

Online Insertion and Removal and Hot-Swapping

The online insertion and removal (OIR) operation lets you replace faulty data and voice modules without affecting system operations. The OIR is similar to hot-swapping. OIR commands are issued before removing and after installing a module. When performing OIR, use an identical module to replace an original one. If you need to perform the OIR operation on multiple modules within a router, perform the operation one module at a time.

The difference between hot-swapping and OIR is that OIR requires executing Cisco IOS commands before and after the OIR. Hot-swapping is strictly a hardware function and does not require the execution commands. Not all router components or modules use OIR, or can be hot swapped.

The following components use OIR in the routers:

- Network Interface Modules (NIMs)
- SFPs
- USB devices

Note The M.2 USB/NVMe module cannot be hot-swapped. The router must be powered off if the M.2 USB/NVMe module is to be removed or installed.

Requirement

To issue OIR commands, you must keep the module that is to be replaced in EnergyWise full-power mode. If the module is in EnergyWise power-saving or shutdown mode, you cannot issue OIR commands, and you cannot, therefore, remove the module.

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OIR Procedures

The following procedures describe using the OIR process to remove and replace NIMs and SMs.

Remove a Module

From a console terminal run the **hw-module subslot subslot stop** command. The service module adapter LED blinks, turns off, and the console displays a prompt signaling the module can be removed. See the following output:

```
Device# hw-module subslot 2/0 stop
Proceed with stop of module? [confirm]
damo-O2#
*Mar 22 20:43:31.088: %SPA_OIR-6-OFFLINECARD: SPA (SM-X-1T3/E3) offline in subslot 2/0
*Mar 22 20:43:31.088: %IOSXE_OIR-6-SOFT_STOPSPA: SPA(SM-X-1T3/E3) stopped in subslot 2/0,
interfaces disabled
Device# show hw-module subslot 2/0 oir
Module Model Operational Status
------------ -------------------- ------------------------
subslot 2/0 SM-X-1T3/E3 stopped
```

Insert a Module

You require to run this step only if you run the oir-stop command when the module is not physically removed from the slot. If the module is physically removed, you do not require to run this command.

From a console terminal issue the hw-module sm {slot} oir-start command. The console displays output that shows the module change states:

```
Device# hw-module sm 2 oir-start
Device#
*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
```