Installing and Removing Modules, Transceivers, and Attaching Cables

Installing and Removing Ethernet Switching Modules

Installing an Ethernet Switching Module

The C6800-32P10G-XL Ethernet module illustrations are shown here as examples; the same installation procedure applies to other modules.

Before You Begin

Verify the following:

- That the two slots adjacent to the slot where you are installing the module have either a module installed in them or a switching-module filler plate installed (Cisco part numbers SLOTBLANK-09 or WS-X6K-SLOT-CVR-E) if either slot is unused. If either slot has a blank slot cover (Cisco part number WS-X6K-SLOT-CVR), you need to remove the blank slot cover and replace it with a switching-module filler plate for NEBS compliance.

- That there is enough clearance to accommodate any interface equipment, such as pluggable transceivers, installed directly on the module ports. If possible, install modules between empty slots that contain only module filler plates.

- That you have adequate cable guides installed on the chassis to accept the additional network interface cables for the new module.

- That the captive installation screws are tightened on all modules installed in the chassis.

  This is to ensure that the EMI gaskets on all of the modules are fully compressed in order to maximize the opening space for the new or replacement module. If the captive installation screws are loose, the

EMI gaskets on the installed modules will push adjacent modules toward the open slot, reducing the opening size and making it difficult to install the module.

Step 1   Attach an ESD grounding strap to your wrist and to ground.

Step 2   Choose a slot for the module and remove the module filler plate covering the selected slot by removing the two Phillips pan-head screws from the filler plate.
Refer to your software release notes for any information on slot or chassis restrictions for the module that you are installing.

Step 3   Remove the new module from its shipping packaging and from the antistatic shipping bag.
Caution   To prevent ESD damage, handle modules by the carrier edges only.

Step 4   Fully open both ejector levers on the new module.

Step 5   Position the new module in the slot. Make sure that you align the sides of the module carrier with the slot guides on each side of the chassis slot.

Figure 1: Locating the Slot Guide and EMI Gasket
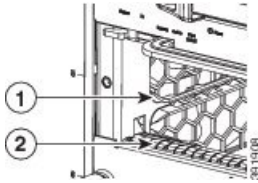
1	Slot guides. Modules to be inserted between these slot guides.	2	EMI gasket.

Step 6   Carefully slide the module into the slot until the EMI gasket along the top edge of the module makes contact with the module or cover plate in the slot above it and the module ejector levers have both closed to approximately 45 degrees with respect to the module faceplate.

Figure 2: Positioning the Module in the Chassis Slot
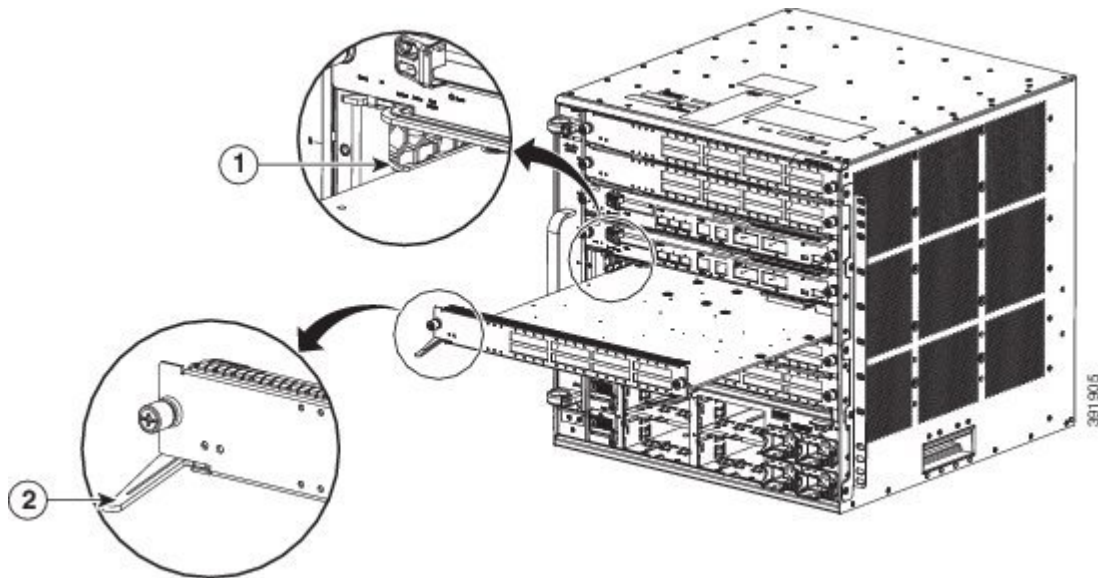
1	Module inserted between the slot guides	2	Ejector lever fully extended

Step 7   Using the thumb and forefinger of each hand, grasp the two ejector levers and gently press down to create a small 0.040 inch (1 mm) gap between the module's EMI gasket and the module or cover plate above it.

Note Do not press down too forcefully on the levers because they will bend and get damaged.

Figure 3: Clearing the EMI Gasket in the Chassis Slot
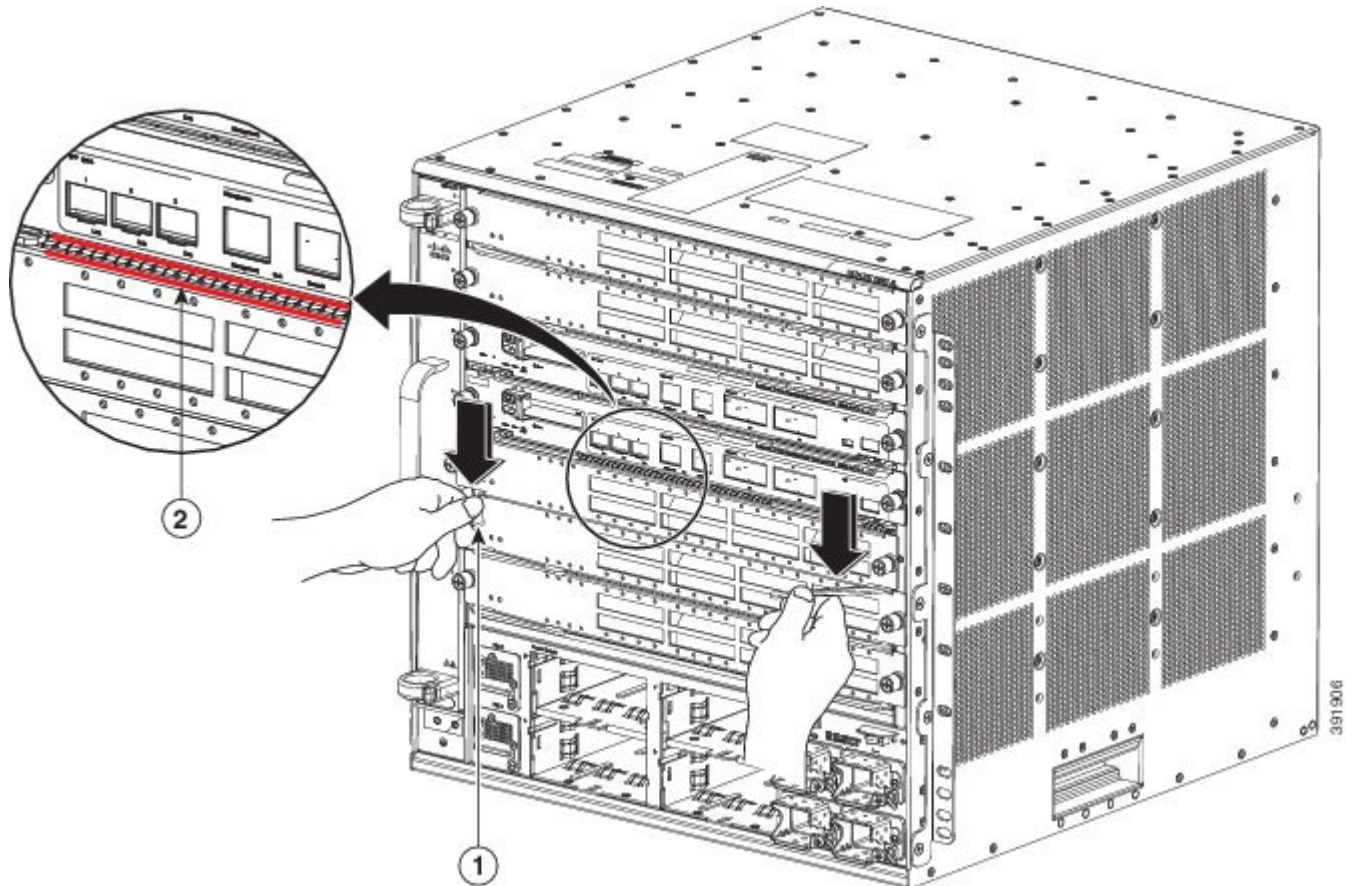
1	Gently press down and simultaneously close the left and right ejector levers to seat the module.	2	1 mm gap between the module EMI gasket and the module above it.

Step 8 While gently pressing down, simultaneously close the left and right ejector levers to fully seat the module in the backplane connector. The ejector levers are fully closed when they are flush with the module faceplate.
Failure to fully seat the module in the backplane connector can result in error messages.

Step 9   Make sure the ejector levers are fully closed and then tighten the two captive installation screws on the module.

Figure 4: Closing Ejector Levers in the Chassis Slot
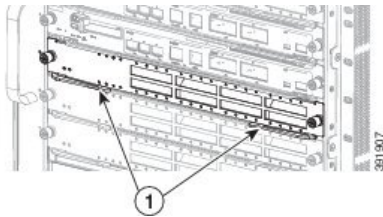
1	Ejector levers fully closed and flush with the module faceplate		-

Step 10   Verify that the module STATUS LED is lit.
Periodically check the STATUS LED color:

- If the STATUS LED changes from orange to green, the module has successfully completed the boot process and is now online.

- If the STATUS LED remains orange or turns red, the module has not successfully completed the boot process and may have encountered an error. For more information about the orange or red STATUS LED states, see Appendix B.

What to Do Next

1   Install switching-module filler plates (Cisco part numbers SLOTBLANK-09 or WS-X6K-SLOT-CVR-E) in any empty slots to maintain consistent airflow through the switch chassis.

2   Verify module installation.

Related Topics

C6800-48P-TX and C6800-48P-TX-XL Ethernet Modules
C6800-48P-TX and C6800-48P-TX-XL Specifications
Ethernet Module LEDs
Example: show module Command Output for C6800-48P-TX-XL , on page 11
C6800-48P-SFP and C6800-48P-SFP-XL Ethernet Modules
C6800-48P-SFP and C6800-48P-SFP-XL Module Specifications
Ethernet Module LEDs
Example: show module Command Output for C6800-48P-SFP , on page 12
C6800-8P10G and C6800-8P10G-XL Ethernet Modules
C6800-8P10G and C6800-8P10G-XL Module Specifications
Ethernet Module LEDs
C6800-16P10G and C6800-16P10G-XL Ethernet Modules

Removing an Ethernet Module

Before You Begin

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Caution During this procedure, wear grounding wrist straps to avoid ESD damage to the module.

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Warning Invisible laser radiation may be emitted from disconnected fibers or connectors. Do not stare into beams or view directly with optical instruments. **Statement 1051**

Step 1 Attach an ESD grounding strap to your wrist and to ground.

Step 2 Disconnect any network interface cables attached to the module.

Step 3 Verify that the captive installation screws on all of the modules in the chassis are tight.
This step ensures that the space created by the removed module is maintained. If the captive installation screws are loose, the EMI gaskets on the installed modules will push the modules toward the open slot, reducing the opening size and making it difficult to remove the module.

Step 4 Loosen the two captive screws on the module. Make sure that the two captive screws are completely unscrewed from the chassis.

Step 5 Place your thumbs on the left and right ejector levers and simultaneously rotate the levers outward to unseat the module from the backplane connector.

Step 6 Grasp the front edge of the module and slide the module part of the way out of the slot. Place your other hand under the module to support the weight of the module. Do not touch the module circuitry.

Step 7 Place the removed module on an antistatic mat or in an antistatic bag, or immediately reinstall it in another slot.

Step 8 Perform one of the following steps:

- Install another module.

- Install a module filler plate.

If the slot is to remain empty and is adjacent to a module, you must install a module filler plate (Cisco part numbers SLOTBLANK-09 or WS-X6K-SLOT-CVR-E) to maintain proper air flow through the chassis. Do not install a blank slot cover (Cisco part number WS-X6K-SLOT-CVR) over the unused slot.

Warning   Blank faceplates and cover panels serve three important functions: they prevent exposure to hazardous voltages and currents inside the chassis; they contain electromagnetic interference (EMI) that might disrupt other equipment; and they direct the flow of cooling air through the chassis. Do not operate the system unless all cards, faceplates, front covers, and rear covers are in place. **Statement 1029**

Installing Transceivers and Module Connectors

Some Ethernet modules require that pluggable transceivers be installed in the module port sockets. These transceivers are normally shipped separately from the module and must be installed after the module is installed in the chassis slot.

For detailed instructions about installing the various kinds of pluggable transceivers and module connectors, see the following:

Transceiver or Module Connector Type	Installation Procedure Document and Link
SFP and SFP+	Cisco SFP and SFP+ Transceiver Module Installation Notes
QSFP+	Cisco CVR-4SFP10G-QSFP Reverse Adapter Installation Note

Related Topics

Pluggable Transceivers

Module Connectors

Attaching Network Interface Cables

Attaching Optical Network Interface Cables

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Caution   Do not remove the plugs from the transceiver optical bores or the fiber-optic cable until you are ready to connect the cable. The plugs protect the transceiver optical bores and cable from contamination.

Step 1   Remove the dust plugs from the network interface cable optical connectors. Save the dust plugs for future use.

Step 2   Immediately inspect and clean the optical connector's fiber-optic end-faces.
Follow these guidelines:

- Always inspect and clean the SC or the LC connector end-faces just before making any connections. Contaminated connectors can damage the fiber and cause data errors.

- Always install protective covers on unused or disconnected components to prevent contamination.

Step 3   Remove the dust plugs from the transceiver optical bores.
If you are using the LX/LH GBIC with MMF, you need to install a patch cord between the GBIC and the MMF cable.

The Read-Only WDM GBIC (WDM-GBIC-REC=) has only one optical bore (receive).

Step 4   Immediately attach the network interface cable optical connector to the transceiver.
Follow these guidelines:

- Always grasp the SC or the LC connector housing rather than the fiber-optic cable to plug or unplug the fiber-optic cable.

- Use extreme care when removing or installing connectors so that you do not damage the connector housing or scratch the end-face surface of the fiber.

Mode-Conditioning Patch Cord

When using the long-wavelength and long-haul (LX and LH) GBIC with 62.5-micron diameter multimode fiber (MMF), you must install a mode-conditioning patch cord (Cisco product number CAB-GELX-625 or equivalent) between the GBIC and the MMF cable on both the transmit and receive ends of the link.

When an unconditioned laser source designed for operation on single-mode optical fiber (SMF) is directly coupled to an MMF cable, an effect known as differential mode delay (DMD) might result in a degradation of the modal bandwidth of the optical fiber cable. This degradation results in a decrease in the link span (the distance between a transmitter and a receiver) that can be supported reliably. The effect of DMD can be overcome by conditioning the launch characteristics of a laser source. A practical means of performing this conditioning is to use a device called a mode-conditioning patch cord.

A mode-conditioning patch cord is required for 1000BASE-LX and LH applications over FDDI-grade, OM1, and OM2 fiber-cable types. Mode-conditioning patch cords should not be used for applications over OM3 fiber cable (laser-optimized fiber cable). For more information about mode-conditioning patch cords, see the

Use of Mode Conditioning Patch Cables in Gigabit Ethernet and 10 Gigabit Ethernet Laser-Based Transmissions bulletin available on Cisco.com.

Figure 5: Mode Conditioning Patch Cord with SC (GBIC Transceiver) Connector
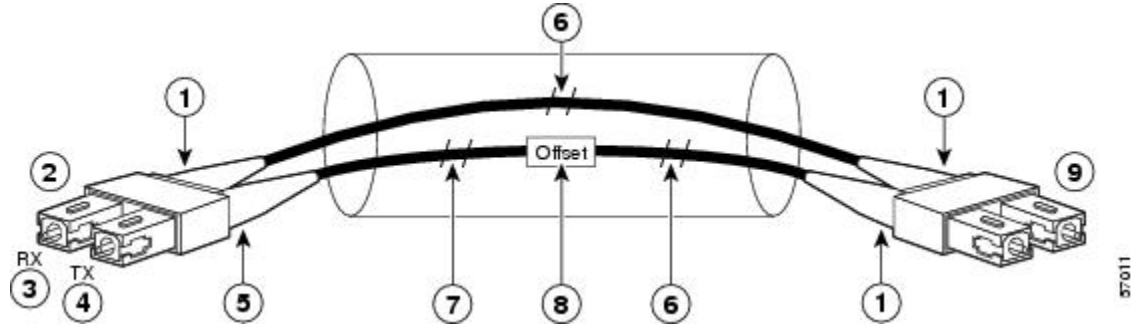
1	Beige color identifier	6	MMF
2	To Gigabit Ethernet interface	7	Single-mode fiber (SMF)
3	RX (receiver)	8	Offset junction
4	TX (transmitter)	9	To cable plant
5	Blue color identifier		

Note   We recommend that you use the LX and LH GBIC and MMF with the patch cord for short link distances of 33 to 328 feet (10 to 100 meters) because not using the patch could result in an elevated bit error rate (BER).

The patch cord is required to comply with IEEE standards. IEEE found that link distances could not be met with certain types of fiber-optic cable due to a problem in the center of some fiber-optic cable cores. The solution is to launch light from the laser at a precise offset from the center by using the patch cord. At the output of the patch cord, the LX and LH GBIC complies with the IEEE 802.3z standard for 1000BASE-LX.

Installing the Patch Cord

Warning   Invisible laser radiation may be emitted from disconnected fibers or connectors. Do not stare into beams or view directly with optical instruments. Statement 1051

To install the patch cord, perform these steps:

SUMMARY STEPS

1. Plug the end of the patch cord labeled To Equipment into the GBIC. See Figure 6: Patch Cord Installation, on page 10.
2. Plug the end labeled To Cable Plant into the patch panel. See Figure 6: Patch Cord Installation, on page 10.

DETAILED STEPS

Step 1   Plug the end of the patch cord labeled To Equipment into the GBIC. See Figure 6: Patch Cord Installation, on page 10.

Step 2   Plug the end labeled To Cable Plant into the patch panel. See Figure 6: Patch Cord Installation, on page 10.

The patch cord is 9.8-feet (3-meters) long and has duplex SC male connectors at each end.

Figure 6: Patch Cord Installation
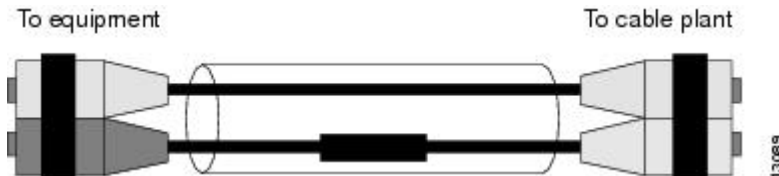
Connecting Transceivers to a Copper Network

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Caution   To comply with GR-1089 intrabuilding lightning immunity requirements, you must use grounded, shielded, twisted-pair Category 5 cabling.

Step 1   Insert the network cable RJ-45 connector into the RJ-45 connector on the transceiver.

When connecting to a 1000BASE-T-compatible switch or repeater, use four-twisted-pair, crossover Category 5 cabling.

Step 2   Insert the other end of the network cable into an RJ-45 connector on a 1000BASE-T-compatible target device.

Verifying the Installation

Verifying Newly Installed Modules

Enter the **show module** or **show port** [*modnum/port_num*] privileged EXEC command.

This verifies that the system acknowledges the new modules and has brought them online.

What to Do Next

Enter the **ping** *host* user EXEC command to ping a host and check connectivity.

If the host is unresponsive, check the IP address of the switch and default IP route, if appropriate.

Example: show module Command Output for C6800-48P-TX-XL

These are examples of the show module command output for the C6800-48P-TX-XL Ethernet module:

```
Switch# show module sw 1
 Switch Number:     1   Role:  Virtual Switch Standby
 --------------------   ----------------------------
Mod Ports Card Type                              Model              Serial No.
--- ----- ------------------------------------- ------------------ -----------
  1   20  DCEF2T 4 port 40GE / 16 port 10GE      WS-X6904-40G       SAL1624E826
  2    4  WiSM 2 WLAN Service Module             WS-SVC-WISM2-K9    SAL1523FLRV
  3    5  Supervisor Engine 2T 10GE w/ CTS (CSSO VS-SUP2T-10G       SAL17152F6Q
  4    5  Supervisor Engine 2T 10GE w/ CTS (Hot) VS-SUP2T-10G       SAL17152F7C
  5    4  Network Analysis Module 3              WS-SVC-NAM-3-K9    SAL16127XFD
  6   48  DCEF-XL 48P 10/100/1000MB Ethernet     C6800-48P-TX-XL    SAL1736CC7W

Mod MAC addresses                       Hw    Fw          Sw           Status
--- ---------------------------------- ------ ----------- ------------ -------
  1 1cdf.0f9b.df26 to 1cdf.0f9b.df39   1.0    12.2(50r)SYL 15.1(2)SY2   Ok
  2 e05f.b994.2660 to e05f.b994.266f   1.0    12.2(18r)S1  15.1(2)SY2   Ok
  3 2c54.2dc4.a0a5 to 2c54.2dc4.a0ac   1.5    12.2(50r)SYS 15.1(2)SY2   Ok
  4 2c54.2dc3.7499 to 2c54.2dc3.74a0   1.5    12.2(50r)SYS 15.1(2)SY2   Ok
  5 1cdf.0f9b.a76e to 1cdf.0f9b.a77d   1.1    12.2(50r)SYL 15.1(2)SY2   Ok
  6 7c69.f69b.c8d8 to 7c69.f69b.c907   0.1    12.2(18r)S1  15.1(2)SY2   Ok

Mod  Sub-Module                 Model              Serial       Hw      Status
---- -------------------------- ------------------ ----------- ------- -------
  1  Distributed Forwarding Card WS-F6K-DFC4-EXL    SAL1532M1VE 1.0     Ok
  3  Policy Feature Card 4       VS-F6K-PFC4XL      SAD1422005E 0.509   Ok
  3  CPU Daughterboard           VS-F6K-MSFC5       SAL17142D69 2.0     Ok
  4  Policy Feature Card 4       VS-F6K-PFC4XL      SAD142502KP 0.509   Ok
  4  CPU Daughterboard           VS-F6K-MSFC5       SAL171424F1 2.0     Ok
 5/0 NAM Application Processor   SVC-APP-PROC-1     SAL161065NJ 1.0     Ok
  6  Distributed Forwarding Card WS-F6K-DFC4-AXL    SAL1736CC7W 0.1     Ok

Base PID:
Mod  Model        Serial No.
---- -----------  ----------
  5 WS-SVC-APP-HW-1    SAL16127XFD

Mod  Online Diag Status
---- ------------------
  1 Pass
  2 Pass
  3 Pass
  4 Pass
  5 Not Applicable
 5/0 Not Applicable
```

```
   6  Pass


Switch#show module switch 1 slot 6

 Switch Number:    1   Role:  Virtual Switch Standby
--------------------  ----------------------------
Mod Ports Card Type                            Model              Serial No.
--- ----- ------------------------------------ ------------------ -----------
  6   48  DCEF-XL 48P 10/100/1000MB Ethernet   C6800-48P-TX-XL    SAL1736CC7W

Mod MAC addresses                       Hw    Fw          Sw           Status
--- -------------------------------- ------ ------------ ------------ -------
  6  7c69.f69b.c8d8 to 7c69.f69b.c907  0.1   12.2(18r)S1  15.1(2)SY2   Ok

Mod  Sub-Module                  Model             Serial      Hw      Status
---- -------------------------- ------------------ ----------- ------- -------
  6  Distributed Forwarding Card WS-F6K-DFC4-AXL    SAL1736CC7W 0.1     Ok

Mod  Online Diag Status
---- -------------------
  6  Pass
```

Related Topics

C6800-48P-TX and C6800-48P-TX-XL Ethernet Modules

Example: show module Command Output for C6800-48P-SFP

These are examples of the show module command output for the C6800-48P-SFP Ethernet module:

```
Switch# show module sw 2
 Switch Number:    2   Role:   Virtual Switch Active
--------------------  ----------------------------
Mod Ports Card Type                            Model              Serial No.
--- ----- ------------------------------------ ------------------ -----------
  1   20  DCEF2T 4 port 40GE / 16 port 10GE    WS-X6904-40G       SAL1627FUGE
  3    5  Supervisor Engine 2T 10GE w/ CTS (Acti VS-SUP2T-10G     SAL17152N0N
  4    5  Supervisor Engine 2T 10GE w/ CTS (CSSO VS-SUP2T-10G     SAL17152F4G
  7   48  DCEF 48P 1GE SFP                       C6800-48P-SFP    SAL1810N5E2

Mod MAC addresses                       Hw    Fw          Sw           Status
--- -------------------------------- ------ ------------ ------------ -------
  1  1cdf.0f9b.e9fa to 1cdf.0f9b.ea0d  1.0   12.2(50r)SYL 15.1(2)SY2   Ok
  3  5057.a8e2.5e85 to 5057.a8e2.5e8c  1.5   12.2(50r)SYS 15.1(2)SY2   Ok
  4  5057.a8e2.5e4e to 5057.a8e2.5e55  1.5   12.2(50r)SYS 15.1(2)SY2   Ok
  7  b838.61d7.fca8 to b838.61d7.fcd7  0.1   12.2(18r)S1  15.1(2)SY2   Ok

Mod  Sub-Module                  Model             Serial      Hw      Status
---- -------------------------- ------------------ ----------- ------- -------
  1  Distributed Forwarding Card WS-F6K-DFC4-EXL    SAL1535P0LR 1.0     Ok
  3  Policy Feature Card 4       VS-F6K-PFC4XL      SAD1352022C 0.509   Ok
  3  CPU Daughterboard           VS-F6K-MSFC5       SAL17152L07 2.0     Ok
  4  Policy Feature Card 4       VS-F6K-PFC4XL      SAD140801W1 0.509   Ok
  4  CPU Daughterboard           VS-F6K-MSFC5       SAL17152KZK 2.0     Ok
  7  Distributed Forwarding Card WS-F6K-DFC4-A      SAL1810N5AL 2.0     Ok

Mod  Online Diag Status
---- -------------------
  1  Pass
  3  Pass
  4  Pass
  7  Pass


Switch# show module switch 2 slot 7
 Switch Number:    2   Role:   Virtual Switch Active
```

```
---------------------  -----------------------------
Mod Ports Card Type                             Model              Serial No.
--- ----- ------------------------------------- ------------------ -----------
  7    48  DCEF 48P 1GE SFP                      C6800-48P-SFP      SAL1810N5E2

Mod MAC addresses                       Hw     Fw          Sw           Status
--- --------------------------------- ------ ----------- ------------ -------
  7  b838.61d7.fca8 to b838.61d7.fcd7   0.1    12.2(18r)S1 15.1(2)SY2   Ok

Mod  Sub-Module                  Model              Serial      Hw      Status
---- --------------------------- ------------------ ----------- ------- -------
  7  Distributed Forwarding Card WS-F6K-DFC4-A      SAL1810N5AL 2.0     Ok

Mod  Online Diag Status
---- ------------------
  7  Pass
```

Related Topics

C6800-48P-SFP and C6800-48P-SFP-XL Ethernet Modules

Example: show module Command Output for C6800-48P-SFP