



## **I/O module**

### **Install and maintain**

NetApp  
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# I/O module

## Overview of add and replace I/O module - AFF C80

You can replace a failed I/O module in your storage system with the same type of I/O module, or with a different kind of I/O module. You can also add an I/O module into a system with empty slots.

- [Add an I/O module](#)

Adding additional modules can improve redundancy, helping to ensure that the system remains operational even if one module fails.

- [Replace an I/O module](#)

Replacing a failing I/O module can restore the system to its optimal operating state.

## Add I/O module - AFF C80

If the storage system has available slots, install the new I/O module into one of the available slots. If all slots are occupied, remove an existing I/O module to make space and then install the new one.

### Before you begin

- Check the [NetApp Hardware Universe](#) to make sure that the new I/O module is compatible with your storage system and version of ONTAP you're running.
- If multiple slots are available, check the slot priorities in [NetApp Hardware Universe](#) and use the best one available for your I/O module.
- Make sure that all other components are functioning properly.

## Add I/O module to an available slot

You can add a new I/O module into a storage system with available slots.

### Steps

1. If you are not already grounded, properly ground yourself.
2. Rotate the cable management tray down by pulling the buttons on the inside of the cable management tray and rotating it down.
3. Remove the target slot blanking module from the carrier:
  - a. Depress the cam latch on the blanking module in the target slot.
  - b. Rotate the cam latch away from the module as far as it will go.
  - c. Remove the module from the enclosure by hooking your finger into the cam lever opening and pulling the module out of the enclosure.
4. Install the I/O module:
  - a. Align the I/O module with the edges of the enclosure slot opening.
  - b. Gently slide the module into the slot all the way into the enclosure, and then rotate the cam latch all the way up to lock the module in place.
5. Cable the I/O module to the designated device.



Make sure that any unused I/O slots have blanks installed to prevent possible thermal issues.

6. Rotate the cable management tray up to the closed position.
7. From the LOADER prompt, reboot the node:

```
bye
```



This reinitializes the I/O module and other components and reboots the node.

8. Give back the controller from the partner controller:

```
storage failover giveback -ofnode target_node_name
```

9. Repeat these steps for controller B.

10. From the healthy node, restore automatic giveback if you disabled it:

```
storage failover modify -node local -auto-giveback true
```

11. If AutoSupport is enabled, restore automatic case creation:

```
system node autosupport invoke -node * -type all -message MAINT=END
```

## Add I/O module to a fully-populated system

You can add an I/O module to a fully-populated system by removing an existing I/O module and installing a new one in its place.

### About this task

Make sure you understand the following scenarios for adding a new I/O module to a fully-populated system:

Scenario	Action required
NIC to NIC (same number of ports)	The LIFs will automatically migrate when its controller module is shut down.
NIC to NIC (different number of ports)	Permanently reassign the selected LIFs to a different home port. See <a href="#">Migrating a LIF</a> for more information.
NIC to storage I/O module	Use System Manager to permanently migrate the LIFs to different home ports, as described in <a href="#">Migrating a LIF</a> .

### Steps

1. If you are not already grounded, properly ground yourself.
2. Unplug any cabling on the target I/O module.
3. Rotate the cable management tray down by pulling the buttons on the inside of the cable management tray and rotating it down.
4. Remove the target I/O module from the chassis:
  - a. Depress the cam latch button.
  - b. Rotate the cam latch away from the module as far as it will go.
  - c. Remove the module from the enclosure by hooking your finger into the cam lever opening and pulling the module out of the enclosure.

Make sure that you keep track of which slot the I/O module was in.

5. Install the I/O module into the target slot in the enclosure:
  - a. Align the module with the edges of the enclosure slot opening.
  - b. Gently slide the module into the slot all the way into the enclosure, and then rotate the cam latch all the way up to lock the module in place.
6. Cable the I/O module to the designated device.
7. Repeat the remove and install steps to replace additional modules for the controller.
8. Rotate the cable management tray up to the closed position.
9. Reboot the controller from the LOADER prompt: `_bye_`

This reinitializes the PCIe cards and other components and reboots the node.



If you encounter an issue during reboot, see [BURT 1494308 - Environment shutdown might be triggered during I/O module replacement](#)

10. Give back the controller from the partner controller:

```
storage failover giveback -ofnode target_node_name
```

11. Enable automatic giveback if it was disabled:

```
storage failover modify -node local -auto-giveback true
```

12. Do one of the following:

- If you removed a NIC I/O module and installed a new NIC I/O module, use the following network command for each port:

```
storage port modify -node *<node name> -port *<port name> -mode network
```

- If you removed a NIC I/O module and installed a storage I/O module, install and cable your NS224 shelves, as described in [Hot-add workflow](#).

13. Repeat these steps for controller B.

## Replace I/O module - AFF C80

Use this procedure to replace a failed I/O module.

- You can use this procedure with all versions of ONTAP supported by your storage system.
- All other components in the storage system must be functioning properly; if not, you must contact technical support.

### Step 1: Shut down the impaired controller

Shut down or take over the impaired controller using one of the following options.

### Option 1: Most systems

To shut down the impaired controller, you must determine the status of the controller and, if necessary, take over the controller so that the healthy controller continues to serve data from the impaired controller storage.

#### Before you begin

If you have a cluster with more than two nodes, it must be in quorum. If the cluster is not in quorum or a healthy controller shows false for eligibility and health, you must correct the issue before shutting down the impaired controller; see [Synchronize a node with the cluster](#).

#### Steps

1. If AutoSupport is enabled, suppress automatic case creation by invoking an AutoSupport message command:  

```
system node autosupport invoke -node * -type all -message MAINT=number_of_hours_downh
```

The following AutoSupport command suppresses automatic case creation for two hours:

```
cluster1:*> system node autosupport invoke -node * -type all -message MAINT=2h
```

2. Disable automatic giveback from the console of the healthy controller:  

```
storage failover modify -node local -auto-giveback false
```
3. Take the impaired controller to the LOADER prompt:

If the impaired controller is displaying...	Then...
The LOADER prompt	Go to the next step.
Waiting for giveback...	Press Ctrl-C, and then respond <i>y</i> when prompted.
System prompt or password prompt (enter system password)	Halt or take over the impaired controller from the healthy controller: <pre>storage failover takeover -ofnode <i>impaired_node_name</i></pre> When the impaired controller shows Waiting for giveback..., press Ctrl-C, and then respond <i>y</i> .

### Option 2: Controller is in a MetroCluster



Do not use this procedure if your system is in a two-node MetroCluster configuration.

To shut down the impaired controller, you must determine the status of the controller and, if necessary, take over the controller so that the healthy controller continues to serve data from the impaired controller storage.

- If you have a cluster with more than two nodes, it must be in quorum. If the cluster is not in quorum or a healthy controller shows false for eligibility and health, you must correct the issue before shutting down the impaired controller; see [Synchronize a node with the cluster](#).
- If you have a MetroCluster configuration, you must have confirmed that the MetroCluster

Configuration State is configured and that the nodes are in an enabled and normal state (metrocluster node show).

### Steps

1. If AutoSupport is enabled, suppress automatic case creation by invoking an AutoSupport command:  

```
system node autosupport invoke -node * -type all -message  
MAINT=number_of_hours_downh
```

The following AutoSupport command suppresses automatic case creation for two hours:

```
cluster1:*> system node autosupport invoke -node * -type all -message  
MAINT=2h
```

2. Disable automatic giveback from the console of the healthy controller: 

```
storage failover modify  
-node local -auto-giveback false
```
3. Take the impaired controller to the LOADER prompt:

If the impaired controller is displaying...	Then...
The LOADER prompt	Go to the next Step.
Waiting for giveback...	Press Ctrl-C, and then respond <i>y</i> when prompted.
System prompt or password prompt (enter system password)	Halt or take over the impaired controller from the healthy controller: <pre>storage failover takeover -ofnode impaired_node_name</pre> When the impaired controller shows Waiting for giveback..., press Ctrl-C, and then respond <i>y</i> .

## Step 2: Replace a failed I/O module

To replace an I/O module, locate it within the controller module and follow the specific sequence of steps.

1. If you are not already grounded, properly ground yourself.
2. Unplug any cabling on the target I/O module.

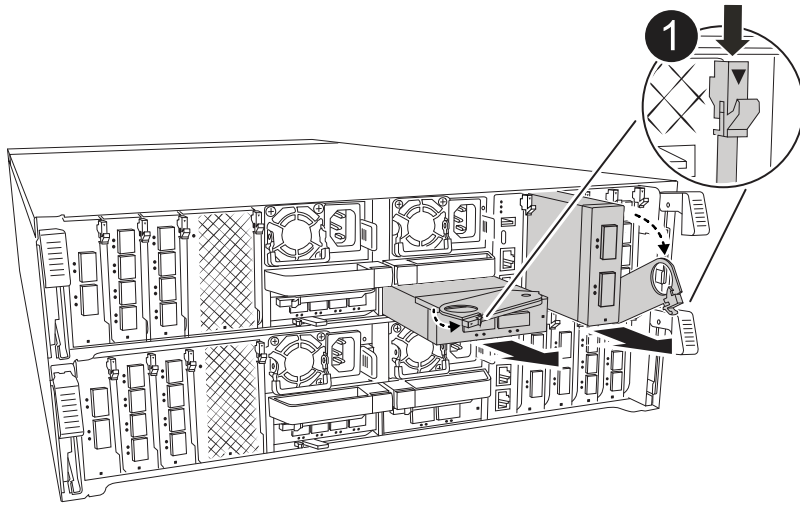
Make sure to label the cables so that you know where they came from.

3. Rotate the cable management tray down by pulling the buttons on the inside of the cable management tray and rotating it down.
4. Remove the I/O module from the controller module:



This following illustration shows removing a horizontal and vertical I/O module. Typically, you will only remove one I/O module.





<b>1</b>	Cam locking button
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- a. Depress the cam latch button.
- b. Rotate the cam latch do away from the module as far as it will go.
- c. Remove the module from the controller module by hooking your finger into the cam lever opening and pulling the module out of the controller module.

Make sure that you keep track of which slot the I/O module was in.

5. Set the I/O module aside.
6. Install the replacement I/O module into the target slot:
  - a. Align the I/O module with the edges of the slot.
  - b. Gently slide the module into the slot all the way into the controller module, and then rotate the cam latch all the way up to lock the module in place.
7. Cable the I/O module.
8. Repeat the remove and install steps to replace additional modules for the controller.
9. Rotate the cable management tray into the locked position.

### Step 3: Reboot the controller

After you replace an I/O module, you must reboot the controller module.

#### Steps

1. From the LOADER prompt, reboot the node: `bye`



This reinitializes the I/O cards and other components and reboots the node.

2. Return the node to normal operation: `storage failover giveback -ofnode impaired_node_name`
3. If automatic giveback was disabled, reenale it: `storage failover modify -node local -auto-giveback true`

## Step 4: Return the failed part to NetApp

Return the failed part to NetApp, as described in the RMA instructions shipped with the kit. See the [Part Return and Replacements](#) page for further information.

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