

One- and 2-Port Serial and Asynchronous High-Speed WAN Interface Cards for Cisco 1800, 1900, 2800, 2900, 3800, and 3900 Series Integrated Services Routers

Serial and asynchronous high-speed WAN interface cards (HWICs) provide highly flexible connections for Cisco® 1800, 1900, 2800, 2900, 3800, and 3900 Series Integrated Services Routers. These HWICs help customers enable applications such as WAN access, legacy protocol transport, console server, and dial access server. You can mix and match HWICs to tailor cost-effective solutions for common networking problems such as remote network management, external dial-modem access, low-density WAN aggregation, legacy protocol transport, and high-port-density support.

Cisco offers four new serial and asynchronous HWICs:

- Cisco 1-Port T1/Fractional T1 DSU/CSU WAN Interface Card (HWIC-1DSU-T1)
- Cisco 1-Port Serial WAN Interface Card (HWIC-1T)
- Cisco 2-Port Serial WAN Interface Card (HWIC-2T)
- Cisco 2-Port Asynchronous/Synchronous Serial WAN Interface Card (HWIC-2A/S)

Figure 1. Cisco 1- and 2-Port Serial and Asynchronous HWICs



Common Applications

These highly flexible interface cards facilitate several important applications:

- WAN access and aggregation
- Legacy protocol transport
- Dial access server

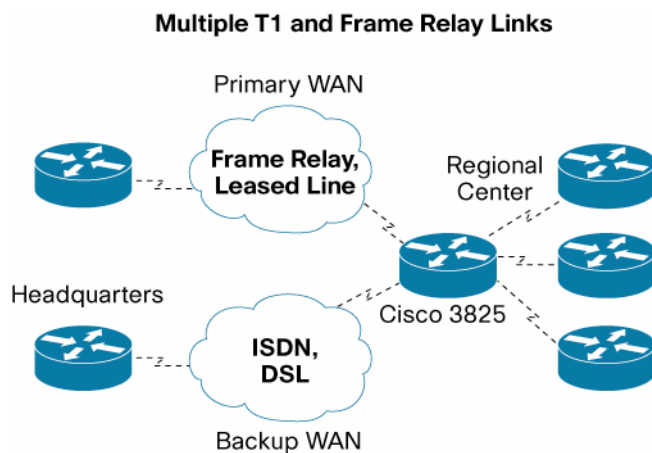
WAN Access and Aggregation

Serial interfaces can be used to provide WAN access for remote sites. With support for serial speeds up to 8 Mbps per port, the 2-port serial HWIC is ideal for low- and medium-density WAN aggregation (Figure 2).

The HWIC-1DSU-T1 also offers an integrated CSU/DSU, simplifying configuration and management. Integration allows management of the router and CSU/DSU as a single SNMP entity

while also providing detailed troubleshooting capabilities. Troubleshooting features include self-test, loopbacks, CSU/DSU reset, alarm counters, and T1 statistics.

Figure 2. WAN Concentration



Legacy Protocol Transport

Serial and synchronous/asynchronous ports are ideally suited to transport legacy traffic across a TCP/IP network, facilitating network convergence (Figure 3) and eliminating costly separate leased lines for this traffic. Legacy protocols supported by Cisco IOS® Software include:

- Systems Network Architecture (SNA) and Synchronous Data Link Control (SDLC) Protocol
- Binary Synchronous Communications Protocol (Bisync)
- X.25 Protocol

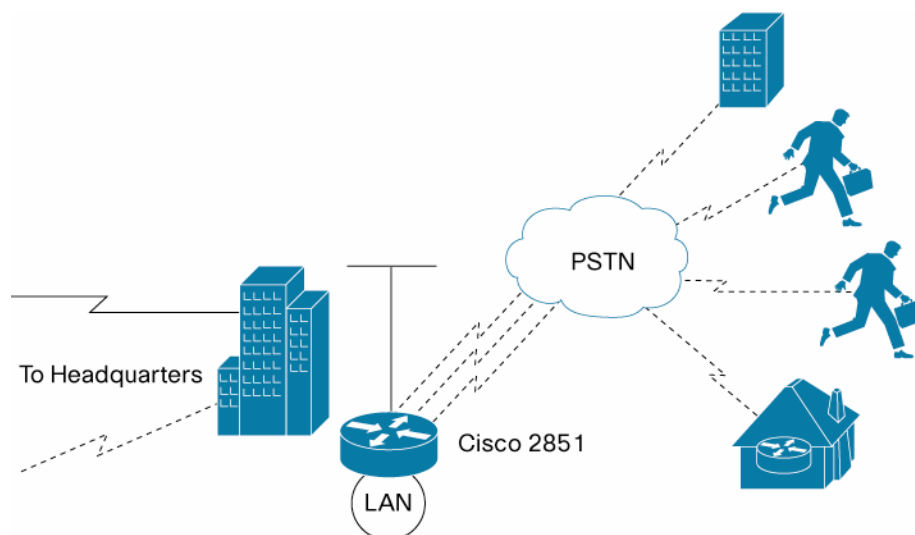
Figure 3. Network Convergence



Dial Access Server

Asynchronous HWICs can connect to external dial modems to provide low-density dial access servers (Figure 4).

Figure 4. Dial Access Server



Ordering Information

Table 1. Cisco 1- and 2-Port Serial and Asynchronous HWICs

Part Number	Description
HWIC-1DSU-T1	1-Port T1/Fractional T1 DSU/CSU WAN Interface Card
HWIC-1T	1-Port Serial WAN Interface Card
HWIC-2T	2-Port Serial WAN Interface Card
HWIC-2A/S	2-Port Async/Sync Serial WAN Interface Card

IOS Release, Feature Sets, Licenses and Platform Support

Table 2. Minimum IOS Releases, Feature Sets and Licenses

Platforms	Minimum Cisco IOS Software Release	Minimum Cisco IOS Software Feature Set or License
Cisco 1800, 2800, and 3800 Series Integrated Services Routers	<ul style="list-style-type: none"> • 12.4(20T) • 12.4(23) • 12.4(15)T 	IP Base
Cisco 1900, 2900, and 3900 Series Integrated Services Routers	<ul style="list-style-type: none"> • 15.0(1)M 	IP Base

Table 3. Supported Platforms and Quantities

Platforms	HWIC-1T	HWIC-1DSU-T1	HWIC-2T	HWIC-2A/S
Cisco 1841	2	2	2	2
Cisco 1861	No	No	No	No
Cisco 1941	2	2	2	2
Cisco 2801	2	2	2	2
Cisco 2811, 2821, 2851	4	4	4	4
Cisco 2901, 2911, 2921, 2951	4	4	4	4
Cisco 3825 and 3845	4	4	4	4
Cisco 3925 and 3945	4	4	4	4

Connectors and Cabling

Smart Serial Cabling

The HWIC-1T, HWIC-2T, and HWIC-2A/S use Cisco Smart Serial connectors. The supported cables are noted in Table 3. The HWIC-1DSU-T1 uses a RJ-48 connector.

Table 4. Smart Serial Cabling for HWIC-1T, HWIC-2T, and HWIC-2A/S

Product Number	Cable Type	Length	Connector Type
CAB-SS-V35MT	V.35 DTE	10 ft (3m)	Male
CAB-SS-V35FC	V.35 DCE	10 ft (3m)	Female
CAB-SS-232MT	EIA/TIA-232 DTE	10 ft (3m)	Male
CAB-SS-232FC	EIA/TIA-232 DCE	10 ft (3m)	Female
CAB-SS-449MT	EIA/TIA-449 DTE	10 ft (3m)	Male
CAB-SS-449FC	EIA/TIA-449 DCE	10 ft (3m)	Female
CAB-SS-X21MT	X.21 DTE	10 ft (3m)	Male
CAB-SS-X21FC	X.21 DCE	10 ft (3m)	Female
CAB-SS-530MT	EIA/TIA-530 DTE	10 ft (3m)	Male
CAB-SS-530AMT	EIA/TIA-530A DTE	10 ft (3m)	Male

Specifications

The specifications of the HWICs are listed in Tables 4, 5, and 6.

Table 5. HWIC Signaling and Telecom Specifications

Specification	HWIC-1DSU-T1	HWIC-1T	HWIC-2T	HWIC-2A/S
Synchronous Support	Yes	Yes	Yes	Yes
Synchronous Maximum Speed (Per Port)	1.544 Mbps	8 Mbps	8 Mbps	128 kbps
Asynchronous Support	No	Yes	Yes	Yes
Asynchronous Maximum Speed (Per Port)	–	115.2 kbps	115.2 kbps	115.2 kbps
Bisync Support	No	Yes	Yes	Yes
Serial Protocols	–	EIA-232, EIA-449, EIA-530, EIA-530A, V.35, and X.21	EIA-232, EIA-449, EIA-530, EIA-530A, V.35, and X.21	EIA-232, EIA-449, EIA-530, EIA-530A, V.35, and X.21
Network Clock Synchronization	Yes	Yes	Yes	Yes
NEBS	Type 1/3	Type 2/4	Type 2/4	Type 2/4
TelecommPTT	<ul style="list-style-type: none"> • TIA-968-A • Industry Canada CS-03 Part II • JATE Digital • ID0002 • HK2017 • NEBS 	<ul style="list-style-type: none"> • TBR1 and 2 • JATE Digital • NEBS 	<ul style="list-style-type: none"> • TBR1 and 2 • JATE Digital • NEBS 	<ul style="list-style-type: none"> • TBR1 and 2 • JATE Digital • NEBS

Table 6. Specifications unique to Cisco 1-Port T1/Fractional T1 DSU/CSU WAN Interface Card (HWIC-1DSU-T1)

Specification	Data
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Network Interface Specifications	<ul style="list-style-type: none"> • Transmit bit rate: 1.544 Mbps +/- 50 bps • Receive bit rate: 1.544 Mbps +/- 100 bps • Line code: AMI, B8ZS • AMI ones density • Forced/bit robbing (N X56) • High-Level Data Link Control (HDLC) data inversion (N X64) • Framing format: D4 (SF) and DSF • Output level (LBO) 0, -7.5, or -15 dB, DSU 0-655 feet • Input level: +1 dB0 to -24 dB0
Recognized BERT Test Patterns	1:2, 1:5, 1:8, 3:24, QRW, all 0s, all 1s, and user-programmable 24-bit patterns

Table 7. Homologation Specifications for the HWIC-1DSU-T1, HWIC-T1, HWIC-2T, and HWIC-2A/S

Specification	Data
Safety Approvals	<ul style="list-style-type: none"> • UL 60950 (United States) • CAN/CSA 22.2, CSA60950 (Canada) • GB 4943 (China) • AS/NZS 60950 (Australia/New Zealand) • EN60950 (Europe) • IEC 60950 (International)
Immunity	<ul style="list-style-type: none"> • EN300386 • CISPR24 • EN55024 • EN50082-1 • 61000-4-2/3/4/5/6/8/11
Emissions	<ul style="list-style-type: none"> • FCC Part 15 Class A • ICES-003 Class A • EN55022 Class A • CISPR22 Class A • AS/NZSCISPR22 Class A • VCCI Class A • EN 300386 • EN61000-3-2/3 • CNS13438
Physical Specifications	<ul style="list-style-type: none"> • Singlewide HWIC, no slot restrictions • Dimensions (H x W x D) 0.8 x 3.1 x 5.6 in. (2.1 x 7.9 x 14.2 cm)
Environmental Specifications	<ul style="list-style-type: none"> • Operating temperature: 32 to 104°F (0 to 40°C) • NEBS short-term operating temperature: 32 to 131°F (0 to 50°C) • Storage temperature: -4 to 149°F (-20 to 65°C) • Relative humidity: 10 to 90%, noncondensing



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