

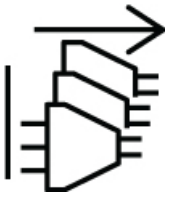
Remove and Replace Cisco NCS 1010 Modules

This chapter describes the tasks to remove and replace Cisco NCS 1010 modules.

Caution Always populate the modular slots in the Cisco NCS 1010 chassis with respective modules (line card, controller, PSU, and fan trays). Perform the replacement or upgrade of the modules (Online Insertion or Removal (OIR)) only when the ambient temperature is below 30-degree Celsius. Complete the OIR of modules within five minutes to prevent overheating of the components.

Warning **Statement 1028—**More Than One Power Supply

This unit might have more than one power supply connection. To reduce risk of electric shock, remove all connections to de-energize the unit.



Warning **Statement 1073—**No User-Serviceable Parts

There are no serviceable parts inside. To avoid risk of electric shock, do not open.

Note **Statement 1089—**Instructed and Skilled Person Definitions

An instructed person is someone who has been instructed and trained by a skilled person and takes the necessary precautions when working with equipment.

A skilled person or qualified personnel is someone who has training or experience in the equipment technology and understands potential hazards when working with equipment.

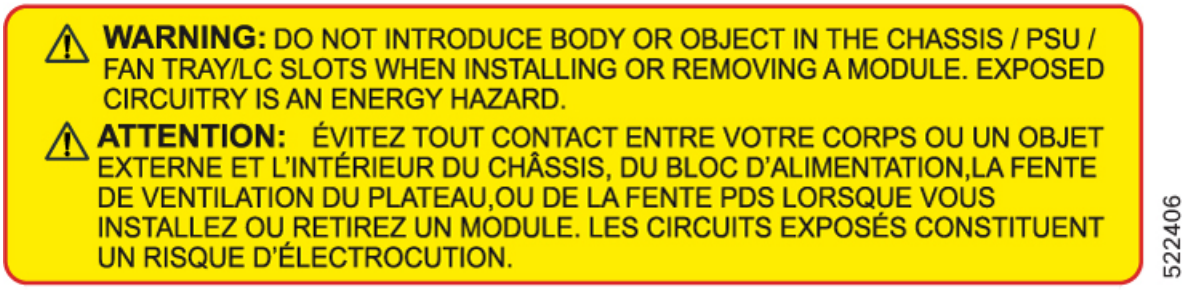
Warning **Statement 1090—**Installation by a Skilled Person

Only a skilled person should be allowed to install, replace, or service this equipment. See statement 1089 for the definition of a skilled person.

Warning **Statement 1091—**Installation by an Instructed Person or Skilled Person

Only an instructed person or skilled person should be allowed to install, replace, or service this equipment. See statement 1089 for the definition of an instructed person or skilled person.

Note The maximum operating altitude for OIR is 1800 m.



- Replace a Cisco NCS 1010 chassis, on page 2
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- Remove and Replace PSU, on page 6
- Remove and Replace Fan Filter, on page 8
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- Wipe Data in Disk Using Secure Erase, on page 14
- Upgrade an NCS 1010 EDFA only Network to a Raman Network, on page 18

Replace a Cisco NCS 1010 chassis

Use this task when you must replace a Cisco NCS 1010 chassis and preserve the information that is required to restore and validate the node.

Complete the pre-checks before the maintenance window. During the maintenance window, replace the chassis, reconnect the cabling, start the system, and compare the post-check data with the pre-check data.

Before you begin

- Ensure that SSH access and session logging are enabled on the node.

- Ensure that console access is available.
- Schedule the activity during a maintenance window.
- Label all fibers, patch cords, Ethernet cables, console cables, power cables, and USB connections. Complete this labeling before starting the replacement.
- Ensure that the solid-state drive (SSD) in the replacement chassis is empty or factory-formatted.



Caution Do not power on the replacement chassis with any route processor (RP) installed prior to the chassis replacement.

Follow these steps to replace a Cisco NCS 1010 chassis.

Procedure

Step 1 Collect and save the pre-check system information.

Run these commands and save the command output for post-check comparison:

Example:

```
show version
show platform
show install active
show install committed
show install fixes active
show install fixes committed
show ip interface brief
show alarms brief system active
show hw-module fpd
show tech ncs1010 detail
```

Step 2 Back up the running configuration.

Copy the backup file to an external location after you verify that the backup file exists.

Example:

```
copy running-config harddisk:
run ls -lrt /harddisk:/ | grep running
```

Step 3 Prepare the hardware records.

a) Record the FPD versions for post-check comparison.
b) Label all cable connections.
c) Label all passive USB connections and record the exact USB port used by each connection.

Step 4 Power down the existing chassis and remove the hardware.

a) Gracefully power down the chassis.
b) Remove the fan trays.
c) Remove the RP cards.
d) Remove the line cards.

e) Disconnect all the fibers, Ethernet cables, console cables, USB cables, and power cables.
f) Remove the chassis from the rack.

Step 5 Install the replacement chassis and modules.

a) Mount the replacement chassis in the rack.
b) Reinstall the fan tray filter.
c) Reinstall the fan trays.
d) Reinstall the power supplies.
e) Reinstall the RP cards and line cards.
f) Firmly tighten the screws on each module. Ensure that all modules are fully seated and secured.

Step 6 Reconnect the cabling and start the replacement chassis.

a) Reconnect the fibers, console cables, and power cables.
b) Reconnect the Ethernet and management cables.
c) Reconnect the passive USB connections to the same USB ports on the EITU panel that were used before removal.
d) Power on the replacement chassis.
e) Monitor the startup process through the console.
f) Allow up to one hour for full system initialization.

Step 7 Verify the post-check system state.

Run these commands and compare the command output with the pre-check output:

Example:

```
show version
show platform
show install active
show install committed
show install fixes active
show install fixes committed
show ip interface brief
show alarms brief system active
show hw-module fpd
```

Step 8 Complete the final validation.

a) Compare the FPD versions with the pre-check data and upgrade FPDs if required.
b) Reestablish the Cisco Smart Software Manager (CSSM) trust for Smart Licensing if the chassis serial number changed.
c) Verify that all interfaces are operational.
d) Verify that only expected alarms are active.
e) Verify that traffic and services have recovered.
f) Confirm that unexpected hardware, software, or environmental alarms do not exist.

The replacement chassis runs with the intended software and configuration, restored cabling, recovered traffic and services, and no unexpected alarms.

What to do next

If the system starts with the wrong software version or configuration, take these steps to recover:

1. Treat this condition as a Disaster Recovery boot caused by a chassis SSD that is not empty,
2. Reinstall the intended software release and fixes.
3. Restore the saved configuration backup.
4. Reboot and revalidate the node.

If issues are observed, collect these logs:

- **show tech ncs1010 detail**
- **show hw-module fpd**
- **show platform**
- **show alarms brief system active**
- **show install active**
- **show install fixes active**

Remove and Replace Controller

Use this task to remove and replace the controller in the Cisco NCS 1010 chassis.

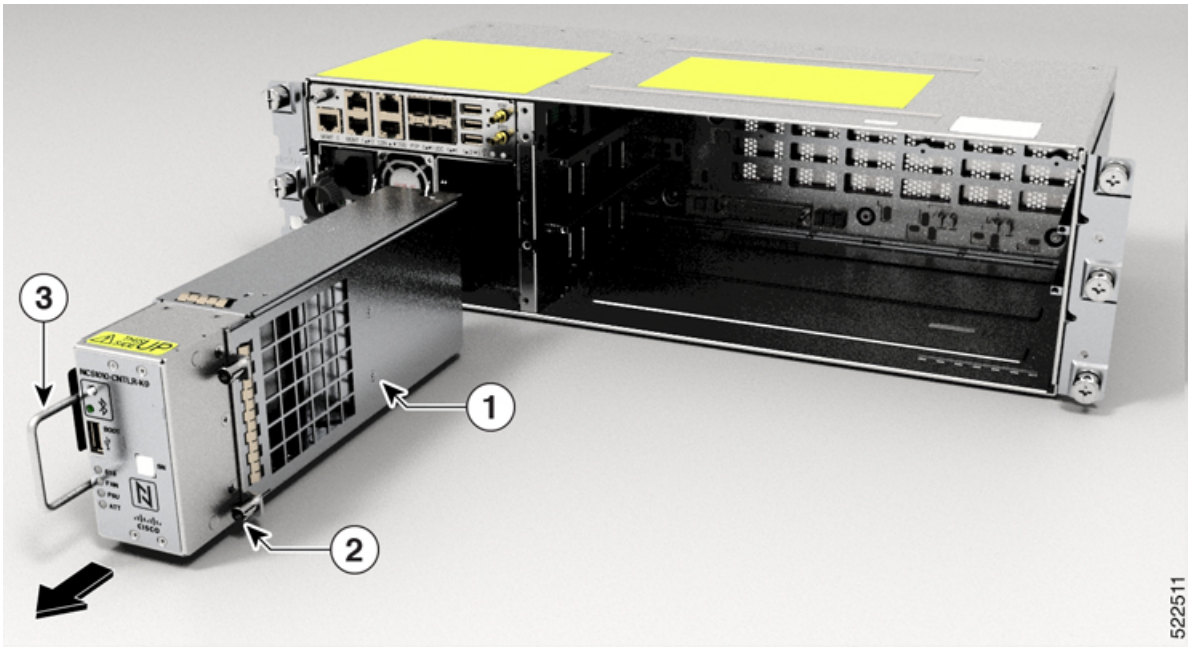
Procedure

Step 1 Using a screwdriver, unfasten the two captive screws on the controller.

Step 2 Pull out the handle from the controller

Step 3 Holding the handle with one hand and supporting the controller with the other, gently remove the controller from the slot.

Figure 1: Removing the Controller



1	Controller
2	Captive screws
3	Handle

What to do next

To replace the controller, see Install Controller.

Remove and Replace PSU

Use this task to remove and replace a PSU in the Cisco NCS 1010 chassis.

Before you begin

Remove the connections to the PSU:

- Disconnect power from the breaker before disconnecting power from the PSU.
- Remove the cable from the retainer and the PSU, in case of an AC PSU installation.
- Disengage the latch available in the DC Cable connector from the DC PSU to remove the cable.

Procedure

Step 1 Press the locking latch towards the right to release the lock.

Figure 2: Locking Latch of AC Power Supply

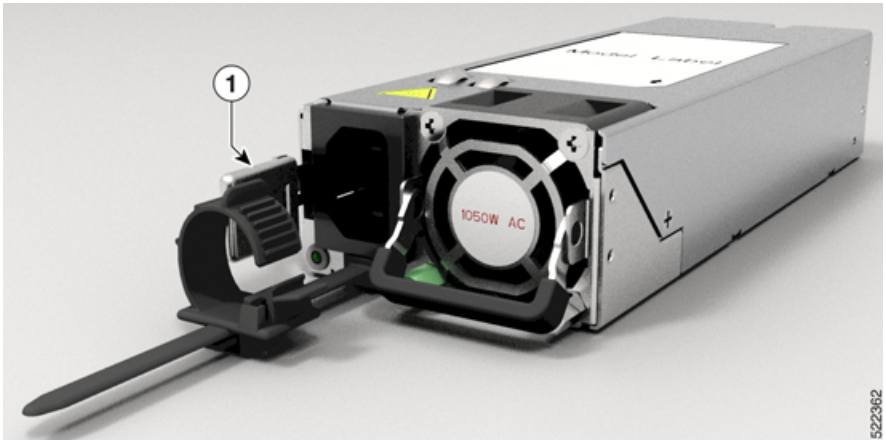
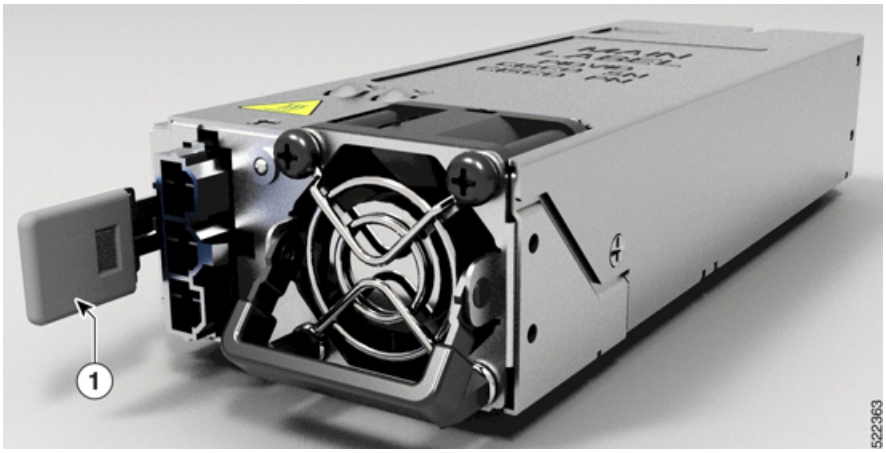
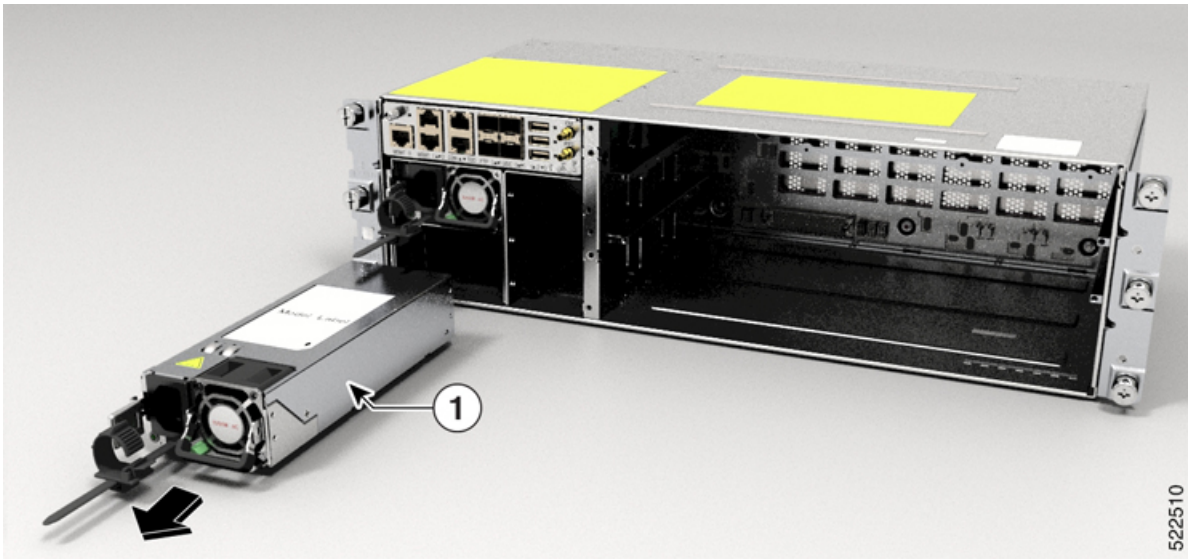


Figure 3: Locking Latch of DC Power Supply



1	Latch

Figure 4: Removing the PSU



Step 2 Supporting the PSU with the one hand, gently pull out the PSU from the slot.

What to do next

To replace the PSU, see Install PSU.

Remove and Replace Fan Filter

The fan filter removes dust from the fan that is drawn into the chassis by the fan trays. If the fan filters are damaged, dirty, or clogged with dust, they must be replaced with a new fan filter. Failure to replace a compromised fan filter can result in insufficient fan circulation through the chassis and temperature-related environmental alarms.

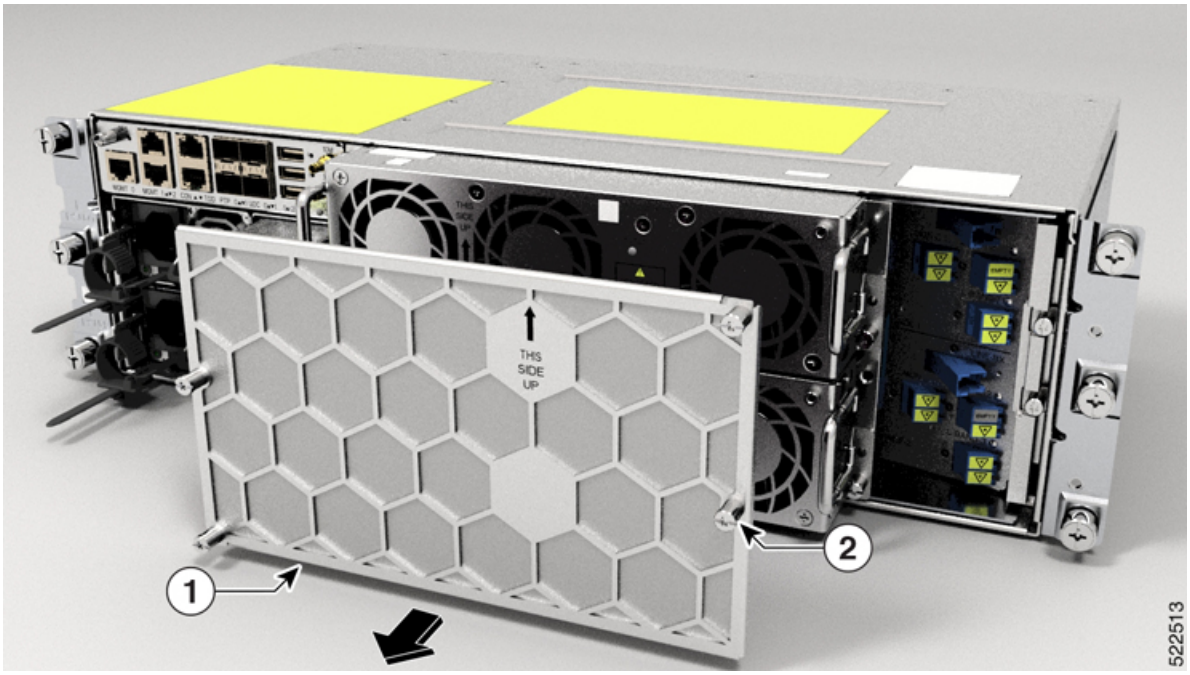
Use this task to remove and replace the fan filter.

Note Inspect the fan filters every three months and replace them as needed. Fan filters should be disposed of and replaced when they become dirty. According to NEBS guidelines, washing or cleaning them is not allowed. Make sure to order these consumable items separately and keep a spare stock. For PID identification, contact TAC, as these parts cannot be replaced through the RMA process.

Procedure

Step 1 Loosen the four captive screws in the fan filter from the standoffs in the fan trays.

Figure 5: Removing the Fan Filter



1	Fan filter
2	Captive Screw

Step 2 Gently remove the fan filter from the fan tray.

What to do next

To replace the fan filter, see Install Fan Filter.

Remove and Replace Fan Tray

Use this task to remove and replace a fan tray in the Cisco NCS 1010 chassis.

Caution Online Insertion and Removal (OIR) duration for the fan tray unit at 30 degree Celsius ambient temperature, is five minutes.

Only one fan tray should be removed at a time. Removing both fan trays simultaneously leads to overheating and may result in an unexpected system shutdown.

Before you begin

Remove the fan filter.

Procedure

Step 1 Loosen the captive screws (one on the left side and other on the right side) using a screwdriver.

Step 2 Using the handle pull the fan tray out of the chassis.

Figure 6: Removing the Fan Tray



1	Fan
2	Captive Screw

Step 3 Repeat Step 1 and Step 2 to remove the second fan tray.

What to do next

To replace the fan tray, see Install Fan Tray.

Remove and Replace Line Card

Use this task to remove and replace the line card in the Cisco NCS 1010 chassis.

Before you begin

- Remove the fan filter.

- Remove the fan trays.
- Remove the protection cover by loosening the captive screws fastened into the standoffs, and remove the standoffs.

Caution

- **Perform the removal and replacement procedure for the line card only when the ambient temperature is below 30 degree Celsius and complete it within five minutes to prevent overheating of the chassis components.**
- **Ensure that you perform the removal and replacement of the fan filter, fan trays, protection cover, and line card within the five minutes of time limit.**
- **As the fan trays draw power through the line card, you must complete the line card replacement before installing the fan trays on top of it.**

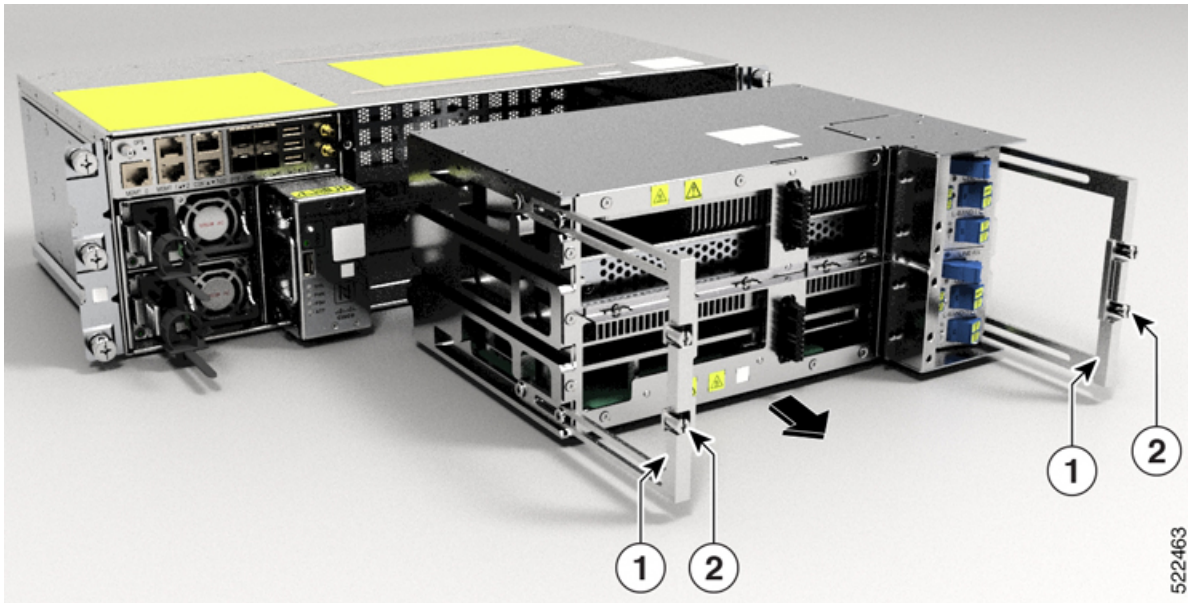
Procedure

Step 1 Loosen the captive screws available in the line card handles.

Step 2 Pull the handles out of the line card, and gently remove the card from the chassis.

Caution
Use the handles only to push and pull out the line card from the chassis. Do not use the handles to carry the line card. To prevent any accidental drop, support the top and bottom of the line card with your hand while you remove or insert it.

Figure 7: Removing the Line Card



1	Handle

2	Captive Screws

What to do next

To replace the line card, see Install Line Card.

Remove and replace the RTC battery in the controller

Use this procedure to remove and replace the controller RTC battery.

Before you begin

Ensure you have these tools and equipment.

- Screw drivers:
  - T-8 Torx screwdriver for NCS1010-CTR2-B-K9 and NCS1010-CTR2-K9
  - Number-1 Phillips screwdriver for NCS1010-CTLR-B-K9 and NCS1010-CNTLR-K9
- Plastic spudger/pry tool
- Plastic or ceramic tweezers
- Electrostatic discharge (ESD) strap or other grounding equipment such as a grounded mat
- Replacement battery – Choose any one from the options:
  - 06032 101 501 — Varta Microbattery Inc.
  - 100272 — Renata

Caution Handle all components only by the carrier edges. Always use an ESD wrist-strap or grounding device to avoid damaging static-sensitive components.

Warning Ensure the system is shut down and power is removed before you begin.

There is danger of explosion if the RTC battery is replaced incorrectly. Replace the RTC battery only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions.

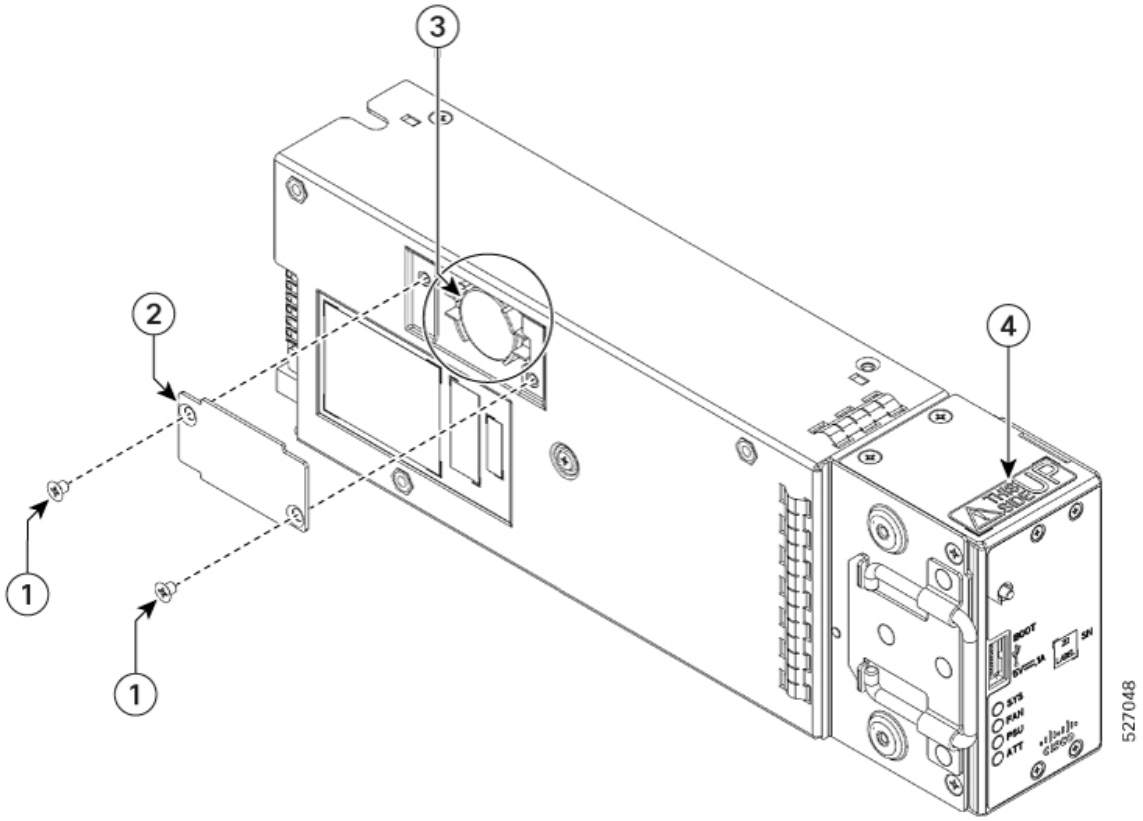
Follow these steps to remove and replace the RTC battery in the controller.

Procedure

Step 1 Remove the battery cover on the left side of the controller.

Before removing the battery cover, use the *This Side Up* label to help yourself orient the controller correctly.

Figure 8: Removing the battery cover on the left side cover



1	• T-8 Torx screws for NCS1010-CTR2-B-K9 and NCS1010-CTR2-K9 • Number-1 Phillips screws for NCS1010-CTLR-B-K9 and NCS1010-CNTLR-K9
2	Side cover
3	Horizontal RTC battery socket
4	*This Side Up* label

a) Loosen the two screws securing the battery cover using the appropriate screwdriver for your controller model.

For the controllers	Use
NCS1010-CTR2-B-K9 and NCS1010-CTR2-K9	T8 Torx screwdriver to loosen the two Torx screws.

For the controllers	Use
NCS1010-CTLR-B-K9 and NCS1010-CNTLR-K9	number-1 Phillips screwdriver to loosen the two Phillips flat-head screws.

b) Gently pull out the battery cover.

Step 2 Locate the horizontal RTC battery socket just below the battery cover.

Step 3 Remove the old RTC battery.

a) Use the plastic spudger/pry tool to gently push the battery toward the spring clip.
b) Slide the battery sideways toward the spring clip.

Once compressed, the other side of the battery pops up slightly.

c) Carefully remove the battery from the holder using the plastic or ceramic tweezers.

Step 4 Install the new RTC battery.

a) Identify the battery polarity.

The positive side has the "CR2032" text and a plus sign (+). The negative side is flat.

b) Insert the battery at a slight angle around 30-degrees to the holder's opening, with the flat negative side facing the internal lower spring contact.
c) Gently slide the battery into the horizontal opening, pressing slightly against the spring contact.

Continue pushing until the battery is fully seated and securely clicks under the plastic retaining tab.

Note
Ensure the battery is seated snugly and correctly.

The positive side of the battery should face outward when installed in the horizontal holder.

Step 5 Reattach the battery cover.

a) Use the two screws to secure the battery cover back into position.
b) Using the appropriate screwdriver, tighten the two screws to a torque value of 5.5 ±0.5 in-lbs.

The new RTC battery is correctly installed and seated. The controller is ready for reassembly and power-up.

What to do next

- Power on the controller and verify that it recognizes the new RTC battery and no battery errors are reported.
- Safely dispose the old battery according to local practices.

Wipe Data in Disk Using Secure Erase

If NCS 1010 develops a fault, contact TAC to request a Return Material Authorization (RMA). Before submitting an RMA request, securely erase data on NCS 1010 disks using the Secure Erase feature.

Warning Use this procedure only when performing an RMA.

Before you begin

- Remove the NCS 1010 unit scheduled for RMA from the data center and the network. Access NCS 1010 only through the console port.
- Perform an RP cold reload to successfully wipe the CPU disk.
- Perform the chassis cold reload for the successful Chassis disk wipe.

Procedure

Step 1 When NCS 1010 boots during RP cold reload or chassis cold reload, the following message appears.

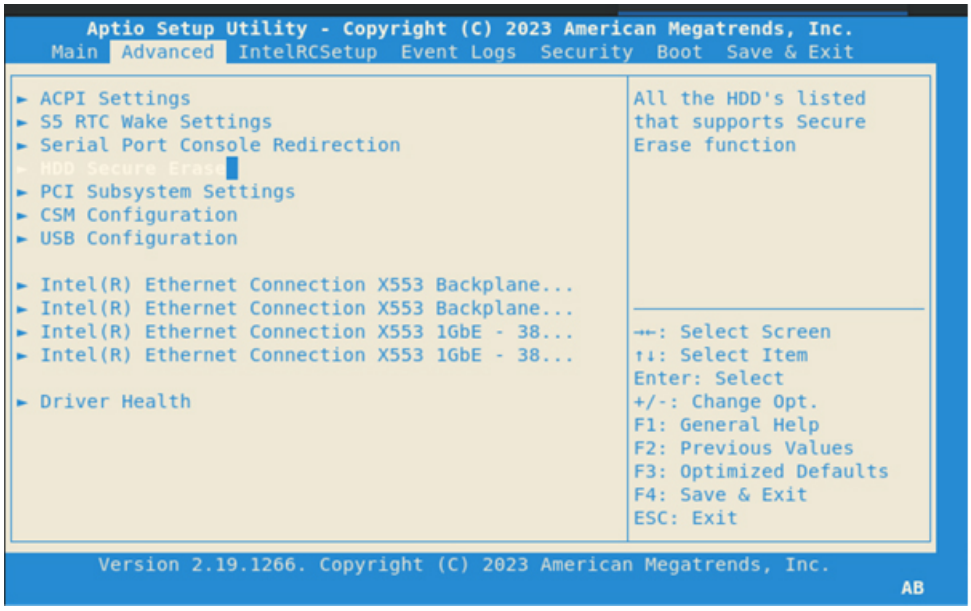
```
Version 2.19.1266. Copyright (C) 2022 American Megatrends, Inc.
BIOS Date: 06/22/2022 08:29:52 Ver: 0ACHI0420
Press <DEL> or <ESC> to enter setup.
Press DEL or ESC key to enter BIOS.
```

Press DEL or ESC key to enter BIOS.

Step 2 Select the **Advanced** tab using the arrow keys.

The disk security details such as HDD Secure Erase are displayed in the **Advanced** tab.

Step 3 Select **HDD Secure Erase** to securely erase data.



Step 4 Select the SSD using the arrow keys.

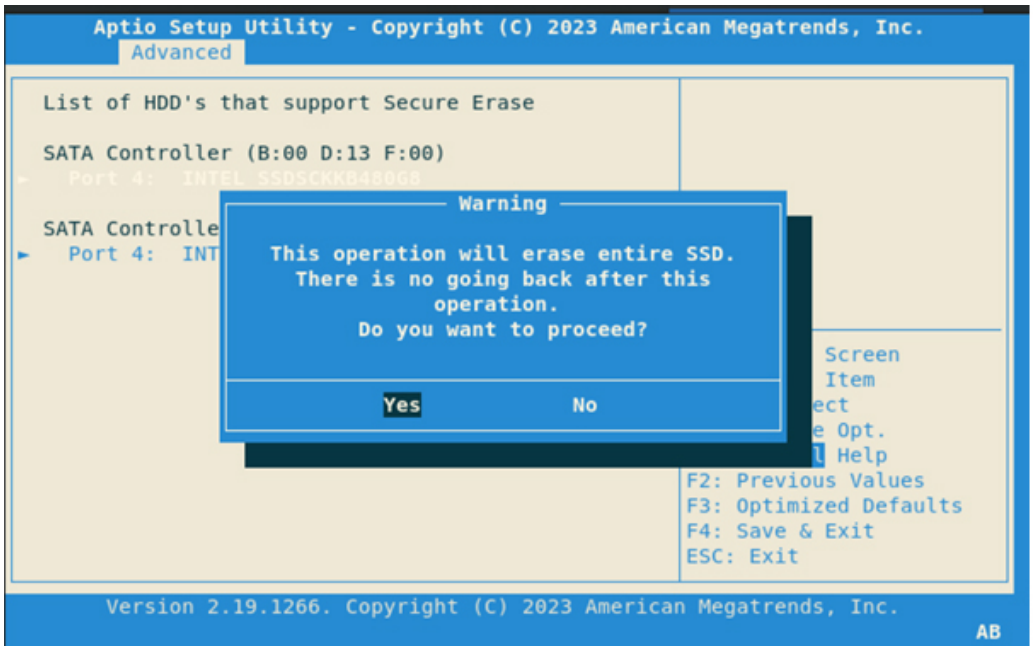
a) Select the SSD under D:13 for RP SSD secure erase.



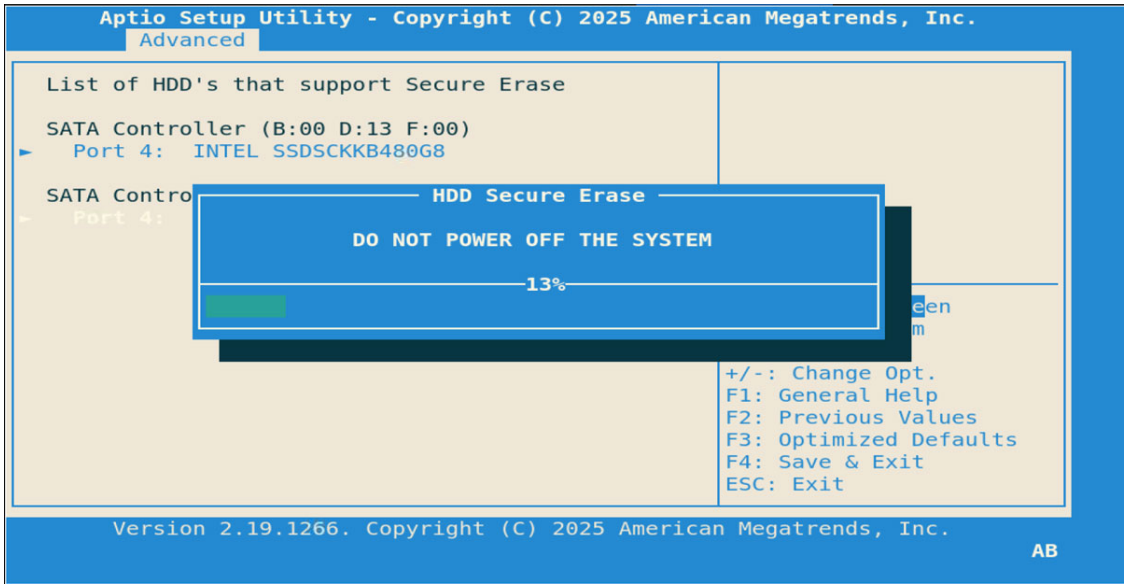
b) Select the SSD under D:14 for chassis SSD secure erase.



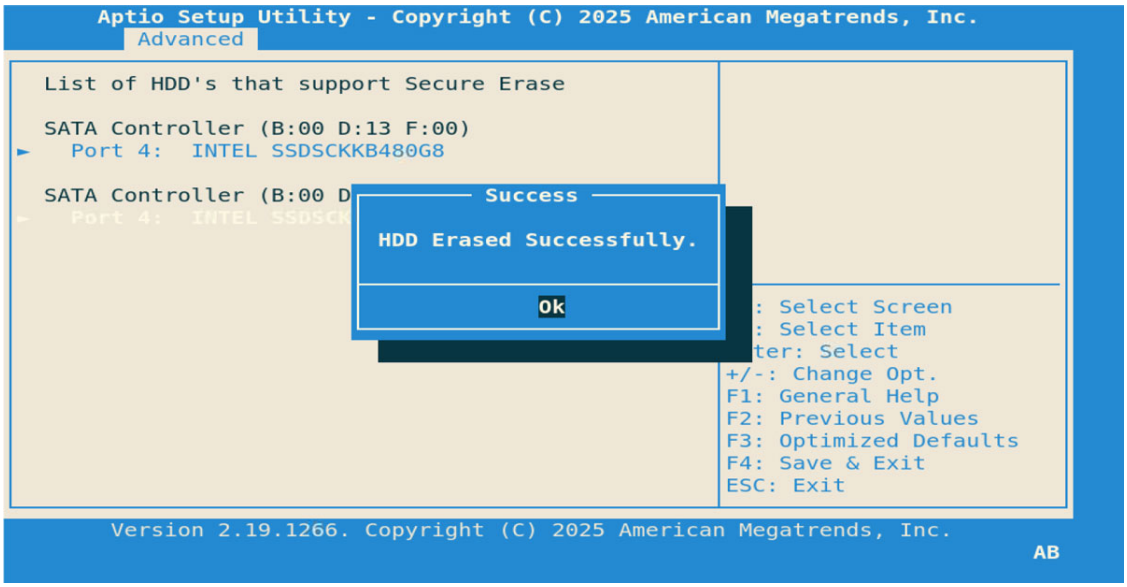
Step 5 Click **Yes** on the **Warning** message box to erase the selected SSD data.



A progress bar appears during the erase operation.



A success message appears when the Secure Erase operation completes.



What to do next

Remove the RP and power down the chassis. This step is important to prevent XR from booting and synchronizing data from the RP back to the chassis SSD.

Upgrade an NCS 1010 EDFA only Network to a Raman Network

The following topics describe how to upgrade an NCS 1010 EDFA only network to a Raman network.

Prerequisites

- Maintain the same physical connections as the EDFA only NCS 1010 nodes.
- You need E2000-LC patch cords for the NCS 1010 Raman ports on the NCS 1010 MPO faceplate. Make sure you have E2000-LC patch cords for each MPO faceplate Raman port. For LC faceplate OLTs, use LC-LC patch cords.
- Raman amplification is sensitive to reflection and loss. Make sure you have the necessary cleaners and fiber scope for any troubleshooting.

Copy Configuration

On each existing EDFA device on the network, perform the following steps:

1. Use the **show running-config** command to get the controller configuration.
2. Copy the configuration to a file on your local system and save the file.

Note This configurations include all the cross-connect configuration on OLTs. Copying these configurations to the Raman module ensures that you do not need to recreate the cross-connect configuration on the Raman node.

Replace the Hardware

You have the following two options to replace the hardware.

- Replace the whole chassis with a Raman OLT or ILA chassis.
- Replace the OLT or ILA line card with a corresponding Raman line card.

Replace all OLT and ILA nodes with corresponding Raman nodes.

1: Replace the Entire NCS 1010 Chassis

For instructions to assemble the NCS 1010 chassis, see Install Cisco NCS 1010 Modules.

1. Remove the existing fiber connections from the NCS 1010 chassis.
2. Loosen the screws of the NCS 1010 chassis in the rack or adapter brackets.
3. Support the top and bottom of the NCS 1010 chassis with your hand to extract the chassis.
4. Install the Raman ILA or OLT module by following the instructions at Install Cisco NCS 1010.
5. Make the fiber connections maintaining the previous connections.

2: Replace the Line Card Only

Prerequisites:

- Remove the fan filter by following the instructions at Remove and Replace Fan Filter.
- Remove the fan tray by following the instructions at Remove and Replace Fan Tray.
- Remove the protection cover by loosening the captive screws fastened into the standoffs, and remove the standoffs.

1. Remove the existing fiber connections from the NCS 1010 chassis.
2. Remove the OLT or ILA line card by following the instructions at Remove and Replace Line Card , on page 10.
3. Install the Raman line card. For steps to install the line card, see Install Line Card.
4. Make the fiber connections maintaining the previous connections.

Apply Configuration to Raman Nodes

Boot up the new nodes. For instructions to boot, see Boot NCS 1010.

Apply the configurations copied in Copy Configuration, on page 18 to the newly installed Raman nodes.

Initial Setup of Raman Nodes

Initiate Raman tuning and gain estimation so that Automatic Power Control gets the necessary setpoints. Link tuner runs automatically when it detects changes in the network and during network bring-up.

For more information on Raman Tuning, Gain Estimation, Link Tuner, and APC, see the following links:

- Raman Tuning
- Gain Estimation
- Link Tuner
- Automatic Power Control

Use the following commands to initiate these operations.

- **olc start-raman-tuning controller ots** *Rack/Slot/Instance/Port*
- **olc start-gain-estimation controller ots** *Rack/Slot/Instance/Port*

Note Raman tuning blocks gain estimation from executing while tuning is in progress. Wait until Raman tuning status changes to **Tuned** before initiating gain estimation.

The circuits on the new Raman nodes should be up if the configurations were copied and port connections were mapped accurately between the EDFA implementation and Raman implementation.