

Cisco Enhanced High-Speed WAN Interface Cards

Cisco Gigabit Ethernet Dual-Identity Small Form-Factor Pluggable and Copper Enhanced High-Speed WAN Interface Card.

- Q.** What is a Cisco® Enhanced High-Speed WAN Interface Card (EHWIC)?
- A.** The Cisco High-Speed WAN Interface Card (EHWIC) is an updated and enhanced version of the current HWIC for the Cisco Integrated Services Router Generation 2 (ISR G2). The EHWIC offers greater speeds (up to 800 Mbps bidirectionally) and higher port density than the current WIC. It also has a third row of pins for increased power to the cards, as well as support for Enhanced Power over Ethernet (EPoE) with up to 20 watts per port. Furthermore, the EHWICs have a connection to the traditional router CPU and the new Multi-Gigabit Fabric (MGF) backplane. EHWICs are available in single-wide and double-wide form factors.
- Q.** What is the EHWIC-1GE-SFP-CU?
- A.** The EHWIC-1GE-SFP-CU is a single-wide EHWIC with one Small Form-Factor Pluggable (SFP) slot. It has two ports: an SFP port and an RJ-45 copper connector port. Either the SFP or the RJ-45 can be active, but not both at the same time. For a list of SFPs supported, please refer to Table 1 later in this document.
- Q.** Which platforms are supported?
- A.** Cisco 1921, 1941, 1941W, 2900, 3900, and 3900E ISRs
- Q.** Is PoE supported?
- A.** No.
- Q.** Does the EHWIC-1GE-SFP-CU connect to the MGF?
- A.** No. This low-cost module connects only to the router's CPU.
- Q.** Are there differences between the on-board Gigabit Ethernet ports and the EHWIC-1GE-SFP-CU?
- A.** The feature sets of the on-board Gigabit Ethernet ports and the EHWIC-1GE-SFP-CU are the same.
- Q.** What is the maximum throughput on the Gigabit Ethernet EHWIC?
- A.** The maximum theoretical throughput for the EHWIC-1GE-SFP-CU is 800 Mbps. Actual performance is based on the router's CPU and is dependent on the router model.
- Q.** Is digital optical monitoring (DOM) supported?
- A.** Yes. The following DOM-related commands are supported:
- show int transceiver
 - show int transceiver detail
 - show int transceiver threshold table
 - show int transceiver supported-list
 - show int transceiver threshold violations
 - show int <interface> transceiver
 - show int <interface> transceiver detail

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show int <interface> transceiver threshold table
show int <interface> transceiver threshold violations
show controller <interface> | incl Diag

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- Q.** Is online insertion and removal (OIR) supported for modules in the EHWIC slots?
- A.** No. OIR of modules in the EHWIC slots is not supported.
- Q.** Which Cisco IOS® Software release and feature set is required?
- A.** Cisco IOS Software Release 15.1(4)M is required.
- Q.** How many EHWIC-1GE-SFP-CU cards are supported per chassis?
- A.** Table 1 lists the supported platforms and number of modules supported on each.

Table 1. Supported Platforms

Supported Platforms	Number of Modules Supported
Cisco 3945E ISR	3
Cisco 3925E ISR	3
Cisco 3945 ISR	4
Cisco 3925 ISR	4
Cisco 2951 ISR	4
Cisco 2921 ISR	4
Cisco 2911 ISR	4
Cisco 2901 ISR	4
Cisco 1941W ISR	2
Cisco 1941 ISR	2
Cisco 1921 ISR	1

- Q.** Which SFPs are supported on the EHWIC-1GE-SFP-CU?
- A.** Table 2 lists the supported part numbers and modules.

Table 2. Supported Part Numbers and Modules

Part Number	Description
EHWIC-1GE-SFP-CU	Enhanced HWIC, Dual Mode 1 port SFP/Copper
Standard SFPs	
GLC-LH-SM=	GE SFP, LC connector LX/LH transceiver
GLC-SX-MM=	GE SFP, LC connector SX transceiver
GLC-ZX-SM=	1000BASE-ZX SFP
GLC-T=	1000BASE-T SFP
GLC-BX-D=	1000BASE-BX SFP, 1490NM
GLC-BX-U=	1000BASE-BX SFP, 1310NM
GLC-FE-100FX=	100BASE-FX SFP for FE port
GLC-FE-100LX=	100BASE-LX SFP for FE port
GLC-FE-100EX	100BASE-EX SFP for FE port
GLC-FE-100ZX	100BASE-XX SFP for FE port
GLC-FE-100BX-U=	100BASE-BX10-U SFP
GLC-FE-100BX-D=	100BASE-BX10-D SFP

Part Number	Description
GLC-GE-100FX=	100BASE-FX SFP for GE SFP port on 3750, 3560, 2970, 2960
CWDM SFPs	
CWDM-SFP-1470=	CWDM 1470 NM SFP Gigabit Ethernet and 1G/2G FC
CWDM-SFP-1490=	CWDM 1490 NM SFP Gigabit Ethernet and 1G/2G FC
CWDM-SFP-1510=	CWDM 1510 NM SFP Gigabit Ethernet and 1G/2G FC
CWDM-SFP-1530=	CWDM 1530 NM SFP Gigabit Ethernet and 1G/2G FC
CWDM-SFP-1550=	CWDM 1550 NM SFP Gigabit Ethernet and 1G/2G FC
CWDM-SFP-1570=	CWDM 1570 NM SFP Gigabit Ethernet and 1G/2G FC
CWDM-SFP-1590=	CWDM 1590 NM SFP Gigabit Ethernet and 1G/2G FC
CWDM-SFP-1610=	CWDM 1610 NM SFP Gigabit Ethernet and 1G/2G FC
DWDM SFPs	
DWDM-SFP-3033=	DWDM SFP 1530.33 nm SFP (100 GHz ITU grid)
DWDM-SFP-3112=	DWDM SFP 1531.12 nm SFP (100 GHz ITU grid)
DWDM-SFP-3190=	DWDM SFP 1531.90 nm SFP (100 GHz ITU grid)
DWDM-SFP-3268=	DWDM SFP 1532.68 nm SFP (100 GHz ITU grid)
DWDM-SFP-3346=	DWDM SFP 1533.47 nm SFP (100 GHz ITU grid)
DWDM-SFP-3425=	DWDM SFP 1534.25 nm SFP (100 GHz ITU grid)
DWDM-SFP-3504=	DWDM SFP 1535.04 nm SFP (100 GHz ITU grid)
DWDM-SFP-3582=	DWDM SFP 1535.82 nm SFP (100 GHz ITU grid)
DWDM-SFP-3661=	DWDM SFP 1536.61 nm SFP (100 GHz ITU grid)
DWDM-SFP-3739=	DWDM SFP 1537.40nm SFP (100 GHz ITU grid)
DWDM-SFP-3819=	DWDM SFP 1538.19 nm SFP (100 GHz ITU grid)
DWDM-SFP-3898=	DWDM SFP 1538.98 nm SFP (100 GHz ITU grid)
DWDM-SFP-3977=	DWDM SFP 1539.77 nm SFP (100 GHz ITU grid)
DWDM-SFP-4056=	DWDM SFP 1540.56 nm SFP (100 GHz ITU grid)
DWDM-SFP-4134=	DWDM SFP 1541.35nm SFP (100 GHz ITU grid)
DWDM-SFP-4214=	DWDM SFP 1542.14 nm SFP (100 GHz ITU grid)
DWDM-SFP-4294=	DWDM SFP 1542.94 nm SFP (100 GHz ITU grid)
DWDM-SFP-4373=	DWDM SFP 1543.73 nm SFP (100 GHz ITU grid)
DWDM-SFP-4453=	DWDM SFP 1544.53 nm SFP (100 GHz ITU grid)
DWDM-SFP-4532=	DWDM SFP 1545.32nm SFP (100 GHz ITU grid)
DWDM-SFP-4612=	DWDM SFP 1546.12 nm SFP (100 GHz ITU grid)
DWDM-SFP-4692=	DWDM SFP 1546.92 nm SFP (100 GHz ITU grid)
DWDM-SFP-4772=	DWDM SFP 1547.72 nm SFP (100 GHz ITU grid)
DWDM-SFP-4851=	DWDM SFP 1548.51 nm SFP (100 GHz ITU grid)
DWDM-SFP-4931=	DWDM SFP 1549.32nm SFP (100 GHz ITU grid)
DWDM-SFP-5012=	DWDM SFP 1550.12 nm SFP (100 GHz ITU grid)
DWDM-SFP-5092=	DWDM SFP 1550.92 nm SFP (100 GHz ITU grid)
DWDM-SFP-5172=	DWDM SFP 1551.72 nm SFP (100 GHz ITU grid)
DWDM-SFP-5252=	DWDM SFP 1552.52 nm SFP (100 GHz ITU grid)
DWDM-SFP-5332=	DWDM SFP 1553.33nm SFP (100 GHz ITU grid)
DWDM-SFP-5413=	DWDM SFP 1554.13 nm SFP (100 GHz ITU grid)
DWDM-SFP-5494=	DWDM SFP 1554.94 nm SFP (100 GHz ITU grid)
DWDM-SFP-5575=	DWDM SFP 1555.75 nm SFP (100 GHz ITU grid)

Part Number	Description
DWDM-SFP-5655=	DWDM SFP 1556.55 nm SFP (100 GHz ITU grid)
DWDM-SFP-5736=	DWDM SFP 1557.36nm SFP (100 GHz ITU grid)
DWDM-SFP-5817=	DWDM SFP 1558.17 nm SFP (100 GHz ITU grid)
DWDM-SFP-5898=	DWDM SFP 1558.98 nm SFP (100 GHz ITU grid)
DWDM-SFP-5979=	DWDM SFP 1559.79 nm SFP (100 GHz ITU grid)
DWDM-SFP-6061=	DWDM SFP 1560.61 nm SFP (100 GHz ITU grid)
DWDM-SFP-6141=	DWDM SFP 1561.42 nm SFP (100 GHz ITU grid)
Third-Party SFPs	
PX-20 Optics=	Third-party: Finisar-Broadway EPON ONU SFP w/Teknovus Chipset
PX-20+ Optics=	Third-party: Finisar-Broadway EPON ONU SFP w/Teknovus Chipset
MiRIC-based T1/T3/E1/E3 over Ethernet	Third Party: SFP Availability In May 2011. These SFPs will work only in the EHWQIC-1GE-SFP-CU and are not interchangeable with similar products.

Q. Is OIR supported on the SFP module slot?

A. Yes. OIR is supported on the SFP module slot. If the SFP is inserted and removed while the system is operational, a syslog message like the following is generated:

%EHWIC_1GE_SFP-6-SFP_IN: Interface GigabitEthernet0/2/0 1000BaseT SFP has been inserted

%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/2/0, changed state to up

%EHWIC_1GE_SFP-6-SFP_OUT: Interface GigabitEthernet0/2/0 SFP has been removed

%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/2/0, changed state to down

Q. Are jumbo frames supported?

A. Yes. The maximum transmission unit (MTU) is user-configurable and can be set from 64 to 9576 bytes. The MTU specifies the size of the Ethernet packet payload, excluding the Ethernet header.

Q. Is Cisco EtherChannel supported?

A. Yes. Cisco EtherChannel is supported for link redundancy, and can only be set up manually. Negotiation protocols such as Link Aggregation Control Protocol (LACP) (IEEE 802.ad) and Port Aggregation Protocol (PAgP) are not supported.

Q. Is flow control supported?

A. Yes. The EHWIC supports IEEE 802.3x Pause frames operation for transmit and receive control.

Q. What trunking protocols are supported?

A. Only IEEE 802.1Q is supported. Inter-Switch Link (ISL) is not supported; it is proprietary to Cisco and is not commonly deployed.

Q. What modes of loopback are supported?

A. Gigabit Ethernet EHWIC supports loopback at the transceiver level and the MAC controller level:

Router(config-if)#loopback ?

driver Loopback at the transceiver level

mac Loopback at the MAC controller level

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Q. Does EHWIC-1GE-SFP-CU support 10/100BASE by using 1000BASE SFPs?

A. Yes.

Q. What are some of the possible applications of the EHWIC-1GE-SFP-CU?

A. The EHWIC-1GE-SFP-CU is intended for:

- Low-cost, high-speed, and long-distance connectivity for all Cisco ISRs to metropolitan backbones
- Gigabit Ethernet uplink for WAN gateways as an upgrade from Fast Ethernet
- Access link between customer premises equipment (CPE) and service provider points of presence (POPs); this setup targets metropolitan-area applications for which Gigabit Ethernet-based services are available from service providers
- VLAN access trunk supporting multiple customers and multiple VLANs from the same CPE
- High-speed short- and long-distance connectivity in the wiring closet or in the same building
- Interoffice connectivity to avoid expensive leased lines



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