Replace Chassis Components

- Replace the Latched Fan Modules, on page 1
- Replace Fan Modules for Cisco 8202 Router, on page 5
- Replace Fan Modules for Cisco 8202-32FH-M Router , on page 6
- Remove SSD Card, on page 8
- Replace AC, HVAC, or HVDC Power Supply, on page 9
- Replace Low Voltage DC Power Supply, on page 12
- DIMM Upgrade Procedure, on page 13

Replace the Latched Fan Modules

Warning **Statement 1090—**Installation by 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.

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

Warning **Statement 1091—**Installation by an Instructed 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 or skilled person.

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

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

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

The fan module is designed to be removed and replaced while the system is operating without presenting an electrical hazard or damage to the system. Please keep the replacement fan modules ready prior to attempting this task.

This procedure is applicable for Cisco 8201, Cisco 8201-32FH, and Cisco 8201-24H8FH routers.

Table 1: Supported Fan Modules

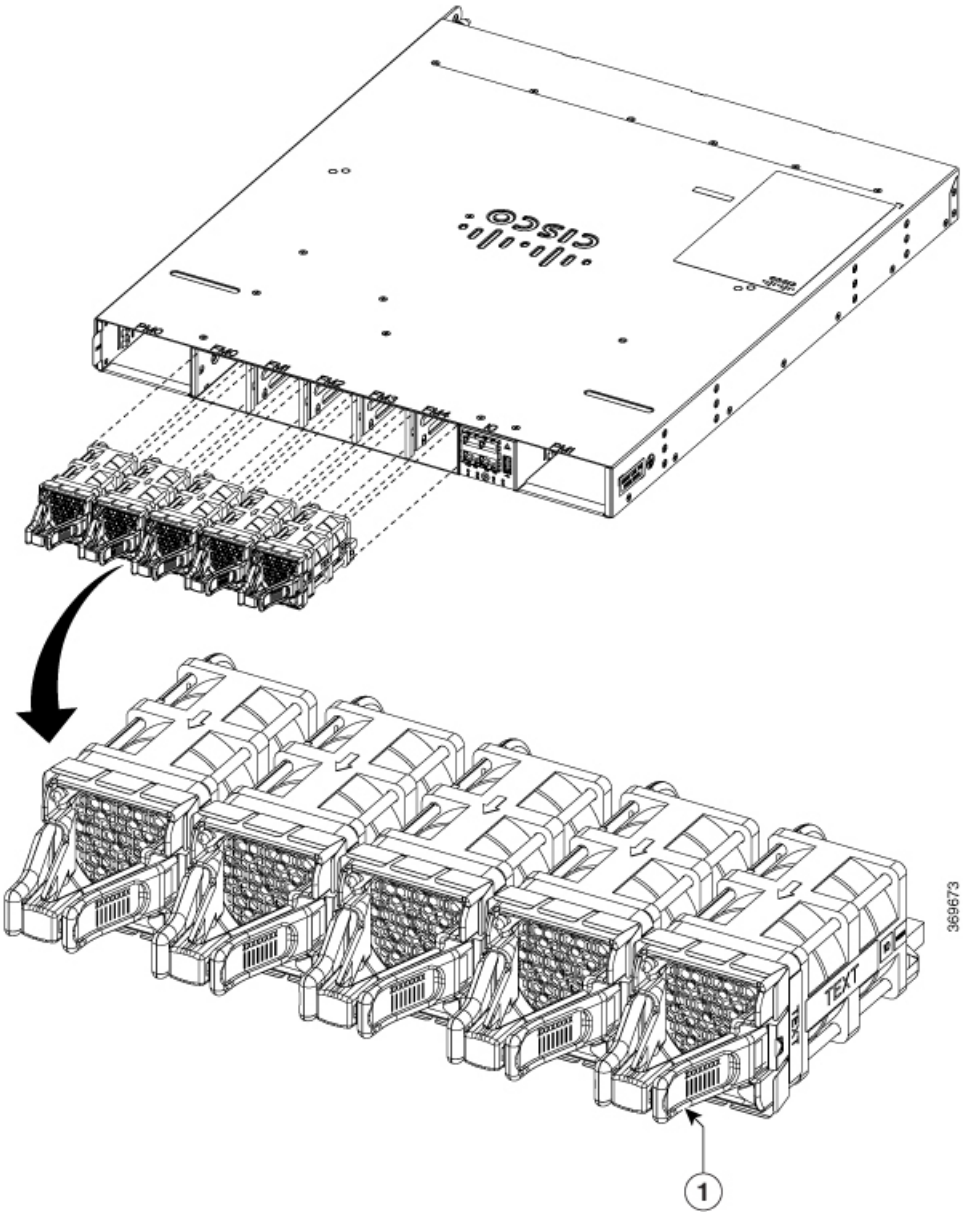
Router	Fan Module	PID
Cisco 8201	Port-side intake airflow	FAN-1RU-PI
	Port-side exhaust airflow	FAN-1RU-PE
Cisco 8201-32FH and Cisco 8201-24H8FH	Port-side intake airflow	FAN-1RU-PI-V2
	Port-side exhaust airflow	FAN-1RU-PE-V2

Note The airflow direction must be the same for all power supply and fan modules in the chassis.

Step 1 To remove a fan module, follow these steps:

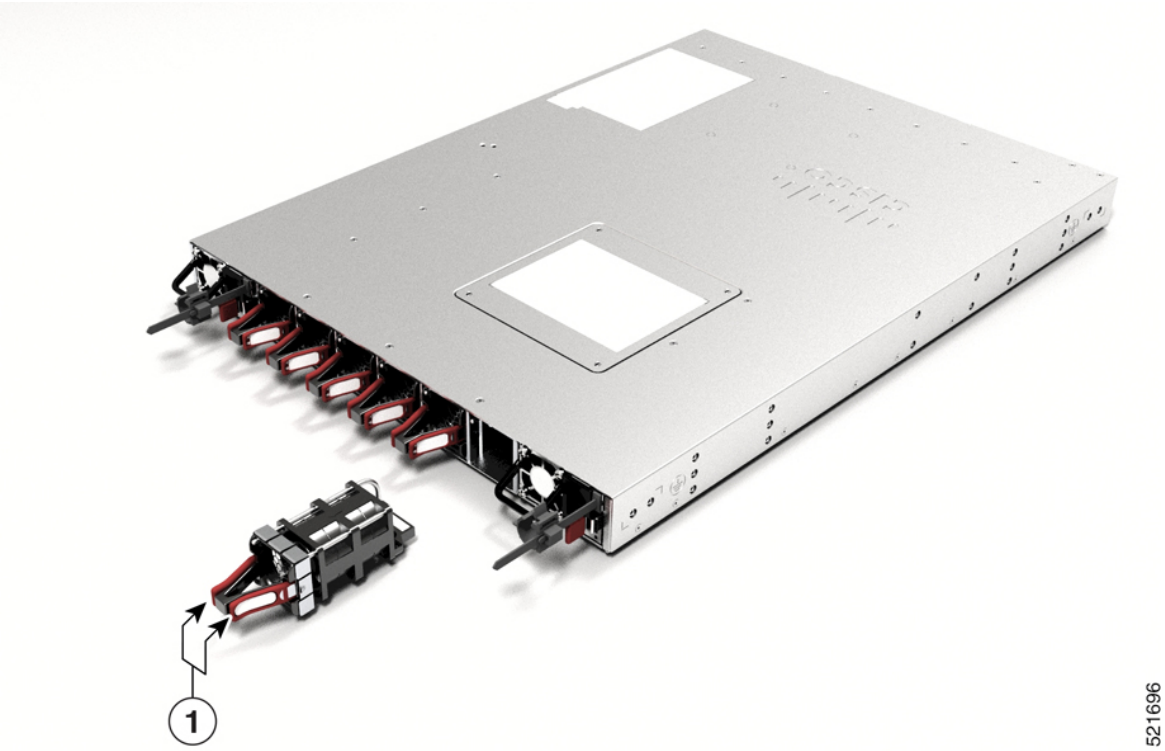
a) Press two latches on the fan module and grasp the handle of fan module.

Figure 1: Cisco 8201 Router — Remove Fans



1	Latched fan module

Figure 2: Cisco 8201-32FH and Cisco 8201-24H8FH Routers — Remove Fans



1	Latched fan module

b) As you simultaneously press the latches pull the fan module fully out of the chassis.

Step 2 To install a fan module, follow these steps:

a) Hold the fan module with the LED at the top.

b) Align the fan module to the open fan tray slot in the chassis, and press the module all the way into the slot until the left and right latches click and are locked on the chassis.

Note If the fan module does not go all the way into the slot, do not force it. Remove the fan module and verify that it is the correct type for your router and in the correct orientation. To verify the status of fans and the speed, use the **show environment fan** command.

c) If the chassis is powered on, listen for the sound of the fans in operation. You should immediately hear them in operation. If you do not hear them, ensure that the fan module is inserted completely in the chassis.

Note During the fan module replacement, the other fans adjust their speed to allow for proper initialization of the new module. When you insert a new fan module, the fans may run at lower or higher speeds for a few minutes.

d) Verify that the fan module LED is green. If the LED is not green, one or more fans are faulty. If this situation occurs, contact your customer service representative for replacement parts.

Replace Fan Modules for Cisco 8202 Router

The fan module is designed to be removed and replaced while the system is operating without presenting an electrical hazard or damage to the system. Please keep the replacement fan modules ready prior to attempting this task.

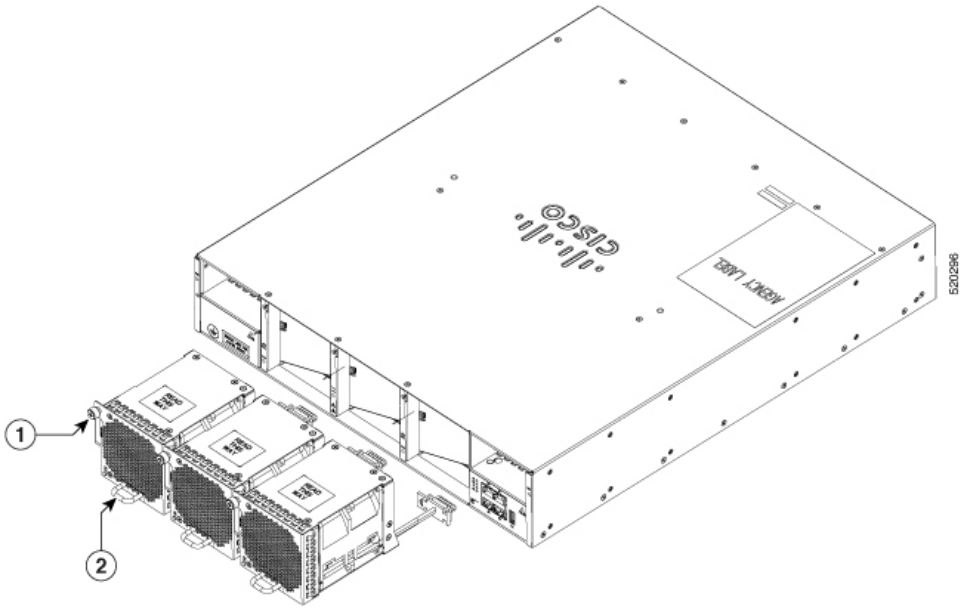
Note The airflow direction must be the same for all power supply and fan modules in the chassis.

Table 2: Supported Fan Module

Fan Module	PID
Port-side intake airflow	FAN-2RU-PI
Port-side exhaust airflow	FAN-2RU-PE

Step 1 Unscrew the thumbscrew on the fan.

Figure 3: Remove Cisco 8202 Fan Modules



Step 2 Pull the handle to remove the fan to be replaced.

Step 3 Hold the fan module with the LED and PID label at the top.

Step 4 Align the fan module to the open fan slot in the chassis and press the module all the way into the slot until the front of the fan module touches the chassis.

Make sure that the thumbscrew on the fan module is aligned with the screw hole in the chassis.

Step 5 Tighten the thumbscrew to secure the fan module in the chassis.

Step 6 If the chassis is powered on, listen for the fans. You should immediately hear them operating. If you do not hear them, ensure that the fan module is inserted completely in the chassis.

Step 7 Verify that the fan module LED is green. If the LED is not green, one or more fans are faulty. If this situation occurs, contact your customer service representative for replacement parts.

Replace Fan Modules for Cisco 8202-32FH-M Router

The fan module is designed to be removed and replaced while the system is operating without presenting an electrical hazard or damage to the system. Please keep the replacement fan modules ready prior to attempting this task.

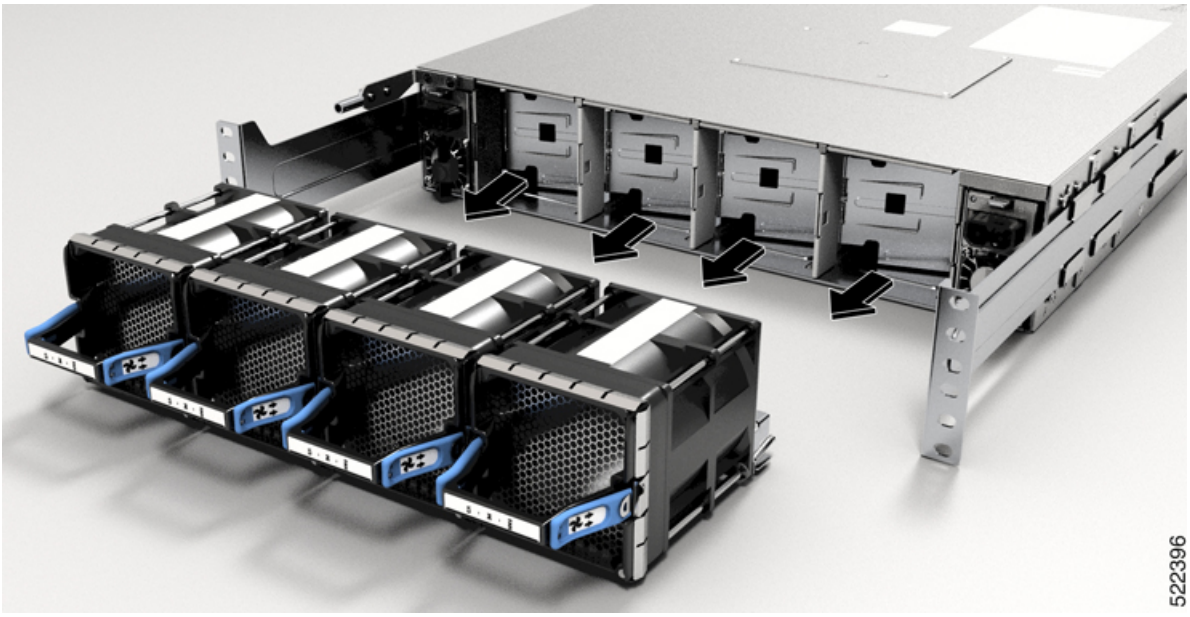
Important

- The airflow direction must be the same for all power supply and fan modules in the chassis.
- The Cisco 8202-32FH-M routers support FAN-PI-V3 (port-side intake airflow) and FAN-PE-V3 (port-side exhaust airflow) fan modules.
- The Cisco 8212-48FH-M routers support FAN-PI-V3 (port-side intake airflow) fan modules.
- The router uses four fan modules, but it can operate with three fan modules while you replace one. When you remove one fan module, the other fan modules speed up their fans to maintain the designed airflow.
- The router will continue to function if a single fan module has failed. We recommend that you leave a failed fan module installed until you can replace it.
- To ensure adequate airflow and prevent overheating, do not operate the router with three fan trays for more than 15 minutes.

Step 1 To remove a fan module, follow these steps:

a) Press two latches on the fan module and grasp the handle of fan module.

Figure 4: Remove Cisco 8202-32FH -M Fan Modules



1	Latched fan module

b) As you simultaneously press the latches, pull the fan module fully out of the chassis.

Step 2 To install a fan module, follow these steps:

a) Hold the fan module with the LED at the top.

b) Align the fan module to the open fan tray slot in the chassis, and press the module all the way into the slot until the left and right latches click and are locked on the chassis.

Note If the fan module does not go all the way into the slot, do not force it. Remove the fan module and verify that it is the correct type for your router and in the correct orientation. To verify the status of fans and the speed, use the **show environment fan** command.

c) If the chassis is powered on, listen for the sound of the fans in operation. You should immediately hear them in operation. If you do not hear them, ensure that the fan module is inserted completely in the chassis.

Note During the fan module replacement, the other fans adjust their speed to allow for proper initialization of the new module. When you insert a new fan module, the fans may run at lower or higher speeds for a few minutes.

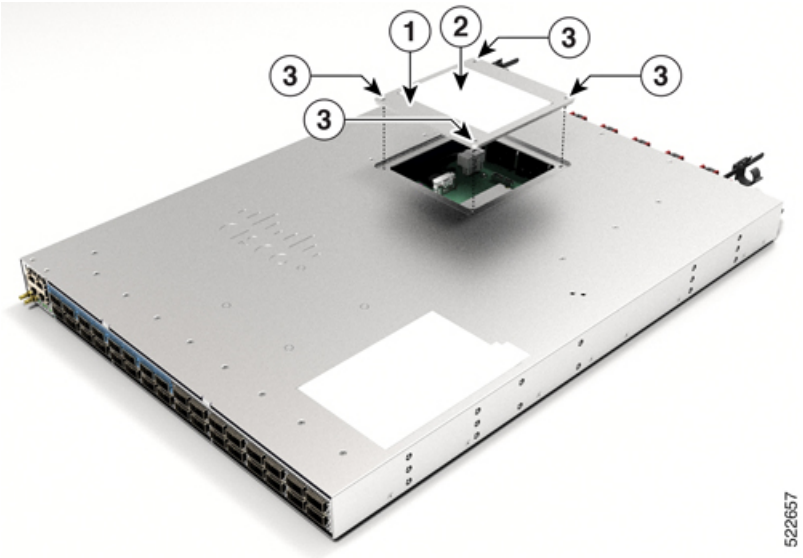
d) Verify that the fan module LED is green. If the LED is not green, one or more fans are faulty. If this situation occurs, contact your customer service representative for replacement parts.

Remove SSD Card

The Cisco 8201-24H8FH Router comes with a M.2 Solid State Drive (SSD) card. We recommend you remove the SSD card before shipping the hardware for a Return Merchandise Authorization (RMA) request. Removal of the card enforces customer data security while performing an RMA.

You can access the card by removing the four screws from the access panel on the top of the router.

Figure 5: Replace or Remove the SSD Card



1	Access panel
2	Instruction label
3	Screws (x4)

To remove the card, follow the card removal instructions on the access panel label.

Figure 6: Card Removal Instruction Label

Replace AC, HVAC, or HVDC Power Supply

This procedure below applies to the following power supply units (PSUs):

- PSU1.4KW-ACPI/PE
- PSU2KW-ACPI/PE
- PSU2KW-HVPI
- PSU3KW-HVPI

Note We recommend that you occupy both the power supply slots of the fixed port routers with power supplies. In case a power module fails, it is recommended to retain the failed power module in its slot until it is replaced with a new power module. This recommendation ensures that the system airflow is not impacted adversely, which may then result in the overheating of the router and its components. Duration to replace the PSU at ambient room temperature (23-degree C to 27-degree C) is within 5 minutes.

Note When installing or replacing power supplies, ensure that input voltage and power supply capacity remain the same for both the power supplies. If changing to a different power supply capacity (that is, 2KW to 3KW) or input type (AC to DC), the system must be powered down, and both power supplies must be replaced while the system is still powered down.

To replace a single PSU (for example, due to PSU failure), follow the procedure below.

To replace both PSUs (for example, to change type or output of PSU), disconnect power from both PSUs and follow the procedure below.

Step 1 Disconnect the power cord of the PSU that must be replaced. If you use the Saf-D-Grid power cord, then press the latch before pulling the power cord out from the power supply.

Note In case of an AC PSU, remove the cord retention from the AC PSU before disconnecting the AC power cord.

Step 2 Press the tab inward to unlatch the PSU, and pull the handle to remove the PSU.

Step 3 Insert the new PSU.

Note If the PSU does not go all the way into the slot, do not force it. Remove the PSU and verify that it is the correct type for your router and in the correct orientation.

Step 4 Connect the power cord to the PSU. Ensure that the connector is completely fixed.

Note For an AC PSU that has an IEC connector (example, 2KW PSU), fix the cord retention to the power supply.

For an AC/HVDC PSU (example, 3KW PSU) that has Saf-D-Grid power cord, ensure that power cord is latched.

Step 5 Turn on the power at source.

Step 6 Wait till the PSU LED color turns green. Verify the power using the **show environment power** command after the router boots up.

Figure 7: Cisco 8202 Router — Remove Power Supply

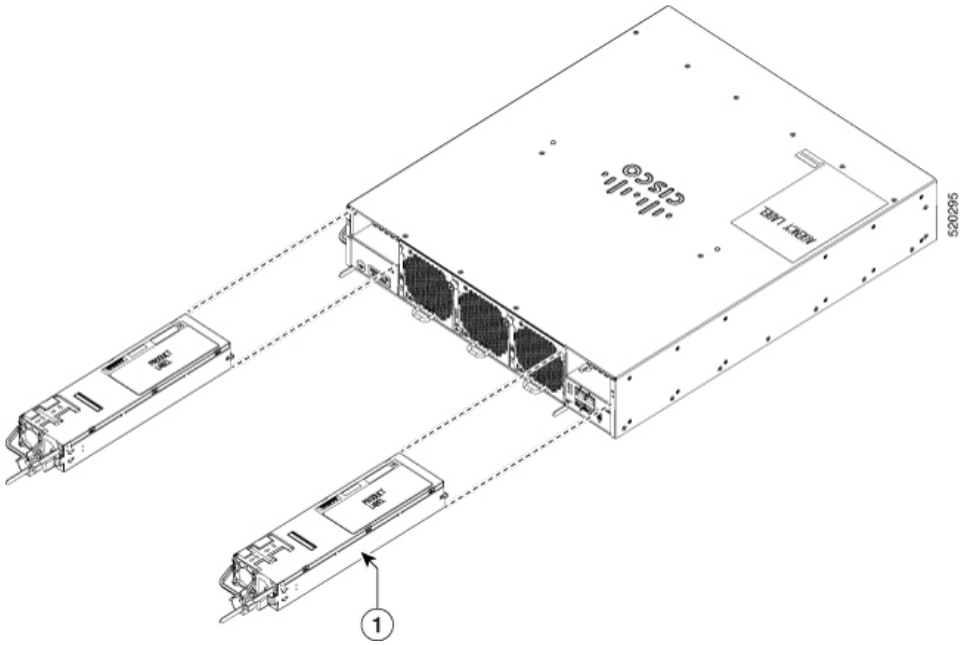


Figure 8: Cisco 8201-32FH and Cisco 8201-24H8FH Routers — Remove Power Supply

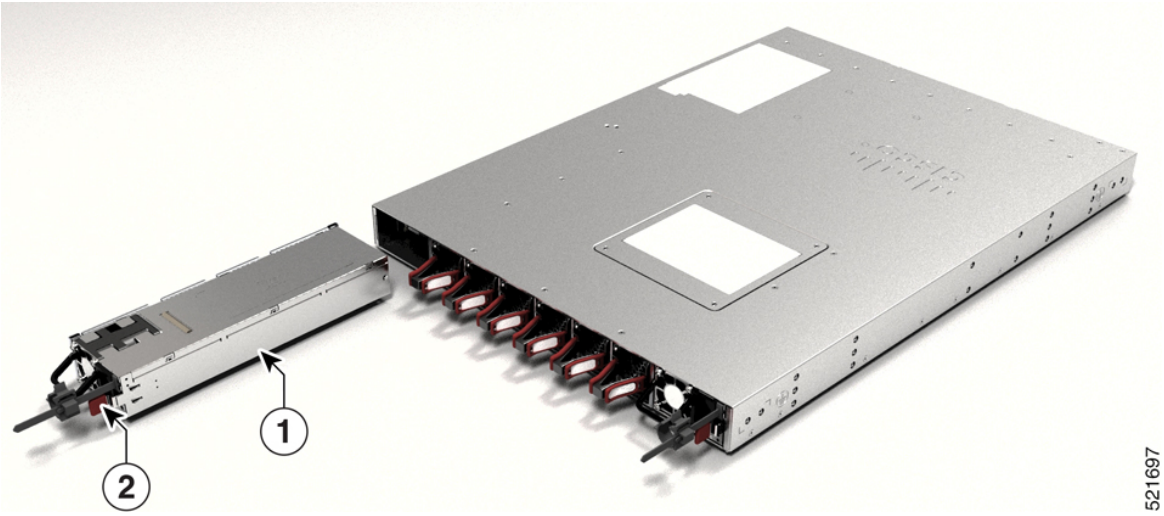
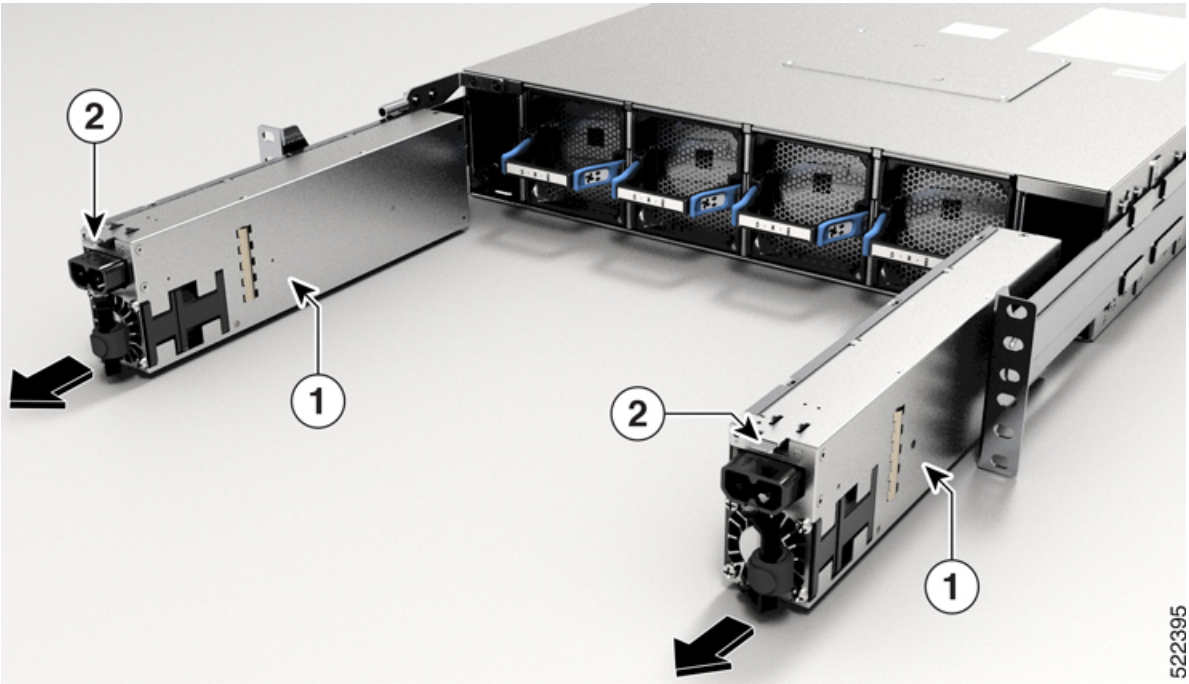


Figure 9: Cisco 8202-32FH -M Router — Remove Power Supply



1	PSU
2	Tab

Replace Low Voltage DC Power Supply

This procedure below applies to the following power supply units:

- PSU2KW-DCPI/PE- This PSU has 2-pin connector cable.

Note When installing or replacing power supplies, ensure that input voltage and power supply capacity remain the same for both the power supplies. If changing to a different power supply capacity or input type (AC to DC), the system must be powered down, and both power supplies must be replaced while the system is still powered down.

To replace a single PSU (for example, due to PSU failure), follow the procedure below.

To replace both PSUs (for example, to change type or output of PSU), disconnect power from both PSUs and follow the procedure below.

Note We recommend that you occupy both the power supply slots of the fixed port routers with power supplies. In case a power module fails, it is recommended to retain the failed power module in its slot until it is replaced with a new power module. This recommendation ensures that the system airflow is not impacted adversely, which may then result in the overheating of the router and its components. Duration to replace the PSU at ambient room temperature (23-degree C to 27-degree C) is within 5 minutes.

Step 1 Disconnect the power cable of the PSU that must be replaced.

In case of PSU2KW-DCPI/PE PSU, press the latch before pulling the power cord out from the PSU.

Step 2 Press the tab inward to unlatch the PSU, and hold on to the terminal block and pull the PSU.

Step 3 Insert the new PSU.

Note If the PSU does not go all the way into the slot, do not force it. Remove the PSU and verify that it is the correct type for your router and in the correct orientation.

Step 4 Connect the PSU cable.

In case of PSU2KW-DCPI/PE PSU, insert the power cord into the PSU.

Step 5 Turn on the power at source.

Step 6 Wait till the PSU LED color turns green. Verify the power using the **show environment power** command after the router boots up.

DIMM Upgrade Procedure

Earlier versions of the Cisco 8202-32FH-M router were shipped with 32GB of memory. Newer versions are shipped with 64GB of memory. You can upgrade the router from 32GB to 64GB using memory upgrade PID DIMM-64G=.

Verifying the Hardware Version and Memory Configuration

To verify the current hardware version, use the **show diag details location 0/RP0/CPU0** command.

In the examples below, the Version Identifier and Deviation #1 fields indicate the installed memory:

Version Identifier	Deviation #1	Installed Memory	Upgrade Available
V03 and later	—	64 GB	No
V02	584161	64 GB	No
V02 and earlier	0	32 GB	Yes

The below example shows Version Identifier as V02 and Deviation #1 as 0, indicating that there is 32GB of memory installed. Proceed with the memory upgrade procedure.

```
RP/0/RP0/CPU0:ios# show diag details location 0/RP0/CPU0

0/RP0/CPU0-Base Board IDPROM - Cisco 8200 2RU 32x400G QSFP56-DD w/IOS XR HBM MACsec
Info
    Controller Family          : 0045
    Controller Type            : 0647
    PID                        : 8202-32FH-M
    Version Identifier         : V02
    UDI Description            : Cisco 8200 2RU 32x400G QSFP56-DD w/IOS XR HBM MACsec
    Chassis Serial Number      : FLM27040B1Z
    Top Assy. Part Number      : 68-7442-03
    Top Assy. Revision         : C0
    PCB Serial Number          : FLM27010309
    PCA Number                 : 73-20590-01
    PCA Revision               : C0
    CLEI Code                  : CMMX800ARB
    ECI Number                 : 477603
    Deviation Number # 1       : 0
    Deviation Number # 2       : 0
    Deviation Number # 3       : 0
    Deviation Number # 4       : 0
    Deviation Number # 5       : 0
    Manufacturing Test Data    : 00 00 00 00 00 00 00 00
    Calibration Data           : 00000000
    Chassis MAC Address        : 9c54.1644.1600
    MAC Addr. Block Size       : 512
    Hardware Revision          : 1.0
    Device values # 1          : 42 00 00 00 00 00 00 00
```

The below example shows Version Identifier as V02 and Deviation #1 as 584161, indicating that there is 64GB of memory installed. No memory upgrade is required.

```
RP/0/RP0/CPU0:ios# show diag details location 0/RP0/CPU0
```

```
0/RP0/CPU0-Base Board IDPROM - Cisco 8200 2RU 32x400G QSFP56-DD w/IOS XR HBM MACsec
Info
    Controller Family          : 0045
    Controller Type            : 0647
    PID                        : 8202-32FH-M
    Version Identifier         : V02
    UDI Description            : Cisco 8200 2RU 32x400G QSFP56-DD w/IOS XR HBM MACsec
    Chassis Serial Number      : FLM27040B1Z
    Top Assy. Part Number      : 68-7442-03
    Top Assy. Revision         : C0
    PCB Serial Number          : FLM27010309
    PCA Number                 : 73-20590-01
    PCA Revision               : C0
    CLEI Code                  : CMMX800ARB
    ECI Number                 : 477603
    Deviation Number # 1       : 584161
    Deviation Number # 2       : 0
    Deviation Number # 3       : 0
    Deviation Number # 4       : 0
    Deviation Number # 5       : 0
    Manufacturing Test Data    : 00 00 00 00 00 00 00 00
    Calibration Data           : 00000000
    Chassis MAC Address        : 9c54.1644.1600
    MAC Addr. Block Size       : 512
    Hardware Revision          : 1.0
    Device values # 1          : 42 00 00 00 00 00 00 00
```

To verify the current memory configuration, use the **show memory summary location 0/RP0/CPU0** command. The following example shows the installed memory as 64GB. No memory upgrade is required.

```
RP/0/RP0/CPU0:ios# show memory summary location 0/RP0/CPU0

node:      node0_RP0_CPU0
-----------------------------------------------------------------

 Physical Memory: 63808M total (58196M available)
 Application Memory : 63808M (58196M available)
 Image: 4M (bootram: 0M)
 Reserved: 0M, IOMem: 0M, flashfsys: 0M
 Total shared window: 318M
```

Upgrading the Memory

The Cisco 8202-32FH-M router uses two Dual Inline Memory Modules (DIMMs), one stacked on top of the other. To upgrade the memory, you will remove two 16GB DIMMs and insert two 32GB DIMMs. To access the DIMMs, you must remove the chassis cover.

Caution Use only the memory from the DIMM-64G= upgrade kit. You must install both DIMMs in this upgrade. Do not attempt to install other devices or DIMMs not approved by Cisco in the DIMM sockets.

Before you begin

Note Before proceeding, ensure that you have the proper tools and ESD-prevention equipment available.

Step 1 Attach an ESD-preventive wrist or ankle strap and follow its instructions for use.

Step 2 Label and remove all interface cables.

Step 3 **Warning** **Statement 1046**—Installing or Replacing the Unit

To reduce risk of electric shock, when installing or replacing the unit, the ground connection must always be made first and disconnected last.

If your unit has modules, secure them with the provided screws.

Disconnect the power and ground connections.

Step 4 Remove chassis from rack (refer to Rack Mount the Chassis).

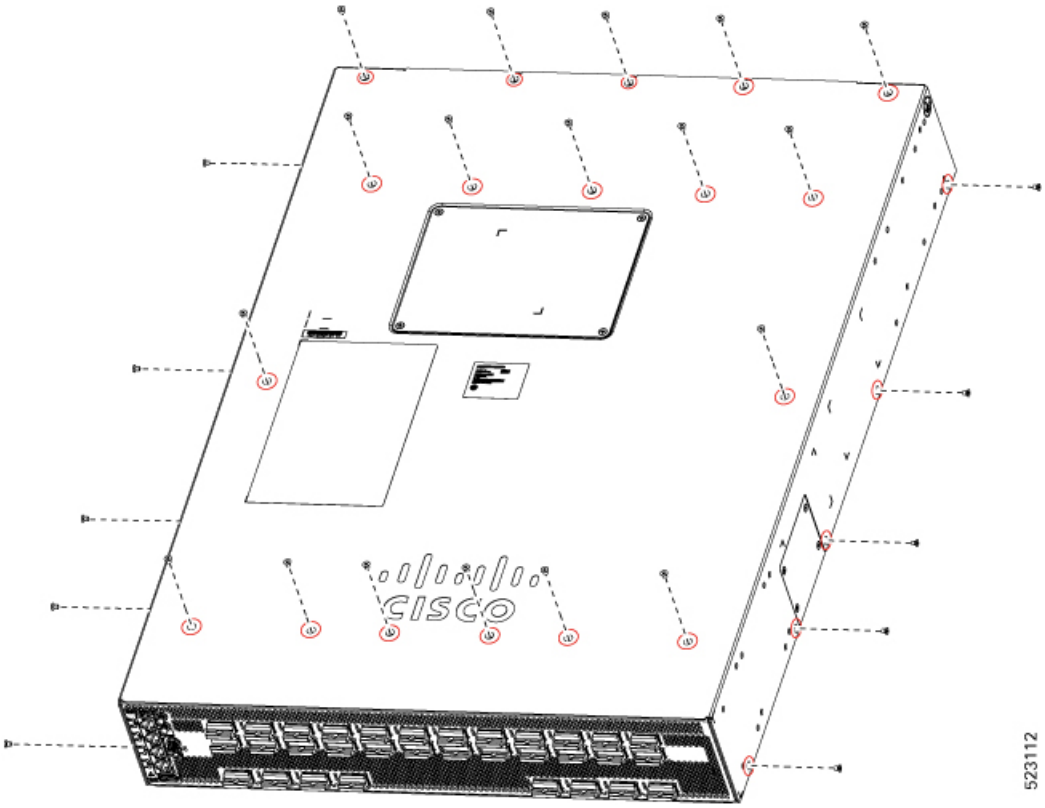
Step 5 Place the router on a flat antistatic surface.

Step 6 **Caution** Allow at least 15 minutes to allow the chassis and internal components to cool before removing the cover.

Using a T8 Torx screwdriver, remove the 28 screws indicated in the figure below:

- 5 screws along each side
- 18 screws on the top

Figure 10: Removing the Screws and Cover



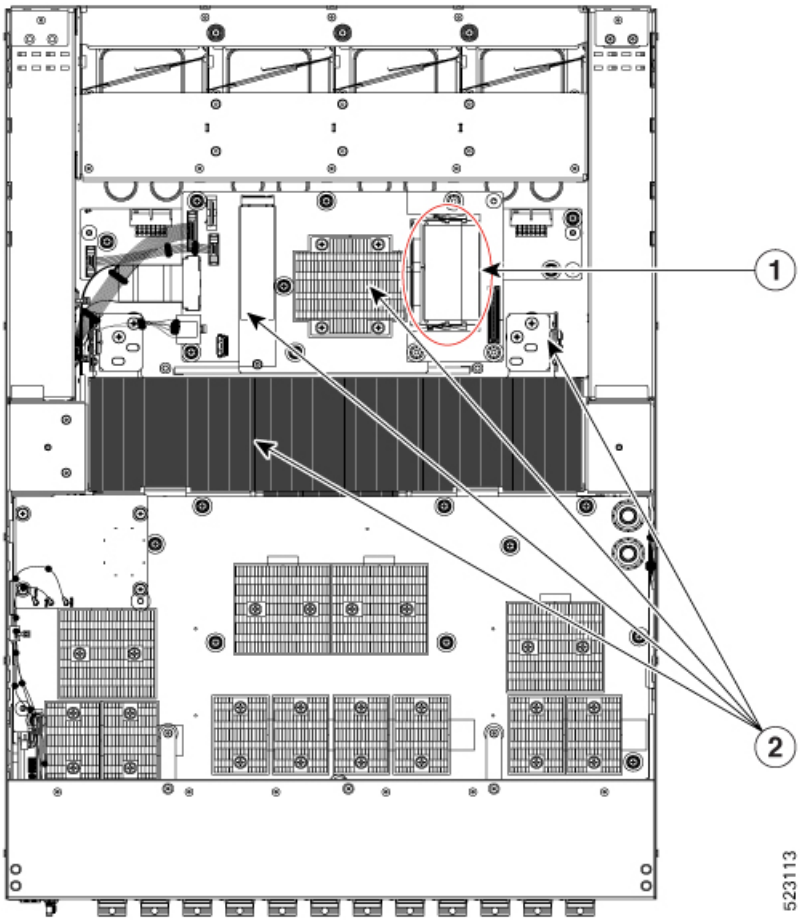
Step 7 Remove the cover.

Step 8 **Warning** **Statement 1079**—Hot Surface

This icon is a hot surface warning. To avoid personal injury, do not touch without proper protection.

Locate the DIMM sockets on the router. Avoid touching heatsinks, brackets, and cables.

Figure 11: DIMM Socket Location



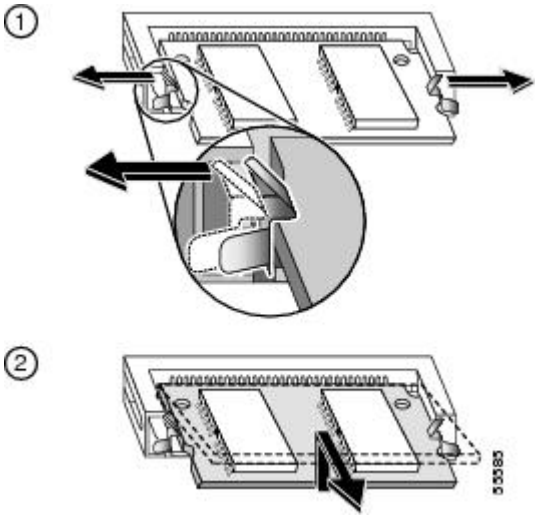
1	DIMM socket location
2	Avoid touching these areas (heatsinks, brackets, cables)

Step 9

Note The router uses two DIMMs, one stacked on top of the other. Remove the upper DIMM first, then remove the lower DIMM.

Remove the top DIMM from the socket by pulling the locking spring clips on both sides of the DIMM holder outward and tilt the DIMM free of the clips. Be careful not to break the clips on the DIMM connector.

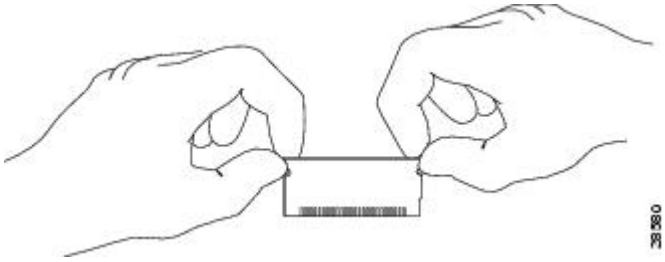
Figure 12: Removing the DIMM



Step 10 **Caution** DIMMs are sensitive components that are susceptible to ESD damage. To prevent ESD damage, handle DIMMs by the edges only; avoid touching the memory modules, pins, or traces (the metal fingers along the connector edge of the DIMM).

Hold the DIMM by its edges, gently lift and remove it, and place it on an antistatic mat or foam.

Figure 13: Handling a DIMM



Step 11 Repeat Steps Step 9, on page 17 and Step 10, on page 18 for the bottom DIMM.

Step 12 Remove one upgrade DIMM from the antistatic container.

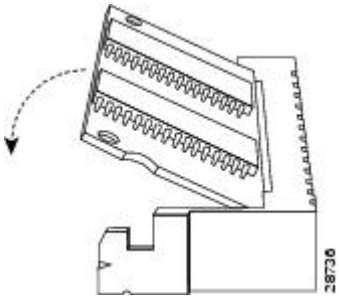
Step 13 Hold the DIMM by its edges.

Step 14 Tilt the DIMM to approximately the same angle as the socket and insert the connector edge into lower DIMM socket. Note the notch (key) on the bottom edge of the DIMM. This key assures correct orientation of the DIMM in the socket.

Caution When inserting the DIMM, use firm but not excessive pressure. If you damage a socket, you will have to return the router to Cisco for repair.

Step 15 Press the DIMM down until it is secured by the spring clips.

Figure 14: Installing the DIMM

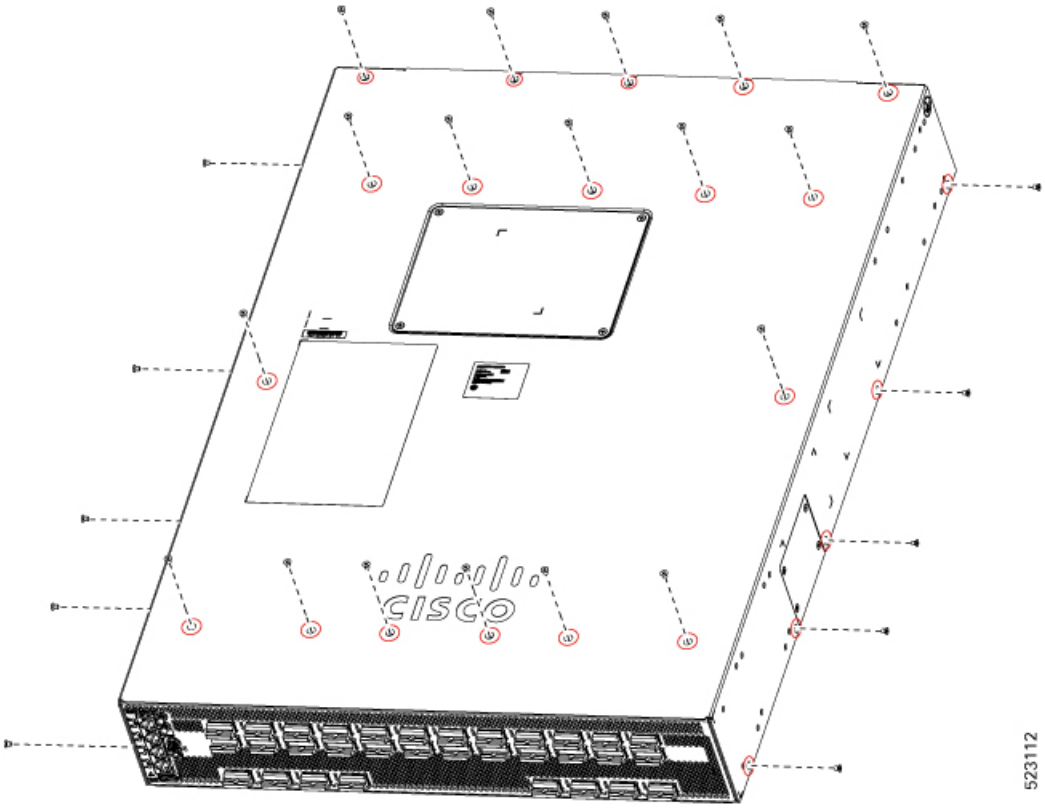


Step 16 When the DIMM is installed, check the two alignment holes, and ensure that the spring retainer is visible. If it is not, the DIMM is not seated properly. If the DIMM appears misaligned, carefully remove it and reseat it in the socket. Push the DIMM firmly back into the socket until the retainer springs snap into place.

Step 17 Repeat Steps Step 12, on page 18 through Step 16, on page 19 for the second (**upper**) DIMM.

Step 18 Install the cover and 28 screws using a T8 Torx screwdriver. Tighten the screws to 5 in-lb (0.56 Nm) of torque.

Figure 15: Installing the Cover and Screws



Step 19 Install the chassis in the rack (refer to Rack Mount the Chassis).

Step 20 **Warning** **Statement 1046—**Installing or Replacing the Unit

To reduce risk of electric shock, when installing or replacing the unit, the ground connection must always be made first and disconnected last.

If your unit has modules, secure them with the provided screws.

Reconnect the ground, power, and interface cables.

Step 21 After the system boots up, use the **show memory summary location 0/RP0/CPU0** command to verify the memory configuration.