



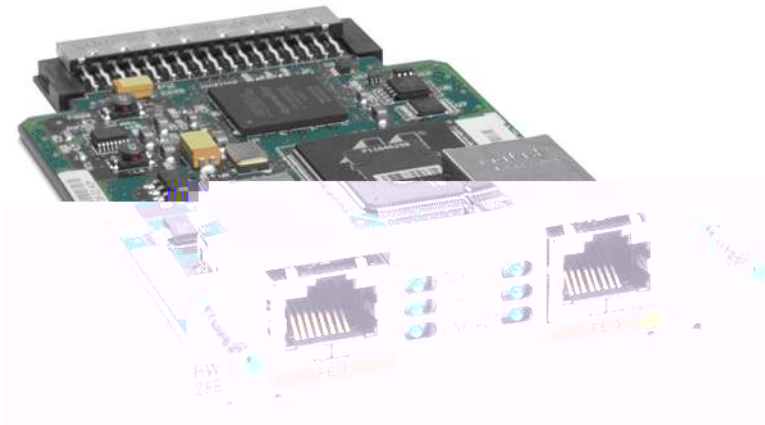
## 1- and 2-Port Fast Ethernet High-Speed WAN Interface Cards for Cisco 1841, 2800, and 3800 Series Integrated Services Routers

### Overview

The Layer 3 Cisco® 1- and 2-Port Fast Ethernet High-Speed WAN interface cards (HWICs) (see Figures 1 and 2) supported on the Cisco 1841, Cisco 2800, and Cisco 3800 Series Integrated Services Routers offer small-to-large-sized businesses and enterprise branch-office customers the option to add Layer 3 routed ports with many advanced features, including quality-of-service (QoS) and rate-limiting capabilities.

**Note:** The 2-port (HWIC-2FE) card is offered on the Cisco 3800 Series Routers only. The 2-port card is not supported on the Cisco 1841 nor the Cisco 2800 Series Integrated Services Routers.

**Figure 1.** Cisco 2-Port Fast Ethernet Layer 3 HWIC for Cisco 3825 and 3845 Integrated Services Routers



**Figure 2.** Cisco 1-Port Fast Ethernet Layer 3 HWIC for Cisco 1841, Cisco 2800, and Cisco 3800 Series Integrated Services Routers



Table 1 provides router support information for the HWIC cards.

**Table 1.** Platform Support

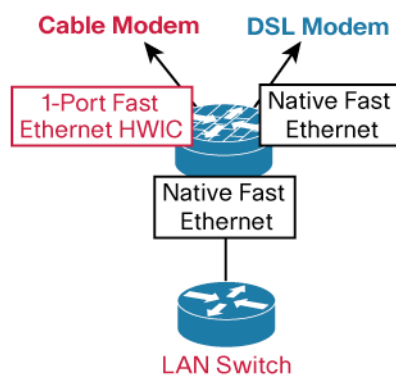
Router	Maximum No. of Cards per Chassis		Maximum No. of Additional Layer 3 Fast Ethernet Ports
	Cisco 1-Port Fast Ethernet HWIC	Cisco 2-Port Fast Ethernet HWIC	
Cisco 1841	1	0	1
Cisco 2801	2	0	2
Cisco 2811	2	0	2
Cisco 2821	2	0	2
Cisco 2851	2	0	2
Cisco 3825	4	2	6
Cisco 3845	4	4	8

**Note:** For the HWIC-1FE and HWIC-2FE the minimum level is Cisco IOS 12.4(15)T.

## Applications

The new HWICs provide additional Layer 3 routed ports with features equivalent to those on the motherboard of the integrated services routers. These Fast Ethernet interfaces can be used for physical LAN segregation, creation of a demilitarized zone (DMZ), or as a WAN interface. Broadband customers can use them to connect to an alternate provider that delivers service on an Ethernet port.

**Figure 3.** The Fast Ethernet HWIC Enables Branch Offices to Cost-Effectively Use High-Speed Broadband Uplinks in Numerous Environments



Additional Broadband Access with Full QoS and Rate Limiting, HSRP, and Other Capabilities

In a branch office, the Cisco 1-Port Fast Ethernet HWIC provides a high-speed broadband uplink (Figure 4).

**Figure 4.** Broadband Access with Additional Layer 3-Port Fast Ethernet HWIC

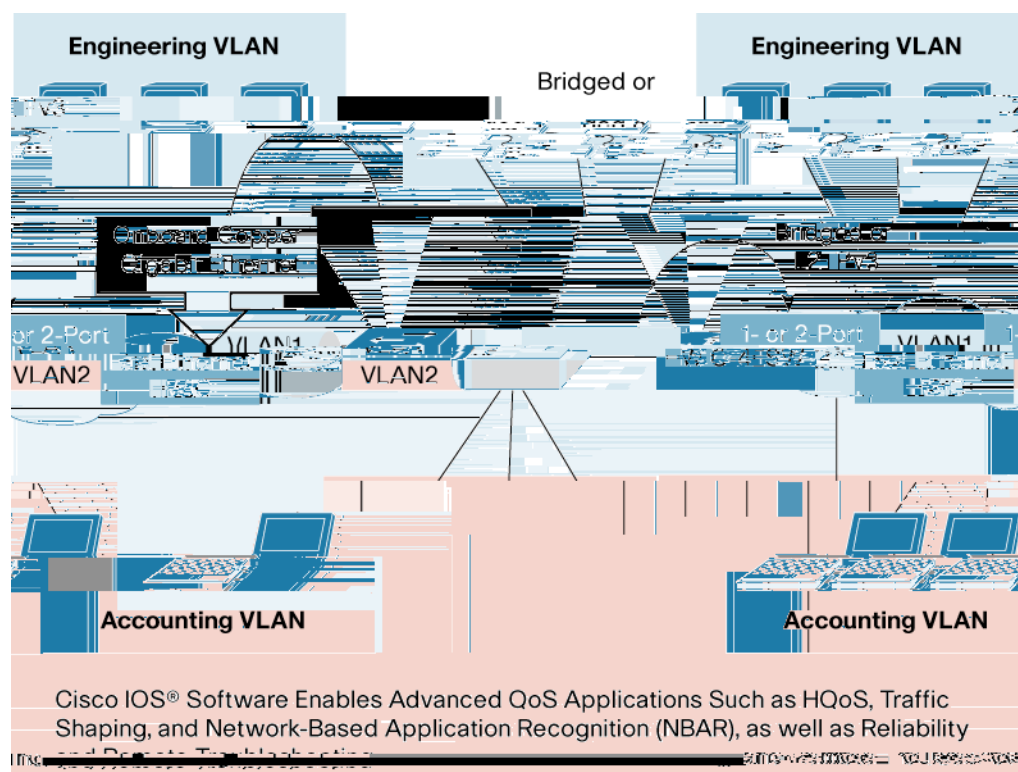
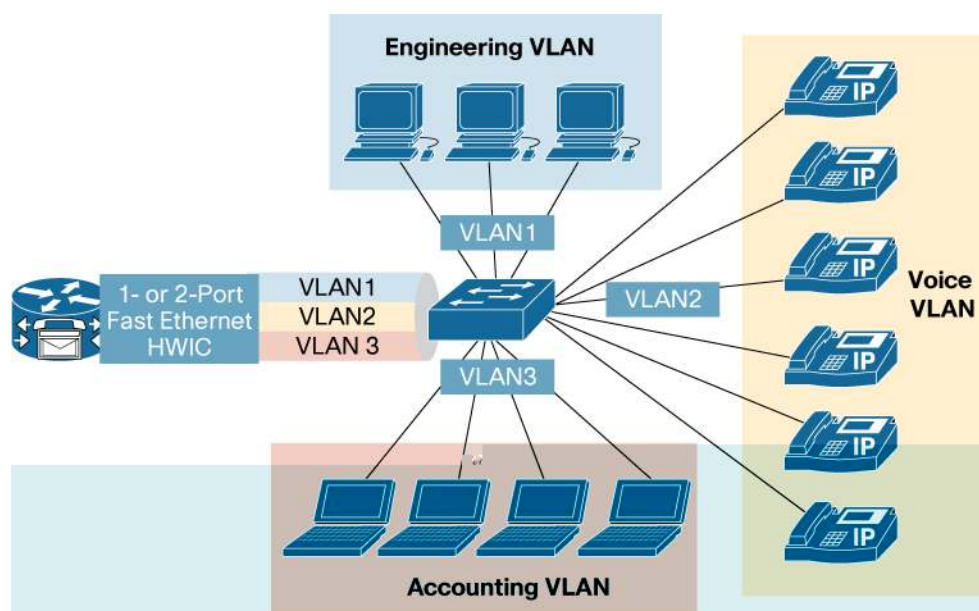


Figure 5 shows the HWIC being used to bridge nonroutable protocols while providing Layer 3 connectivity. The HWIC is also useful in situations that require IEEE 802.1q inter-VLAN.

**Figure 5.** VLAN Trunking Application—LAN Segmentation with Layer 3 Fast Ethernet Switch HWIC



## Summary

The Cisco Fast Ethernet HWICs are singlewide interface cards, available as a 1-port HWIC (HWIC-1FE) and as a 2-port HWIC (HWIC-2FE), that provide Cisco modular and integrated services routers with additional Layer 3 routed ports.

## Specifications

### Feature Highlights

The Fast Ethernet routed ports on the HWICs have the same characteristics and features as the onboard LAN interfaces for the integrated-services-router platforms. Along with Layer 3 connectivity, such as per-port access control lists (ACLs), routing, and IP addressing, these HWICs provide functions equivalent to those of onboard Fast Ethernet routed ports. The following is a partial list of features supported in Cisco IOS® Software for the Fast Ethernet HWICs:

### Ethernet and VLAN Features

- IEEE802.3 with IEEE802.2 Service Advertising Protocol (SAP)
- IEEE802.3 with IEEE802.2 and Subnetwork Access Protocol (SNAP)
- IEEE 802.1Q VLAN tagging
- Flow control (802.3x)
- Autosensing, autonegotiation, and automatic media-dependent interface crossover (Auto-MDIX)
- Unique MAC address (not shared with any other interface on the router), assigned MAC address to interface, and subinterfaces
- Network Management Features
- CiscoWorks
- Simple Network Management Protocol (SNMP) support
- Cisco NetFlow accounting

### QoS Features

- Weighted Random Early Detection (WRED)
- Precedence setting and mapping (802.1p)
- Committed access rate (CAR)
- ACLs
- MAC address filtering
- Extended ACLs
- Voice and remaining QoS features, per platform and per Cisco IOS Software release

### Additional Features

- Cisco Group Management Protocol and Internet Group Management Protocol (IGMP) for multicasting
- High availability, supporting Hot Standby Router Protocol (HSRP), Virtual Router Redundancy Protocol (VRRP), and Gateway Load Balancing Protocol (GLBP)
- MPLS features as supported by platform
- Generic routing encapsulation (GRE)
- IPv6

- IP Security (IPsec) (crypto map)
- Layer 2 Tunneling Protocol Version 3 (L2TPv3) tunnel termination
- Dynamic Host Configuration Protocol (DHCP) client and server
- Network Address Translation (NAT)
- Generic Traffic Shaping (GTS)
- Media Gateway Control Protocol (MGCP) bind
- IBM features
- Point-to-Point Protocol over Ethernet (PPPoE) client
- Bridging

MIBs supported by the HWIC-1FE and HWIC-2FE

- ENTITY-MIB
- IF-MIB
- OLD-CISCO-CHASSIS-MIB
- RMON-MIB
- ETHERLIKE-MIB
- CISCO-ENT-ASSET-MIB
- CISCO-ENTITY-FRU-CONTROL-MIB

**Note:** These two HWIC modules do not support Jumbo Frames.

Agency Approvals

- UL 1950 (United States)
- CSA-C22.2 #950 (Canada)
- EN60950 (Europe)
- TUV GS (Germany)
- IEC 950 (International)

Immunity

- EN300386
- EN55024 and CISPR24
- EN50082-1

Emissions

- FCC Part 15
- Class A ICES-003
- Class A EN55022
- Class A CISPR22
- Class A AS and NZS 3548
- Class A VCCI
- Class A EN 300386 EN61000-3-3 EN61000-3-2

### Form Factor

- Singlewide HWIC form factor

- 3.08 x 4.74 x 0.76 in.

- 1-Port: 0.14 lbs or 2.24 oz.
- 2-Port: 0.16 lbs or 2.56 oz.

- Operating temperature: 32 to 104°F (0 to 40°C)
- Storage temperature: -4 to 149°F (-20 to 65°C)

Relative humidity: 10 to 90%, noncondensing

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