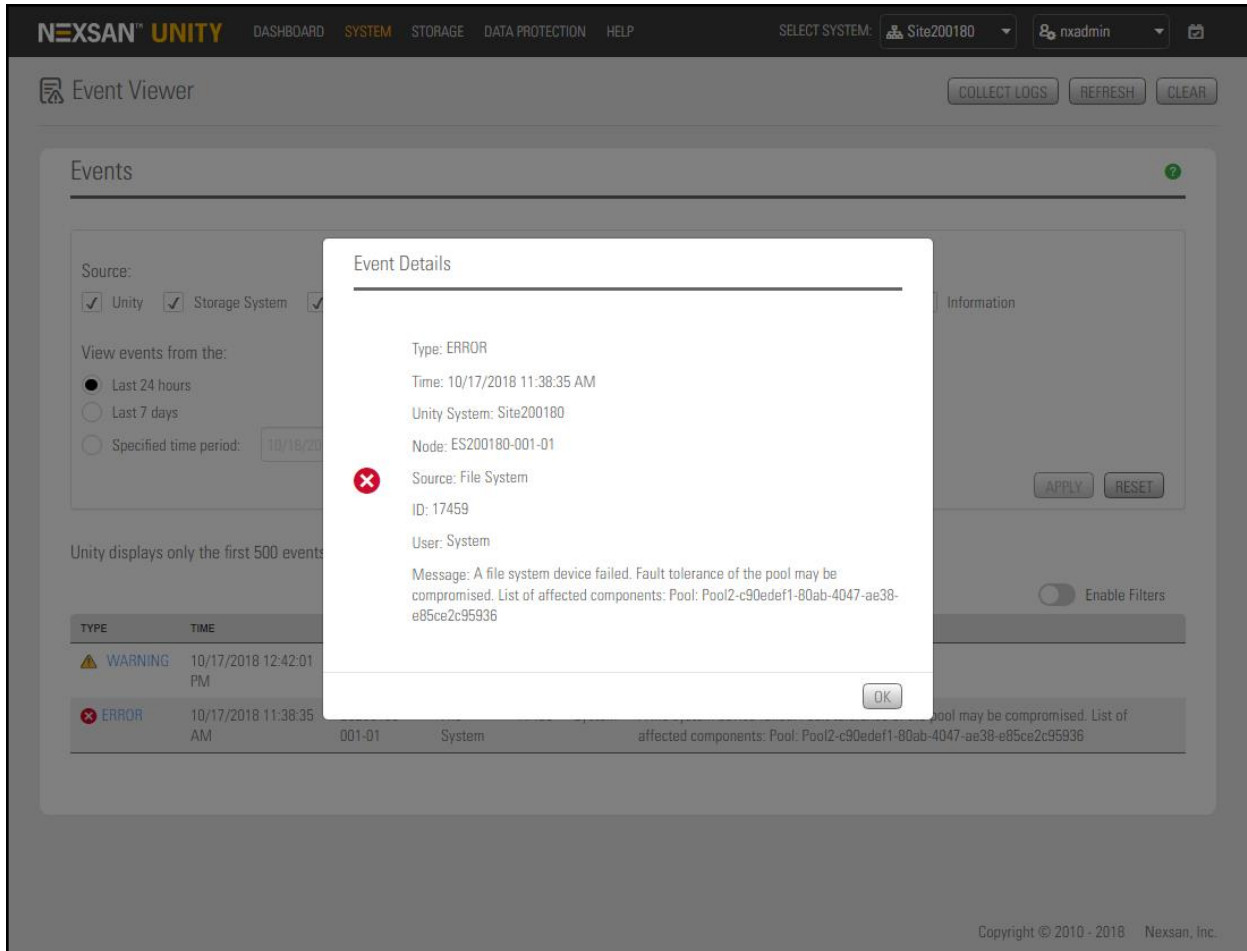
Field	Value
Type	WARNING
Time	10/11/2018 3:59:38 PM
Unity System	new_site
Node	ES202030-001-01
Source	Storage System
ID	42041
User	System
Message	Disk 8 pod 1 retired (sn: MK0171YFJ7Z96A). Generated on storage E18R6U17 (0x1d34d71) controller 0 at 15:59:25 on Oct 11 2018

Figure 1-6: Event log entry indicating that the disk (array) has been rebuilt

The screenshot shows the Nexsan Unity Event Viewer interface. An information event is highlighted in the event log, and its details are shown in a pop-up dialog. The event details are as follows:

Field	Value
Type	INFORMATION
Time	10/11/2018 3:59:38 PM
Unity System	new_site
Node	ES202030-001-01
Source	Storage System
ID	42045
User	System
Message	Rebuild of array 8 completed. Generated on storage E18R6U17 (0x1d34d71) controller 0 at 15:59:25 on Oct 11 2018

Figure 1-7: Event log entry for a degraded storage pool



1

- In the command-line interface (CLI), run the **drives** command. The number of the drive bay where the failed disk is installed will be missing from the list.

Example, with “Slot 5” missing, indicating the failed disk:

```
ES260768-176-01:A: />drives
Enumerating drives...
Drives in NST5100 (Chassis ID 100000001, Slots: 16)
* Slot 1: ATA-INTEL-SSDSA2CW30 0362 (Serial: XXXXXXXX, Size: 300 GB)
* Slot 2: SEAGATE-ST32000444SS 0006 (Serial: XXXXXXXX, Size: 2.0 TB)
* Slot 3: SEAGATE-ST32000444SS 0006 (Serial: XXXXXXXX, Size: 2.0 TB)
* Slot 4: SEAGATE-ST32000444SS 0006 (Serial: XXXXXXXX, Size: 2.0 TB)
* Slot 6: SEAGATE-ST32000444SS 0006 (Serial: XXXXXXXX, Size: 2.0 TB)
* Slot 7: SEAGATE-ST32000444SS 0006 (Serial: XXXXXXXX, Size: 2.0 TB)
* Slot 8: SEAGATE-ST32000444SS 0006 (Serial: XXXXXXXX, Size: 2.0 TB)
* Slot 9: SEAGATE-ST32000444SS 0006 (Serial: XXXXXXXX, Size: 2.0 TB)
* Slot 10: SEAGATE-ST32000444SS 0006 (Serial: XXXXXXXX, Size: 2.0 TB)
* Slot 11: SEAGATE-ST32000444SS 0006 (Serial: XXXXXXXX, Size: 2.0 TB)
* Slot 12: SEAGATE-ST32000444SS 0006 (Serial: XXXXXXXX, Size: 2.0 TB)
* Slot 13: SEAGATE-ST32000444SS 0006 (Serial: XXXXXXXX, Size: 2.0 TB)
* Slot 14: SEAGATE-ST32000444SS 0006 (Serial: XXXXXXXX, Size: 2.0 TB)
* Slot 15: SEAGATE-ST32000444SS 0006 (Serial: XXXXXXXX, Size: 2.0 TB)
* Slot 16: SEAGATE-ST32000444SS 0006 (Serial: XXXXXXXX, Size: 2.0 TB)
```

When you have all required information, including the specific drive bay that the failed disk occupies, proceed to [Replacing data disks](#) on page 18.

FASTier disk failures

When a FASTier disk fails,


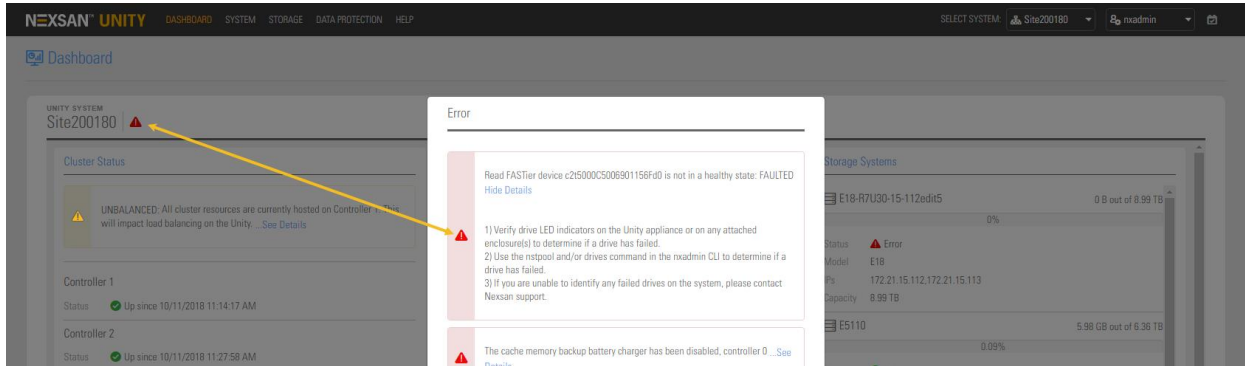
- a warning is displayed on the Unity Storage System Dashboard panel. Click the Warning icon , displayed beside the Unity System name for details, as shown here:

Figure 1-8: FASTier disk failure error popup

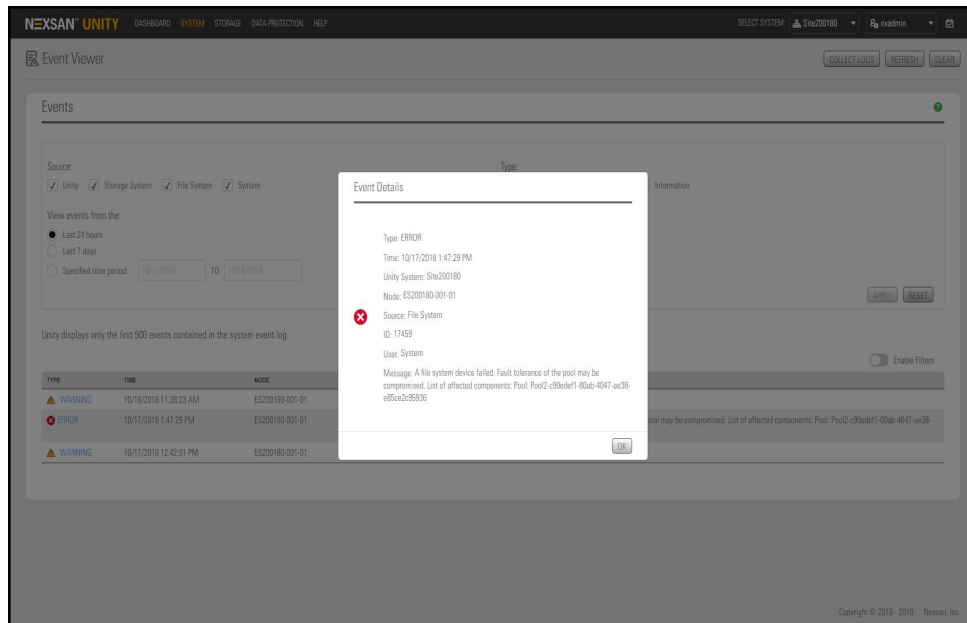


- the disk LEDs on the front of the unit indicate which disk has failed. See [Figure 1-3](#)
- ▶ **For more information about the failed FASTier disk:**

Do one or more of the following:

- Open the Event Viewer to display system events. Click an event to open a detail dialog with additional information.

Figure 1-9: Event log entry for failed FASTier disk



Note Because there is no other Unity notification of a failed FASTier drive, it is highly recommended that you configure Unity to send an e-mail whenever a CRITICAL event occurs so that you are notified in the event of a FASTier failure. See "Event logging and notification" in the *Nexsan Unity Software User Guide*.

- In the command-line interface (CLI), run the **drives** command to display information about the disk failure.

Example, with “Slot 1” missing, indicating the failed FASTier™ disk:

```
ES260768-176-01:A:/>drives
Enumerating drives...
Drives in NST5100 (Chassis ID 100000001, Slots: 16)
 * Slot 2: SEAGATE-ST32000444SS 0006 (Serial: XXXXXXXX, Size: 2.0 TB)
 * Slot 3: SEAGATE-ST32000444SS 0006 (Serial: XXXXXXXX, Size: 2.0 TB)
 * Slot 4: SEAGATE-ST32000444SS 0006 (Serial: XXXXXXXX, Size: 2.0 TB)
 .
 .
 .
```

When you have all required information, including the specific drive bay that the failed disk occupies, proceed to [Replacing FASTier drives](#) on page 22.

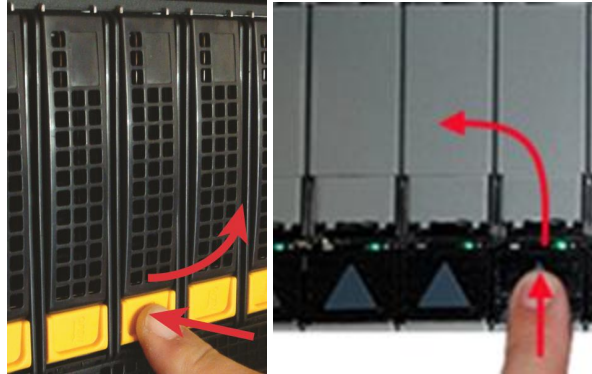
Replacing data disks

It is always recommended that you replace failed disk drives immediately to ensure that the system has an adequate number of spare drives.

► **To replace a failed data drive:**

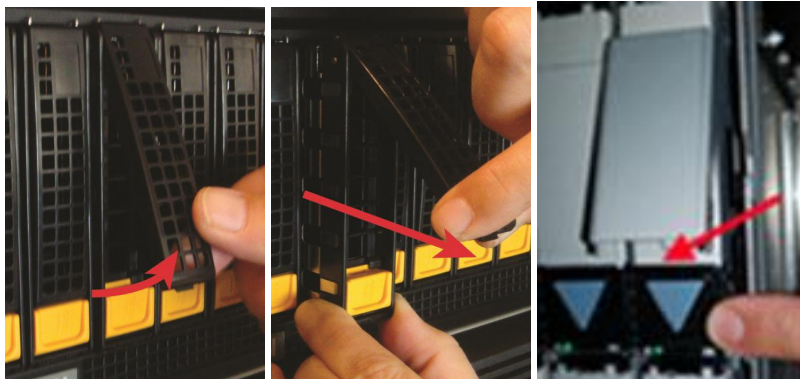
1. Press the release switch down to unlatch the drive extraction lever. The lever pops out.

Figure 1-10: Unlatching the extraction lever



2. Using the drive extraction lever, pull the disk drive out approximately 1/2 to 1 inch, then grasp the drive carrier body and remove the drive the rest of the way.

Figure 1-11: Removing the disk drive



3. Remove the drive carrier from the failed disk and attach it to the new disk.

Figure 1-12: Drive carrier screw locations

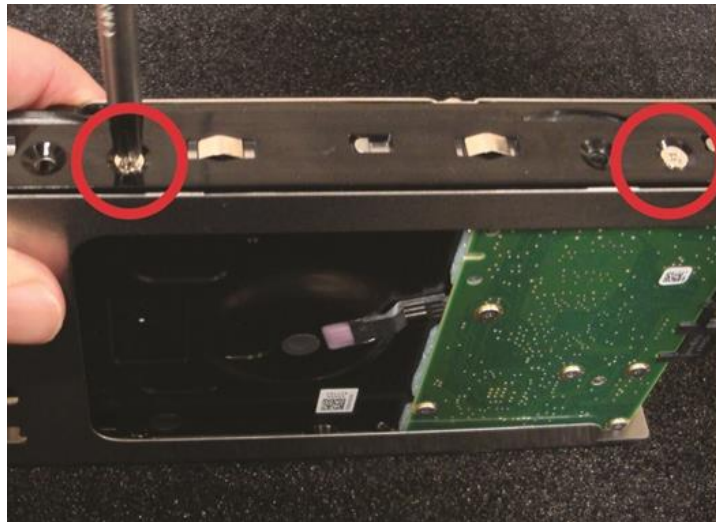


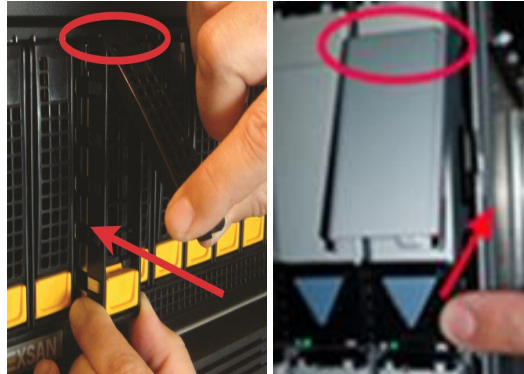
Figure 1-13: US460



CAUTION: ALWAYS put replacement disk drives into the slot from which the failed disk drives were removed. Do NOT move disk drives between slots.

4. Install the new disk drive:
 - a. Line up the carrier guides with the guides on the front of the Nexsan Unity chassis and slide the disk drive into the slot.
 - b. Hook the top of the extraction handle onto the lip of the chassis.

Figure 1-14: Installing the new disk drive



- c. Press the extraction handle until it clicks into place.

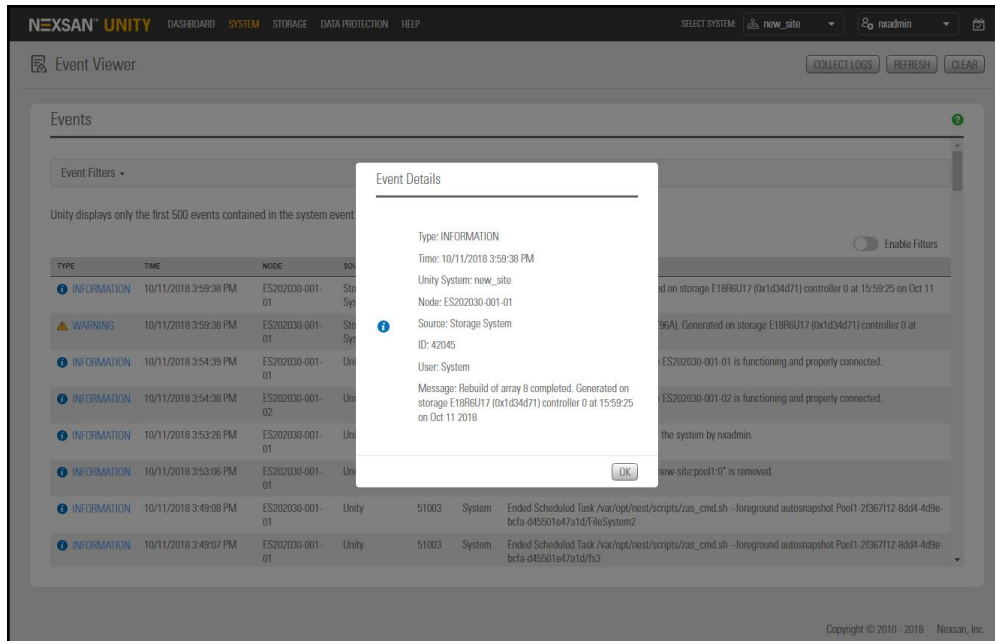
Figure 1-15: Latching the new disk into place



The appropriate disk LED lights up green to let you know that the disk is operating properly.

If the storage pool had an available spare, the new disk is configured as a spare. The failure icons in Unity are cleared and the Event Viewer shows that the disk has been restored.

Figure 1-16: Event indicating that a disk (array) has been rebuilt



If the storage pool did not have an available spare, the new disk is “resilvered” and built into the storage pool (see [Identifying failed disk drives](#) on page 11). Resilvering can take several hours to several days.

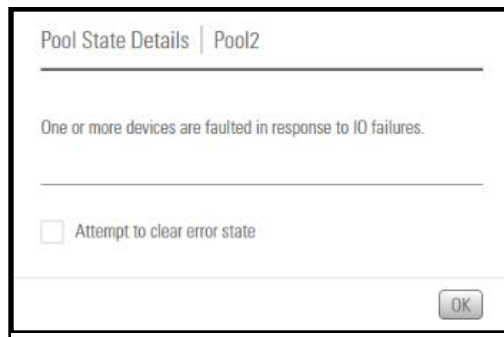
When all failure conditions are addressed (the disk is replaced, resilvering is complete, and the storage pool is operating normally), the Event Viewer indicates this.

Note In some cases, the storage pool error (see [Identifying failed disk drives](#) on page 11) is not automatically cleared when the resilvering process is complete. In such cases, perform the following procedure:

► **To clear the storage pool error after disk resilvering is complete:**

1. On the **Unity navigation bar**, select **Storage > Storage Pools**.
2. Click the link to the pool that displays the error.
3. Check the **Attempt to clear error state** check box and click **OK**.

Figure 1-17: Attempt to clear error state check box



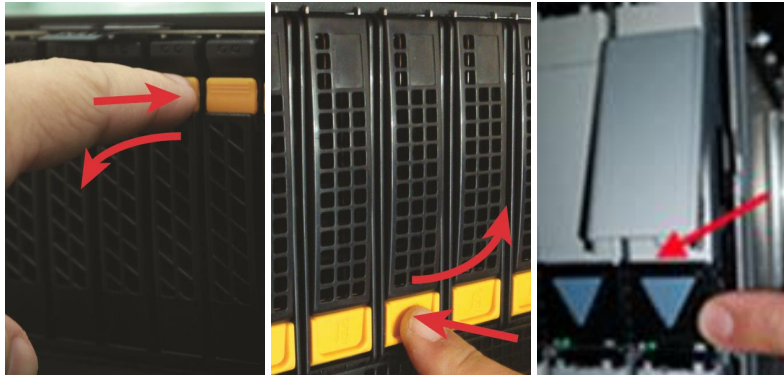
The storage pool error is cleared.

Replacing FASTier drives

► To replace a failed FASTier drive:

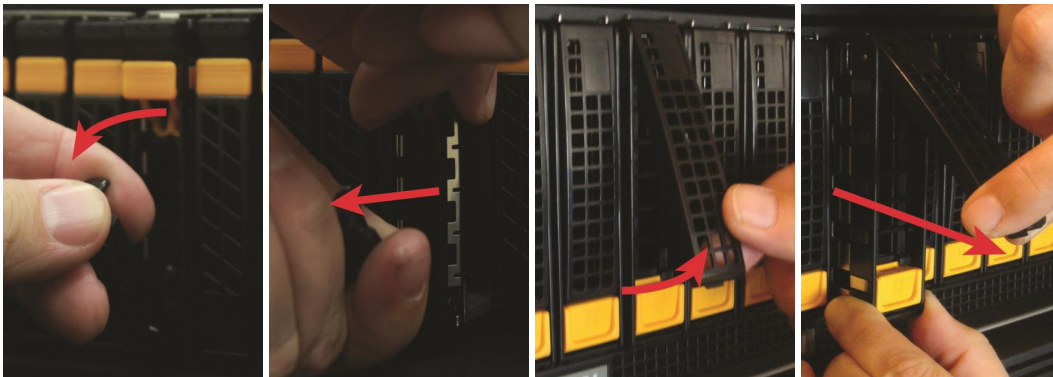
1. First you must remove the failed FASTier drive from the storage pool to which it is assigned:
 - a. On the **Unity navigation bar**, select **Storage > Storage Pools**.
 - b. Click the link to the pool that the FASTier disk is assigned to.
 - c. Select **Summary > FASTier Cache**.
Unity displays the number of available FASTier devices on the system. This number is the number of installed FASTier disks, minus one.
 - d. Make the appropriate FASTier cache assignments, either READ or WRITE, depending on your system and disk options. See "FASTier caching by storage system" in the *Unity Software User Guide*.
 - e. Click the **Apply** button.
2. Press the latch switch down to unlatch the drive extraction lever. The lever pops out.

Figure 1-18: Unlatching the extraction lever



3. Using the drive extraction lever, pull the disk drive out approximately 1/2 to 1 inch, then grasp the drive carrier body and remove the drive the rest of the way.

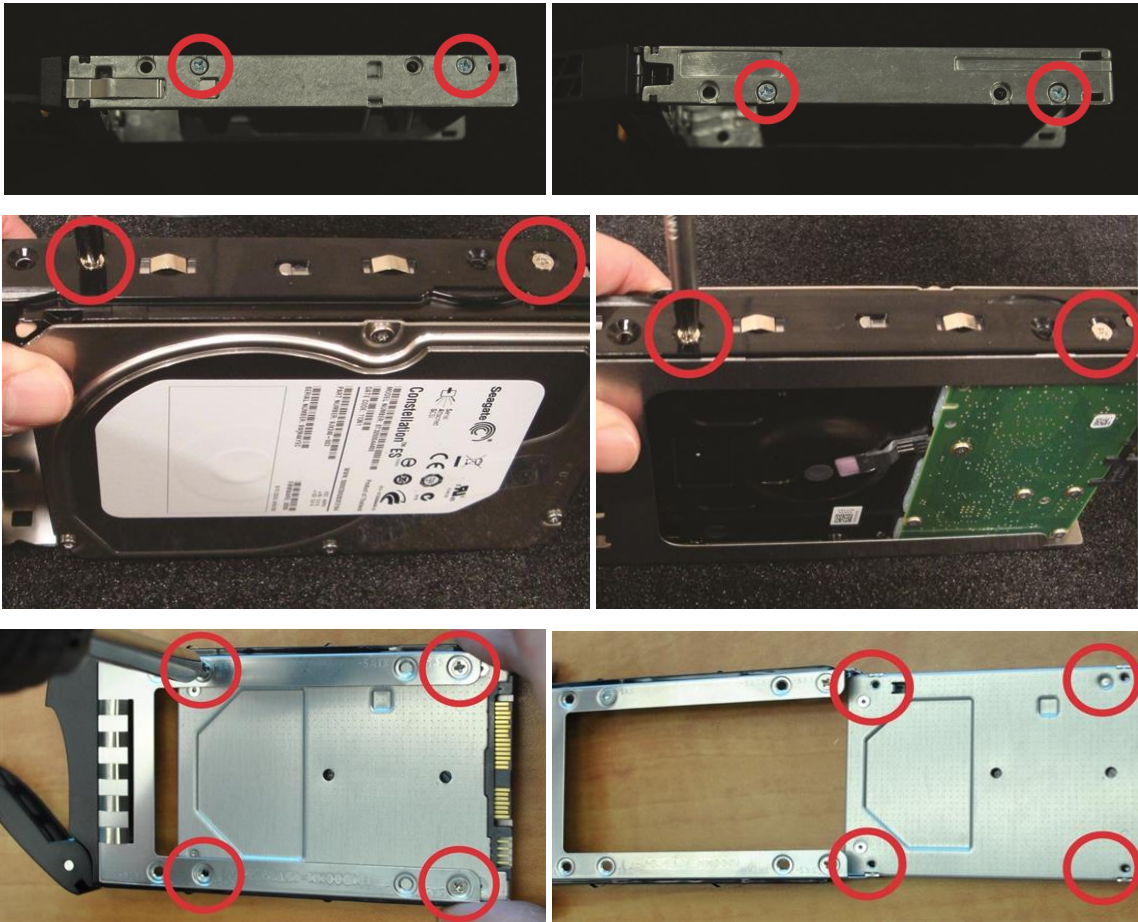
Figure 1-19: Removing the FASTier drive



CAUTION: ALWAYS put replacement disk drives into the slot from which the failed disk drives were removed. Do NOT move disk drives between slots.

4. Remove the drive carrier from the failed disk and attach it to the new disk.

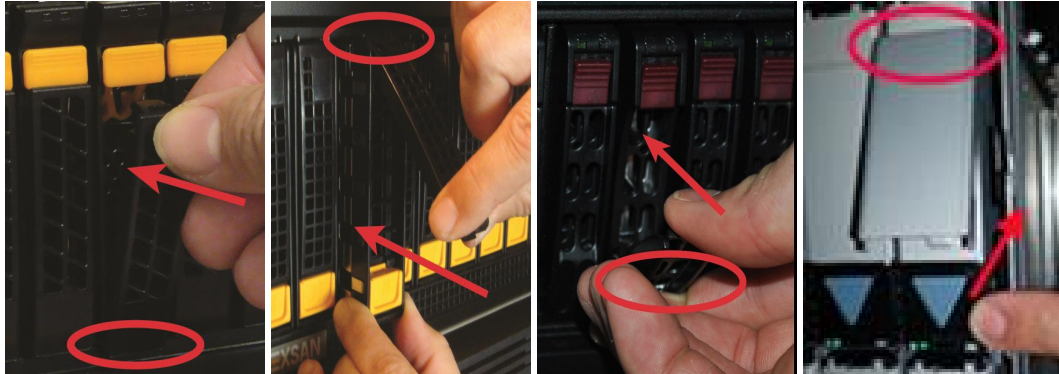
Figure 1-20: Example drive carrier screw locations



Note US460 Expansions do not use drive carriers for each drive.

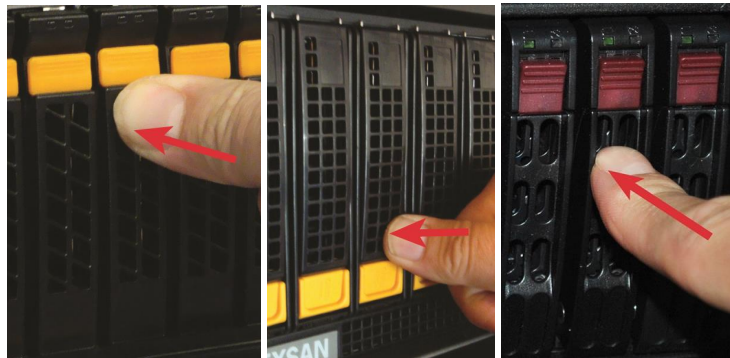
5. Install the new disk drive:
 - a. Line up the carrier guides with the guides on the front of Unity chassis and slide the disk drive into the slot.
 - b. Hook the bottom of the extraction handle beneath the lip of the chassis.

Figure 1-21: Installing the new FASTier drive



- c. Press the extraction handle until it clicks into place.

Figure 1-22: Latching the FASTier disk into place



An event is recorded in the event log and can be accessed in the Event Viewer.

6. Assign the new FASTier drive to the storage pool that the old FASTier drive was assigned to.
 - a. On the **Unity navigation bar**, select **Storage > Storage Pools**.
 - b. Click the link to the pool that the FASTier disk is assigned to.
 - c. Select **Summary > FASTier Cache**.
Unity displays the number of available FASTier devices on the system. This number is the number of installed FASTier disks, minus one.
 - d. Make the appropriate FASTier cache assignments, either READ or WRITE, depending on your system and disk options. See "FASTier caching by storage system" in the *Unity Software User Guide*.
 - e. Click the **Apply** button.

Power supply units (PSUs)

Unity Storage Systems include redundant power supply units (PSUs). In case one fails, the unit can continue to operate for a brief period using only the power from the other PSU.

Note The cooling fans in each PSU operate on separate circuits from the power supply itself. If one PSU fails, its fans continue to run on power supplied by the other PSU.



CAUTION: When a failed PSU is removed, ALWAYS replace it as soon as possible. Two functional PSUs are necessary to maintain proper operation and cooling for the unit.

Identifying failed power supply units (PSUs)


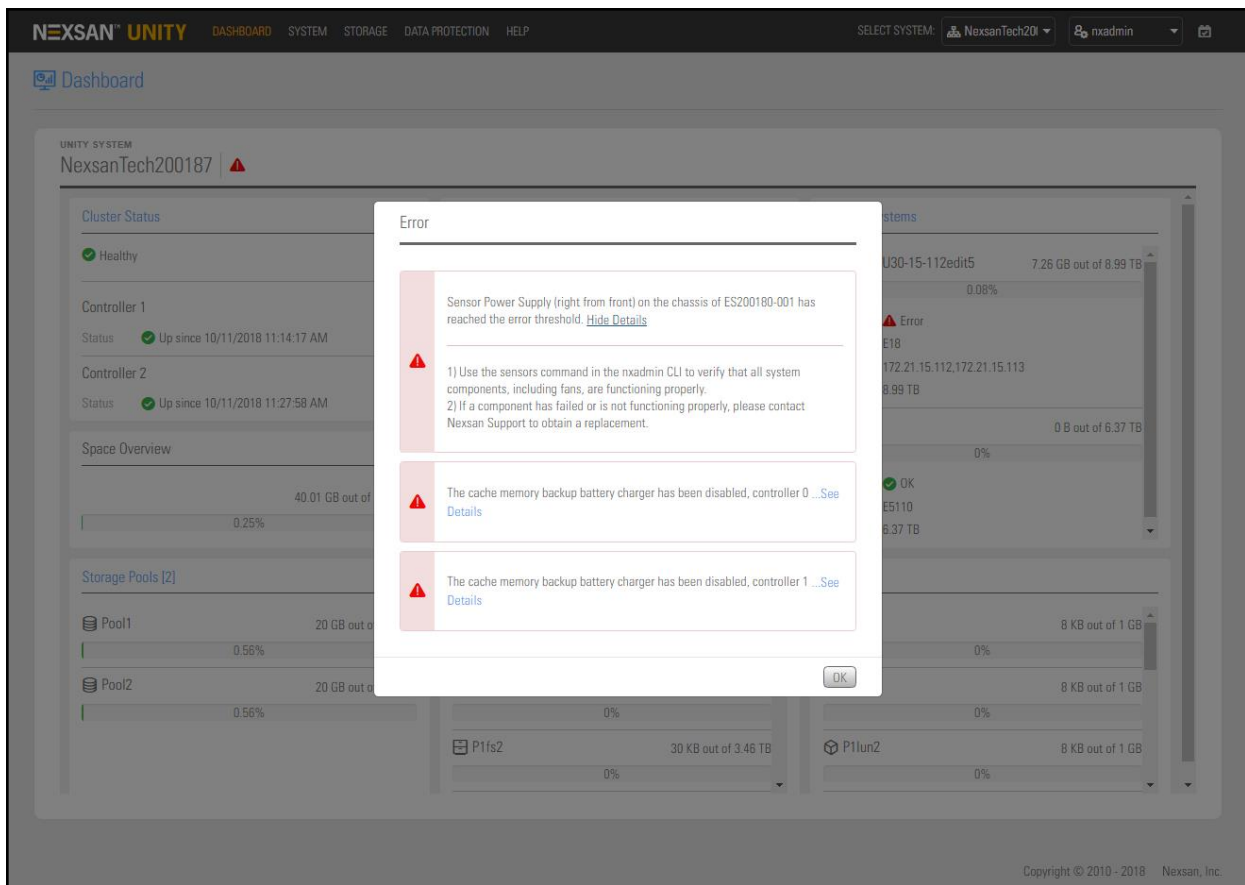
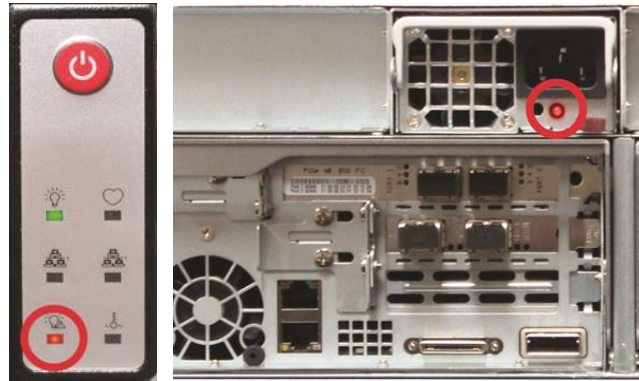
A failed power supply unit (PSU) is indicated by a critical error icon  at the top of the **Unity Dashboard**. Click the icon for details.

Figure 1-23: Power supply failure error from the Dashboard

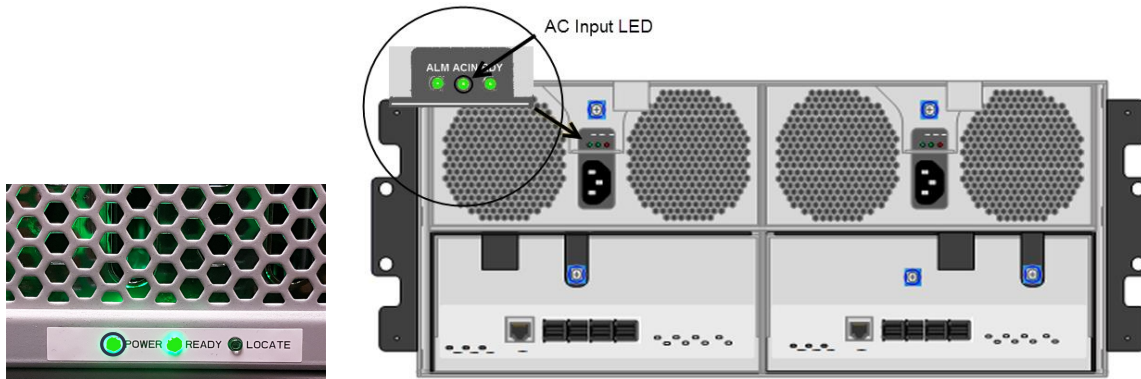


On most Unity systems, the front-panel power failure LED corresponding to the failed PSU is illuminated, and the status LED on the back of the PSU is either red or off.

Standard power failure LED (left) and PSU status LED (right)



US460 front power LED (left) and rear AC Input LED

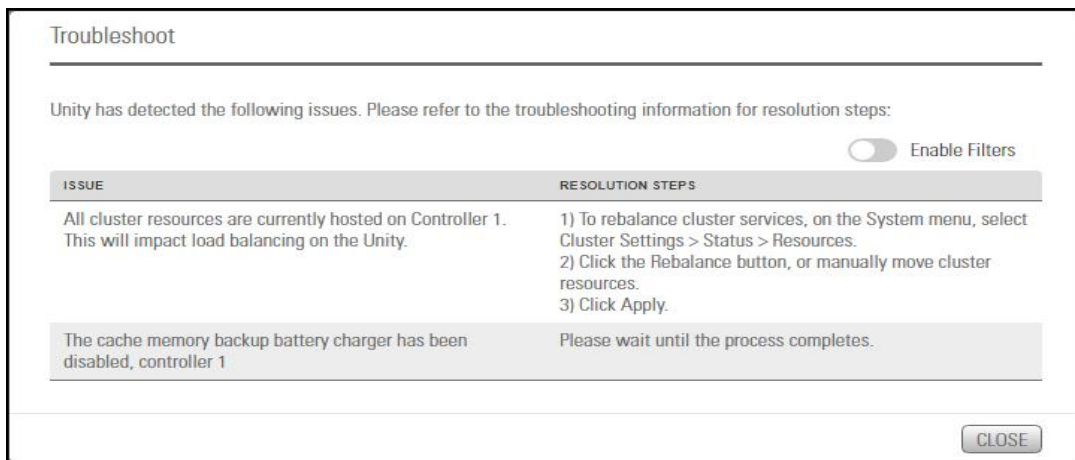


Note If the front chassis power failure LED is flashing rather than steadily lit up, this indicates a fan failure rather than a PSU failure. See [Fans](#) on page 43.

► **For more information about the failed PSU, do one or more of the following:**

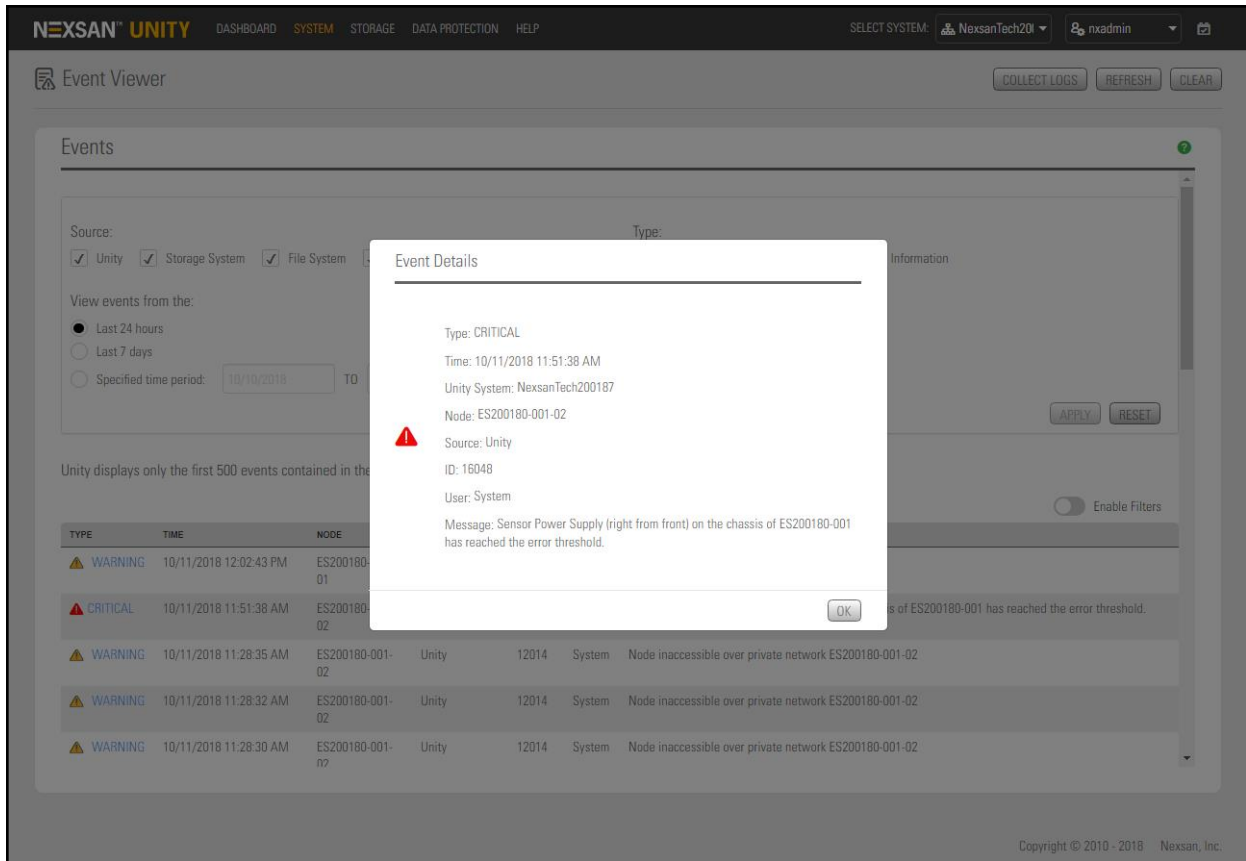
- On the **Unity navigation bar**, click **System > Troubleshoot** to display the troubleshooting popup, which contains more information about the PSU failure.

Figure 1-24: Troubleshooting popup



- Check Event Viewer: On the **Unity Dashboard**, click **Events** to open the **Event Viewer**, with links to Critical, Warning, Error, and Information events.

Figure 1-25: Event log entry for failed PSU



- In the command-line interface (CLI), run the **sensors** command to display information about the failure. **Example, with Power Supply (right from front) showing a status of “down”**

Sensors for E5110 chassis:

```
ERROR * Power Supply(right from front) (discrete): down
* Power Supply(left from front) (discrete): normal
* Temperature (right from front) (temperature): normal [30 C]
* Temperature (left from front) (temperature): normal [35 C]
* 5V supply voltage (voltage): unknown [0.00V]
* 12V supply voltage (voltage): unknown [0.00 V]
* 5V supply current (misc): unknown
* 12V supply current (misc): unknown
.
.
.
```

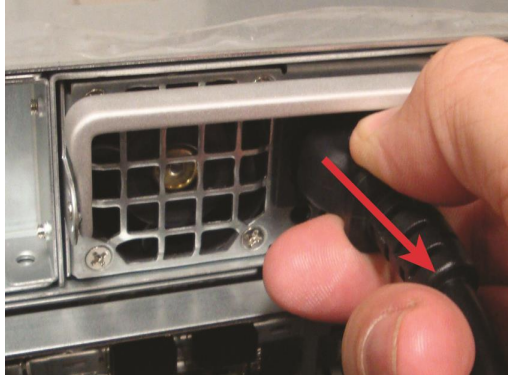
When you have all required information, including the specific power supply unit that has failed, continue with the appropriate replacement procedure.

Replacing a standard PSU

► **To replace a standard PSU:**

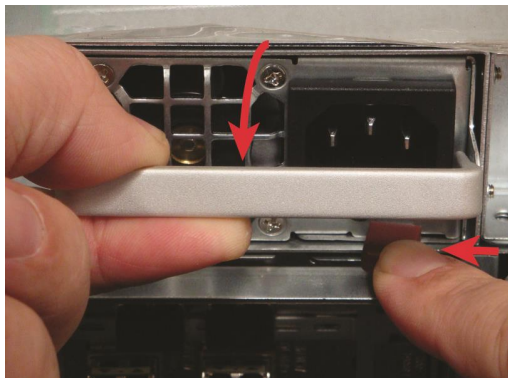
1. Remove the power cord from the failed PSU.

Figure 1-26: Removing the power cord



2. Fold down the extraction handle and press the latch tab inward, to the left.

Figure 1-27: Unlatching the PSU



3. Gently pull the extraction handle and remove the PSU from the slot, supporting its weight with your other hand.

Figure 1-28: Removing the PSU



4. Orient the replacement PSU so that the latch tab is on the right.

5. Guide the new PSU into the slot and slide it in until it is fully seated.

Figure 1-29: Installing the new PSU



CAUTION: Make certain that the power supply unit is FULLY SEATED before applying power.

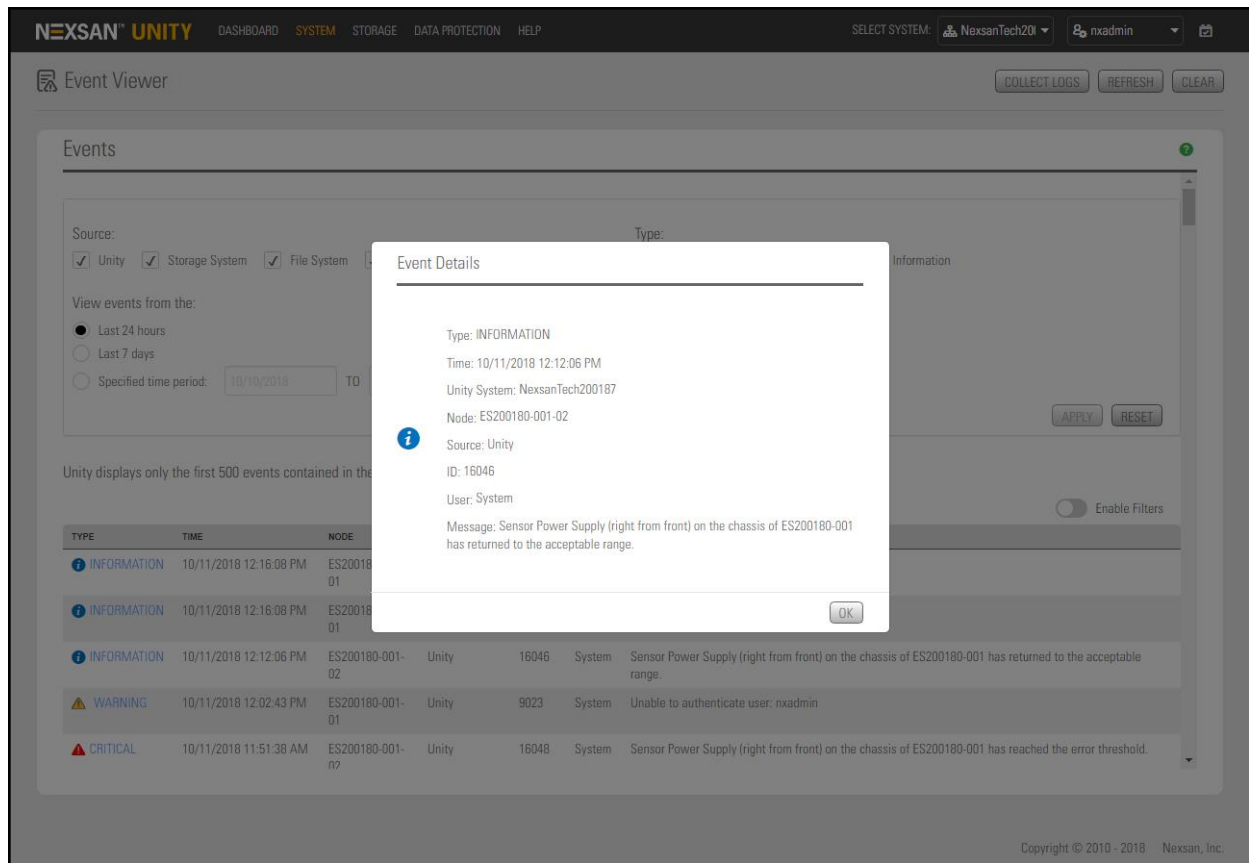
6. Place the power cord in the power socket on the PSU.

Figure 1-30: Applying power to the PSU



The PSU Status LED lights up green to let you know that the new PSU is working properly, and the power fail LED on the front of the unit turns off. Also, an event is recorded in the event log and can be accessed in the Event Viewer. To open Event Viewer, on the **Unity Dashboard**, click **Events**.

Figure 1-31: Event indicating that the PSU has returned to an acceptable range



1

Replacing a US460 PSU

► To replace a US460 PSU:

1. Remove the power cord from the failed PSU.



2. Fold down the extraction handle.

Figure 1-32: Unlatching the PSU



3. Gently pull the extraction handle and remove the PSU from the slot, supporting its weight with your other hand.
4. Guide the new PSU into the slot and slide it in until it is fully seated.



CAUTION: Make certain that the power supply unit is **FULLY SEATED** before applying power by plugging in the unit.

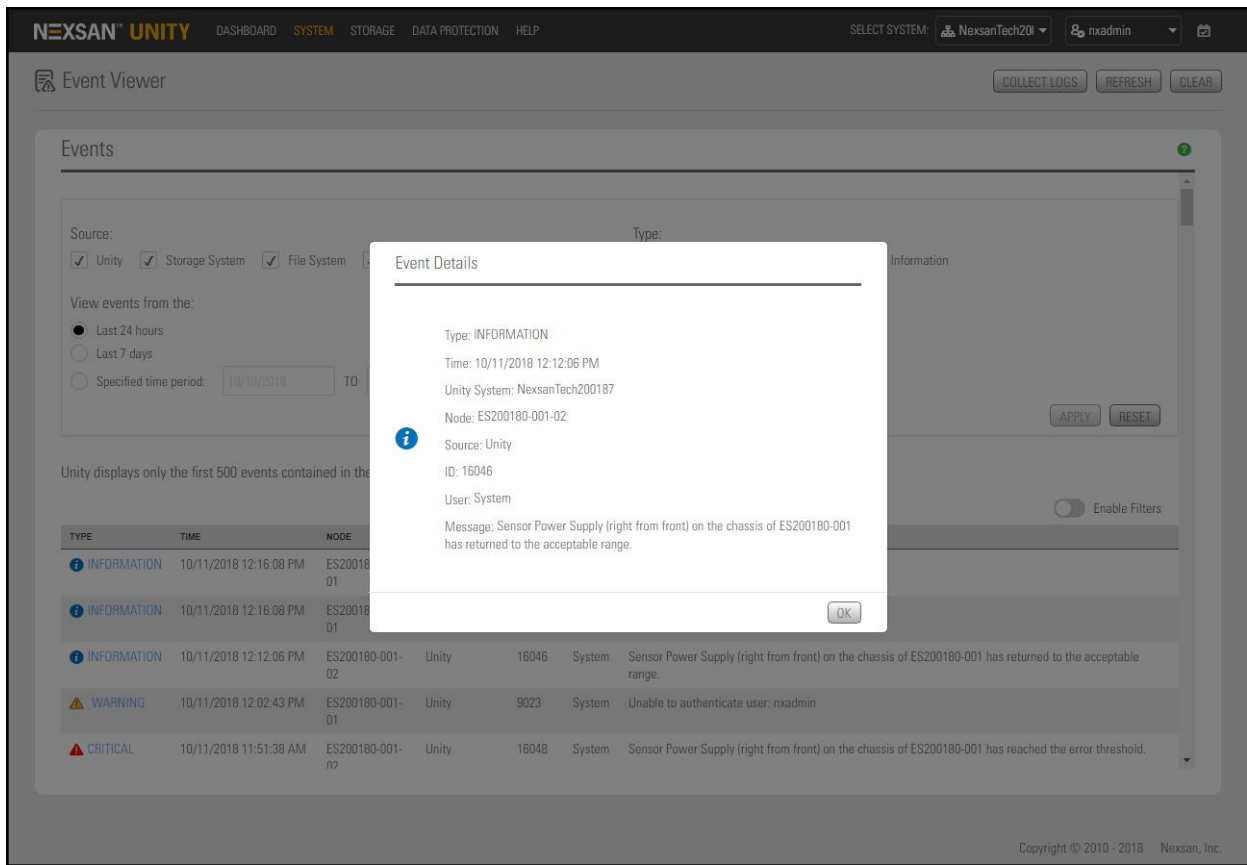
5. Place the power cord in the power socket on the PSU.

Figure 1-33: Applying power to the PSU



The PSU Status LED lights up green to let you know that the new PSU is working properly, and the power LED on the front of the unit turns green. Also, an event is recorded in the event log and can be accessed in the Event Viewer. On the **Unity Dashboard**, click **Events** to open the **Event Viewer**.

Figure 1-34: Event indicating that the PSU has returned to an acceptable range



1

SFPs

SFPs (small form pluggable) ports on the Fibre Channel can be individually replaced in case of failure. This procedure only applies to Unity Storage Systems equipped with Fibre Channel cards.

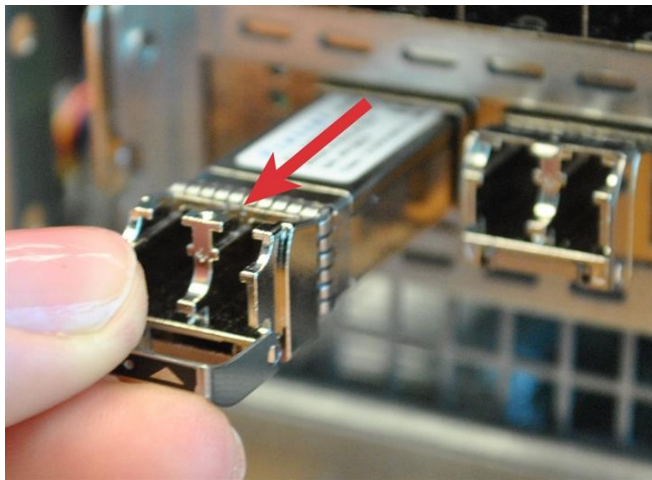


CAUTION: Only perform this procedure if the system is wired for redundancy. This is to avoid loss of network connectivity or access to external storage.

► **To replace SFPs on a Fibre Channel:**

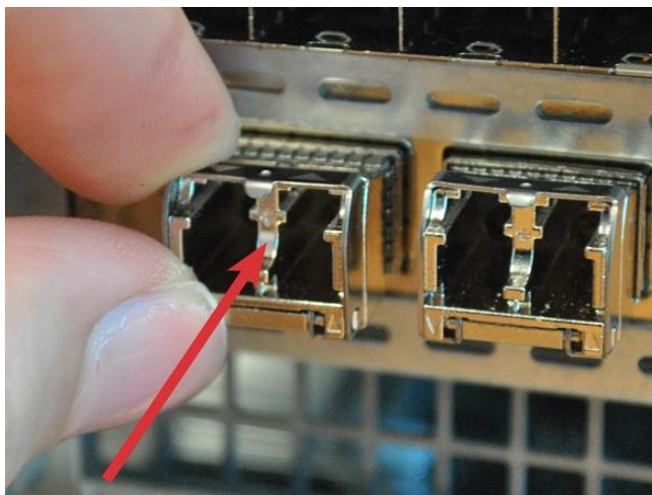
1. Remove the cable from the SFP connector.
2. Fold down the small extraction handle on the SFP, then gently pull the SFP out of the slot.

Figure 1-35: Removing the SFP



3. Orient the new SFP so that the extraction handle points up.
4. Gently slide the new SFP into the slot until it is fully seated.

Figure 1-36: Replacing the SFP



5. Attach the cable you removed in Step 1 to the new SFP connector.

Chapter 2

Customer Replaceable Units: Class 2

Class 2 CRUs - The following components of Nexsan Unity are replaceable by the customer, typically without assistance from Technical Support, but do have some associated risk of causing a complete or partial system failure if the documented replacement procedure is not followed correctly. If you are unsure about a specific step or process, please contact Nexsan Support for assistance.

This chapter contains the following sections:

Unity Storage Expansion controllers	36
System sub-components	41
Fans	43

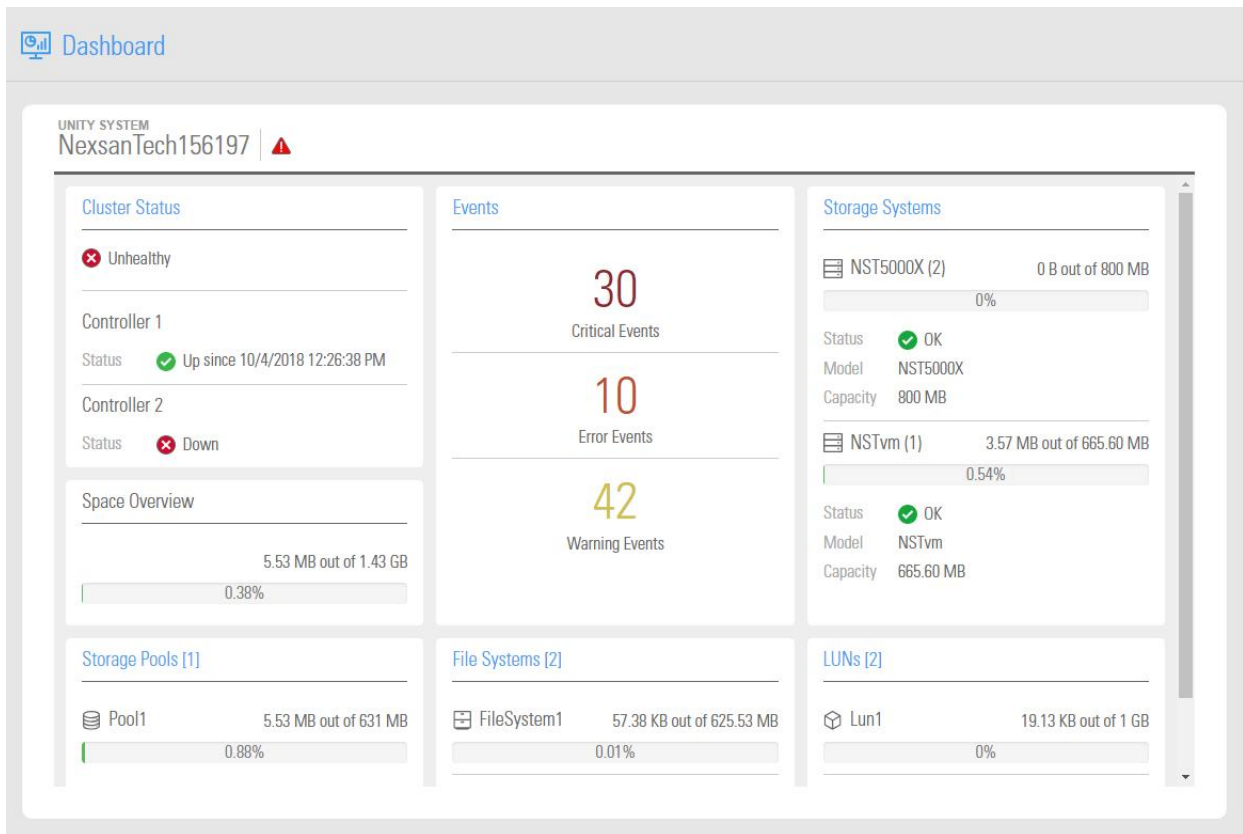
Unity Storage Expansion controllers

When one Unity Storage Expansion controller fails, its resources (Pool Resource Group and storage pools) are migrated to the remaining Unity Storage Expansion controller automatically.

Identifying a failed controller

A failed controller in a storage system is indicated in Unity by error in the **Cluster Status** section of the **Dashboard** panel.

Figure 2-1: Controller failure icons



Check the front panel LEDs for controller errors

► **For all Unity Storage Systems**

- The heartbeat LED turns red.

Figure 2-2: Controller fault LED indicators



Identify the controller numbers using the CLI

You can identify the controller numbers using the Unity `nxcmd` command-line interface.

▶ **To display controller number:**

- Enter the `nics` command in the `nxcmd` CLI.

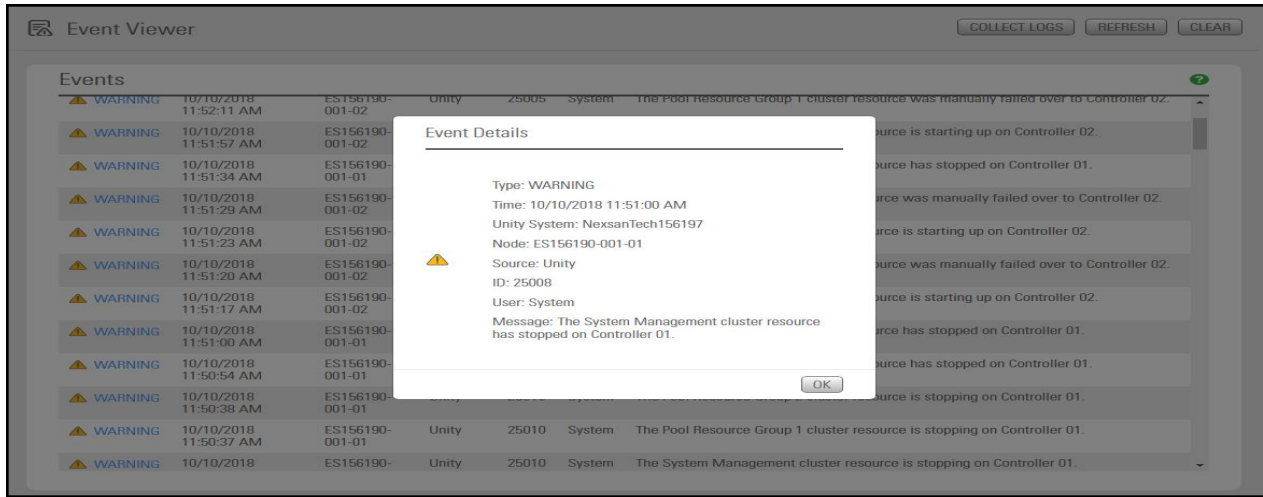
Description	This command displays the physical locations of the network ports on the current Controller node.
Controller	Run this command on the controller where the network ports you wish to view information for are located.
Syntax	<code>nics</code>
Options	None
Example	<pre>nics System Chassis : Unity2200 System Node # : 2 igb0 : 1000 RJ45 - 1G Copper Network Port onboard, first port from the left igb1 : 1000 RJ45 - 1G Copper Network Port onboard, second port from the left igb2 : 1000 RJ45 - 1G Copper Network Port onboard, third port from the left igb3 : 1000 RJ45 - 1G Copper Network Port onboard, fourth port from the left</pre>

For details, consult the Nexsan Unity `nxcmd` Command Line Interface Reference Guide, available from the Nexsan.com [Unity support page](#).

▶ **For more information about the failed controller:**

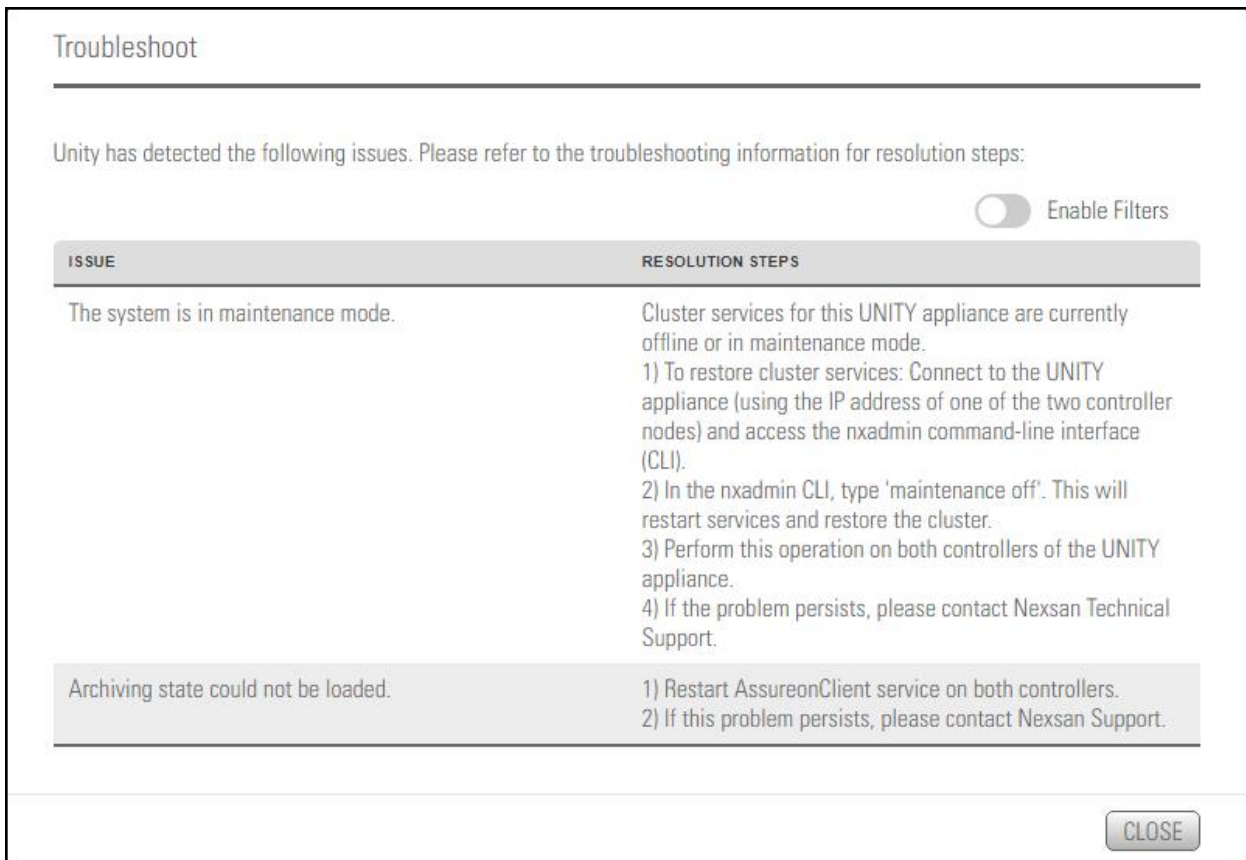
1. Check Event Viewer: On the **Unity Dashboard**, click **Events** to open the **Event Viewer**, which displays Critical, Warning, and Error events. Click Error events to list Controller events.

Figure 2-3: Event log entry for failed controller



2. On the **Unity navigation bar**, click **System > Troubleshoot** to display the troubleshooting window, which contains more information about the controller failure.

Figure 2-4: The troubleshoot popup



When you have all required information, including the specific controller that has failed, continue with the appropriate replacement procedure.

Replacing a Unity Storage Expansion controller

► To replace a failed Unity Storage Expansion controller:

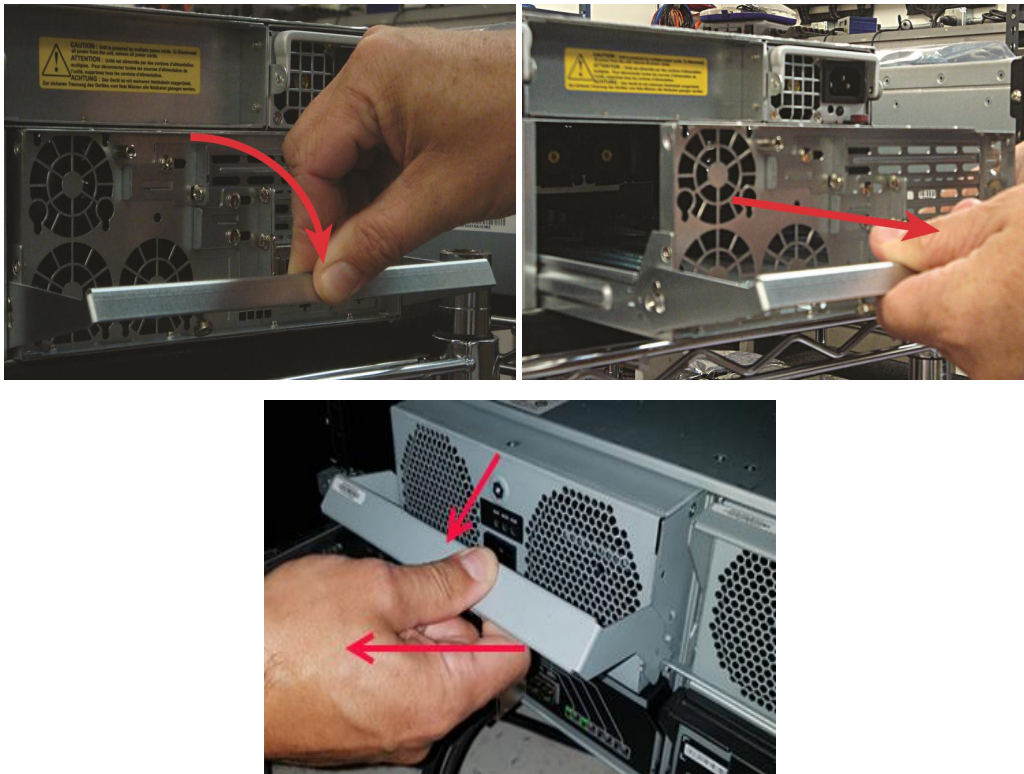
1. Remove the SAS cables from the failed controller, being sure to label each SAS cable with the number of the SAS port to which it was attached.
2. For standard controllers, remove the retaining bolt on the controller that needs to be replaced. See [Replacing a Unity Storage System controller](#) on page 54.
3. For the US460 Expansion, remove the controller retaining bolt.

Figure 2-5: US460 Expansion controller retaining bolt



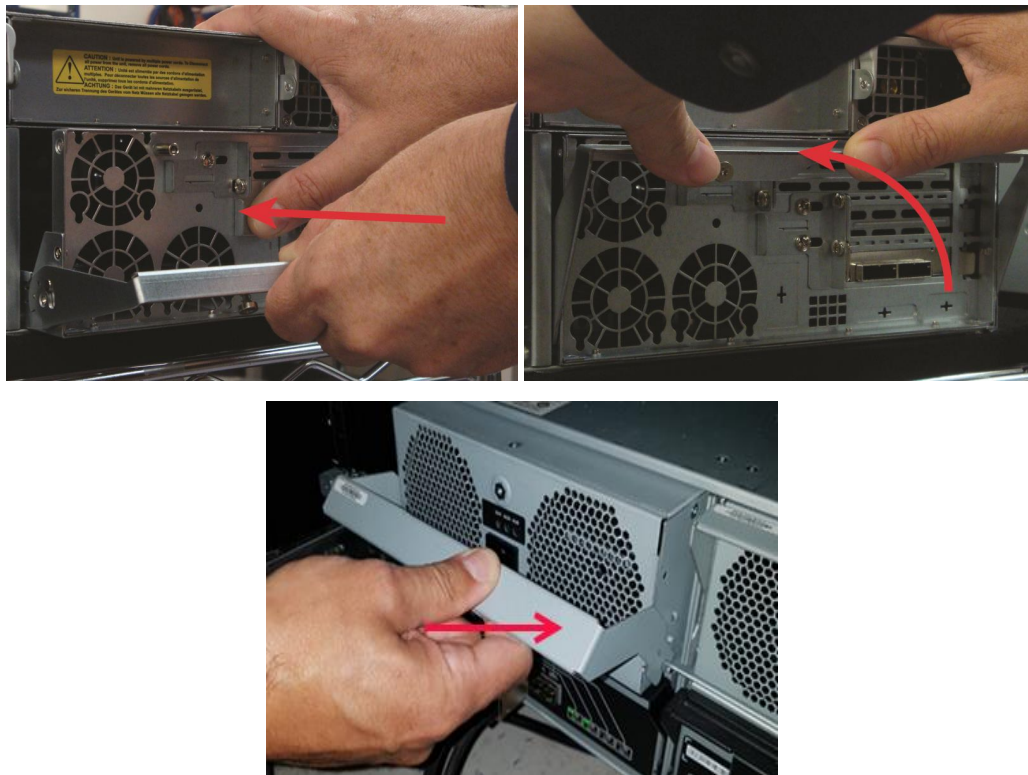
4. Pull down the extraction handle to disengage the controller from the unit, then gently pull the controller out of the chassis, supporting its weight with the other hand.

Figure 2-6: Removing the Unity Storage Expansion controller



5. Guide the new controller into the slot and slide it in until some resistance is met, then push the extraction handle up to seat the controller.

Figure 2-7: Inserting the new Unity Storage Expansion controller



2

6. Re-secure the controller retaining bolt.
 - a. For standard controllers, see [Replacing a Unity Storage System controller](#) on page 54.
 - b. For the US460 Expansion, fasten the controller retaining bolt.



7. Replace the SAS cables on the new controller, being sure to put all cables back into the proper ports. See Step 1.
8. Open Unity and verify that the new controller is being recognized by the system. See *Navigating Unity* in the *Nexsan Unity hardware Reference Guide*.

System sub-components

Standard Unity Storage System controllers contain the following field-replaceable units:

- [Fans on page 43](#)
- [System SSDs on page 64](#)
- [SATADom on page 72](#)

To replace any of the sub-components, the failed component must be identified, the cluster's resources migrated to the other cluster in the system, and the storage system or controller shut down.

Note For US460 Expansions, the sub components described in this section are not individually replaceable. The entire canister is replaced. Please contact Nexsan Support for assistance.

► **To prepare a Unity Storage System for sub-component replacement, do the following:**

1. For Fans, use the `sensors` command in the command-line interface (CLI). See *Accessing the nxadmin CLI* and *Using the nxadmin CLI's command-based shell* in the *Unity CLI Reference Guide*.

Example, showing Lower Fan 3 status as “down [0.0 RPM]”:

```
Node: ES200030-001-02
Location: left (from the front)
Sensors for E5110:
* CPU 1 status (discrete): normal
* CPU 2 status (discrete): normal
* CPU 1 core voltage (voltage): normal [1.01 V]
* CPU 2 core voltage (voltage): normal [1.02 V]
.
.
.
* Lower Layer Fan 1 (fan): normal[9384 RPM]
* Lower Layer Fan 2 (fan): normal[9384 RPM]
ERROR * Lower Layer Fan 3 (fan): down [0.00 RPM]
* Upper Layer Fan 1 (fan): normal [7680 RPM]
* Upper Layer Fan 2 (fan): normal [8160 RPM]
* Upper Layer Fan 3 (fan): normal [8400 RPM]
.
.
.
```

2. Once you identify the failed component, migrate cluster resources from the cluster containing the failed component to the other cluster using Unity. See *Moving Cluster Resources* in the *Nexsan Unity Software User Guide* for details.
3. Shut down the unit or controller node containing the failed component through Unity. See *Shutting down the cluster or individual cluster nodes* in the *Nexsan Unity Software User Guide*.
4. Remove all communication cables from the unit or controller containing the failed component.

Note Be sure to label each cable with the name and number of the port to which it was attached.

5. Unscrew the retaining bolt on the controller's extraction handle. See step 3 in [Replacing a Unity Storage System controller](#) on page 54.
6. Pull down the extraction handle to disengage the controller from the unit, then gently pull the controller out of the chassis, supporting its weight with the other hand. See [Replacing a Unity Storage System controller](#) on page 54.

Fans

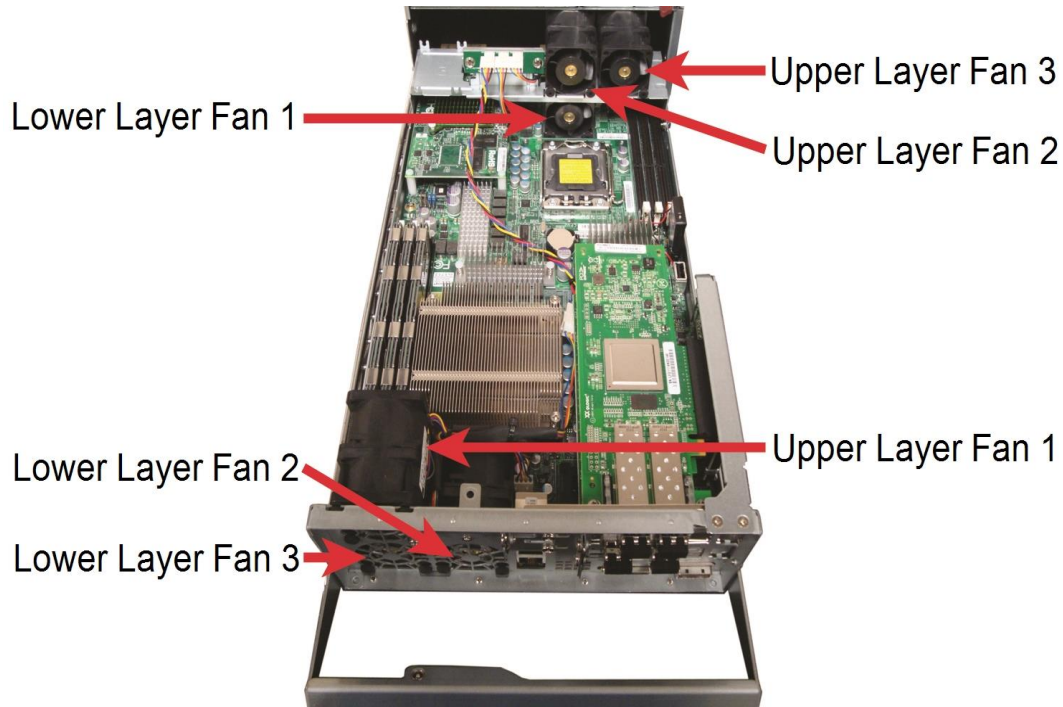
Unity Storage System fans are essential for maintaining proper internal temperature and should be replaced immediately if found to be faulty.

A failed fan usually causes a temperature warning LED on the front panel to light up.

Replacing a fan

RAID Unity Storage Systems have six fans per controller: three on the motherboard (designated *Lower Layer*) and three on raised brackets (designated *Upper Layer*).

Figure 2-8: Locations of fans in a controller

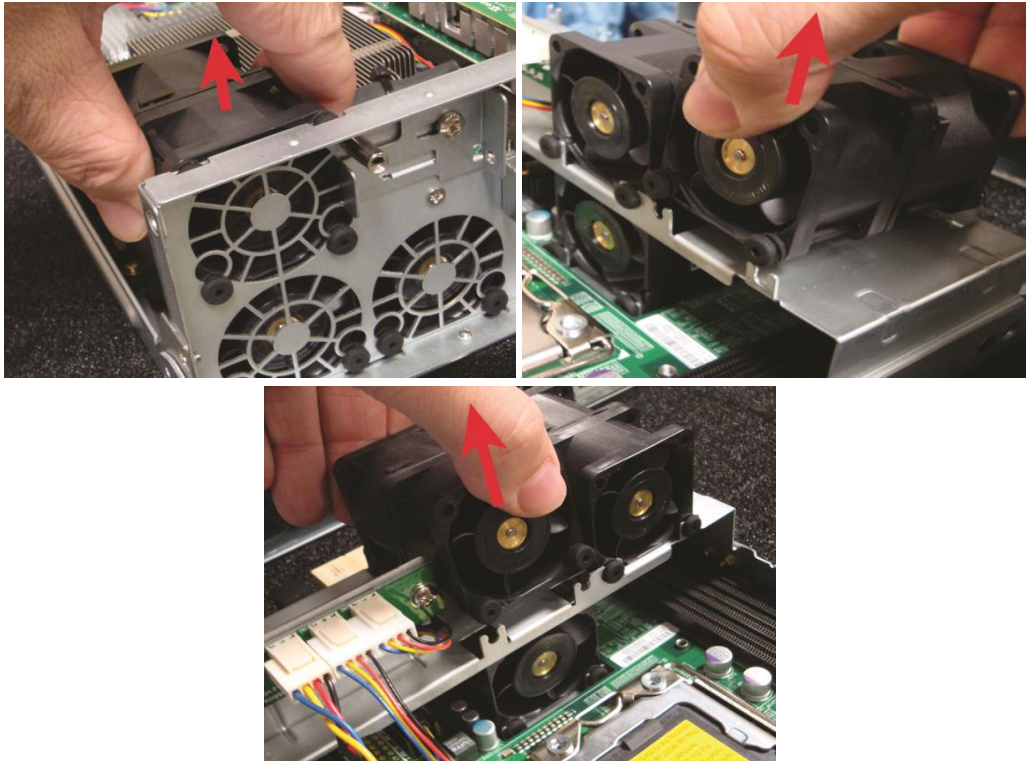


► To replace an upper layer fan

1. Perform the component identification, migrate cluster resources, and controller removal steps under [System sub-components](#) on page 41.

2. Gently lift the fan from its slot.

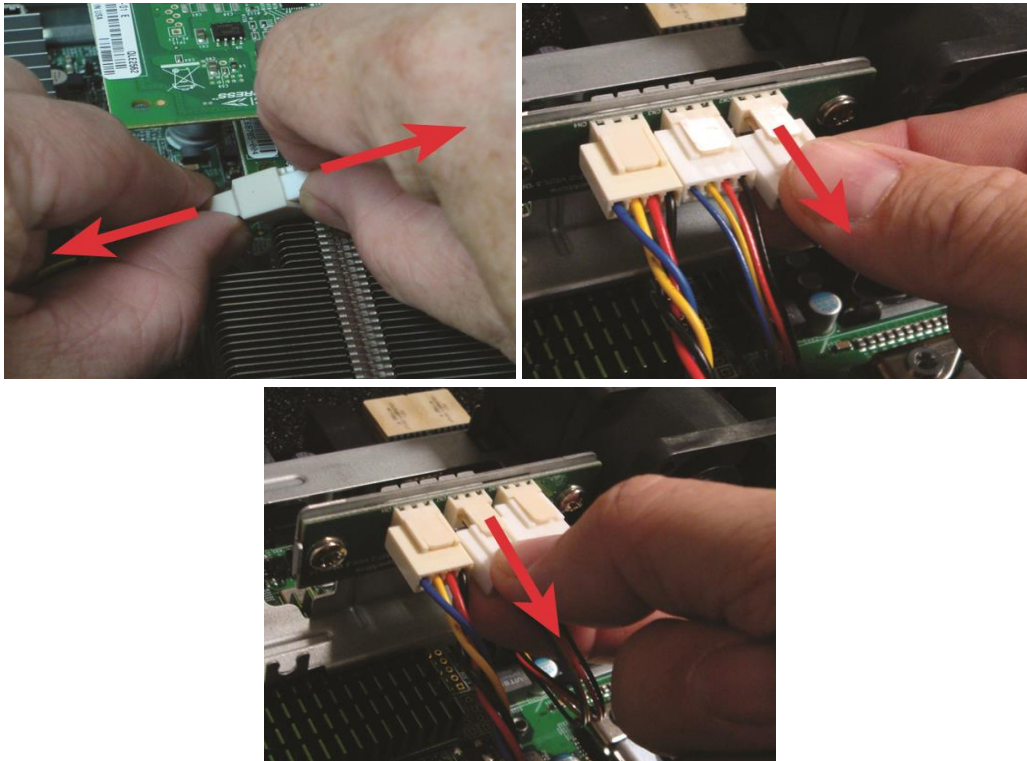
Figure 2-9: Removing upper layer fans



3. If necessary, snip the pull ties holding the fan's power wires to the chassis.

4. Unclip the retaining tab on the power plug and gently remove it from the socket.

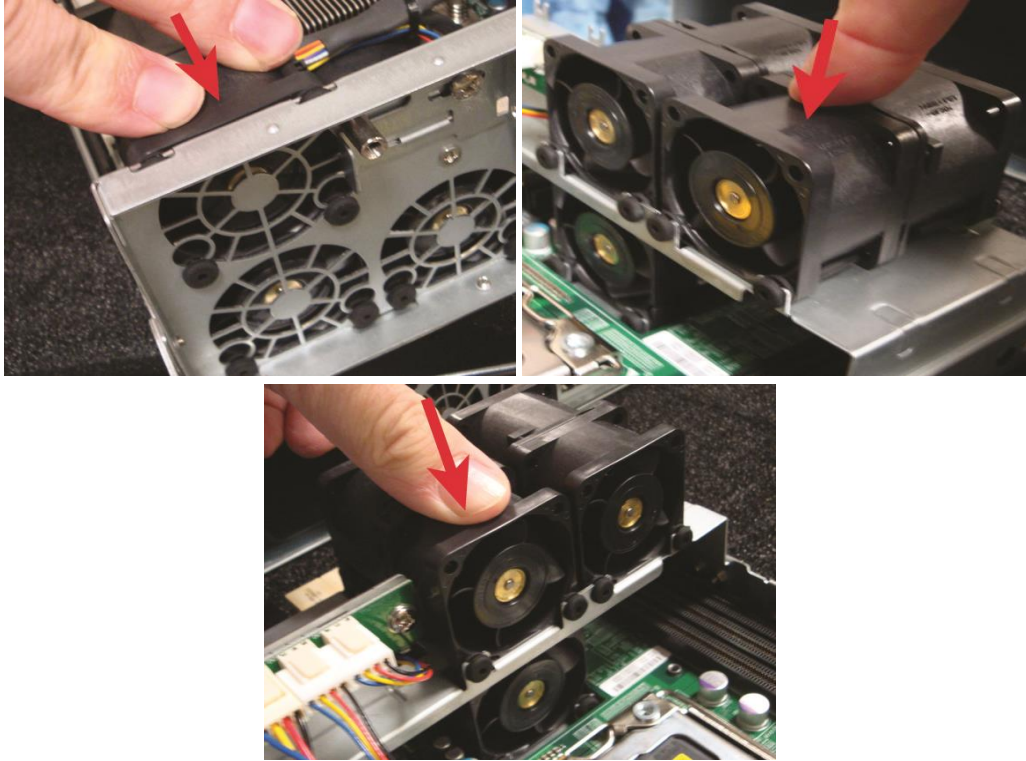
Figure 2-10: Disconnecting the fan's power plug



5. Insert the power plug for the replacement fan into the socket and gently press until the retaining tab clicks.
6. If necessary, re-secure the power wires with new pull ties.

7. Gently place the replacement fan into the slot. Press firmly down to ensure that it is properly seated.

Figure 2-11: Replacing upper layer fans



2

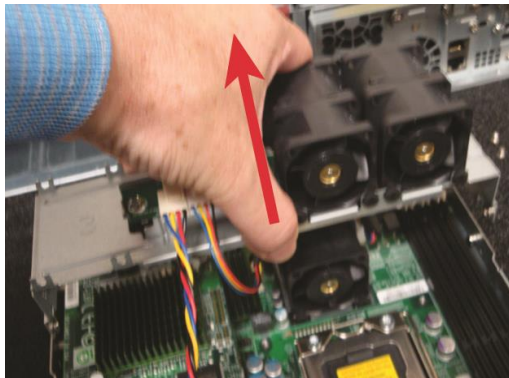
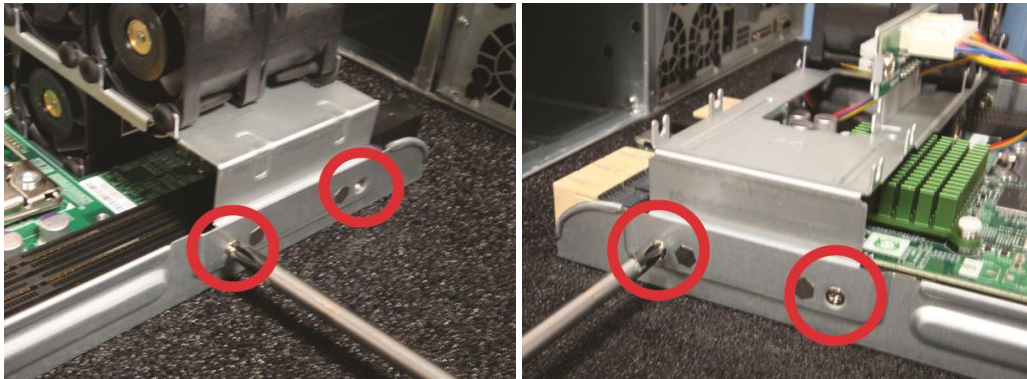
8. Guide the controller into the slot and slide it in until some resistance is met, then push the extraction handle up to seat the controller. See [Replacing a Unity Storage System controller](#) on page 54.
9. Re-secure the extraction handle retaining bolt. See [Replacing a Unity Storage System controller](#) on page 54.
10. Replace all cables on the new controller.

Notes: Be sure to put all cables back into the proper ports. See Step 4 under [System sub-components](#) on page 41.

If the controller does not automatically start up, select it in Unity and click the **Turn On** button in its Properties panel at the bottom of the screen.
11. Verify that the new fan is working using the **sensors** command in the command-line interface (CLI). See *Accessing the nxadmin CLI* and *Using the nxadmin CLI's command-based shell* in the *Nexsan Unity CLI reference Guide*.
12. Migrate the resources back to the controller you removed using Unity. See *Moving Cluster Resources* in the *Nexsan Unity Software User Guide*.
 - ▶ **To replace the lower layer fan 1:**
 1. Perform the component identification and controller removal steps under [System sub-components](#) on page 41.

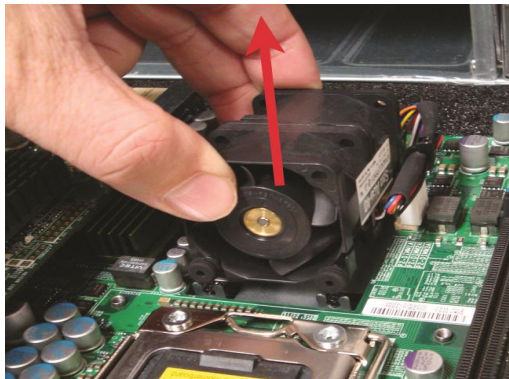
2. Unscrew and remove the bracket holding the upper layer fans in place. Set it aside.

Figure 2-12: Removing the fan bracket



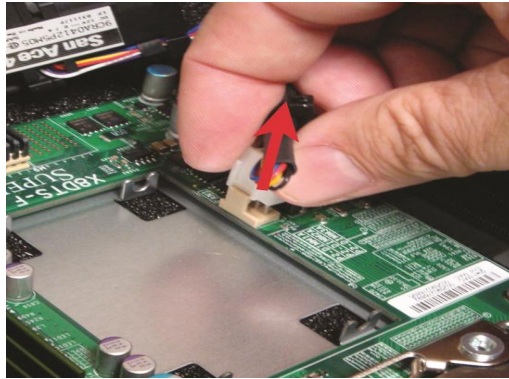
3. Gently lift the fan from its slot.

Figure 2-13: Removing Lower Layer Fan 1



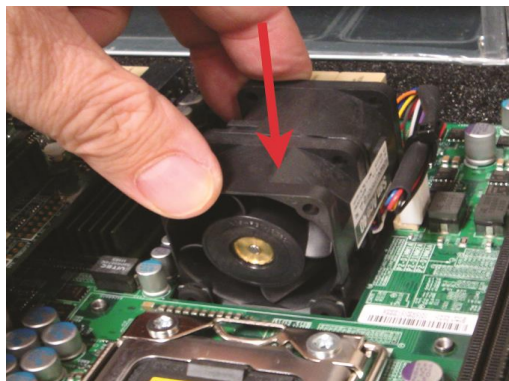
- Unclip the retaining tab on the power plug and gently remove it from the socket.

Figure 2-14: Disconnecting the fan's power plug



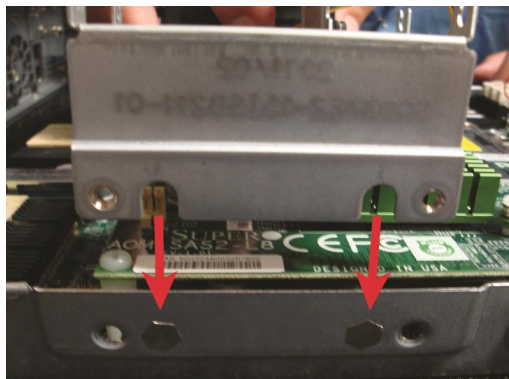
- Insert the power plug for the replacement fan into the socket and gently press until the retaining tab clicks.
- Gently place the replacement fan into the slot. Press firmly down to ensure that it is properly seated.

Figure 2-15: Replacing Lower Layer Fan 1



- Line up the notches in the sides of the bracket with the tabs on the controller.

Figure 2-16: Lining up the bracket for replacement



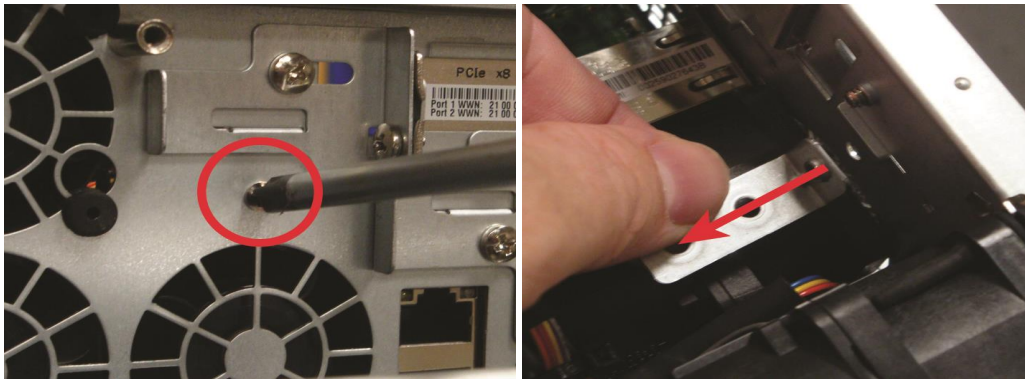
- Re-secure the bracket with the screws you removed in Step 2.
- Guide the controller into the slot and slide it in until some resistance is met, then push the extraction handle up to seat the controller. See [Replacing a Unity Storage System controller](#) on page 54.

10. Re-secure the extraction handle retaining bolt. See [Replacing a Unity Storage System controller on page 54](#).
 11. Replace all cables on the new controller.

Notes: Be sure to put all cables back into the proper ports. See Step 4 under [System sub-components on page 41](#).

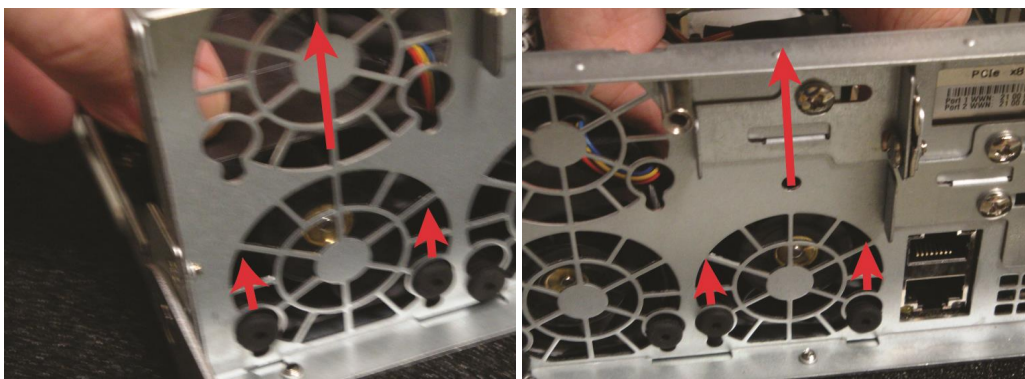
If the controller does not automatically start up, select it in Unity and click the **Turn On** button in its Properties panel at the bottom of the screen.
 12. Verify that the new fan is working using the **sensors** command in the command-line interface (CLI). See *Accessing the nxadmin CLI* and *Using the nxadmin CLI's command-based shell* in the *Nexsan Unity CLI Reference Guide*.
 13. Migrate the resources back to the controller you removed using Unity. See *Moving Cluster Resources* in the *Nexsan Unity Software User Guide*.
- **To replace a lower layer fan 2 or 3 (Unity2200 or Unity2200X):**
1. Perform the component identification and controller removal steps under [System sub-components on page 41](#).
 2. Remove Upper Layer Fan 1, but do not detach it from power (see [Replacing a fan on page 43](#), far left photograph). Set it aside.
 3. If necessary, unscrew the fan bracket from the back of the controller and remove it.

Figure 2-17: Removing the fan bracket



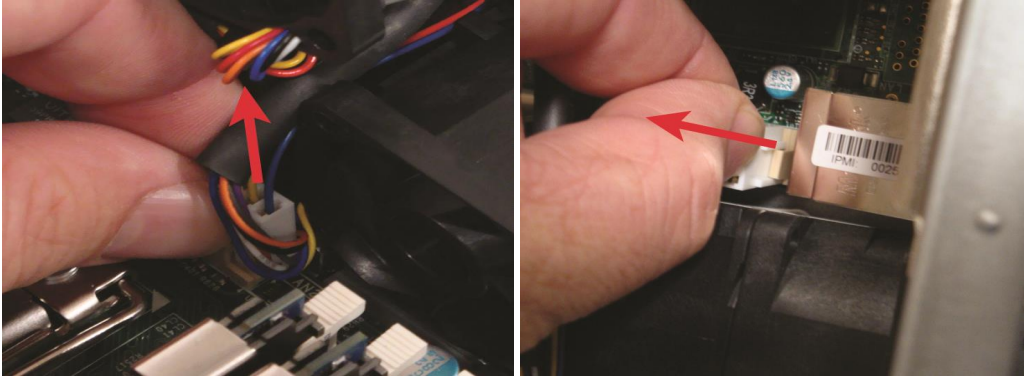
4. Gently lift the fan from its slot.

Figure 2-18: Removing Primary Fan 2 or 3



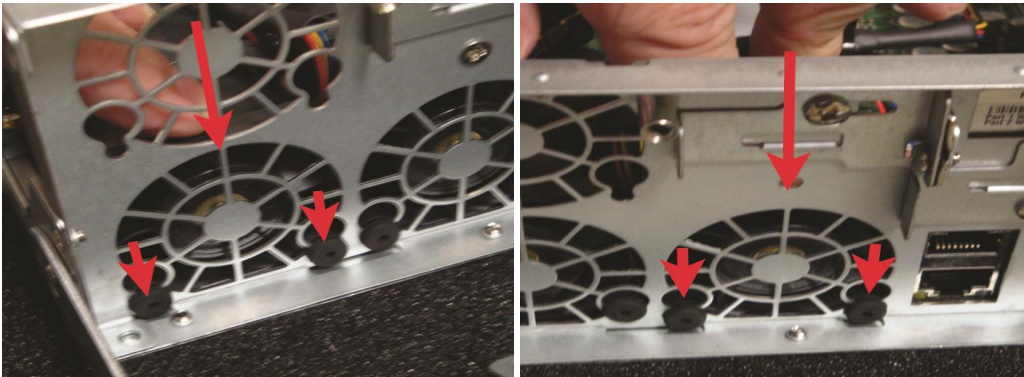
5. Snip the pull ties holding the fan's power wires to the chassis.
6. Unclip the retaining tab and gently remove the power plug from the socket.

Figure 2-19: Disconnecting the fan's power plug



7. Insert the power plug for the replacement fan into the socket and gently press until the retaining tab clicks.
8. Re-secure the power wires with new pull ties.
9. Gently place the replacement fan into the slot. Press firmly down to ensure that it is properly seated.

Figure 2-20: Replacing Primary Fan 2 or 3



10. If necessary, replace the fan bracket.
11. Replace Secondary Fan 1 (see [Replacing a fan](#) on page 43, far left photograph). Press firmly down to ensure that it is properly seated.
12. Guide the controller into the slot and slide it in until some resistance is met, then push the extraction handle up to seat the controller. See [Replacing a Unity Storage System controller](#) on page 54.
13. Re-secure the extraction handle retaining bolt. See [Replacing a Unity Storage System controller](#) on page 54.
14. Replace all cables on the new controller.

Notes: Be sure to put all cables back into the proper ports. See Step 4 under [System sub-components](#) on page 41.

If the controller does not automatically start up, select it in Unity and click the **Turn On** button in its Properties panel at the bottom of the screen.

15. Verify that the new fan is working using the **sensors** command in the command-line interface (CLI). See the *Nexsan Unity nxadmin CLI Reference Guide*.
16. Migrate the resources back to the controller you removed using Unity. See *Moving Cluster Resources* in the *Nexsan Unity Software User Guide*.

Chapter 3

Customer Replaceable Units: Class 3

Class 3 CRUs - The following components of the Nexsan Unity Storage Systems are replaceable by the customer, typically without assistance from Technical Support, but do have a high associated risk of causing a complete or partial system failure if the documented replacement procedure is not followed correctly. If you are unsure about a specific step or process, please contact Nexsan Support for assistance.

This chapter contains the following sections:

Unity Storage System controllers	54
--	----

Unity Storage System controllers

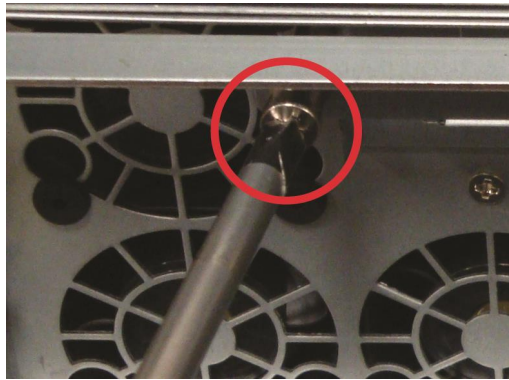
When one Unity Storage System controller fails, its resources (Pool Resource Group and storage pools) are migrated to the remaining Unity Storage System controller automatically.

Replacing a Unity Storage System controller

► **To replace a Unity Storage System controller:**

1. Shut down the failed controller through Unity. See *Shutting down the cluster or individual cluster nodes* in of the *Nexsan Unity Software User Guide* for details.
2. Remove all cables from the failed controller, being certain to label each with the name and number of the port to which it was attached.
3. Unscrew the retaining bolt on the extraction handle of the controller that needs to be replaced.

Figure 3-1: Unscrewing the controller retaining bolt (standard expansions)



4. Pull down the extraction handle to disengage the controller from the unit, then gently pull the controller out of the chassis, supporting its weight with the other hand.

Figure 3-2: Removing the Unity Storage System controller



- Remove all SFPs, HBA cards, DIMMs, and the SATADom from the failed controller and install them into the same slots on the replacement controller. See [SFPs on page 33](#), and [SATADom on page 72](#) for details.

You MUST install the HBA cards into the same slots on the replacement controller as they occupied on the failed controller.

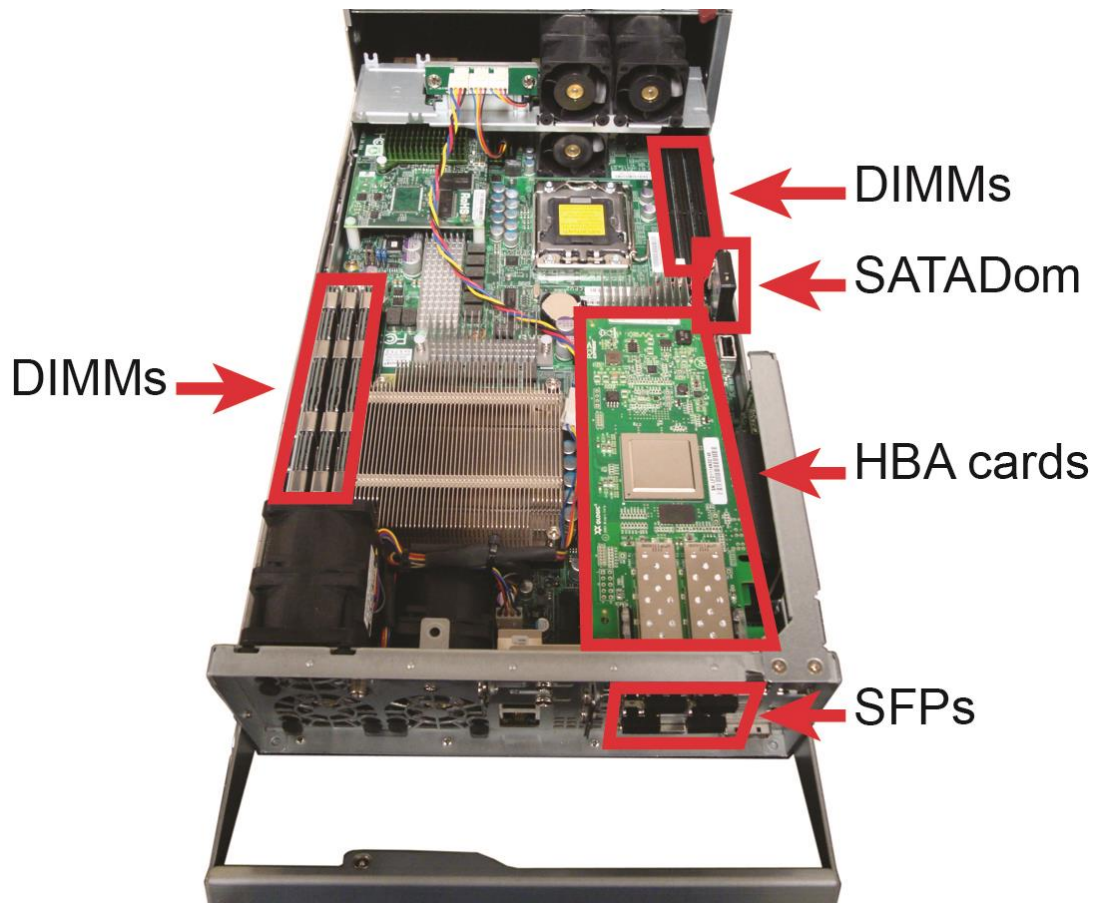


CAUTION: Be certain to press the metal clip on the side of the SATADom inward to unlatch it before removing the SATADom. Failure to do so may cause for the clip to break.



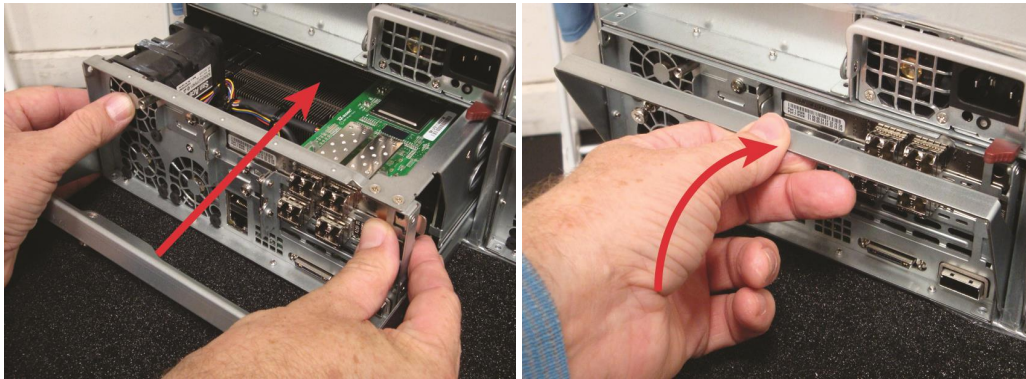
CAUTION: Be sure that the SATADom power cable wires are clear of the edge of the controller. Failure to do so may result in damage to the wires when the controller is replaced.

Figure 3-3: Locations of HBA cards, SFPs, DIMMs, and the SATADom



6. Guide the new controller into the slot and slide it in until some resistance is met, then push the extraction handle up to seat the controller.

Figure 3-4: Inserting the new controller



7. Re-secure the extraction handle retaining bolt. See [Replacing a Unity Storage System controller on page 54](#).
8. Replace all cables on the new controller, being sure to put all cables back into the proper ports. See Step 2.
9. Open Unity and verify that the new controller is being recognized by the system. See "Finding Unity features" in the *Nexsan Software User Guide*.
Notes: If the controller does not automatically start up, select it in Unity and click the **Turn On** button in its Properties panel at the bottom of the screen.
It may take a few minutes for the new controller to fully start up.
10. Reconfigure the IPMI settings for the controller. See "Setting or modifying IPMI settings" in the *Nexsan Unity Software User Guide*.
11. Migrate the failed controller's resources to the new controller in Unity. See *Moving Cluster Resources* in the *Nexsan Unity Software User Guide*.

Chapter 4

Support-Assisted FRUs: Class 2

Class 2 Support-Assisted FRUs - The following components of the Nexsan Unity Storage Systems are replaceable only with assistance from Nexsan Support as they have some associated risk of causing a complete or partial system failure. Please contact Nexsan Support if one of the following components has failed.

This chapter contains the following sections:

DIMMs	58
Identifying a failed DIMM	58

DIMMs

Dual in-line memory modules (DIMMs) supply the random-access memory (RAM) for Unity. In cases of failure, they can be replaced.

Note A failed DIMM affects the entire controller, but replacement of a DIMM can only be done by Nexsan Support Group. Please contact Nexsan Support immediately if you suspect a failed DIMM in your Unity Storage Systems.

Identifying a failed DIMM

DIMM failure can be difficult to diagnose without the assistance of Nexsan Support; however, the following may help you identify a potentially failed DIMM:

- If you have autolog enabled, the analyzer will likely detect a failed DIMM.
- If you are familiar with the amount of RAM that you have, run the `top` command in the command line interface (CLI) to see if the amount is lower than you think it should be. See *Accessing the nxadmin CLI* and *Using the nxadmin CLI's command-based shell* in the *Unity CLI Reference Guide*. You can also check if the amount of RAM is comparatively lower than the other controller.
- A failed DIMM often causes a drop in the system's performance.

Note It is possible for DIMMs to only partially fail. In this case, the `top` command in the `nxadmin` CLI may not show lower RAM levels and there may not be a visible drop in performance. However, seemingly random failures and system crashes will likely still occur and are important signs of DIMM failure.

If you suspect DIMM failure, contact Nexsan Support for assistance.

Chapter 5

Support-Assisted Replacements: Class 3

Class 3 Support-Assisted FRUs - The following components of the Nexsan Unity Storage Systems are replaceable only by qualified Nexsan Support personnel as they have a high associated risk of causing a complete or partial system failure. Please contact Nexsan Support if one of the following components has failed.

This chapter contains the following sections:

Chassis	60
System SSDs	64
SATADom	72

Chassis

Use this procedure to diagnose whether the Unity System has a failed chassis.

Identifying a failed chassis

Only Nexsan Support is able to officially diagnose a chassis as failed. If you suspect a failed chassis please first ensure that no other component may be responsible for the failure; see:

- [Identifying failed disk drives on page 11](#)
- [Identifying a failed DIMM on page 58](#)
- [Identifying a failed controller on page 36](#)

If you have eliminated the possibility of failure in any other component, please contact Nexsan Support for assistance.

Replacing a chassis

This procedure is only to be followed if the chassis was officially diagnosed as failed by Nexsan Support. For more information, see [Identifying a failed chassis](#) above.

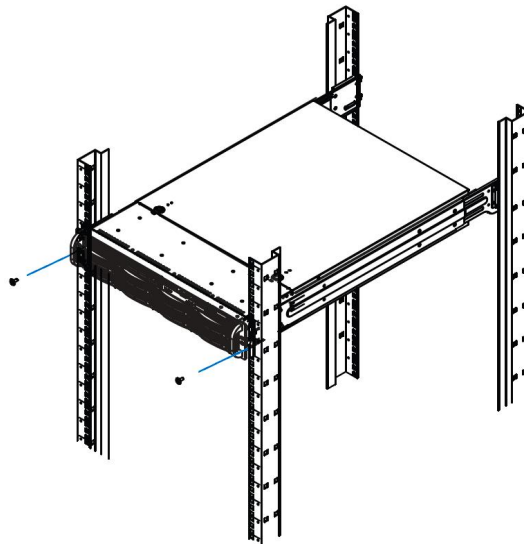
▶ To remove a chassis:



CAUTION: A minimum of two people are required for safe removal and replacement of the chassis.

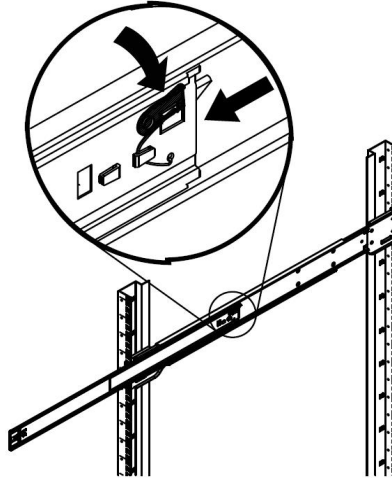
1. Shut down both controllers using Nexsan Unity. See "Shutting down the cluster or individual cluster nodes" in the *Nexsan Unity Software User Guide* for details.
2. Remove all cables, being certain to label each with the name and number of the port to which it was attached.
3. Remove both controllers from the failed chassis. Take note of the positioning of the controllers.
4. Remove the thumbscrews that hold the front of the chassis to the rack.

Figure 5-1: Example - Removing thumbscrews



- To remove the chassis, slide the inner-chassis rails from the outer-rack rails ensuring equal pressure on both rails. You may have to press the locking tabs to release the chassis, prior to sliding. Place the chassis aside.

Figure 5-2: Example - Locking tabs



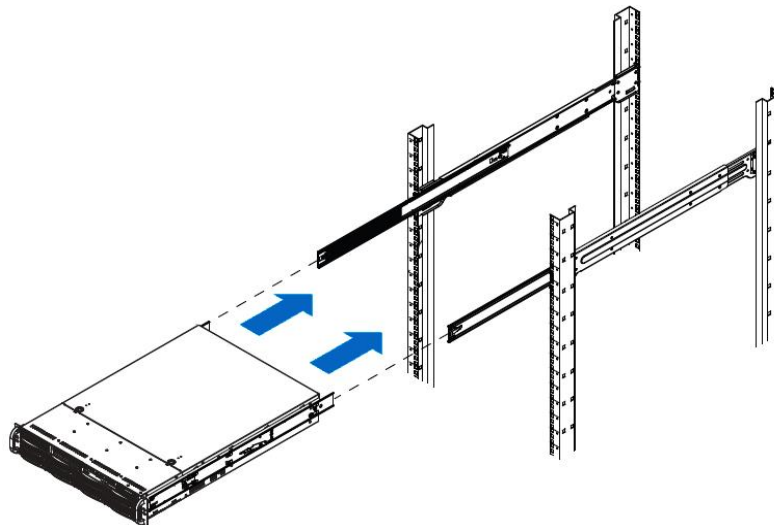
CAUTION: Do not pick up the server by the front handles, they are only designed to pull the chassis from the rack.

Note As replacement chassis ship with chassis rails pre-installed, it is not necessary to remove the chassis rails from the old chassis.

► **To install a replacement chassis:**

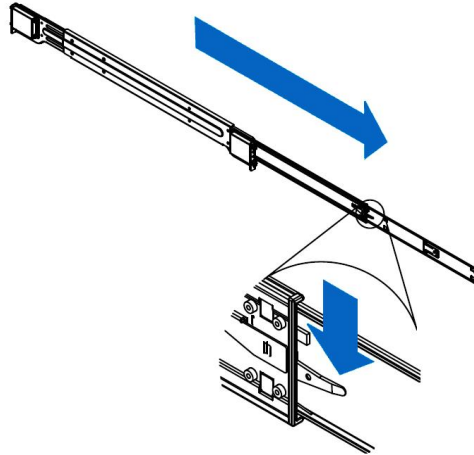
- Lift the chassis from each side—not from the front or back.
- Line up the inner-chassis rails with the front of the outer-rack rails.

Figure 5-3: Example - Installing a chassis



- Slide the inner-chassis rails into the outer-rack rails, keeping the pressure even on both sides. Depress the locking tabs when inserting.

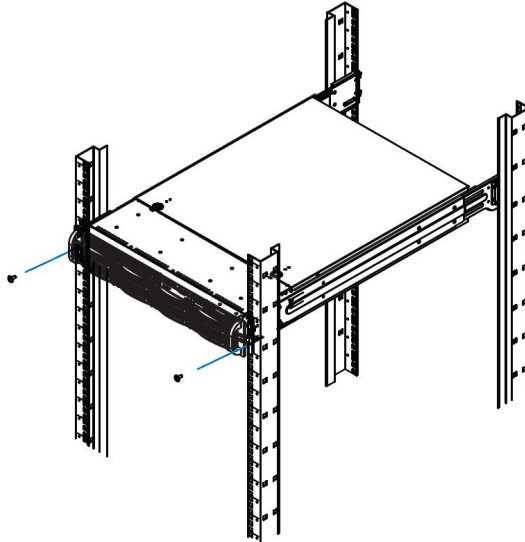
Figure 5-4: Example - Depressing the rail locking tabs



- Push the chassis completely into the rack. You should hear the locking tabs "click" when in position.
- Tighten the thumbscrews that hold the front of the chassis to the rack.

Note The thumbscrews are already attached to the front of the chassis.

Figure 5-5: Example - Tightening the thumbscrews



- Install both controllers into the same slots in the replacement chassis as the old chassis.
- Replace all cables, ensuring that they are put back into the proper ports. See [Step 2](#) of *To remove a chassis*.
- Transfer the disk drives from the old chassis to the replacement chassis in the same configuration. See [Replacing FASTier drives](#) on page 22 and [Replacing data disks](#) on page 18.

9. Open Nexsan Unity and verify that both controllers are being recognized by the system. Click Cluster Status in the Unity Dashboard for more options.

Notes: If the controllers do not automatically start up, select each controller in Unity and click the **Turn On Controller** button.

It may take a few minutes for the controllers to fully start-up.

System SSDs

Unity Storage Systems have two internal solid-state disks (SSDs): One FASTier write cache SSD and one drive used for the Unity operating system (the OS SSD).

See:

- [Replacing the FASTier Cache SSD below](#)
- [Replacing the OS SSD on page 68](#)

Replacing the FASTier Cache SSD

The FASTier Cache SSD replacement procedure involves both software and hardware steps. It is necessary that you perform these procedures with assistance by Technical Support, see [Contacting Nexsan on page 7](#).

Note The FASTier Write Cache SSD is the drive that is attached to the **SATA 1** port.

▶ **To replace a FASTier Cache SSD drive:**

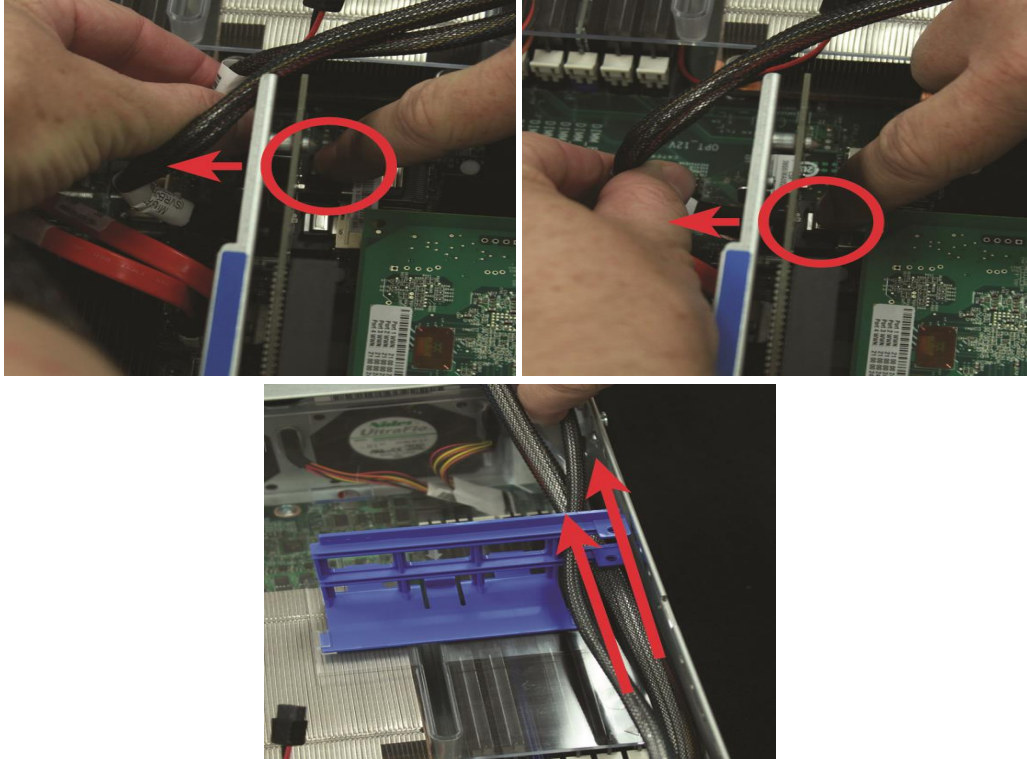
1. Contact Technical Support and have them prepare your Unity for the SSD replacement.
2. Perform the migrate cluster resources, unit shutdown, and cover removal steps under [System sub-components on page 41](#).

Note If the FASTier data cables are not fed through the plastic guides on the top of the clear plastic disk shelf, proceed to step 4.

- Unplug the FASTier data cables from the motherboard and slide them out of the plastic guides on top of the shelf.

Note Label each cable with the port it was plugged into so that it can be replaced in the proper plug when you are finished.

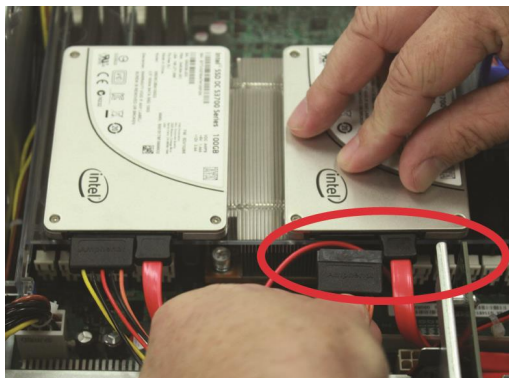
Figure 5-6: Unplugging FASTier cords and sliding them out of the plastic guides



- Remove the power and data cables from the cache SSD drive.

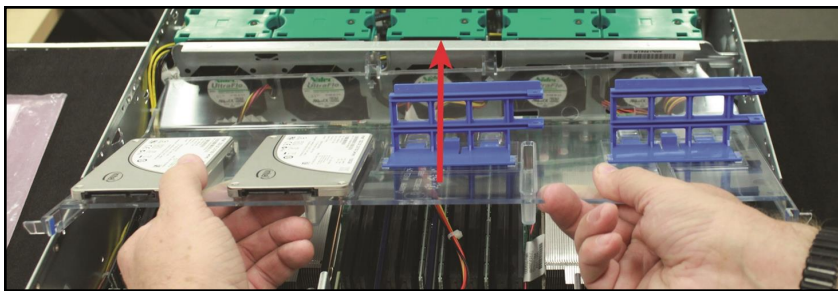
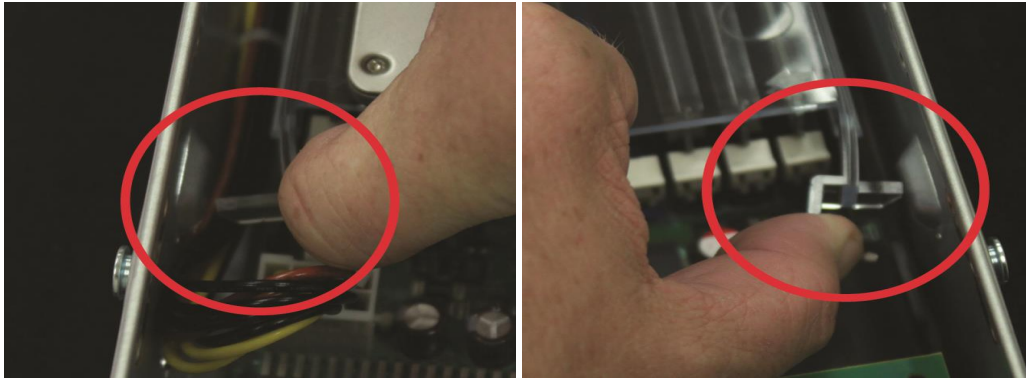
Note Label each power and data cable with the drive from which it was removed so that it can be properly replaced when you are finished.

Figure 5-7: Unplugging OS SSD drive



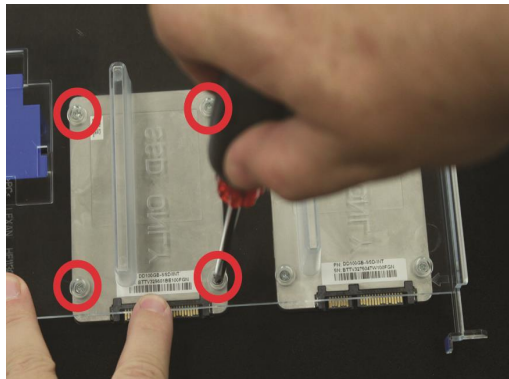
5. Unlatch the shelf on either side and remove it.

Figure 5-8: Removing the plastic shelf



6. Turn the shelf over and unscrew the old cache SSD drive to remove it.

Figure 5-9: Removing the old cache SSD drive



7. Attach the new cache SSD drive to the shelf.
8. Place the plastic shelf back into the unit (see [Figure 5-8](#)).
9. Re-attach the power and data cables to the cache SSD (see [Figure 5-7](#)).
10. Thread the FASTier data cables back through the plastic guides and re-attach them to the motherboard (see [Figure 5-6](#)).
11. Replace the top cover (see [System sub-components](#) on page 41) and secure it with the cover screws (see [System sub-components](#) on page 41).
12. Return the unit to the rack.

13. Replace all communication cables on the unit.

Note Be sure to put all cables back into the proper ports. See Step 4 under [System sub-components on page 41](#).

14. Re-attach the power cables to the power supply units (PSUs) to turn the unit back on.
15. Allow Technical Support to configure the new battery-backed cache SSD disk.

Replacing the OS SSD

The OS SSD replacement procedure involves both software and hardware steps. To make the process easier, it has been divided into five sections.

It is necessary that you perform these procedures with Technical Support assistance. See [Contacting Nexsan](#) on page 7 for telephone numbers and email addresses for your region.

Record system settings

Some system settings must be reconfigured after the OS SSD is replaced. It is necessary, therefore, to write these settings down so that they can be properly re-entered later.

► **To record system settings:**

1. Ensure that IPMI is properly configured on the unit, and write down the IPMI settings:
 - a. On the **Unity Dashboard**, click **Cluster Status**.
 - b. Click **Status > IPMI**.
 - c. Make sure that the IPMI settings are configured; if they are not, you must configure them, including assigning an IPMI address to each controller node.
 - d. Write down all IPMI settings.

2. Write down all IP and network settings:

- a. On the **Unity Dashboard**, click **Cluster Status**.
- b. Click **Status > IP Configuration**.
- c. Write down all IP and network settings.

3. Determine which node is the active node and which is the passive node.

Note Although both controller nodes in the Active/Active Cluster implementation are “active”, the controller node that is currently hosting the cluster management services is considered the active controller by the system. It's best to replace the OS SSD on the passive node first, and then replace the OS SSD on the active node.

- a. Open a separate SSH session to each node.
- b. On each node, log on as `nxadmin`.
- c. When the command prompt appears, type `menu`, then press the **Enter** key.
- d. When the main menu is displayed, type 2 (Shutdown and Reboot Menu), then press the **Enter** key.
- e. Type 8 (Power Control Menu...) and press the **Enter** key.
- f. Type 2 (Show Status) and press the **Enter** key to display the node's status, either active or passive.

Back up the old OS SSD

The operating system and system configuration reside on the OS SSD. It is therefore necessary to copy this information from the old OS SSD to the new one. However, this process can only be done by Technical Support, see [Contacting Nexsan](#) on page 7.

When Technical Support has finished backing up the OS SSD, you may then continue with the next procedure.

Install the new OS SSD

Note The OS SSD is the drive that is attached to the **SATA 0** port.

► **To remove the old OS SSD and install the new one:**

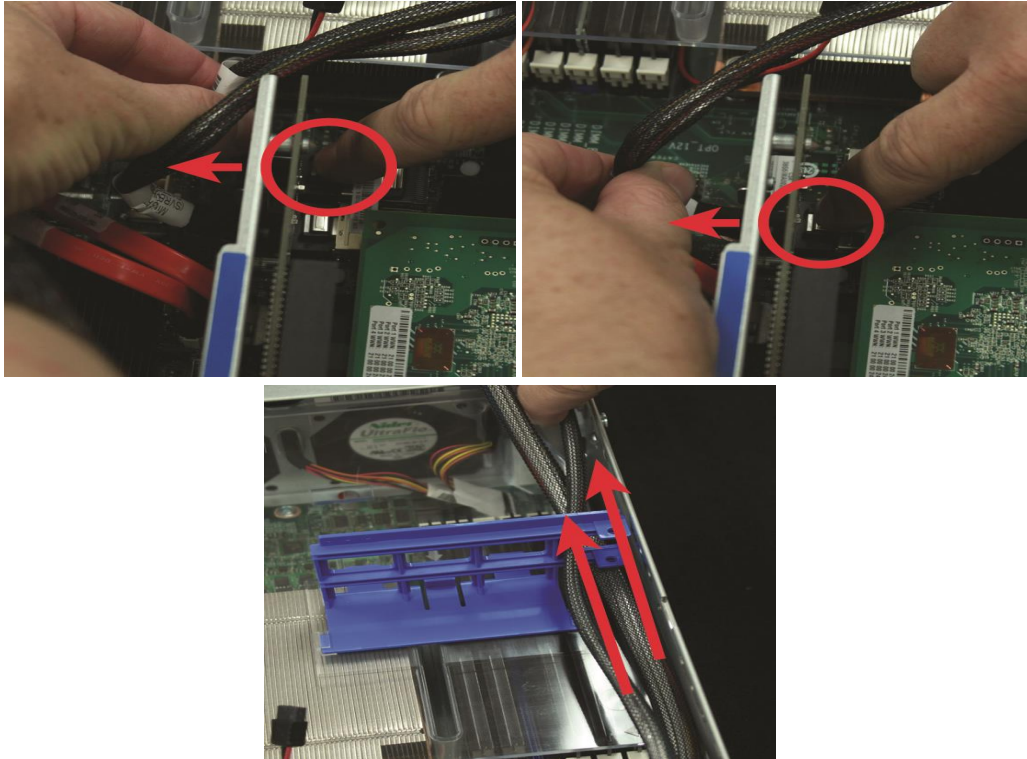
1. Perform the unit shutdown and cover removal steps under [System sub-components](#) on page 41.

Note If the FASTier data cables are not fed through the plastic guides on the top of the clear plastic disk shelf, proceed to step 3.

2. Unplug the FASTier data cables from the motherboard and slide them out of the plastic guides on top of the shelf.

Note Label each cable with the port it was plugged into so that it can be replaced in the proper plug when you are finished.

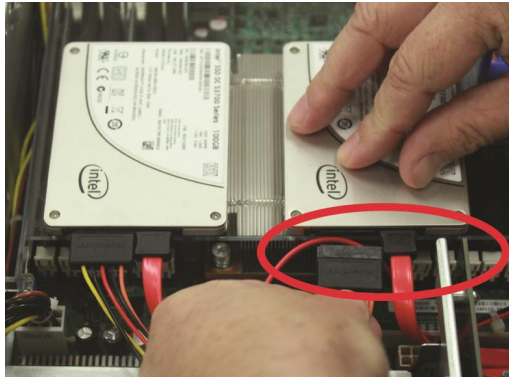
Figure 5-10: Unplugging FASTier cords and sliding them out of the plastic guides



3. Remove the power and data cables from the OS SSD drive.

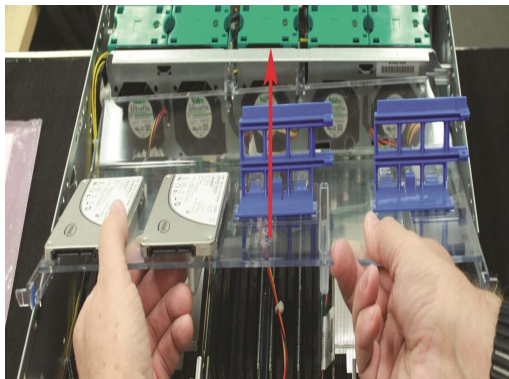
Note Label each power and data cable with the drive from which it was removed so that all cables can be correctly replaced when you are finished.

Figure 5-11: Unplugging OS SSD drive



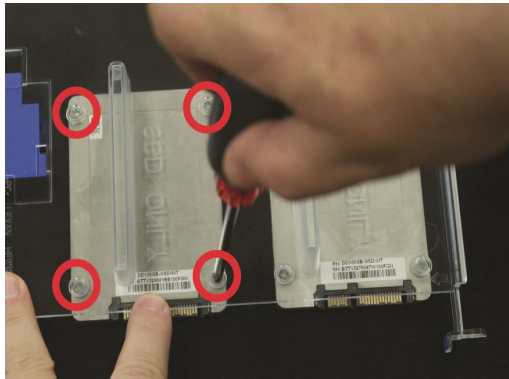
4. Unlatch the shelf on either side and remove it.

Figure 5-12: Removing the plastic shelf



5. Turn the shelf over and unscrew the old OS SSD drive to remove it.

Figure 5-13: Removing the old OS SSD drive



6. Attach the new OS SSD drive to the shelf.
7. Place the plastic shelf back into the unit (see [Replacing the OS SSD on page 68](#)).
8. Re-attach the power and data cables to the OS SSD (see [Replacing the OS SSD on page 68](#)).
9. Thread the FASTier data cables back through the plastic guides and re-attach them to the motherboard (see [Replacing the OS SSD on page 68](#)).
10. Replace the top cover (see [System sub-components on page 41](#)) and secure it with the cover screws (see [System sub-components on page 41](#)).
11. Return the unit to the rack.
12. Replace all communication cables on the unit.

Note Be sure to put all cables back into the proper ports. See Step 4 under [System sub-components on page 41](#).
13. Re-attach the power cables to the power supply units (PSUs) to turn the unit back on.

Transfer data to the new OS SSD

When the passive controller comes back online, Technical Support must then transfer data to the new OS SSD. To contact Technical Support, see [Contacting Nexsan on page 7](#).

When the OS SSD data has been restored, you may then continue to the next procedure.

Re-enter IPMI settings

► To re-enter IPMI settings for the restored controller:

1. On the **Unity Dashboard**, click **Cluster Status**.
2. Click **Status > IPMI**.
3. Using the settings you recorded in Step 1 of [Record system settings on page 68](#), re-enter the IPMI settings for this unit.

Replace and restore the OS SSD on the other unit

You must now replace the OS SSD, reconfigure IP and network settings, and restore the operating system and system configuration on the other unit.

▶ **To replace and restore the OS SSD on the other unit:**

1. Perform the unit shutdown and cover removal steps under [System sub-components](#) on page 41.
2. When the unit is shut down, perform the procedures under [Install the new OS SSD](#) on page 68, [Transfer data to the new OS SSD](#) on the previous page, and [Re-enter IPMI settings](#) on the previous page for the unit.

SATADom

The SATADom (Serial ATA Disk on Module) replacement procedure involves both software and hardware steps, and must be performed on both controllers in a clustered environment.

The process has been divided into the following sections:

- [Replacing a SATADom](#) below

It is necessary that you perform these procedures with the assistance of Technical Support, see [Contacting Nexsan](#) on page 7.

Replacing a SATADom

Each Unity Storage System controller has one 16GB OS SATADom.

If an OS SATADom fails, the controller will become unresponsive. If you suspect a failed OS SATADom, please contact Technical Support to make an official diagnosis, see [Contacting Nexsan](#) on page 7.

▶ **To record system settings:**

In some instances, system settings must be reconfigured after the SATADom is replaced. It is therefore important to write these settings down so that they can be properly re-entered after installation.

Ensure that IPMI is properly configured on the unit, and write down the IPMI settings:

1. On the **Unity Dashboard**, click **Cluster Status**.
2. Click **Status > IPMI**.
3. Make sure that the IPMI settings are configured; if they are not, you must configure them, including assigning an IPMI address to each controller node.
4. Write down all IPMI settings.

5. On a clustered system, determine which controller node is the active node and which is the passive node.

Note Although both controller nodes in the Active/Active Cluster implementation are “active”, the controller node that is currently hosting the cluster management services is considered the active controller by the system. If you are replacing SATADoms on both controllers, you should replace the SATADom on the passive controller first, and then replace the SATADom on the active controller.

- a. Open a separate SSH session to each controller node.
- b. On each node, log on as **nxadmin**.
- c. When the command prompt appears, type **menu**, then press the **Enter** key.
- d. When the main menu is displayed, type **2** (Shutdown and Reboot Menu), then press the **Enter** key.
- e. Type **8** (Power Control Menu...) and press the **Enter** key.
- f. Type **2** (Show Status) and press the **Enter** key to display the node’s status, either active or passive.
- g. Type **1** (Show Location) and press the **Enter** key to display the position of the controller in the chassis; for example, *Left side of chassis from front, slot 01*.

► **To back up the old SATADom:**

The operating system and system configuration reside on the SATADom. It is therefore necessary to copy this information from the old SATADom to the new one. This process can only be done by Technical Support, see [Contacting Nexsan](#) on page 7.

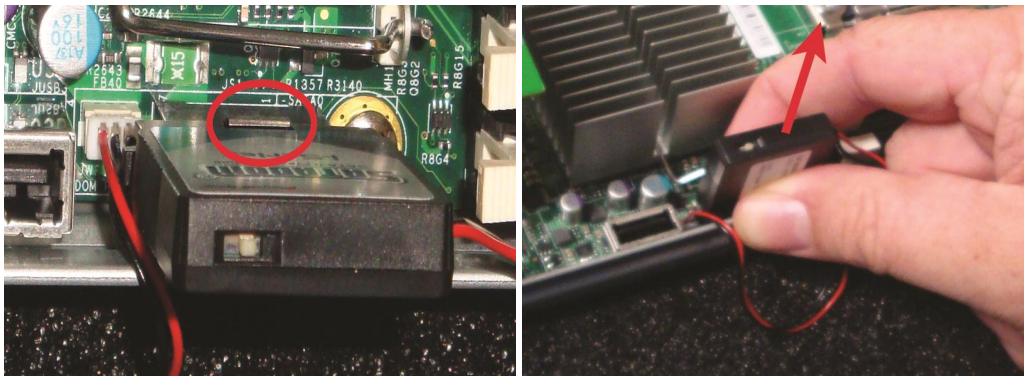
Once Technical Support has completed backing up the SATADom, you may continue with the following procedures.

► **To remove and replace the SATADom:**

1. Remove the controller from the system. See [Unity Storage Expansion controllers](#) on page 36 for directions.
2. Press the small, metal latch near the base of the SATADom, then gently remove the SATADom from the socket.

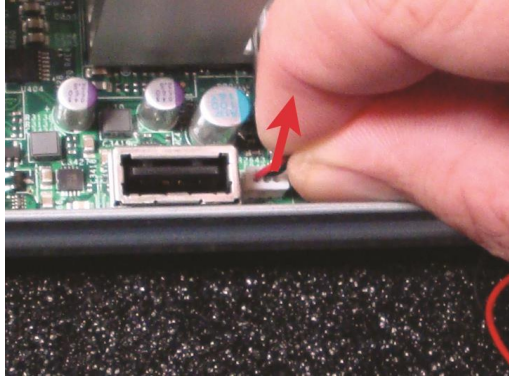
Note The SATADom may be hard to remove. Do NOT force it, but gently oscillate it from side to side until it comes out.

Figure 5-14: Removing the old SATADom



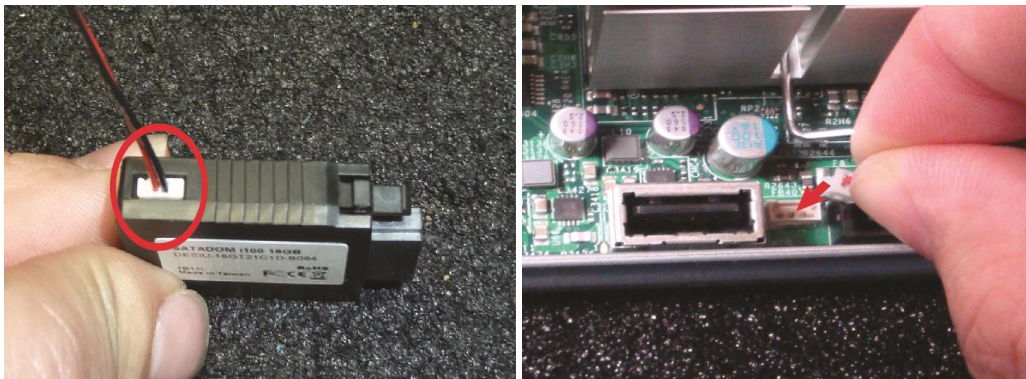
3. Remove the SATADom power cable from the board next to the SATADom socket.

Figure 5-15: Removing the SATADom's power cable



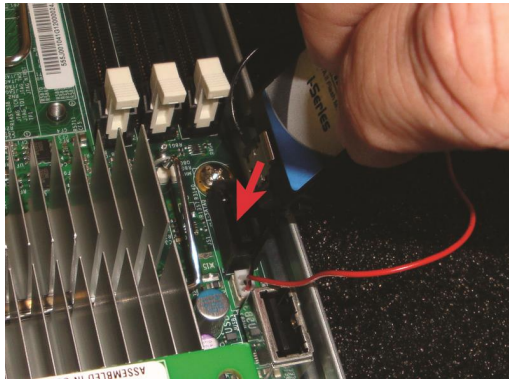
4. Attach the new SATADom to its power cable, then plug the new SATADom power cable into the socket on the board.

Figure 5-16: Connecting the new SATADom power cord



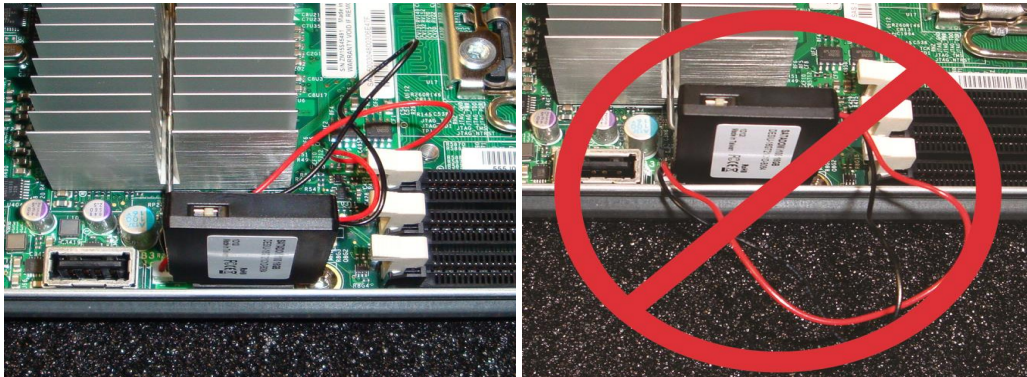
5. Gently plug the new SATADom into the socket until the latch clicks.

Figure 5-17: Inserting the new SATADom



CAUTION: Be sure that the SATADom power cable wires are clear of the edge of the controller. Failure to do so may result in damage to the wires when the controller is replaced.

Figure 5-18: Power cable placement, good (left) and bad (right)



6. Slide the controller back into the chassis and reattach all cables. See [Unity Storage Expansion controllers](#) on page 36 for directions.

► **To transfer data to the new SATADom:**

When the controller comes back online, Technical Support must then transfer data to the new SATADom. To contact Technical Support, see [Contacting Nexsan](#) on page 7.

► **To re-enter IPMI settings for the restored controller:**

1. On the **Unity Dashboard**, click **Cluster Status**.
2. Click **Status > IPMI**. See Step 1 of [To record system settings:](#) on page 72.
3. Using the IPMI settings you wrote down, re-enter the IPMI settings for this controller.



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https://helper.nexsansupport.com/unt_support

Worldwide Web

www.nexsan.com

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