



# Connecting the Cisco 6-port GE SFP Service Modules and the Cisco 4-port GE SFP and 1-port 10 GE SFP Service Modules to the Network

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**Last Updated: March 16, 2015**

This document describes how to install a Cisco 6-port GE SFP Service Module and Cisco 4-port GE SFP and 1-port 10 GE SFP Service Module on the Cisco ISR 4400 Series Routers and how to connect the service module to your network.

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# About the Cisco 6-port GE SFP Service Module and Cisco 4-port GE SFP and 1-port 10 GE SFP Service Module

The Cisco SM-X-6X1G and Cisco SM-X-4X1G-1X10G are multi GE service modules for the Cisco ISR 4400 Series routers.

The SM-X-4X1G-1X10G provides one 10GE and four 1GE ports. You can configure this service module to use either a single 10GE port or four 1GE ports.

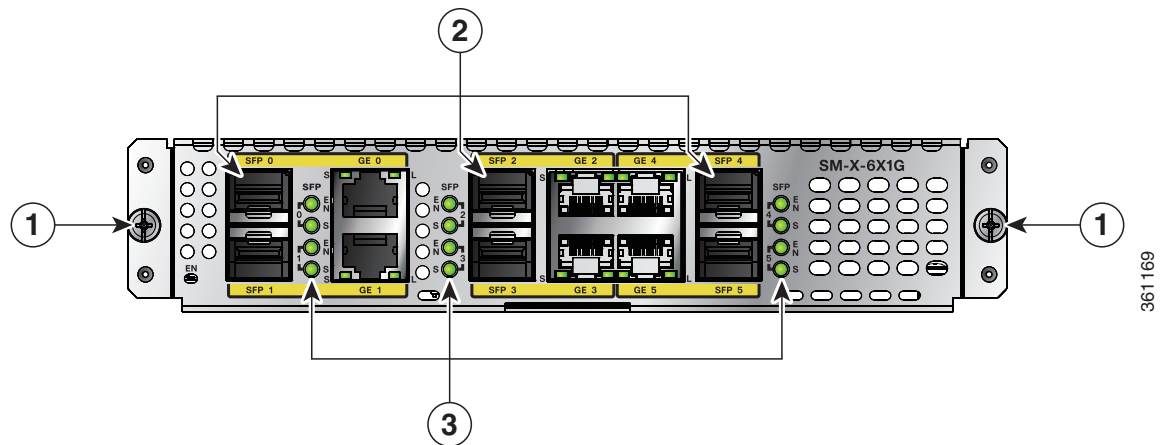
The SM-X-6X1G provides six 1GE routing ports.

The service module provides the following external interfaces:

- 10/100/1000 Mbps RJ45 interface with Speed and Link LEDs
- SFP interface with Speed and EN LEDs
- SFP+ interface with LNK/ACT and EN LEDs

Figure 1 shows the faceplate of the Cisco SM-X-6X1G service module.

**Figure 1** Cisco SM-X-6X1G Service Module

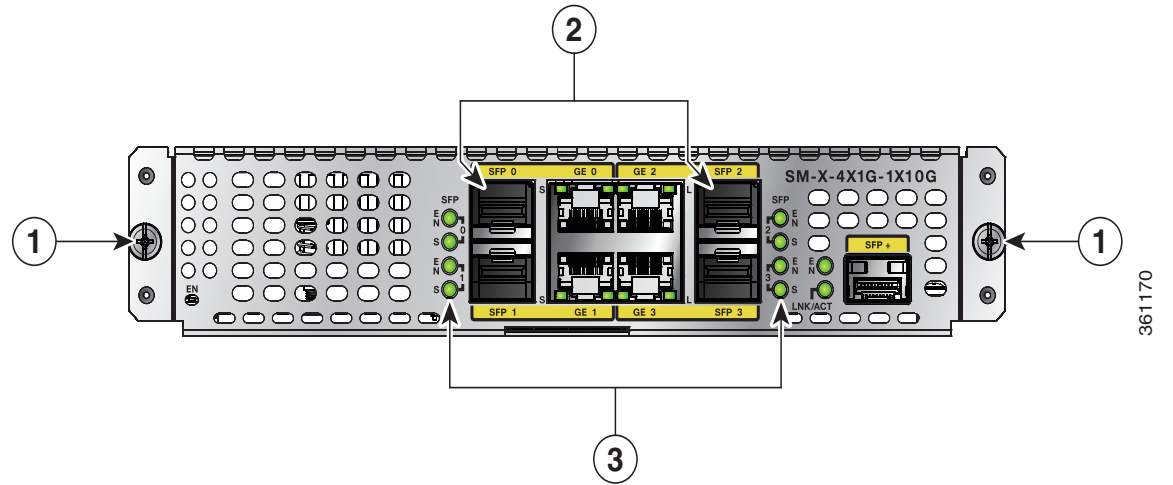


<b>1</b>	Screws to connect to router chassis	<b>3</b>	LEDs
<b>2</b>	GE Ports		

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Figure 2 shows the faceplate of the Cisco SM-X-4X1G-1X10G service module.

**Figure 2** Faceplate of the Cisco SM-X-4X1G-1X10G Service Module



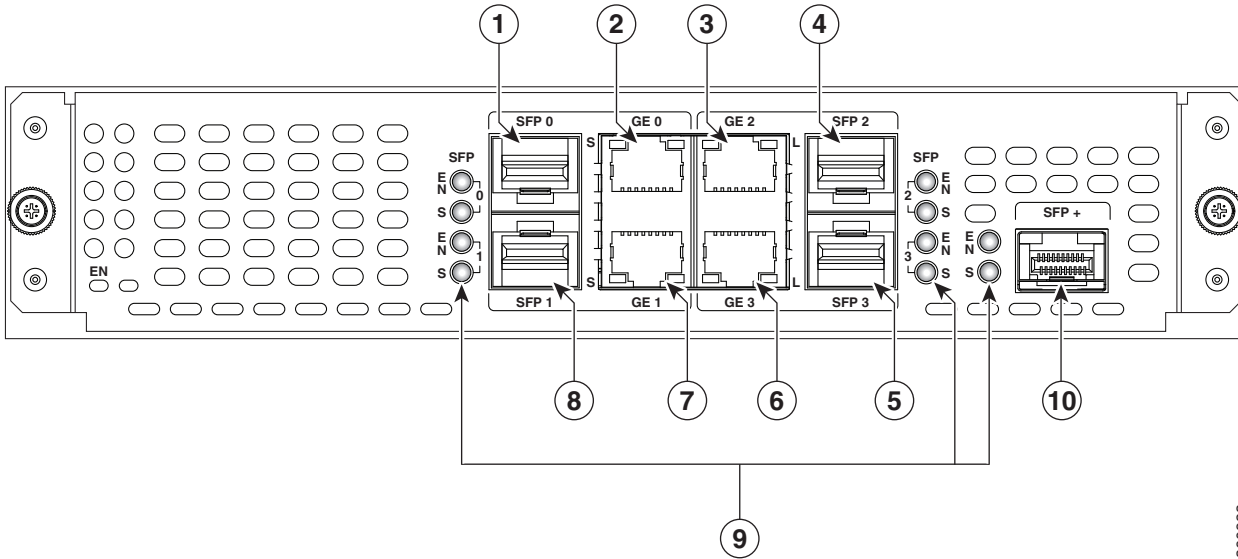
<b>1</b>	Screws to connect to router chassis	<b>3</b>	LEDs
<b>2</b>	GE Ports		

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# Service Module GE Ports

Figure 3 and Figure 4 show the various ports on the Cisco SM-X-6X1G and Cisco SM-X-4X1G-1X10G:

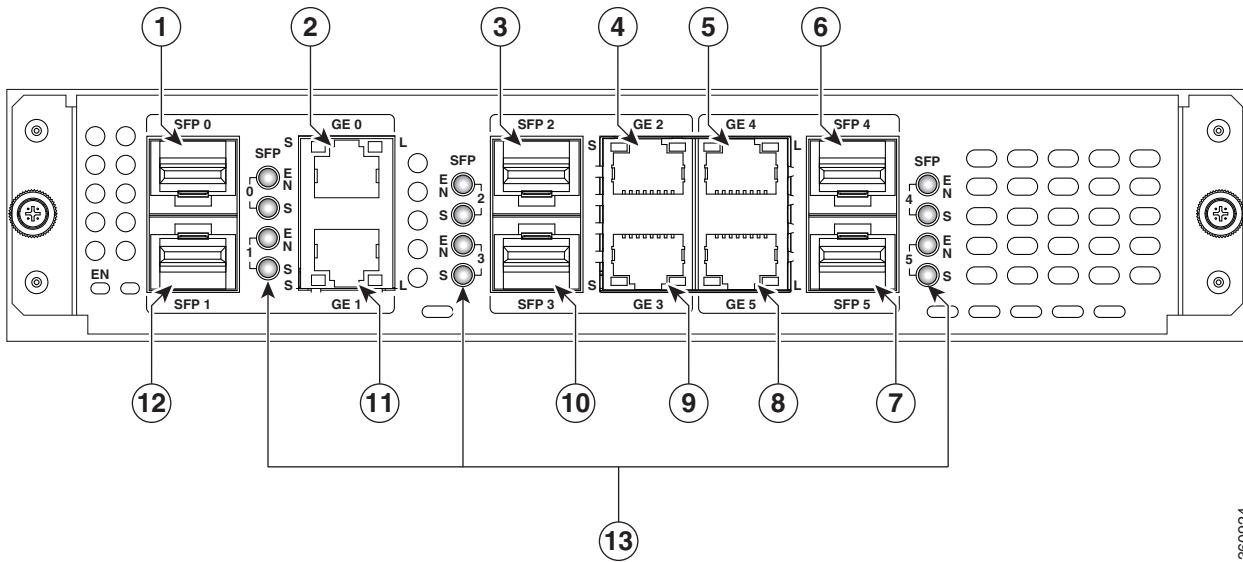
**Figure 3** Front Ports on the SM-X-4X1G-1X10G



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1	SFP0	6	GE3
2	GE0	7	GE1
3	GE2	8	SFP1
4	SFP2	9	LEDs
5	SFP3	10	SFP+

**Figure 4** Front Ports on the SM-X-6X1G



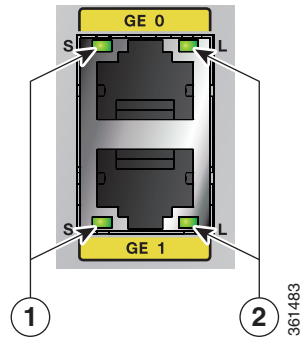
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1	SFP0	8	GE5
2	GE0	9	GE3
3	SFP2	10	SFP3
4	GE2	11	GE1
5	GE4	12	SFP1
6	SFP4	13	LEDs
7	SFP5		

# Service Module LEDs

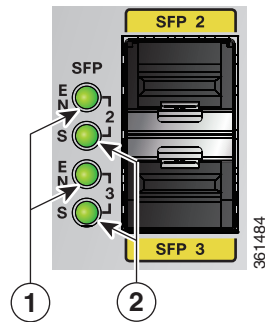
The Cisco SM-X-6X1G and Cisco SM-X-4X1G-1X10G enhanced service module includes several indicator LEDs. The following figures show the port LEDs on the service modules. [Table 1](#) describes the LEDs.

**Figure 5 GE Port LEDs**



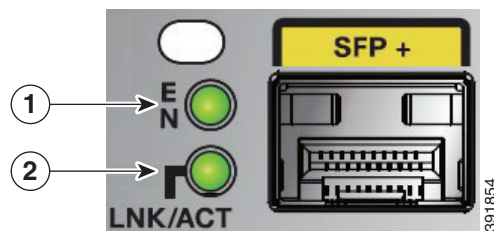
<b>1</b> S (speed) LED	<b>2</b> L (link status) LED
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**Figure 6 SFP LEDs**



<b>1</b> EN (port status) LED	<b>2</b> S (speed) LED
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**Figure 7 SFP+ LEDs**



<b>1</b> EN (port status) LED	<b>2</b> LNK/ACT (Link activity) LED
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**Table 1** Cisco SM-X-6X1G and Cisco SM-X-4X1G-1X10G Service Module LEDs

LED	Color	Description
EN (on service module)	Solid Green	The module is powered on and is functioning correctly.
	Solid Amber	Module has some failure.
	Off	Default when module is powered on for the first time. Persistent until changed by the host software.
S (GE port speed)	Off	No link.
	Blinking	Blink frequency indicates port speed: 1 blink—10 Mbps 2 blinks—100 Mbps 3 blinks—1000 Mbps
L (GE link status)	Off	No link.
	Solid green	Ethernet cable present and link established with the other side.
EN (SFP and SFP+ port status)	Off	One of the following: <ul style="list-style-type: none"> <li>Active media type is not SFP</li> <li>Active media type is SFP but SFP is not present</li> </ul>
	Solid green	Active media type is SFP, SFP type is valid, and there is no error in the SFP.
	Amber	Active media type is SFP, but SFP type is not valid or there is an error in the SFP.
S (SFP link speed)	Off	No link.
	Blinking	Blink frequency indicates port speed: 1 blink—10 Mbps 2 blinks—100 Mbps 3 blinks—1000 Mbps
LNK/ACT (SFP+ port)	Off	No link activity.
	Green	Link is stable with no activity.
	Blinking green	Link is stable with activity (constant blinking). <b>Note</b> The LNK LED will blink briefly while the module is booting.

# Conventions


**Note**

Means *reader take note*. Notes contain helpful suggestions or references to additional information and material.


**Caution**

This symbol means *reader be careful*. In this situation, you might do something that could result in equipment damage or loss of data.


**Tip**

Means *the following information will help you solve a problem*. The tips information might not be troubleshooting or even an action, but could be useful information, similar to a Timesaver.


**Warning**
**IMPORTANT SAFETY INSTRUCTIONS**

**This warning symbol means danger. You are in a situation that could cause bodily injury. Before you work on any equipment, be aware of the hazards involved with electrical circuitry and be familiar with standard practices for preventing accidents. Use the statement number provided at the end of each warning statement to locate its translation in the translated safety warnings that accompanied this device.** Statement 1071

**SAVE THESE INSTRUCTIONS**

# Safety Warnings


**Warning**

**Read the installation instructions before connecting the system to the power source.** Statement 1004


**Warning**

**Only trained and qualified personnel should be allowed to install, replace, or service this equipment.** Statement 1030


**Warning**

**This equipment must be installed and maintained by service personnel as defined by AS/NZS 3260. Incorrectly connecting this equipment to a general-purpose outlet could be hazardous. The telecommunications lines must be disconnected 1) before unplugging the main power connector or 2) while the housing is open, or both.** Statement 1043


**Warning**

**Before working on a system that has an on/off switch, turn OFF the power and unplug the power cord.** Statement 1



  
Warning

**This unit might have more than one power supply connection. All connections must be removed to de-energize the unit.** Statement 1028

  
Warning

**This equipment must be grounded. 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.** Statement 1024

  
Warning

**Hazardous network voltages are present in WAN ports regardless of whether power to the unit is OFF or ON. To avoid electric shock, use caution when working near WAN ports. When detaching cables, detach the end away from the unit first.** Statement 1026

  
Warning

**Before opening the unit, disconnect the telephone-network cables to avoid contact with telephone-network voltages.** Statement 1041

  
Warning

**Before working on equipment that is connected to power lines, remove jewelry (including rings, necklaces, and watches). Metal objects will heat up when connected to power and ground and can cause serious burns or weld the metal object to the terminals.** Statement 43

  
Warning

**Do not use this product near water; for example, near a bath tub, wash bowl, kitchen sink or laundry tub, in a wet basement, or near a swimming pool.** Statement 1035

  
Warning

**Never install telephone jacks in wet locations unless the jack is specifically designed for wet locations.** Statement 1036

  
Warning

**Never touch uninsulated telephone wires or terminals unless the telephone line has been disconnected at the network interface.** Statement 1037

  
Warning

**Avoid using a telephone (other than a cordless type) during an electrical storm. There may be a remote risk of electric shock from lightning.** Statement 1038

  
Warning

**To report a gas leak, do not use a telephone in the vicinity of the leak.** Statement 1039

  
Warning

**There is the danger of explosion if the battery is replaced incorrectly. Replace the battery only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions.** Statement 1015

**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

**Warning**

**No user-serviceable parts inside. Do not open.** Statement 1073

**Warning**

**For connections outside the building where the equipment is installed, the following ports must be connected through an approved network termination unit with integral circuit protection.**

T3, E3 Statement 1044

## Installing and Removing the Cisco SM-X-6X1G and Cisco SM-X-4X1G-1X10G on Cisco ISR 4400 Series Routers

This section describes the following tasks for the Cisco SM-X-6X1G and Cisco SM-X-4X1G-1X10G enhanced service module:

- [Software Requirements for the Cisco SM-X-6X1G and Cisco SM-X-4X1G-1X10G, page 11](#)
- [Removing the Cisco SM-X-6X1G and Cisco SM-X-4X1G-1X10G from the Router, page 11](#)
- [Installing the Cisco SM-X-6X1G and Cisco SM-X-4X1G-1X10G in the Router, page 12](#)
- [Verifying Cisco SM-X-6X1G and Cisco SM-X-4X1G-1X10G Installation in a Cisco Router, page 13](#)

**Caution**

Always wear an electrostatic discharge (ESD)-preventive wrist strap and ensure that it makes good contact with your skin when you remove or install a service module (SM). Connect the equipment end of the wrist strap to the metal part of the chassis.

**Caution**

Handle service modules (SMs) by the edges only. SMs are ESD-sensitive components and can be damaged by mishandling.

**Caution**

To comply with the Telcordia GR-1089 NEBS standard for electromagnetic compatibility and safety, connect the Gigabit Ethernet ports only to intra-building or unexposed wiring or cable. The intrabuilding cable must be shielded and the shield must be grounded at both ends. The intra-building port(s) of the equipment or subassembly must not be metallicly connected to interfaces that connect to the OSP or its wiring. These interfaces are designed for use as intra-building interfaces only (Type 2 or Type 4 ports as described in GR-1089-CORE) and require isolation from the exposed OSP cabling. The addition of Primary Protectors is not sufficient protection in order to connect these interfaces metallicly to OSP wiring.

## Software Requirements for the Cisco SM-X-6X1G and Cisco SM-X-4X1G-1X10G

Cisco IOS XE Release 3.11S or later release is required to operate the SM-X-6X1G and Cisco IOS XE Release 3.13S to operate the SM-X-4X1G-1X10G enhanced service module on a Cisco router. However, Cisco IOS XE Release 3.13.1 or later is the recommended version for both the SMs.

To determine the version of Cisco IOS software that is running on your router, log in to the router and enter the **show version** command:

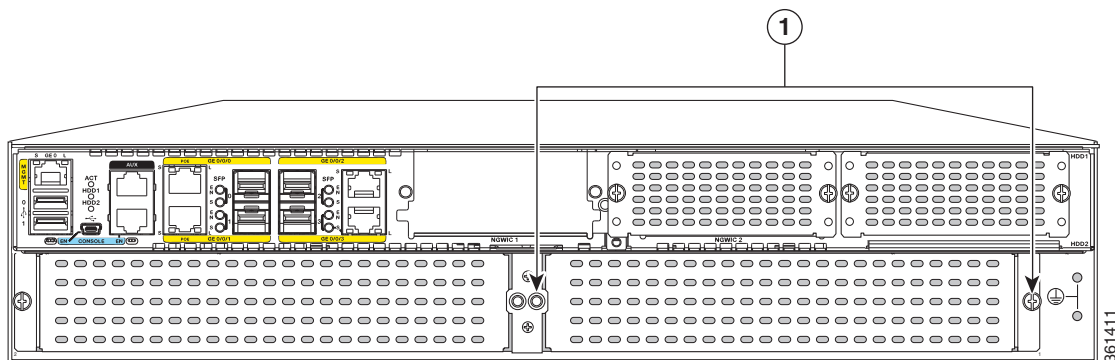
```
Router> show version
```

```
Cisco IOS XE Software, Version 2014-07-08_20.33_ciscouser
Cisco IOS Software, ISR Software (X86_64_LINUX_IOSD-UNIVERSALK9-M),
Version 15.4(20140709:015327) [v154_3_s_xe313_throttle-ciscouser-xe313_0708 101]
Copyright (c) 1986-2014 by Cisco Systems, Inc.
Compiled Tue 08-Jul-14 18:54 by ciscouser
```

## Removing the Cisco SM-X-6X1G and Cisco SM-X-4X1G-1X10G from the Router

Use the following procedure to remove the Cisco SM-X-6X1G and Cisco SM-X-4X1G-1X10G from a Cisco router:

- 
- Step 1** Read the “Safety Warnings” section on page 8 before you perform any module replacement.
  - Step 2** Locate the service module (SM) to be removed.
  - Step 3** Using a number 1 Phillips or flat-blade screwdriver, unscrew the captive mounting screws on the module faceplate. See Figure 8.

**Figure 8** Removing a module from the Router (Model Shown: Cisco ISR 4451-X)


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**1** Mounting screws on the module faceplate

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- Step 4** Pull the Cisco SM-X-6X1G and Cisco SM-X-4X1G-1X10G out of the chassis.
- Step 5** Place the SM in an antistatic bag to protect it from electrostatic discharge (ESD) damage.
- 

## Installing the Cisco SM-X-6X1G and Cisco SM-X-4X1G-1X10G in the Router

Use the following procedure to install the Cisco SM-X-6X1G and Cisco SM-X-4X1G-1X10G on a Cisco router:

- 
- Step 1** Read the “Safety Warnings” section on page 8 before you perform any module replacement.
- Step 2** Remove the blank faceplates installed over the slot you intend to use.
- Step 3** Push the Cisco SM-X-6X1G and Cisco SM-X-4X1G-1X10G into place until you feel the edge connector seat securely into the connector on the router backplane. The module faceplate should contact the chassis rear panel.
- Step 4** Using a number 1 Phillips or flat-blade screwdriver, tighten the captive mounting screws on the module faceplate.
-

## Verifying Cisco SM-X-6X1G and Cisco SM-X-4X1G-1X10G Installation in a Cisco Router

Use the **show diag** command to verify that the Cisco SM-X-6X1G and Cisco SM-X-4X1G-1X10G has been installed correctly.

In the following example, the SM-X-6X1G service module is recognized by the system.

```
router# show diag ?
  all      All related information
  chassis  Chassis related information
  slot     Slot location information for this command
  subslot  Subslot location information for this command

router# show diag subslot 1/0 eeprom detail
SPA EEPROM data for subslot 1/0:
  EEPROM version      : 4
  Compatible Type     : 0xFF
  Controller Type     : 3012
  Hardware Revision   : 1.0
  PCB Part Number     : 73-15667-04
  Top Assy. Part Number : 800-40597-01
  Board Revision      : 01
  Deviation Number    : 138372
  Fab Part Number     : 28-11352-04
  Fab Version         : 04
  PCB Serial Number   : FOC173618MY
  RMA Test History    : 00
  RMA Number          : 0-0-0-0
  RMA History         : 00
  Product Identifier (PID) : SM-X-6X1G
  Version Identifier (VID) : V00
  CLEI Code           :
  Base MAC Address    : A4 4C 11 CB 13 16
  MAC Address block size : 10
  Environment Monitor Data : 40 0B E3 43 00 4B
  Platform features   : 02 01 01 4B 00 01 01 00
                      01 03 00
```

In the following example, the SM-X-4X1G-1X10G service module is recognized by the system:

```
router# show diag ?
  all      All related information
  chassis  Chassis related information
  slot     Slot location information for this command
  subslot  Subslot location information for this command

Router# show diag subslot 1/0 eeprom detail
SPA EEPROM data for subslot 1/0:
  EEPROM version : 4
  Compatible Type : 0xFF
  Controller Type : 3013
  Hardware Revision : 1.0
  PCB Part Number : 73-15696-04
  Top Assy. Part Number : 800-40596-01
  Board Revision : 01
  Deviation Number : 138372
  Fab Part Number : 28-11352-04
  Fab Version : 04
  PCB Serial Number : FOC173618NC
  RMA Test History : 00
  RMA Number : 0-0-0-0
  RMA History : 00
  Product Identifier (PID) : SM-X-4X1G-1X10G
  Version Identifier (VID) : V00
  CLEI Code :
  Base MAC Address : A4 4C 11 CB 14 92
  MAC Address block size : 10
  Environment Monitor Data : 40 0B E3 43 00 4B
  Platform features : 02 01 01 4B 00 01 01 00
  01 03 00
```

## Additional References

- [Related Documents](#), page 15
- [Technical Assistance](#), page 15

## Related Documents

Related Topic	Document Title
Configuring Cisco SM-X-6X1G and Cisco SM-X-4X1G-1X10G software	<i><a href="#">Software Configuration Guide for the Cisco 6-port GE SFP Service Module and Cisco 4-port GE SFP and 1-port 10 GE SFP Service Module</a></i>
Regulatory compliance and safety information	<i><a href="#">Cisco Service Module Regulatory Compliance and Safety Information</a></i>

## Technical Assistance

Description	Link
The Cisco Support and Documentation website provides online resources to download documentation, software, and tools. Use these resources to install and configure the software and to troubleshoot and resolve technical issues with Cisco products and technologies. Access to most tools on the Cisco Support and Documentation website requires a Cisco.com user ID and password.	<a href="http://www.cisco.com/cisco/web/support/index.html">http://www.cisco.com/cisco/web/support/index.html</a>

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