



## Online Insertion Removal and Hot-Swapping

Online insertion and removal (OIR) enables you to replace faulty modules without affecting system operation, which is similar to hot-swapping. OIR commands are issued before removing a module and after installing a module. When performing OIR, an identical module must be used to replace the original one. If performing OIR on multiple modules within a router, perform the operation on one module at a time.

### Requirement

The module must be in energywise full-power mode for OIR commands to be issued. If the module is in energywise power-saving or shutdown mode, OIR commands can not be issued, and the module should not be removed.



**Note**

OIR is only supported on the Cisco 3925, 3925E, 3945, and 3945E ISRs.

The difference between hot-swapping and OIR is that OIR requires performing IOS commands before and after the OIR. Hot-swapping is strictly a hardware function and requires no commands. Not all router components or modules use OIR, or can be hot swapped.

The following items use OIR in the Cisco 3925, 3925E, 3945, and 3945E ISRs:

- Service Modules
- Network modules



**Note**

Network modules must be inserted into a network module adapter. The network module adapter and network module must always remain together. They function as one unit.

- External CompactFlash memory
- SFPs
- USB devices

The following items can be hot swapped:

- Fan tray
- Power supply only when the router is backed up with an RPS

# OIR Procedures

The following procedures describe using the OIR process to remove and replace data and voice modules.

## Removing a Module

From a console terminal issue the **hw-module sm {slot} oir-stop** command. The service module adapter LED blinks then turns off, and the console displays a prompt signaling the module can be removed. See the following output:

```
Router# hw-module sm 4 oir-stop
*Nov 11 22:40:53.299: %ATMOC3POM-6-SFP_OUT: Interface ATM4/0 SFP has been removed.
*Nov 11 22:40:54.299: %LINEPROTO-5-UPDOWN: Line protocol on Interface ATM4/0, changed
state to down
SM Hardware slot 4 can be removed
```

## Removing a Voice Module



### Note

---

All voice ports, controllers, transcoding, conferencing, and MTP dspfarm profiles should be shut down before removing a voice module.

---

From a console terminal issue the **hw-module sm {slot} oir-stop** command. The service module adapter LED blinks then turns off, and the console displays a prompt signaling the module can be removed. See the following output:

```
Router# hw-module sm 4 oir-stop
*Nov 11 22:40:53.299: %ATMOC3POM-6-SFP_OUT: Interface ATM4/0 SFP has been removed.
*Nov 11 22:40:54.299: %LINEPROTO-5-UPDOWN: Line protocol on Interface ATM4/0, changed
state to down
SM Hardware slot 4 can be removed
```

## Inserting a Data or Voice Module

This step is only required if the **oir-stop** command was issued and the module was not physically removed from the slot. If the module was physically removed, this command is not needed.

From a console terminal issue the **hw-module sm {slot} oir-start** command. The console displays a output showing the module changing states. See the following output:

```
Router# hw-module sm 2 oir-start
Router#
*Nov 11 21:06:17.546: %ATMOC3POM-6-SFP_IN: Interface ATM2/0 OC3 MM SFP has been inserted.
Router#
*Nov 11 21:06:19.442: %LINK-3-UPDOWN: Interface ATM2/0, changed state to up
*Nov 11 21:06:20.442: %LINEPROTO-5-UPDOWN: Line protocol on Interface ATM2/0, changed
state to up
```

# Hot-Swapping Procedures

The following items can be hot-swapped:

- Fan trays
- Power supplies only when the router is backed up with an RPS

See the [“Replacing a Fan Tray or Air Filter”](#) section on page 5-44 and the [“Replacing Power Supplies and Redundant Power Supplies”](#) section on page 5-28.

