

Controller Replacement: StorNext M-Series Metadata Arrays

Follow the steps in the document to replace a Metadata Array controller in your StorNext M-Series Metadata Appliance:

Note: These instructions apply to M660, M440 and M330 Metadata Appliance products.

Note: A controller may need to be re-seated in order to function properly. See [Taking the Metadata Array Controller Off-line](#) on page 2 to take the controller off-line first, then re-seat the controller. Replace the controller if needed.

To replace the array controller, refer to the following sections:

- [Taking the Metadata Array Controller Off-line](#) on page 2.
- [Replacing the Metadata Array Controller](#) on page 3
- [Replacing the Metadata Array Controller Battery/BBU](#) on page 9
- [Performing a Hardware Detect from the Service Menu](#) on page 18

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Taking the Metadata Array Controller Off-line

Note: Since the component in this section is not used in the Pro Foundation and Artico chassis, this procedure does not apply to those appliances. Refer to the QXS 12-drive documentation for information about the Pro Foundation and Artico RAID and Expansion Chassis CRU procedures at: <http://www.quantum.com/qxshybriddocs>

Note: If re-seating the controller does not solve the problem, proceed with [Replacing the Metadata Array Controller](#) on page 3.

Note: Always take the controller off-line before it is removed for controller or battery/BBU replacement, in order for the system to fail over to the other controller.

To take the controller off-line:

Login to the command line of one of the MDC nodes and access the **Service Menu**.

- 1 Open an SSH connection to the server using the network IP address for the system on either the Metadata or LAN Client network.

Note: If the system has not yet been set up, you will most likely have to connect to the Service Port (network port) to access the system. Use the Service Port IP addresses assigned to the system. Default IP values: **10.17.21.1** (Node 1), **10.17.21.2** (Node2)

- 2 Enter **stornext** for the username at the prompt.
- 3 Enter the password for the **stornext** user account. The default password is "password", but may have been changed after initial configuration.
- 4 At the command prompt enter the following to gain root user access:

```
sudo rootsh
```

- 5 Enter the password for the **stornext** user account again when prompted.
- 6 Press Enter.
- 7 Launch the **Service Menu** script by typing:

```
sh /opt/DXi /scri pts/servi ce. sh
```

The **Service Menu** displays.

- 8 Select the **Hardware Configuration** option.
- 9 Select the **Setup external Array** option.

- 10 Select the **Replace Array controller** option.
- 11 The system queries the array (s).
- 12 Choose the array containing the controller desired.
- 13 Choose the option that corresponds to the controller desired.
- 14 Re-seat the controller or replace the battery/BBU (see [Replacing the Metadata Array Controller Battery/BBU](#) on page 9).
- 15 Press <Enter> when done.
You will see a message indicating the controller has been successfully identified the replacement controller. Example:

```
"Successfully replaced controller b on array 1"
```

- 16 Press <Enter> to return to the menu.
- 17 Enter <Q> repeatedly until you exit the **Service Menu** and return to the command line.
- 18 Disconnect the service laptop from the system.
The procedure is complete.

Replacing the Metadata Array Controller

Note: Since the component in this section is not used in the Pro Foundation and Artico chassis, this procedure does not apply to those appliances. Refer to the QXS 12-drive documentation for information about the Pro Foundation and Artico RAID and Expansion Chassis CRU procedures at: <http://www.quantum.com/qxshybriddocs>

Each metadata array contains two controllers. The controllers are used to connect the Metadata Array to the MDC Node SAS RAID controllers (PERC H200310-INT).

Replacing a Metadata Array controller consists of the following steps:

- 1 [Preparing to Replace the Metadata Array Controller](#)
- 2 [Replacing the Metadata Array Controller](#) on page 5

Preparing to Replace the Metadata Array Controller

Note: If re-seating the controller does not solve the problem, proceed with [Replacing the Metadata Array Controller](#) on page 3.

Required Replacement Kit

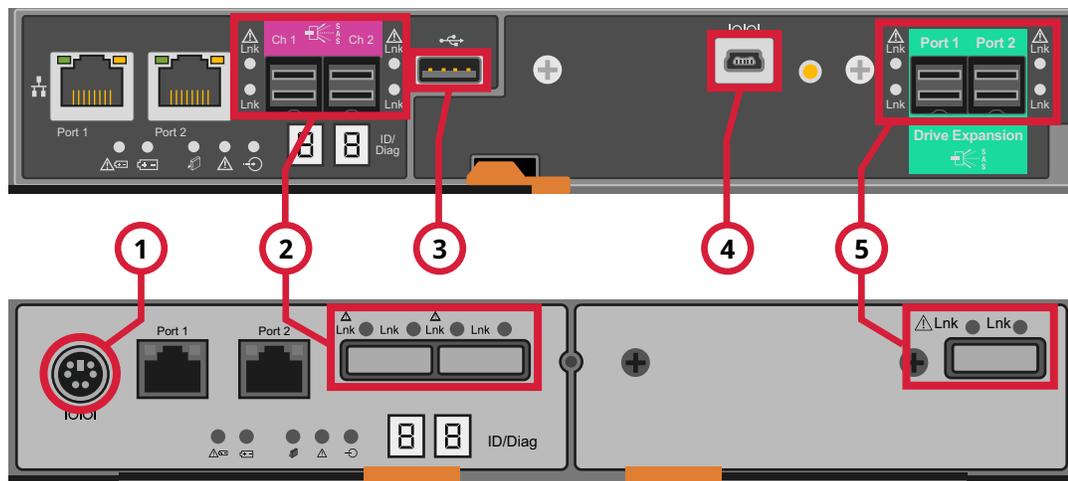
Before beginning the replacement procedure, make sure that you have the required replacement kit(s). Refer to the following tables for the replacement kit contents (see [Table 1](#)):

Caution: Do not mix and match different generation controllers. Use only Tahoe controllers in systems which originally contained Tahoe controllers, and use only Snowmass controllers in systems which originally contained Snowmass controllers.

How to identify Tahoe and Snowmass Controllers

Here are a few simple ways you can identify the Tahoe controller from the Snowmass Controller:

Tahoe Controller

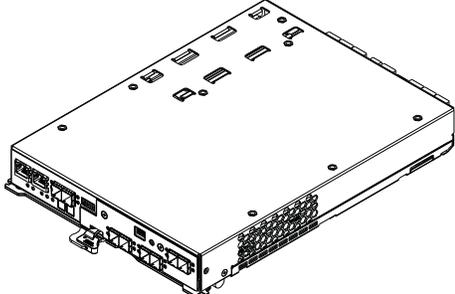


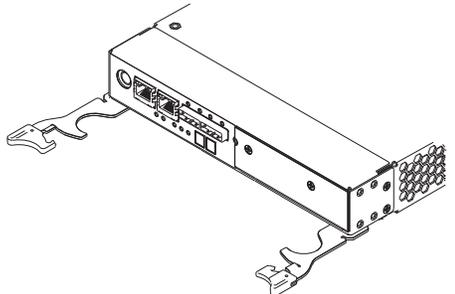
Snowmass Controller

Item	Description	Found in Controller
1	Serial Port	Snowmass-only
2	12 Gb SAS Port (square)	Tahoe-only
	6 Gb SAS Port (rectangle)	Snowmass-only
3	USB Connection	Tahoe-only
4	Mini USB	Tahoe-only

Item	Description	Found in Controller
5	12 Gb SAS Port (square)	Tahoe-only
	6 Gb SAS Port (rectangle)	Snowmass-only

Table 1 Replacement Metadata Array Controller

Qty	Illustration	Description
1		Replacement Tahoe Metadata Array Controller

Qty	Illustration	Description
1		Replacement Snowmass Metadata Array Controller

Required Tools

The following tools are required:

- None

Replacing the Metadata Array Controller

Replacing the Metadata Array Controller consists of the following steps:

Caution: Use appropriate ESD precautions, including the use of a grounding strap, when performing the Metadata Array controller replacement procedure.

- 1 [Identifying the Failed Metadata Array Controller](#)
- 2 [Removing and Replacing the Metadata Array Controller](#) on page 6

Identifying the Failed Metadata Array Controller

Locate the failed controller canister by checking the Controller Service Action Required LEDs (see [Figure 1](#) and [Figure 2](#)). If a fault is detected, the amber **Controller Service Action Required LED** (item #2) is on. If you can safely remove the controller canister, the blue **Controller Service Action Allowed** (item #1) LED is on.

Figure 1 Metadata Array Tahoe Controller LED Indicators

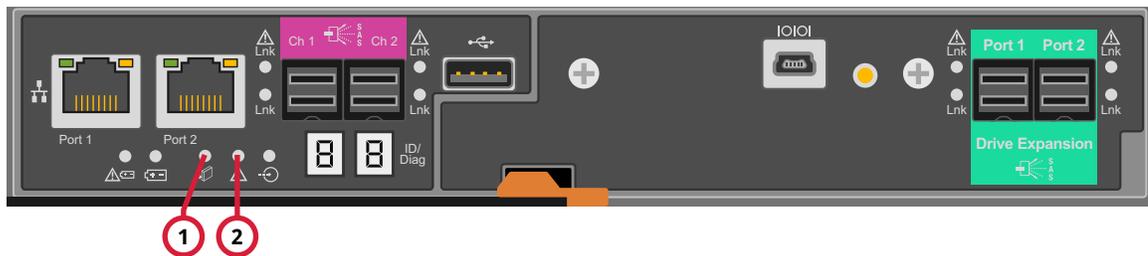
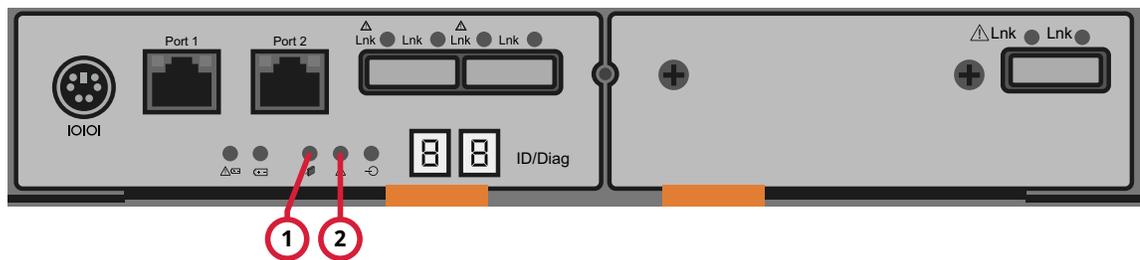


Figure 2 Metadata Array Snowmass Controller LED Indicators



Removing and Replacing the Metadata Array Controller

To remove and replace the Metadata Array controller:

- 1 Once the failed controller has been identified, remove the SAS cables from the failed controller.

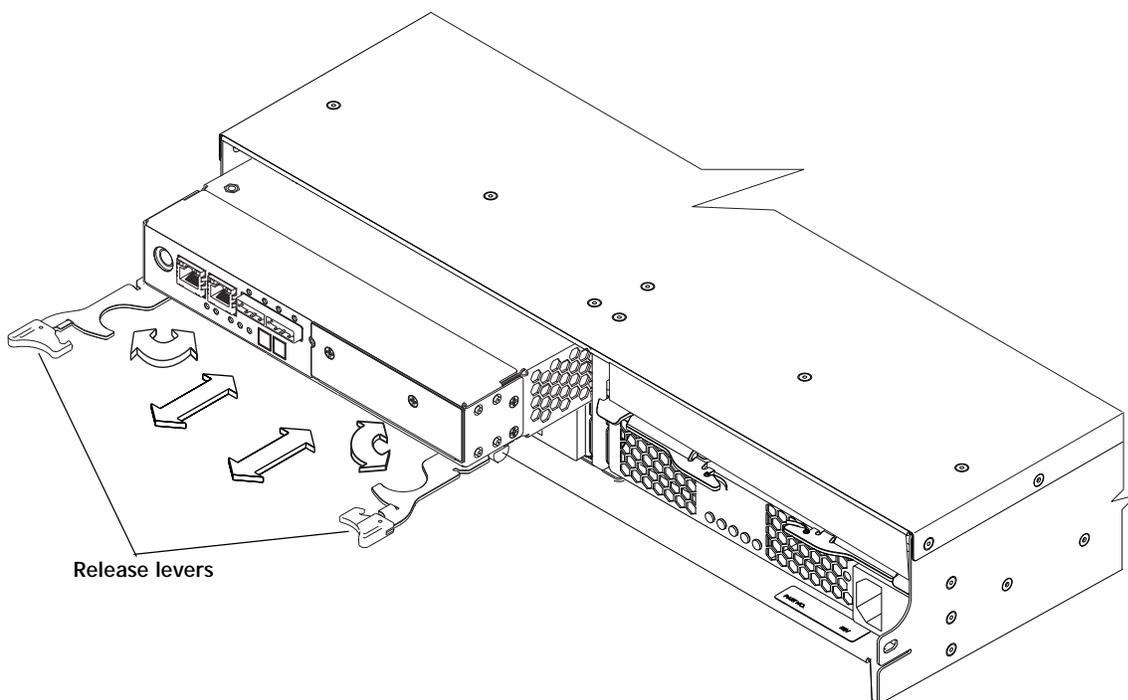
Caution: Leave the working controller online and cabled to auto-synchronize firmware with the new controller after replacement. If not, the firmware on both controllers will have to be replaced, causing an extended array outage.

Caution: Do not mix and match different generation controllers. Use only Tahoe controllers in systems which originally contained Tahoe controllers, and use only Snowmass controllers in systems which originally contained Snowmass controllers.

- 2 To remove the controller (see [Figure 3](#)):
- a Unlock and pull out the release levers to release the controller.
 - b Using the release levers and the sides of the controller, pull the controller out of the Metadata Array.

Note: Do not discard the controller at this time. You will need to remove the battery/BBU from the controller for use in the replacement controller.

Figure 3 Removing the Metadata Array Controller

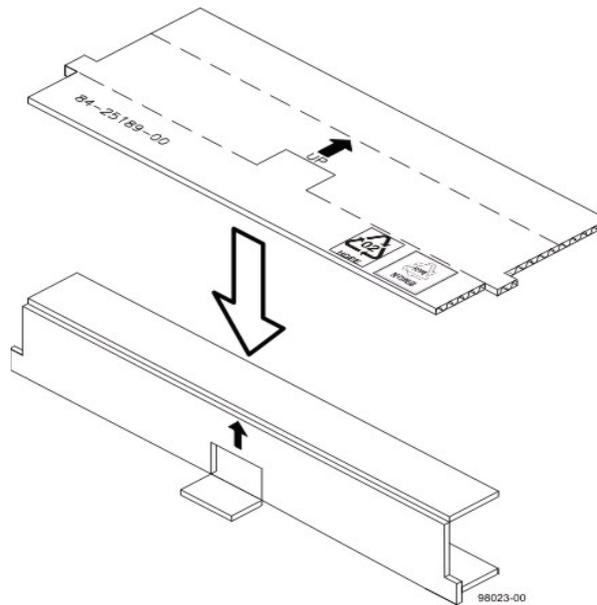


Note: While a Snowmass controller is shown above, the same procedure and release levers are used for the Tahoe Controller.

Caution: The controller slot cannot remain open for more than three minutes because of the possibility of overheating the equipment. Use a controller air blocker during replacements to fill the controller slot so that the equipment will not overheat.

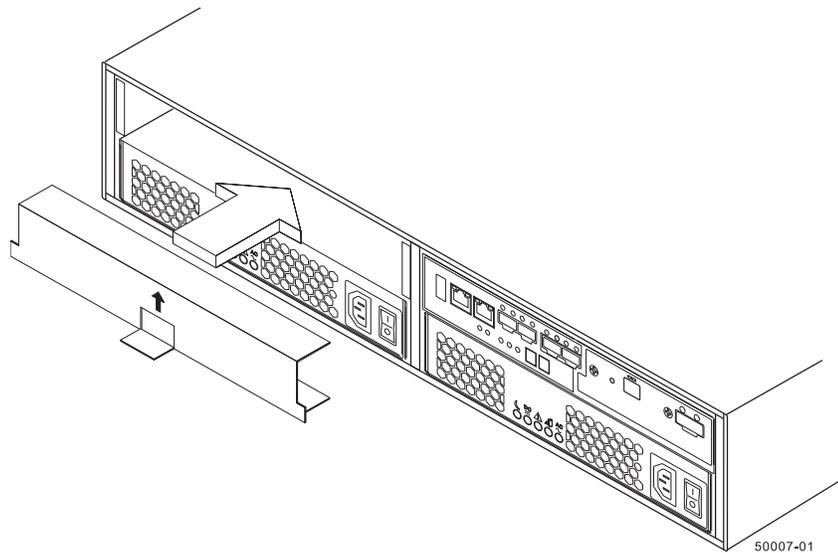
- 3 Set the controller on a flat, static-free surface, with the release lever up.
- 4 Remove the controller air blocker from the packaging and fold it inward at right angles so it is ready to insert into the open controller slot.

Figure 4 Preparing Air Blocker



- 5 Insert the controller air blocker into the open controller slot to make sure that proper airflow is maintained.

Figure 5 Inserting Air Blocker
into Controller Slot



- 6 If the controller comes without a battery/BBU, remove the battery/BBU from the old controller and install it into the new controller. (See [Replacing the Metadata Array Controller Battery/BBU](#) on page 9 for removal and replacement of the battery/BBU).
- 7 When ready to install the new controller, remove the controller air blocker from the controller slot.
- 8 Insert the replacement controller into the bay until it seats into place.
- 9 Push the release lever toward the chassis until it clicks into place.
- 10 Reconnect all cables to the replacement controller.
- 11 Perform a **Hardware Detect** to detect the new array controller (see [Performing a Hardware Detect from the Service Menu](#) on page 18).
The **Hardware Detect** allows the new controller, with a new serial number, to be detected and used by the MDC node.
- 12 Enter <Q> repeatedly until you exit the **Service Menu** and return to the command line.
- 13 Disconnect the service laptop from the system.
- 14 Repeat [Step 11](#) through [Step 13](#) on the other MDC node.
The replacement procedure is now complete.

Replacing the Metadata Array Controller Battery/BBU

Note: Since the component in this section is not used in the Pro Foundation and Artico chassis, this procedure does not apply to those appliances. Refer to the QXS 12-drive documentation for information about the Pro Foundation and Artico RAID and Expansion Chassis CRU procedures at: <http://www.quantum.com/qxshybriddocs>

Each controller contains a battery that is used to power the controller during a power outage. This ensures that any data that has not yet been written to the drives is stored within the controllers until main power is restored.

Replacing a control battery consists of the following steps:

- 1 [Preparing to Replace the Metadata Array Controller Battery/BBU](#)
- 2 [Replacing the Metadata Array Controller Battery/BBU](#) on page 9

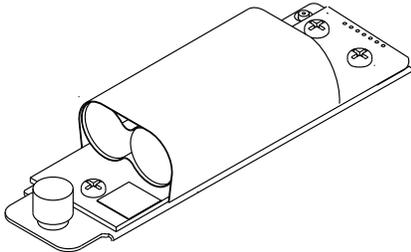
Preparing to Replace the Metadata Array Controller Battery/BBU

Before beginning the replacement procedure, make sure that you have the required replacement kit(s).

Required Replacement Kit

Refer to the following tables for the replacement kit contents (see [Table 2](#)):

Table 2 Metadata Array Control Panel Kit

Qty	Illustration	Description
1		Replacement controller battery/BBU

Required Tools

The following tools are required:

- None

Replacing the Metadata Array Controller Battery/BBU

Replacing the Metadata array controller battery consists of the following steps:

Caution: Use appropriate ESD precautions, including the use of a grounding strap, when performing the Metadata Array control panel replacement procedure.

- 1 [Identifying the Failed Metadata Array Controller Battery/BBU](#)
- 2 [Removing and Replacing the Metadata Array Controller Battery/BBU](#) on page 11

Identifying the Failed Metadata Array Controller Battery/BBU

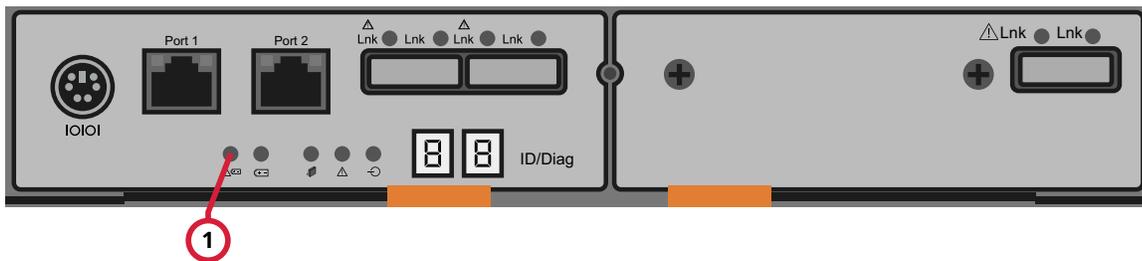
Before you can replace the failed metadata array controller battery, you must identify which battery has failed.

- 1 Locate the failed battery by checking the **Battery Service Action Required** LEDs (item #1) on the controller (see [Figure 6](#) and [Figure 7](#)).

Figure 6 Metadata Array Tahoe Controller Battery Service LED



Figure 7 Metadata Array Snowmass Controller Battery Service LED



Removing and Replacing the Metadata Array Controller Battery/BBU

Note: Always take the controller off-line before it is removed for controller or battery/BBU replacement, in order for the system to fail over to the other controller.

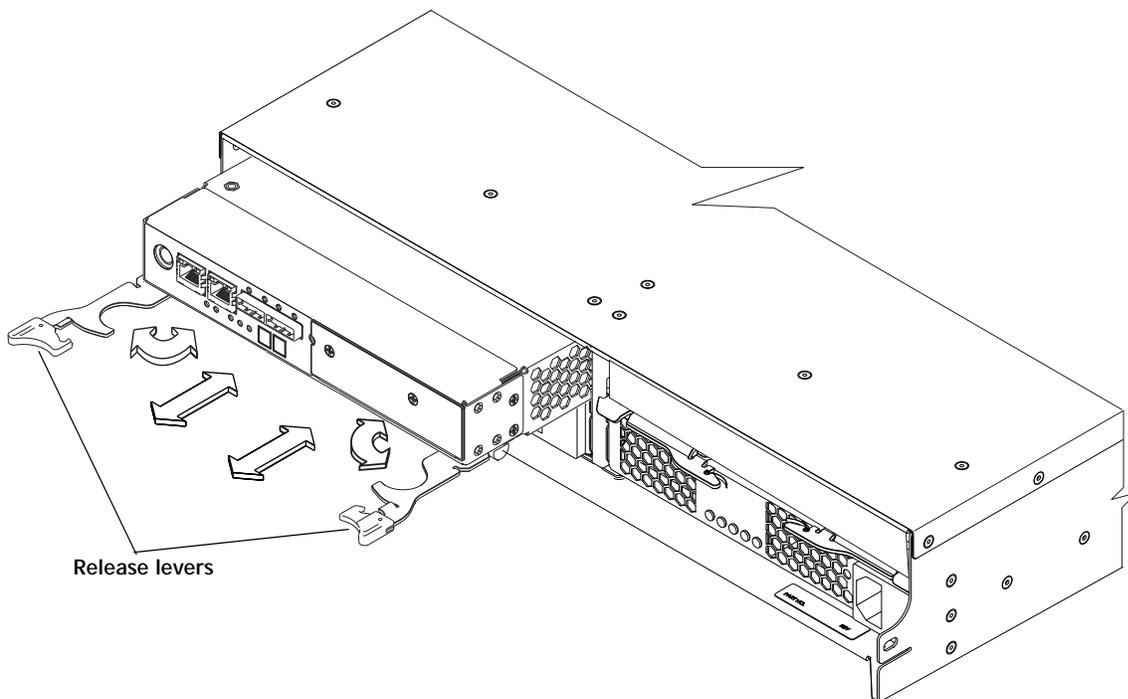
To remove and replace the Metadata Array controller battery:

- 1 Take the failed controller off-line (see [Taking the Metadata Array Controller Off-line](#) on page 2).

Caution: Leave the working controller online and cabled to auto-synchronize firmware with the new controller after replacement. If not, the firmware on both controllers will have to be replaced, causing an extended array outage.

- 2 Disconnect all interface cables from the controller canister that has the failed battery. If you are performing this procedure while the system is still running, do not disturb the second controller.
- 3 To remove the controller (see [Figure 8](#)):
 - a Unlock and pull out the release levers to release the controller.
 - b Using the release levers and the sides of the controller, pull the controller out of the Metadata Array.

Figure 8 Removing the Metadata Array Controller

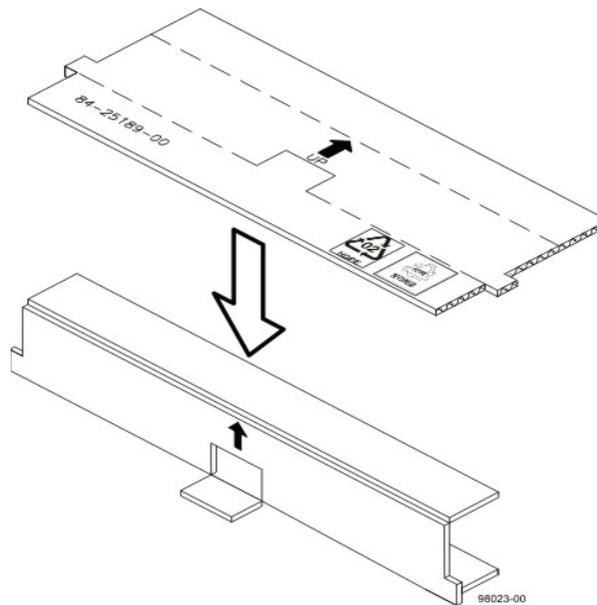


Note: While a Snowmass controller is shown above, the same procedure and release levers are used for the Tahoe Controller.

Caution: The controller slot cannot remain open for more than three minutes because of the possibility of overheating the equipment. The controller air blocker fills the controller slot so that the equipment will not overheat.

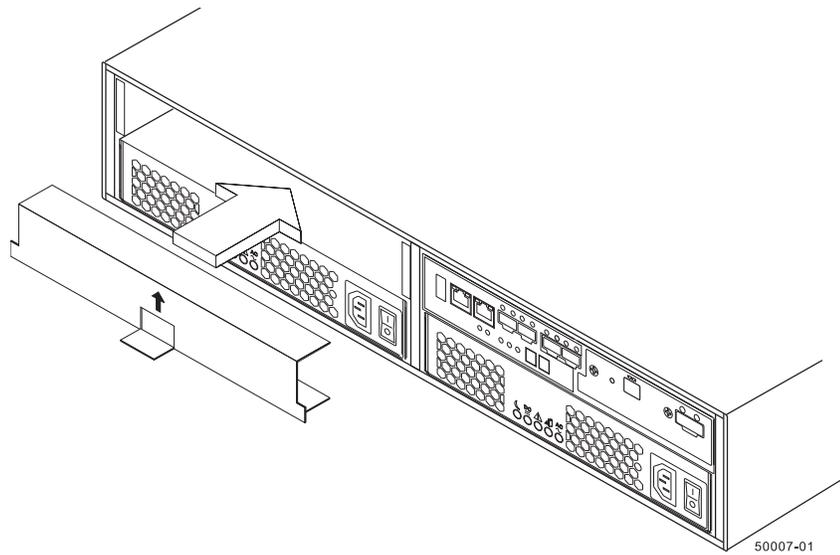
- 4 Set the controller canister on a flat, static-free surface, with the release lever up.
- 5 Remove the controller air blocker from the packaging and fold it inward at right angles so it is ready to insert into the open controller slot.

Figure 9 Preparing Air Blocker



- 6 Insert the controller air blocker into the open controller slot to make sure that proper airflow is maintained.

Figure 10 Inserting Air Blocker into Controller Slot



- 7 Press down on both of the top cover releases, and slide the top cover out to the rear of the controller canister that has a failed battery (see [Figure 11](#) and [Figure 12](#)).
- 8 Unscrew the thumbscrew that secures the failed battery to the controller canister (see [Figure 11](#) and [Figure 12](#)).

Figure 11 Removing the Tahoe
Controller Cover

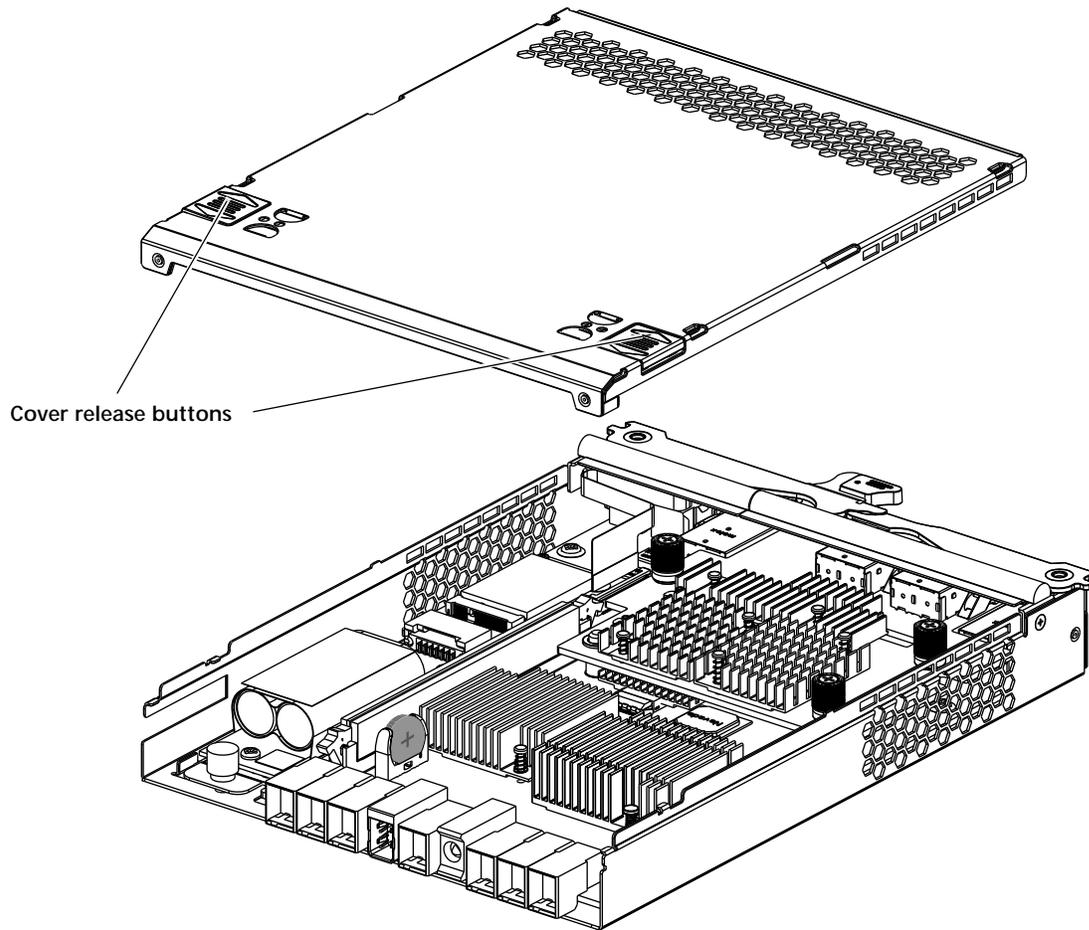


Figure 12 Removing the Tahoe Battery/BBU

Caution: Remove the BBU battery **ONLY** (indicated in green), and **NOT** the coin-style battery (indicated in red).

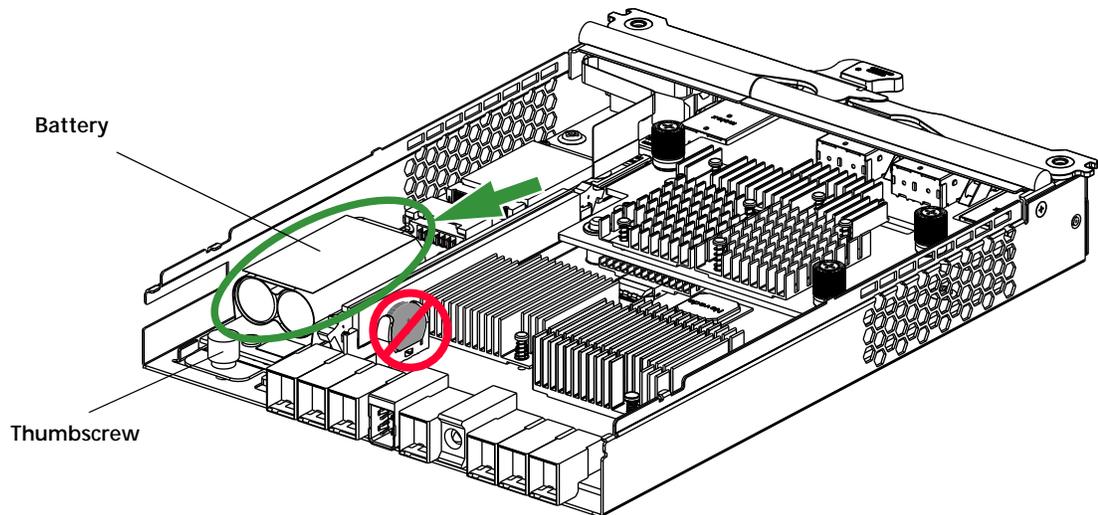


Figure 13 Removing the Snowmass Controller Cover

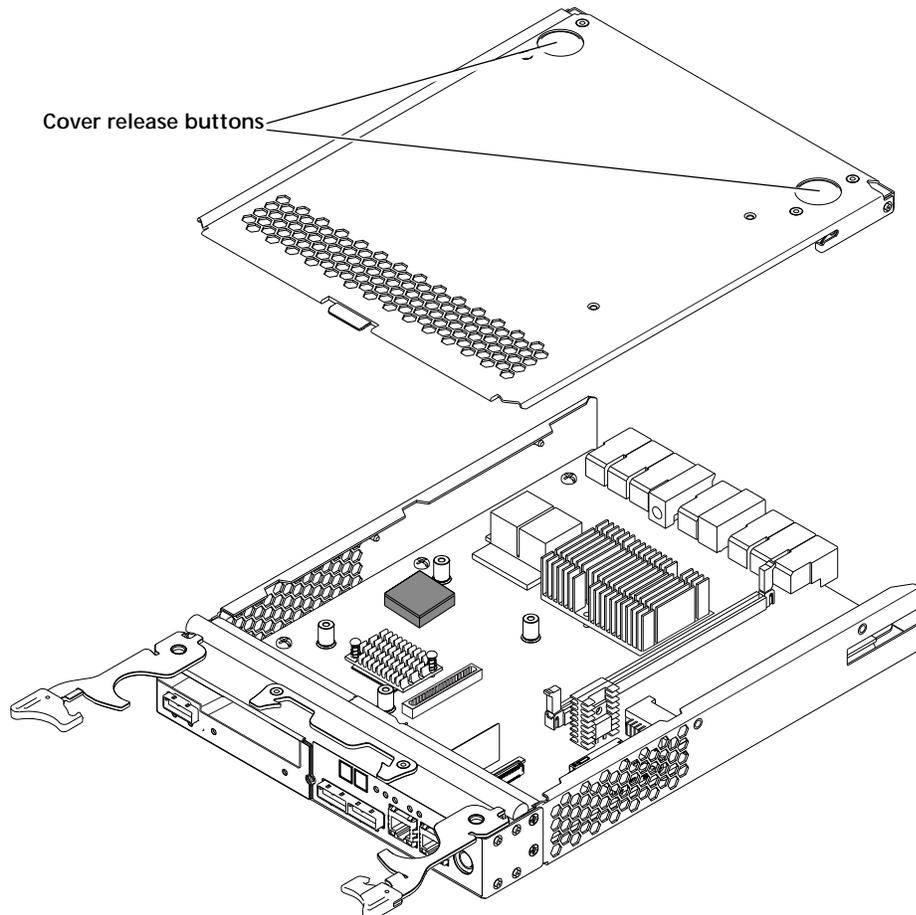
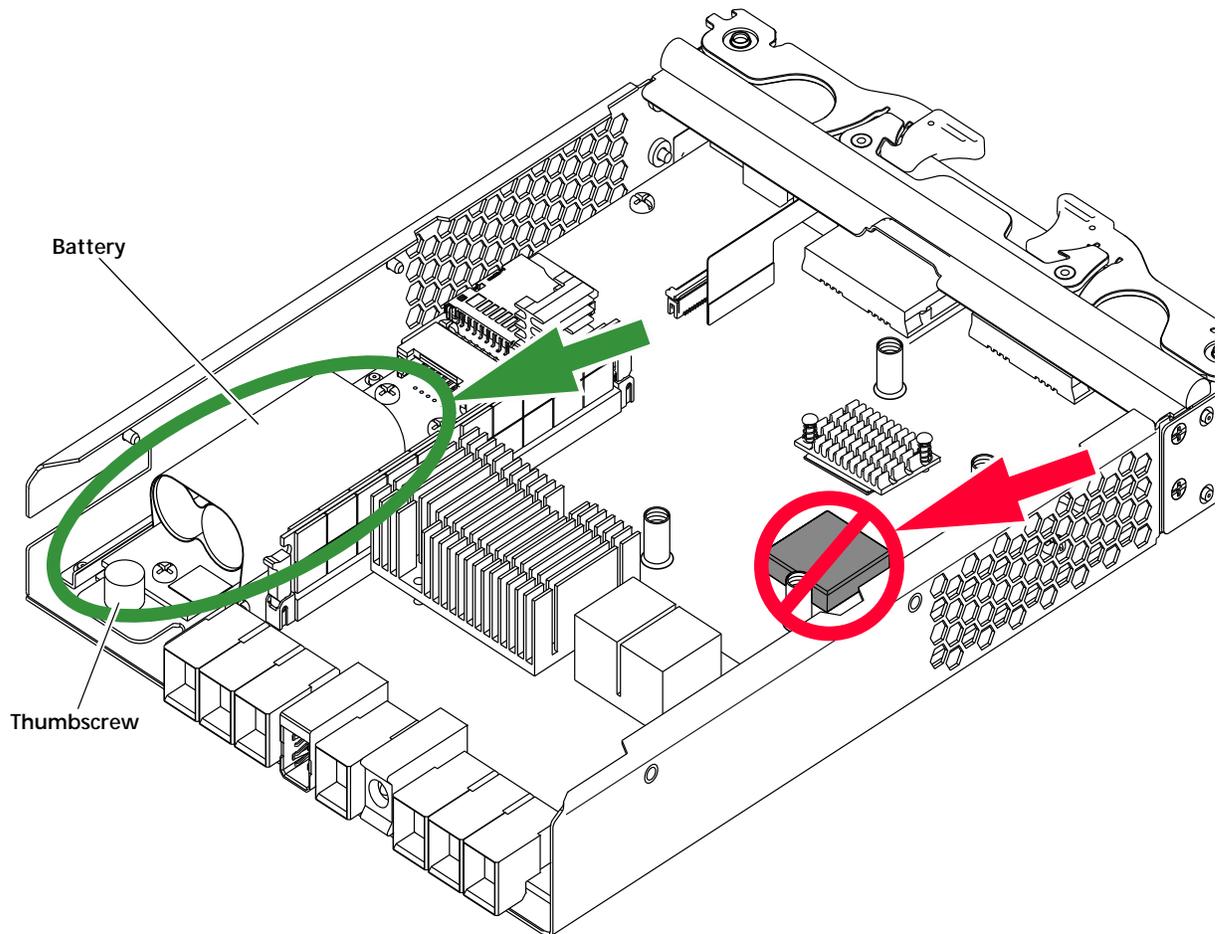


Figure 14 Removing the Snowmass Battery/BBU

Caution: Remove the BBU battery **ONLY** (indicated in green), and **DO NOT REMOVE** the NVSRAM chip/PowerCap (indicated in red).



- 9 Insert the new battery by sliding it towards the front of the controller canister.
- 10 Tighten the thumbscrew that secures the new battery to the controller canister.
- 11 Reinstall the top cover on the controller canister.
- 12 Remove the controller air blocker.
- 13 Insert the replacement controller into the bay until it seats into place.
- 14 Push the release lever toward the chassis until it clicks into place.
- 15 Reconnect all cables to the replacement controller.
- 16 Place the controller back on-line (see [Taking the Metadata Array Controller Off-line](#) on page 2, beginning with [Step 15](#)).

Performing a Hardware Detect from the Service Menu

Login to the command line of one of the MDC nodes and access the **Service Menu**.

- 1 Open an SSH connection to the server using the network IP address for the system on either the Metadata or LAN Client network.

Note: If the system has not yet been set up, you will most likely have to connect to the Service Port (network port) to access the system. Use the Service Port IP addresses assigned to the system. Default IP values: **10.17.21.1** (Node 1), **10.17.21.2** (Node2)

- 2 Enter **stornext** for the username at the prompt.
- 3 Enter the password for the **stornext** user account. The default password is "password", but may have been changed after initial configuration.
- 4 At the command prompt enter the following to gain root user access:

```
sudo rootsh
```

- 5 Enter the password for the **stornext** user account again when prompted.
- 6 Press Enter.
- 7 Launch the **Service Menu** script by typing:

```
sh /opt/DXi/scripts/service.sh
```

The **Service Menu** displays.

- 8 Select the **Hardware Configuration** option.
- 9 Select the **Factory Detect Hardware** option to detect the new array controller.

The **Hardware Detect** allows the new controller, with a new serial number, to be detected and used by the server.

- 10 Enter <Q> repeatedly until you exit the **Service Menu** and return to the command line.
- 11 Close the SSH connection to the MDC node.
- 12 Run a **Factory Detect Hardware** on the other MDC node by repeating [Step 1](#) through [Step 11](#) in this section.

The replacement procedure is now complete.