
# Installing and Removing the Cisco ASR 1000 Series Fixed Ethernet Line Cards

This chapter describes how to install and remove the Cisco ASR 1000 Series Fixed Ethernet Line Cards on the Cisco ASR 1000 Series Aggregation Services Routers. This chapter contains the following sections:



## Handling the Cisco ASR 1000 Series Fixed Ethernet Line Card

Each Cisco ASR 1000 Series Fixed Ethernet Line Card circuit board is mounted on a metal carrier and is sensitive to electrostatic discharge (ESD) damage. Before you begin installation, read Chapter 2, "Preparing to Install the Cisco ASR 1000 Series Fixed Ethernet Line Cards" for a list of parts and tools required for installation.

**Caution** Always handle the Cisco ASR 1000 Series Fixed Ethernet Line Card by the carrier edges and handles; never touch the line card components or connector pins.

When a slot is not in use, a blank filler plate must be installed in the empty slot to allow the router or switch to conform to electromagnetic interference (EMI) emission requirements and to allow proper airflow across the installed modules. If you plan to install the Cisco ASR 1000 Series Fixed Ethernet Line Card in a slot that is not in use, you must first remove the blank filler plate.

## Online Insertion and Removal

The Cisco ASR 1000 Series Aggregation Services Routers support online insertion and removal (OIR) of the Cisco ASR 1000 Series Fixed Ethernet Line Card, as well as OIR for the small form-factor pluggables (SFP or XFP modules). Therefore, you can remove the Cisco ASR 1000 Series Fixed Ethernet Line Card with its SFP or XFP modules still intact, or you can remove SFP or XFP modules independently from the Cisco ASR 1000 Series Fixed Ethernet Line Card, leaving the line card installed in the router.

This section includes the following topics on OIR support:



# Preparing for Online Removal of the Cisco ASR 1000 Series Fixed Ethernet Line Card

The Cisco ASR 1000 Series Aggregation Services Routers support OIR of the Cisco ASR 1000 Series Fixed Ethernet Line Card. If you plan to remove a Cisco ASR 1000 Series Fixed Ethernet Line Card, deactivate the line card first using the **hw-module slot** *slotnumber* **shutdown** global configuration command.

When you deactivate the Cisco ASR 1000 Series Fixed Ethernet Line Card using this command, it automatically deactivates each of the SFP or XFP modules that are installed in the Cisco ASR 1000 Series Fixed Ethernet Line Card. Therefore, it is not necessary to deactivate each of the SFP or XFP modules prior to deactivating the Cisco ASR 1000 Series Fixed Ethernet Line Card.

Although graceful deactivation of the Cisco ASR 1000 Series Fixed Ethernet Line Card is preferred using the **hw-module slot** *slotnumber* **shutdown** command, the Cisco ASR 1000 Series Aggregation Services Routers do support the removal of the Cisco ASR 1000 Series Fixed Ethernet Line Card without deactivating it first.

**Note** It is recommended that you stop any traffic, and then stop the card using **hw-module slot <> stop** command in privileged EXEC mode and wait for at-least 60 sec before swapping carrier cards.

## Deactivating a Cisco ASR 1000 Series Fixed Ethernet Line Card

To deactivate a Cisco ASR 1000 Series Fixed Ethernet Line Card and its installed SFPs or XFPs prior to the removal of the Cisco ASR 1000 Series Fixed Ethernet Line Card, use the following command in the global configuration mode:

| Command | Purpose |
|---|---|
| `Router(config)# hw-module slot` *slotnumber* `shutdown` | Shuts down the installed interfaces and deactivates the Cisco ASR 1000 Series Fixed Ethernet Line Card in the specified slot. Here:<br>*slotnumber*—Specifies the chassis slot number in which the Cisco ASR 1000 Series Fixed Ethernet Line Card is installed. |

## Reactivating a Cisco ASR 1000 Series Fixed Ethernet Line Card

After you deactivate the Cisco ASR 1000 Series Fixed Ethernet Line Card, whether or not you have performed an OIR, you must use the **no hw-module slot** *slotnumber* **shutdown** global configuration command to reactivate the Cisco ASR 1000 Series Fixed Ethernet Line Card.

The installed SFP or XFP modules automatically get reactivated upon reactivation of the Cisco ASR 1000 Series Fixed Ethernet Line Card in the router. For example, consider a scenario where you remove a Cisco ASR 1000 Series Fixed Ethernet Line Card from the router to replace it with another Cisco ASR 1000 Series Fixed Ethernet Line Card. You reinsert the same SFP or XFP modules into the new Cisco ASR 1000 Series Fixed Ethernet Line Card. When you enter the **no hw-module slot** *slotnumber* **shutdown** command on the router, the SFP or XFP modules will automatically get reactivated with the new Cisco ASR 1000 Series Fixed Ethernet Line Card.

To reactivate a Cisco ASR 1000 Series Fixed Ethernet Line Card and its installed SFP or XFP modules after the Cisco ASR 1000 Series Fixed Ethernet Line Card has been deactivated, use the following command in the global configuration mode:

| Command | Purpose |
|---|---|
| `Router(config)# no hw-module slot` *slotnumber* `shutdown` | Reactivates the line card in the specified slot and its installed SFPs or XFPs. Here:<br>*slotnumber*—Specifies the slot number of the chassis on which the line card is installed.<br>This command is used only is this card was previously shut down using the **hw-module slot x shutdown** global configuration command.<br>**Note**: A newly inserted line card does not require this command to activate the card. |

## Verifying the Deactivation and Activation of the Cisco ASR 1000 Series Fixed Ethernet Line Card

To verify the deactivation of the Cisco ASR 1000 Series Fixed Ethernet Line Card, enter the **show platform** command in the privileged EXEC configuration mode. Observe the State field associated with the Cisco ASR 1000 Series Fixed Ethernet Line Card that you want to verify.

The following example shows the Cisco ASR 1000 Series Fixed Ethernet Line Card located in slot 2. In this scenario, slot 2 is powered down. This is indicated by its disabled status.

```
Router1(config)#hw-module slot 2 shutdown
Router1# show platform
Chassis type: ASR1013

Slot      Type                State                 Insert time (ago)
--------- ------------------- --------------------- -----------------
1         ASR1000-SIP40       ok                    22:02:07
 1/0      SPA-1X10GE-L-V2     ok                    22:00:57
 1/1      SPA-1X10GE-L-V2     ok                    22:00:57
 1/2      SPA-1X10GE-WL-V2    ok                    21:30:51
 1/3      SPA-1X10GE-L-V2     ok                    22:00:46
2         ASR1000-2T+20X1GE   disabled              22:02:07
3         ASR1000-SIP10       ok                    22:02:07
 3/1      SPA-5X1GE-V2        ok                    22:00:55
 3/2      SPA-5X1GE           ok                    22:00:48
```

```
R0        ASR1000-RP2         ok, active            22:02:07
R1        ASR1000-RP2         ok, standby           22:02:07
F0        ASR1000-ESP40       ok, active            22:02:07
F1        ASR1000-ESP40       ok, standby           22:02:07
P0        ASR1013/06-PWR-AC   ok                    22:01:16
P1        ASR1013/06-PWR-AC   ps, fail              22:01:15
P2        ASR1013/06-PWR-AC   ps, fail              22:01:15
P3        ASR1013/06-PWR-AC   ok                    22:01:14

Router# show platform diag
Chassis type: ASR1013

Slot: 1, ASR1000-2T+20X1GE
  Running state               : disabled
  Internal state              : offline
  Internal operational state  : disabled
  Physical insert detect time : 00:00:58 (03:19:08 ago)
  Software declared up time   : 00:02:52 (03:17:13 ago)
  CPLD version                : 13012400
  Firmware version            : 15.3(3r)S

Sub-slot: 1/0, BUILT-IN-2T+20X1GE
  Operational status          : ok
  Internal state              : inserted
  Physical insert detect time : 00:03:25 (03:16:40 ago)
  Logical insert detect time  : 00:03:25 (03:16:40 ago)

Slot: 4, ASR1000-SIP40
  Running state               : ok
  Internal state              : online
  Internal operational state  : ok
  Physical insert detect time : 00:00:58 (03:19:08 ago)
  Software declared up time   : 00:01:51 (03:18:15 ago)
  CPLD version                : 00200800
  Firmware version            : 15.2(1r)S
```

To verify the activation and proper operation of a Cisco ASR 1000 Series Fixed Ethernet Line Card, enter the **no hw-module slot 2 shutdown** command. After this, enter the **show platform** command and observe slot 1 in the ok state. Finally, enter the **show platform diag** command and observe ok in the Running state field, as shown in the following example:

```
Router# show platform diag
Chassis type: ASR1013

Slot: 1, ASR1000-2T+20X1GE
  Running state               : ok
  Internal state              : online
  Internal operational state  : ok
  Physical insert detect time : 00:00:58 (03:19:08 ago)
  Software declared up time   : 00:02:52 (03:17:13 ago)
  CPLD version                : 13012400
  Firmware version            : 15.3(3r)S

Sub-slot: 1/0, BUILT-IN-2T+20X1GE
  Operational status          : ok
  Internal state              : inserted
  Physical insert detect time : 00:03:25 (03:16:40 ago)
  Logical insert detect time  : 00:03:25 (03:16:40 ago)

Slot: 4, ASR1000-SIP40
  Running state               : ok
  Internal state              : online
```

```
Internal operational state  : ok
Physical insert detect time : 00:00:58 (03:19:08 ago)
Software declared up time   : 00:01:51 (03:18:15 ago)
CPLD version                : 00200800
Firmware version            : 15.2(1r)S
```

# Preparing for Online Removal of SFP or XFP Modules

The Cisco ASR 1000 Series Aggregation Services Routers support OIR of an SFP or XFP module without removing the Cisco ASR 1000 Series Fixed Ethernet Line Card. This means that a Cisco ASR 1000 Series Fixed Ethernet Line Card can remain installed in the router with one XFP remaining active, while you remove another XFP from one of the line-card ports, or that a Cisco ASR 1000 Series Fixed Ethernet Line Card can remain installed in the router with some number of SFP modules remaining active, while you remove other SFP modules from the line-card ports.

The interface configuration is retained or recalled if a Cisco ASR 1000 Series Fixed Ethernet Line Card or SFP or XFP is removed and then replaced with one of the same type.

However, if the line card is already installed in the router and the system is operational, we recommend that you shut down the port using the **interface config** command before removing the SFP or XFP modules.