Replace Chassis Components

Replace Fan Modules for Cisco 8100 Series Routers

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.

The router supports the following types of fan modules:

Table 1: Supported Fan Modules

Router	Module Configuration (Air Flow Direction)	PID
Cisco 8102-64H-O	Port-side Intake	FAN-2RU-PI-V2
	Port-side Exhaust	FAN-2RU-PE-V2
Cisco 8101-32H-O	Port-side Intake	FAN-1RU-PI-V2
	Port-side Exhaust	FAN-1RU-PE-V2
Cisco 8111-32EH-O	Port-side Intake	FAN-1RU-PI-V2
Cisco 8101-32FH-O	Port-side Intake	FAN-1RU-PI-V2
	Port-side Exhaust	FAN-1RU-PE-V2
Cisco 8122-64EH-O	Port-side Intake	FAN-2RU-PI-V3 or FAN-2RU-PI-V4
Cisco 8102-28FH-DPU-O	Port-side Intake	FAN-2RU-PI-V4
Cisco 8122-64EHF-O	Port-side Intake	FAN-PI-V4

Note Port-Side Exhaust (PSE) configuration is not supported on these routers:

- Cisco 8111-32EH-O
- Cisco 8122-64EH-O
- Cisco 8102-28FH-DPU-O
- Cisco 8122-64EHF-O

Note The airflow direction must be the same for all power supply and fan modules in the chassis. Depending upon the required airflow direction, you can change the fan type. You must then also change the power supply.

Figure 1: Airflow Direction for Cisco 8102-64H-O Router

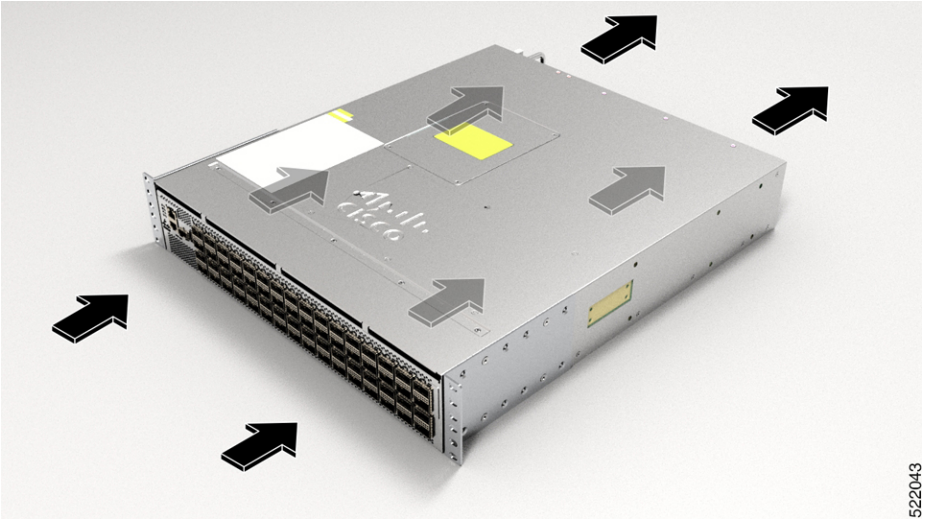


Figure 2: Airflow Direction for Cisco 8101-32H-O Router

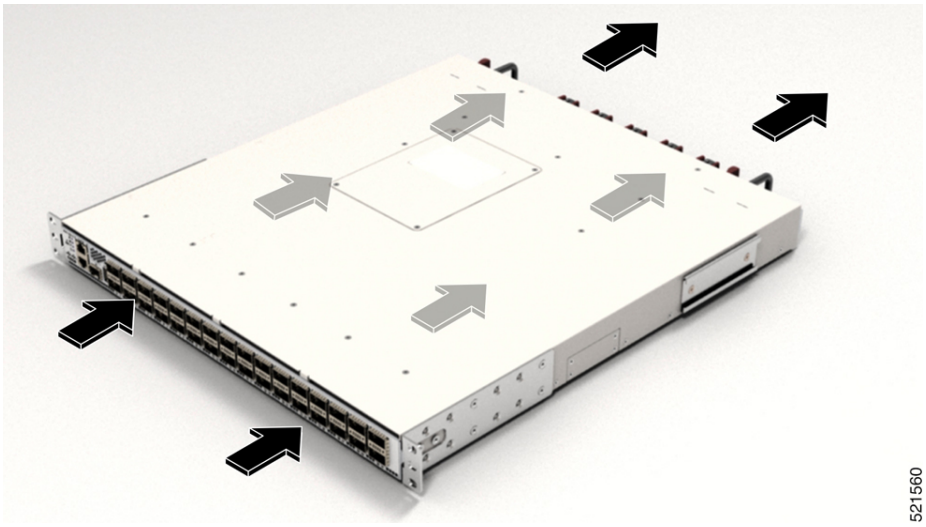


Figure 3: Airflow Direction for Cisco 8111-32EH-O Router

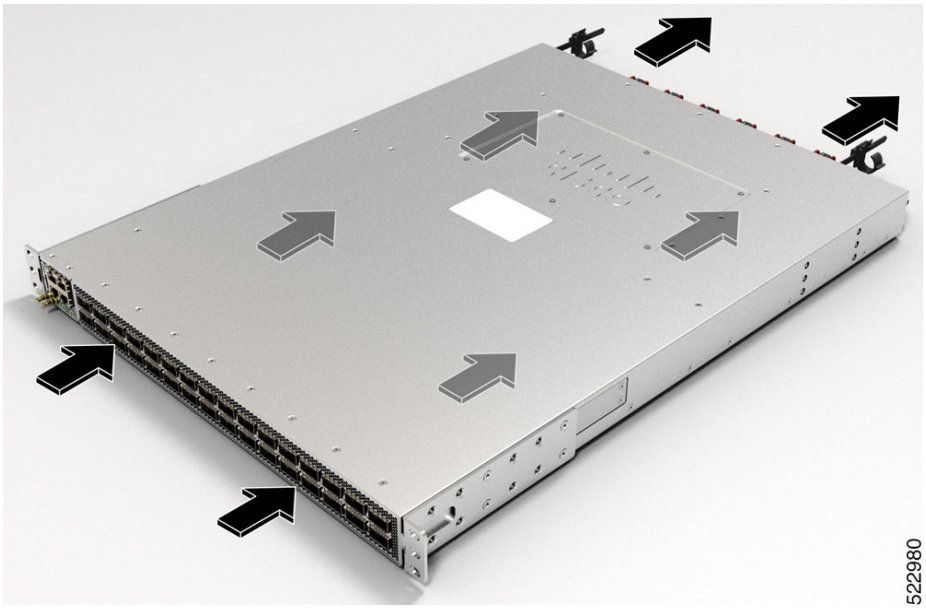


Figure 4: Airflow Direction for Cisco 8122-64EH-O Router

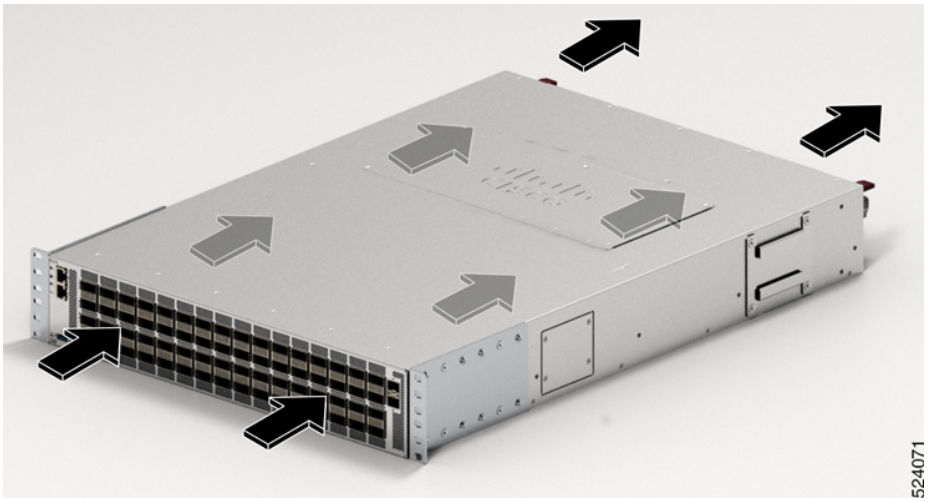
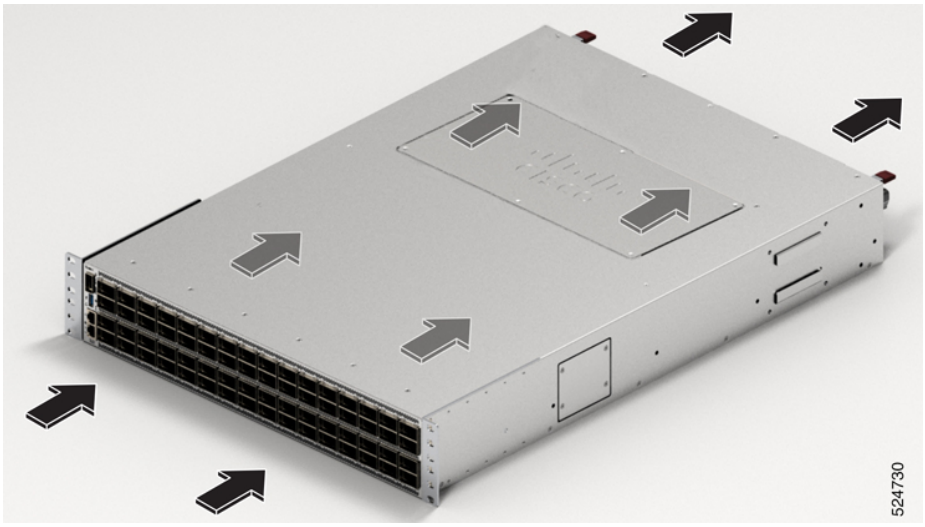


Figure 5: Airflow Direction for Cisco 8102-28FH-DPU-O Router

Figure 6: Airflow Direction for Cisco 8122-64EHF-O Router



Procedure

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 7: Cisco 8102-64H-O Router — Remove Fans

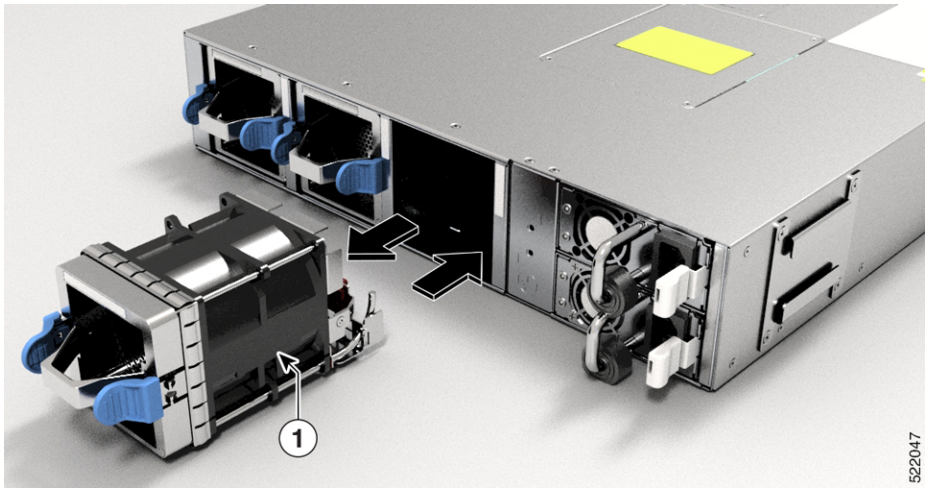


Figure 8: Cisco 8101-32H-O Router — Remove Fans

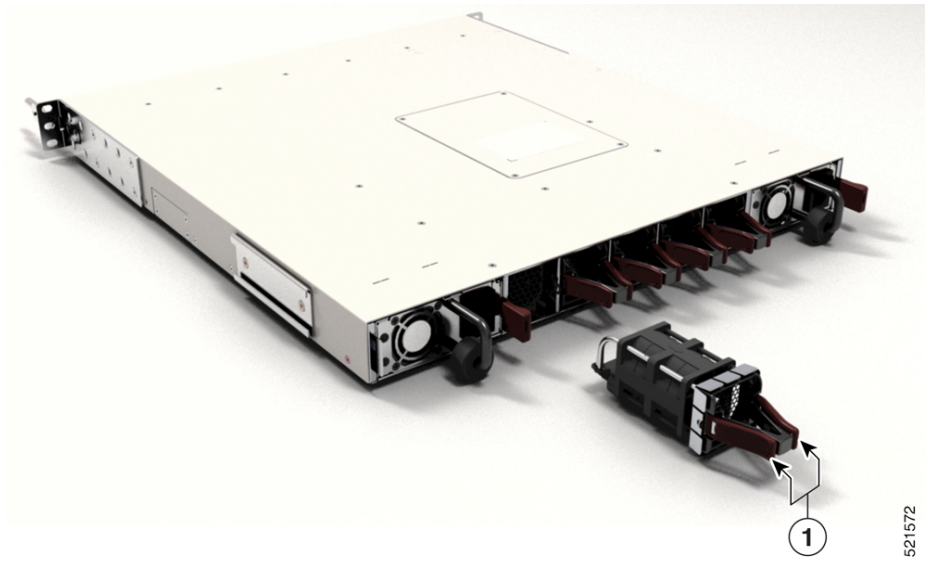


Figure 9: Cisco 8111-32EH-O Router — Remove Fans

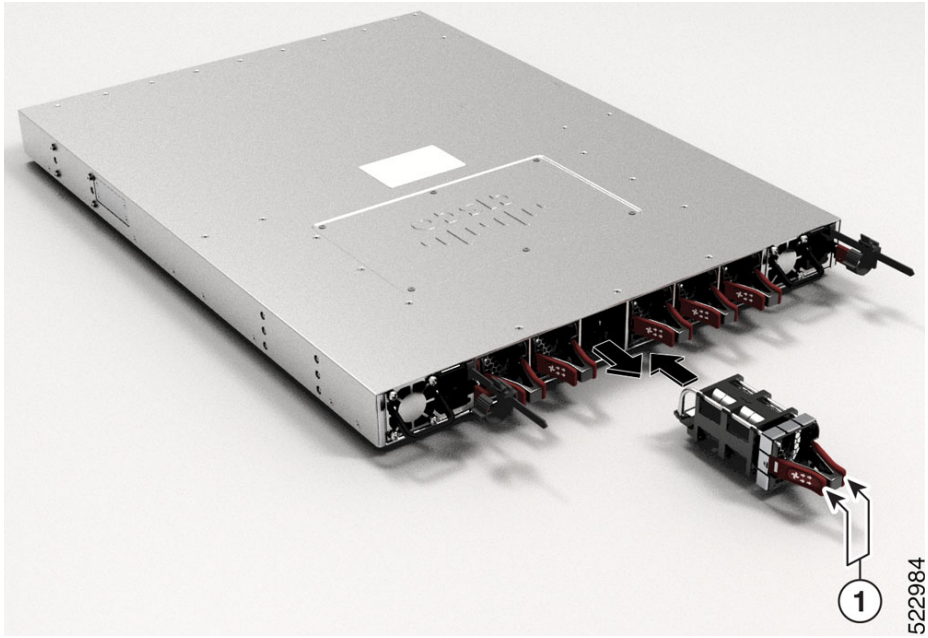


Figure 10: Cisco 8122-64EH-O Router — Remove Fans

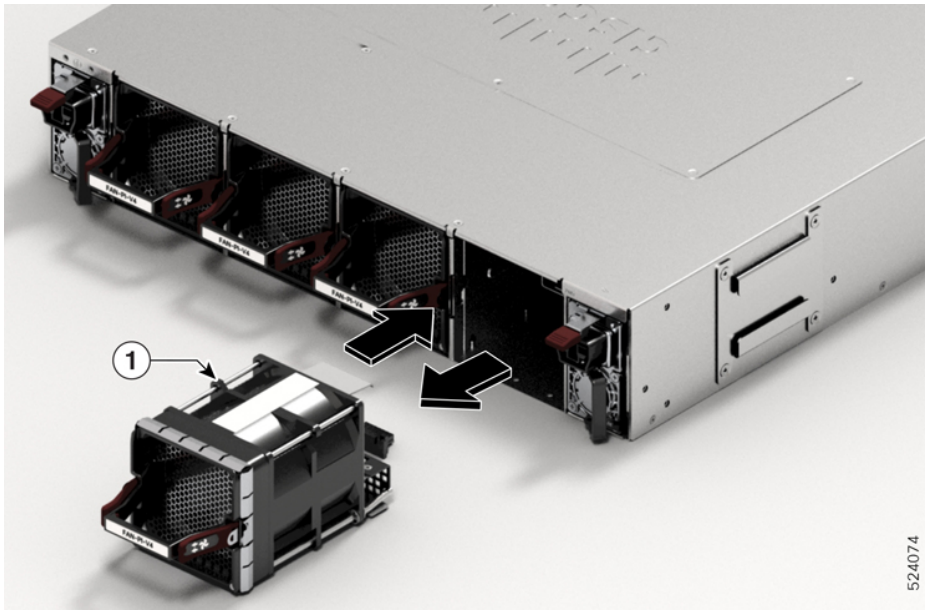


Figure 11: Cisco 8102-28FH-DPU-O — Remove Fans

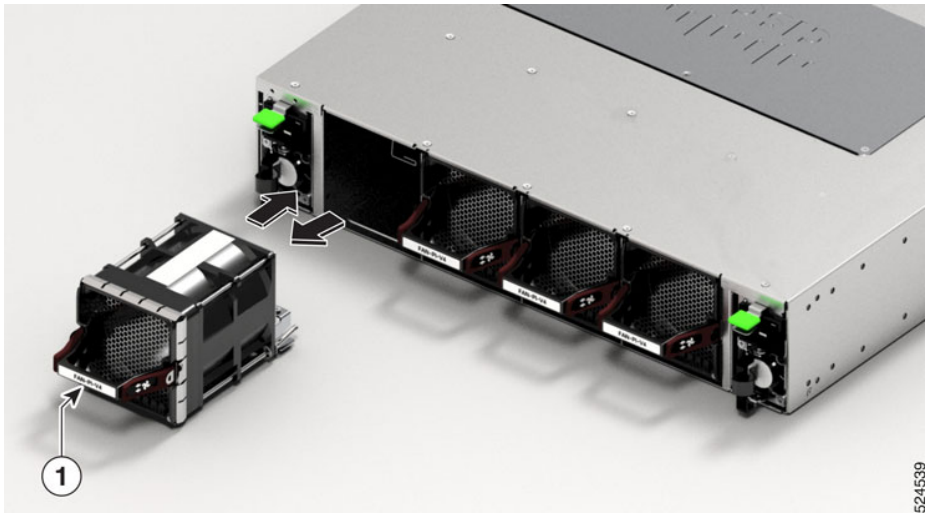


Figure 12: Cisco 8122-64EHF-O Router — Remove Fans

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.

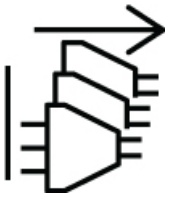
Note
During the fan module replacement, an empty fan slot causes the remaining fans to operate at higher speeds and may reach their maximum speed. This is a short-term condition that should only occur during the replacement of a fan module.

d) Verify that the fan module LED turns 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 Power Supply Units

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 1005—**Circuit Breaker

This product relies on the building's installation for short-circuit (overcurrent) protection. To reduce risk of electric shock or fire, ensure that the protective device is rated not greater than:

- 20 A (North America) and 16 A (Europe) circuit breaker for an AC-input power supply module.
- 83 A DC-rated circuit breaker for each input of a DC-input power supply module, for safety purposes - irrespective of whether the inputs are power from a single or separate DC sources.

Warning **Statement 1022—**Disconnect Device

To reduce the risk of electric shock and fire, a readily accessible disconnect device must be incorporated in the fixed wiring.

Warning **Statement 1003—**DC Power Disconnection

To reduce risk of electric shock or personal injury, disconnect DC power before removing or replacing components or performing upgrades.

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.

Warning **Statement 1022—**Disconnect Device

To reduce the risk of electric shock and fire, a readily accessible disconnect device must be incorporated in the fixed wiring.

Warning **Statement 1024—**Ground Conductor

This equipment must be grounded. To reduce the risk of electric shock, never defeat the ground conductor or operate the equipment in the absence of a suitably installed ground conductor. Contact the appropriate electrical inspection authority or an electrician if you are uncertain that suitable grounding is available.

Warning **Statement 1033—**Safety Extra-Low Voltage (SELV)—IEC 60950/ES1–IEC 62368 DC Power Supply

To reduce the risk of electric shock, connect the unit *only* to a DC power source that complies with the SELV requirements in the IEC 60950-based safety standards or the ES1 requirements in the IEC 62368-based safety standards.

For DC power supply units:

- All power connection wiring should conform to the rules and regulations prescribed by the National Electrical Code (NEC), as well as local codes, if any.
- The DC return must remain isolated from the system frame and the chassis (DC-I).

  The color coding of the source DC power cable leads depends on the color coding of the site DC power source. Typically, green or green and yellow stripes indicate that the cable is a ground cable. Since there is no color code standard for source DC wiring, you must ensure that the power cables are connected to the DC-input power supply terminal block in the proper + and - polarity.

  In some cases, the source DC cable leads might have a positive (+) or a negative (–) label. This label is a relatively safe indication of polarity, but you must verify the polarity by measuring the voltage between the DC cable leads. When measuring, ensure that the positive lead and the negative lead always match the "+" and "-" labels on the DC-input power supply terminal block, respectively.
- DC power cables use the M-CRPS connector at the power supply end.
- The circuit must be protected by a dedicated two-pole DC-rated circuit breaker.

  The circuit breaker is considered to be the disconnect device and must be easily accessible. For DC-input power supply units with multiple inputs, each DC input must be protected by a dedicated DC-rated circuit breaker or a fuse.

  The circuit breaker or fuse should be sized according to the power supply input rating and local or national code requirements.
- If the DC inputs are powered from separate sources, the cables must be wired straight across to their respective sources and terminals.

  Crossed cables in a setup where the DC source has floating outputs means that no damage will occur, but the LEDs will not light up, and the module will not operate.

Crossed cables in a setup with a positive ground or a negative ground power system constitute a severe safety hazard that includes causing electric shock and generating excessive EMI and RFI.

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 Routers can operate normally only with the same type of PSU in both the power slots. During replacement of PSU from one type to another (AC to DC or vice-versa (or) 2KW to 3KW or vice-versa), the router exhibits unexpected behaviour and the Cisco IOS XR software raises the PID mismatch alarm due to the presence of different types of PSUs. You must therefore replace the PSUs in both slots with the same type.

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 swap from one type of PSU to the other (AC to DC or vice-versa), follow the instructions outlined in these procedures as appropriate—

- To uninstall an AC/HVPI PSU, follow steps 1 through 3 in the "Replace AC, HVAC, or HVDC Power Supply" procedure.
- To uninstall a DC PSU, follow steps 1 and 2 in the "Replace Low Voltage DC Power Supply" procedure.
- To install an AC/HVPI PSU, follow steps 4 through 8 in the "Replace AC, HVAC, or HVDC Power Supply" procedure.
- To install a DC PSU, follow steps 3 through 6 in the "Replace Low Voltage DC Power Supply" procedure.
- To connect power to an AC PSU, follow the steps outlined in the "Connect AC Power to the Chassis" procedure.
- To connect power to a DC PSU, follow the steps outlined in the "Connect DC Power to the Chassis" procedure.
- To connect power to an HVPI PSU, follow the steps outlined in the "Connect High Voltage Power Supply Unit to Power Source" procedure.

Replace AC, HVAC, or HVDC Power Supply

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

Table 2: PIDs for Power Supply Units

AC PID	HVPI PID
• PSU650W-ACPI • PSU650W-ACPE • PSU2KW-ACPI • UCSC-PSU1-2300W	• PSU3KW-HVPI • PSU2KW-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 there are two PSUs in the router, use the following steps to replace the PSUs (AC to DC or vice-versa (or) 2KW to 3KW or vice-versa) to a different type. Routers can operate normally only with the same type of PSU in both the power slots. During replacement of PSU from one type to another, the router exhibits unexpected behaviour and the Cisco IOS XR software raises the PID mismatch alarm due to the presence of different types of PSUs. You must therefore replace the PSUs in both slots with the same type.

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.

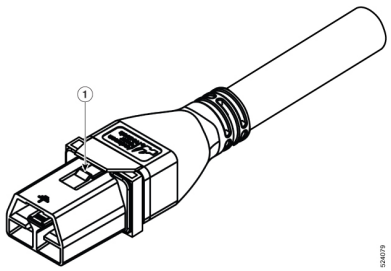
Procedure

Step 1 Ensure that the PSUs are powered off.

Step 2 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.

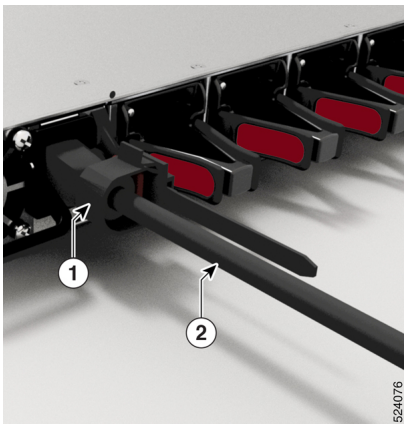
Figure 13: Latch on Saf-D-Grid Power Cord



1	Latch

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

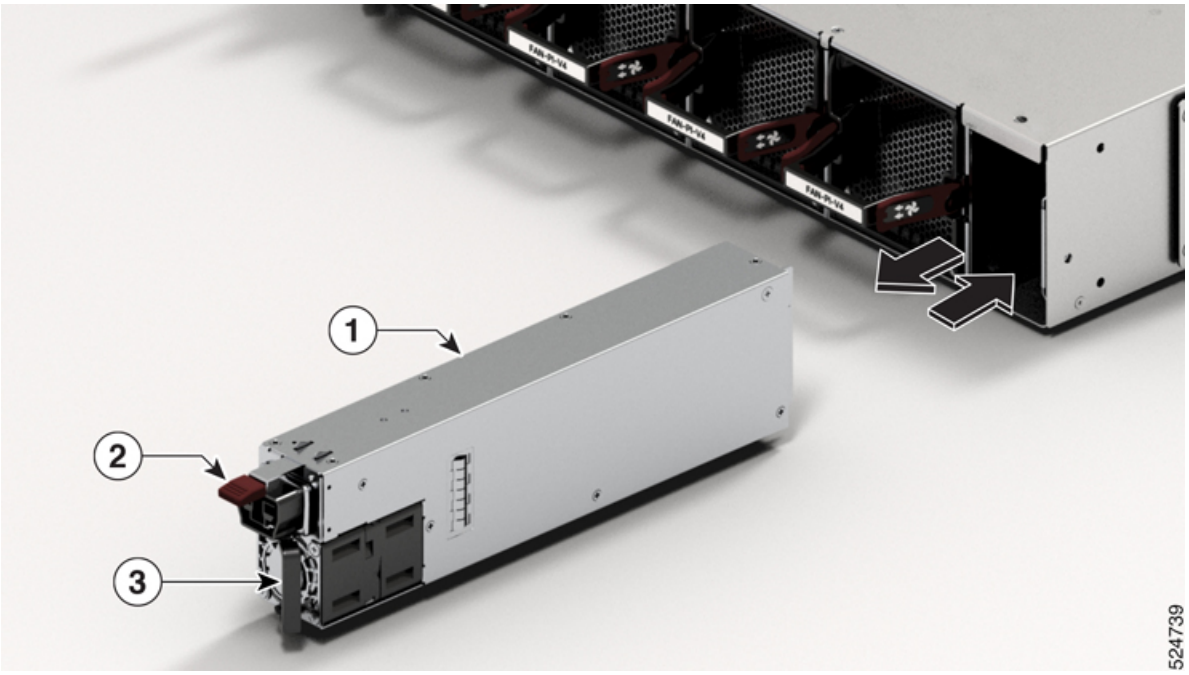
Figure 14: Disconnect AC Power Cable



1	Power cord retention clamp	2	AC power cable

Step 3 Press the tab inward to unlatch the PSU, and pull the handle to remove the PSU.

Figure 15: Remove the PSU



1	PSU	3	Handle
2	Tab		

Note
On the Cisco 8101-32H-O and Cisco 8102-64H-O Router, when you remove one of the PSUs, the fan speed for the following fan modules becomes very high:

- FAN-1RU-PE-V2
- FAN-2RU-PE-V2

Step 4 Insert the new PSU.

a) Grasp the PSU and insert it into the empty slot.
b) Slide the PSU into the slot until the release lever locks.

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. Ensure that the PSU is latched completely into the slot.

Step 5 Connect the power cord to the PSU. Ensure that the power cord is completely fixed.

Note
For an AC PSU that has an IEC connector (example, 2KW PSU), fix the power cord retention clamp 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 6 Turn on the power at source.

Step 7 Wait till the PSU LED color turns green. Verify the power using the **show environment power** command after the router boots up.

Step 8 Repeat steps 1 through 7 to replace the PSU in the second slot.

Replace Low Voltage DC Power Supply

This procedure below applies to the following power supply units:

- PSU930W-DCPI
- PSU930W-DCPE
- PSU2KW-DCPI

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.

Procedure

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

In case of the PSU2KW-DCPI and PSU930W-DCPI/DCPE PSUs, press the latch before pulling the power cord out from the PSU.

Step 2 Press the tab inward to unlatch the PSU 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, PSU930W-DCPI/DCPE 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.