

# Cisco 4000 Series Integrated Services Router Gigabit Ethernet WAN Modules Q&A

## Product Overview

Cisco Gigabit Ethernet WAN Modules bring high-density Small Form-Factor Pluggable (SFP) and copper (RJ-45) 1 Gigabit and 10 Gigabit Ethernet (GE) connectivity to the Cisco 4000 Series Integrated Services Routers (ISRs). Providing maximum flexibility, the modules accelerate applications such as Ethernet WAN access, inter-VLAN routing, and high-speed connectivity to LAN switches and servers.

Data-sheet: <http://www.cisco.com/c/en/us/products/collateral/routers/4400-series-integrated-services-routers-isr/datasheet-c78-730527.html>.

## General

**Q.** Which platforms support these modules?

**A.** The Cisco Gigabit Ethernet WAN Modules are generally supported on all Cisco ISR 4000 ISR routers, depending on slot availability. For a list of PIDs, supported platforms & IOS XE software versions, visit - [Cisco 4000 ISR - Interfaces & Modules](#).

**Q.** How many modules are supported per chassis?

**A.** There is no limitation on the number of modules supported per chassis. The maximum number is limited by the slot availability.

**Q.** What Cisco IOS Software features do these modules support?

**A.** The modules are based on the technology of the onboard Gigabit Ethernet and SFP ports on the Cisco 4000 Series ISRs. Cisco IOS Software feature support is therefore identical to that of the onboard ports.

**Q.** Are there any differences between the onboard Gigabit Ethernet ports and the Cisco Gigabit Ethernet WAN Service Modules?

**A.** The feature set of the onboard Gigabit Ethernet ports is the same as that for the Cisco Gigabit Ethernet WAN Service Modules with a few hardware-dependent differences:

- Onboard Gigabit Ethernet ports support Power over Ethernet (PoE), but the Cisco Gigabit Ethernet WAN Service Modules do not.
- The Cisco Gigabit Ethernet WAN Service Modules support ingress quality of service (QoS) (Physical Layer Interface Module [PLIM]), but onboard Gigabit Ethernet ports & Network Interface Modules do not.
- The 2-port NIM module is MACSec capable (IOS XE 3.16).

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- Q.** The Cisco 6-Port Gigabit Ethernet Service Module has 12 interfaces. How many of those can be used simultaneously?
- A.** The Cisco 6-Port Gigabit Ethernet Service Module is a singlewide enhanced service module with 6 dual-identity ports for routed Layer 3 services. Each dual-identity port pair consists of an RJ-45 copper connector and an SFP slot. Either the SFP or the RJ-45 can be active, but not both at the same time. If both the SFP and the RJ-45 port of the same port pair are connected and have detected an active link at startup, the RJ-45 port will, by default, become active.

For a list of SFPs supported, please refer to the [Cisco 4000 Series ISR - Interfaces & Modules](#).

- Q.** The Cisco 4-Port Gigabit or 1-Port 10 Gigabit Ethernet Service Module has nine interfaces. How many of them can be used simultaneously?
- A.** The Cisco 4-Port Gigabit or 1-Port 10 Gigabit Ethernet Service Module operates in two mutually exclusive modes: 10 Gigabit mode or 1 Gigabit mode. In the 10 Gigabit mode, only the SFP+ interface can be used and all other gigabit ports are disabled. In the 1 Gigabit mode, the 10 Gigabit Ethernet SFP+ port is disabled. Like the 6-Port Gigabit Ethernet module, either the SFP or the RJ-45 can be active, but not both at the same time. If both the SFP and the RJ-45 port of the same port pair are connected and have detected an active link at startup, the RJ-45 port will, by default, become active.

For a list of SFPs supported, please refer to the [Cisco 4000 Series ISR - Interfaces & Modules](#).

- Q.** Do these modules connect to the Multi-Gigabit Fabric (MGF)?
- A.** Yes, but not in the same way as a switch module. These modules do not allow for module-to-module communication such as a switch or Cisco Unified Computing System™ (Cisco UCS) E-Series Servers. Instead the Gigabit Ethernet WAN Service Modules simply use the MGF to reach the router processing architecture.
- Q.** Is switching supported between the ports on these modules?
- A.** No. The host routes all traffic entering ports on the modules. These modules do not support Layer 2 switching of traffic between local ports or between SM-X ports and other ports within the router system. VLAN information will not be switched onto other ports in the system.
- Q.** What is the maximum throughput on the Cisco Gigabit Ethernet WAN Service Modules?
- A.** These modules are so-called “routed-port” modules, meaning that all traffic to and from the ports on them are routed through the host router. As such, the maximum throughput of the Cisco Gigabit Ethernet WAN Service Modules is mandated by the host router and not by the module itself. E.g. The Cisco 4451-X ISR has two throughput levels of 1 Gbps (factory default) or 2 Gbps level with the Cisco IOS Software feature Performance on Demand License. The maximum total throughput of a Cisco Gigabit Ethernet WAN Service Module will be one of these two.
- Q.** Which SFPs are supported on the Cisco Gigabit Ethernet WAN Service Modules?
- A.** The [Cisco 4000 Series ISR - Interfaces & Modules](#) provides the full list of supported SFPs.
- Q.** What speeds are supported by the copper Gigabit Ethernet RJ-45 ports?
- A.** Supported speeds are 10, 100, and 1000 Mbps with auto-negotiation.
- Q.** Do the Cisco Gigabit Ethernet WAN Service Modules support 10/100BASE by using 1000BASE SFPs?
- A.** No. Because each of the ports of the module includes an RJ-45 option, copper Ethernet SFPs are not supported.

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- Q.** Do the Cisco Gigabit Ethernet WAN Service Modules support field-replaceable SFP modules?
- A.** Yes.
- Q.** Is PoE supported?
- A.** No.
- Q.** Is digital optical monitoring (DOM) supported?
- A.** Yes.
- Q.** Is online insertion and removal (OIR) supported for modules in the NIM & SM-X slots?
- A.** Yes.
- Q.** Is OIR supported on the SFP module slot?
- A.** Yes. OIR is supported on the SFP module slot. When the SFP is inserted and removed while the system is operational, a syslog message is generated.
- Q.** Does the OIR support mean that I can install a new Cisco Gigabit Ethernet WAN Service Module while the router is in operation?
- A.** Yes. The Cisco 4000 ISR supports any-to-any OIR, meaning you can swap the modules of different type.

## Features

- Q.** Is interface auto-switchover & auto-failover between SFP and RJ-45 connections supported?
- A.** Yes, auto-switchover & auto-failover is supported on the RJ-45 and SFP dual-identity ports on the modules, as well as on the on-board dual-identity RJ-45 and SFP ports on the Cisco 4000 ISR chassis. This support was introduced in IOS XE 3.15. This feature may not be supported with all SFP transceiver modules.
- Q.** Is trunking supported on these Cisco modules?
- A.** Yes. Layer 2 trunks from externally connected switches are supported. The Cisco module ports, however, will terminate Layer 2 trunks the same way as for onboard ports. All traffic coming in on a trunk will be routed through the host router, and not switched.
- Q.** Is 802.1ad QinQ termination supported?
- A.** Yes.
- Q.** What trunking protocols are supported?
- A.** Only 802.1Q is supported. Cisco Inter-Switch Link (ISL) is not supported; it is proprietary to Cisco and is not commonly deployed.
- Q.** Is MACsec supported on the Cisco Gigabit Ethernet WAN Service Modules?
- A.** 256-bit MACsec is supported on the 2-port NIM module starting with IOS XE 3.16.
- Q.** Is Cisco TrustSec® security supported on the modules?
- A.** Cisco TrustSec security is a host feature in Cisco IOS XE Software; support depends on the Cisco IOS Software release.
- Q.** Is IEEE1588 clock synchronization supported on the Cisco Gigabit Ethernet WAN Service Modules?
- A.** No.
- Q.** Is ITU-T Y.1731 performance monitoring supported on the modules?
- A.** No.

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**Q.** Are Jumbo Frames supported?

**A.** Yes. The maximum transmission unit (MTU) is user-configurable and can be set from 64 to 9188 bytes. The MTU specifies the size of the Ethernet packet payload, excluding the Ethernet header.

**Q.** Is flow control supported?

**A.** Yes. The Cisco Gigabit Ethernet WAN Service Modules support 802.3x PAUSE frames operation for transmit and receive control.

**Q.** Where can I find instructions for configuring these modules?

**A.** For configuration instructions, refer to the “Configuring Ethernet, Fast Ethernet, or Gigabit Ethernet Interfaces” chapter of the document Configuring LAN Interfaces. The guidelines in this chapter apply to all Cisco modular access routers.

## Technical Assistance

The [Cisco Support](#) website provides extensive online resources, including documentation and tools for troubleshooting and resolving technical problems with Cisco products and technologies.

To receive security and technical information about your products, you can subscribe to various services, such as the [Cisco Notification Service](#), the [Cisco Technical Services Newsletter](#), and [Really Simple Syndication \(RSS\)](#) feeds.

Access to most tools on the Cisco Support website requires a Cisco.com user ID and password.



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