T1/E1 High-Speed WAN Interface Card for Cisco 1861 Router

Cisco® integrated services routers offer a wide variety of WAN connectivity modules to accommodate the range of application needs in customer networks. The new Cisco 1-Port T1/E1 High-Speed WAN Interface Card (HWIC-1T1/E1) provides fractional or full T1/E1 WAN connectivity services for the Cisco 1861 Integrated Services Router deployed in small and medium-sized businesses (SMBs) and enterprise branch offices.

Product Overview

The Cisco T1/E1 HWIC combines T1 and E1 connectivity in the same card, providing fractional or full T1/E1 WAN connectivity. The flexible WAN connectivity options, together with integrated routing, security, and voice capabilities, make the Cisco 1861 Integrated Services Router able to meet the diverse needs of enterprise-class branch offices, commercial offices, and SMB offices. The Cisco T1/E1 HWIC can be used in T1 or E1 networks, selectable by software configuration. The integrated channel service unit/data service unit (CSU/DSU) enables customers to consolidate customer premises equipment (CPE). The Cisco T1/E1 HWIC (Figure 1) supports balanced and unbalanced E1 connectivity.

Figure 1. 1-Port T1/E1 High-Speed WAN Interface Card for the Cisco 1861

Features and Benefits

Key Features

- 1 port of RJ-48
- Cisco IOS® Software configurable for T1 or E1 operation
- Integrated CSU/DSU per port
- Fractional T1/E1 (n x DS-0) or full T1/E1
- Maximum two channel groups
- Balanced or unbalanced E1 termination in the same module

- Full management features
  - Configuration: The Cisco T1/E1 HWIC can be remotely configured using Telnet from Cisco IOS CLI.
  - Monitoring: Router and DSU/CSU are manageable as a single SNMP entity; extensive DSU/CSU statistics are available through the Cisco IOS CLI.
  - Troubleshooting: Extensive loopbacks (including manual button for network line loopback), bit error rate tester (BERT) test patterns, alarm counters, and performance reports are all accessible from Cisco IOS CLI. LED displays are available for carrier detect, loopback, and alarm functions.

Key Benefits

Enhanced Flexibility

The Cisco T1/E1 HWIC is software-configurable between T1 or E1 operation, balanced or unbalanced E1 termination, and CSU/DSU. Customers no longer need to buy a specific module for T1 support and then another card for E1 connectivity. In addition, the same module provides for balanced (120-ohm) and unbalanced (75-ohm) E1 termination. See Table 1 for available cable adaptors.

Increased Manageability and Troubleshooting

Critical loopback support makes the Cisco T1/E1 HWIC easy to manage. The Cisco T1/E1 HWIC has the capability to internally loop back the onboard framer chip toward the interface, thus eliminating the need for an external loopback plug. Local, remote, line, and payload loopbacks complement the Cisco T1/E1 HWIC.

Reliability

Integrating the external T1/E1 terminating device (CSU/DSU) increases the overall system reliability. Possible points of failure are reduced by eliminating the second power supply, additional fans, extra cabling, and other equipment that accompany a "two-box" solution. This increase in reliability allows service providers to more easily and cost-effectively meet the requirements of their customers' service-level agreements (SLAs) and provides enterprises with maximum equipment uptime.

Product Specifications

Table 1 lists the Cisco T1/E1 HWIC specifications in comparison to the other Cisco T1 HWIC and WICs.

Table 1. Cisco T1/E1 HWIC Specifications and Comparison

Specification/Feature	HWIC-1T1/E1	HWIC-1CE1T1-PRI	WIC-1DSU-T1-V2	VWIC2-1MFT-T1/E1
Software-Configurable	Yes – T1/E1	Yes	• No. T1 or fractional • T1 only	• T1, fractional T1, • E1, and fractional E1
Fractional T1	Yes	Yes	Yes	Yes
Max Channel Groups	2	32	1	32
G.703 E1 Unframed	No	Yes	No E1 support	• No (supported only on the • VWIC2-1MFT-G703)
Integrated CSU/DSU	Yes	Yes	Yes	• Integrated DSU (E1) • Integrated CSU/DSU (T1)
Independent Clocking	No	Yes	No	Yes

Specification/Feature	HWIC-1T1/E1	HWIC-1CE1T1-PRI	WIC-1DSU-T1-V2	VWIC2-1MFT-T1/E1
Platforms Supported	1861	1841, 2800, 3800	• 1700, 2600, 3600, 3700 • 1841, 2800, 3800	• 1700, 2600, 3600, 3700 • 1841, 2800, 3800
PRI Support	No	Yes	No	No
Voice Support	No	No	No	Yes
TDM Groups	No	Yes	No	Yes
Drop-and-Insert MUX	No	Yes	No	Yes

Software and Management

Table 2 lists the software and management features for the Cisco T1/E1 HWIC.

Table 2. Software and Management Features

Feature	Description
Diagnostic Loopback Support	• Interface local loopback • Interface remote loopback • Controller local loopback • Controller remote loopback • CSU loopback modes for T1 CSU • Data terminal equipment (DTE) loopback • Network loopback • Payload loopback
Alarm Detection	• Yellow alarm: Receive/send from/to network • Blue alarm: Receive alarm indication signal (AIS) from network • Red alarm: Loss of network signal
Relevant MIB Support	• RFC1406-MIB • CISCO-ICSUDSU-MIB
Remote Management	• Supported by Cisco WAN Access Performance Management System (WAPMS) • Cisco CNS 2100 Series Intelligence Engine (IE2100) • CiscoWorks

Hardware Specifications

Table 3 lists the hardware specifications for the Cisco T1/E1 HWIC.

Table 3. Hardware Specifications for the Cisco T1/E1 HWIC

Feature	Description
Dimensions (H x W x D)	• 751 x 3.080 x 4.382 inches
Operating Temperature	• 41 to 104°F (5 to 40°C)
Non-Operating Temperature	• –40 to 158°F (–40 to 70°C)
Relative Humidity	• 5–85% non-condensing
Operating Altitude	• –197 ft to 6000 ft (–60 to 1800m)
LEDs	• LEDs per port: • CD: Carrier detect • LP: Loop condition present • AL: Alarm
Ports	• 1 T1/E1 port on RJ-48C connectors
Line Bit Rate (per Port)	• E1: (2.048 Mbps) • T1: (1.544 Mbps)
Line Coding	• E1: HDB3 • T1: AMI, B8ZS

Feature	Description
Framing Formats	• E1: CRC4 • T1: SF and ESF
Output Levels	• E1: short-haul/long-haul • T1 (LBO): - 0, -7.5, or -15 dB

Regulatory, Compliance, Safety, and EMC

Table 4 shows a listing of regulatory compliance and safety data.

Table 4. Regulatory Compliance and Safety

Feature	Description
Telecommunications Compliance	• United States: FCC Part 68, TIA-968A • Canada: Industry Canada CS-03 • European Union: TBR 12, TBR 13 • Australia: AS/ACIF, AS/ACIF S016 • Japan: JATE Gray Book • Hong Kong: HKTA 2023 • Taiwan: ID0002 • Singapore: IDA TS DLCN • Korea: RRL No.2005-96
Telecommunications Interface Industry Standards	• ITU-T G.703, G.704, G.706, G.823 • ANSI T1.403
Safety	• IEC 60950-1 • EN 60950-1 • UL 60950-1 • CSA C22.2, No. 60950-1 • AS/NZ 60950.1
NEBS	• GR-63, GR-78, GR-1089-CORE Type 1/3
EMC Emissions/Immunity	• 47 CFR Part 15: 2005 • CISPR22: 2005 • EN300386: V1.3.3 : 2005 • EN55022: 1994 [+ amd 1 & 2] • EN55022: 1998 • EN61000-3-2: 2000 [Inc amd 1 & 2] • EN61000-3-3: 1995 [+ amd 1: 2001] • ICES-003 Issue 4 : 2004 • KN 22: 2005 • VCCI: V-3/2006.04 • CISPR24: 1997 [+ amd 1 & 2] • EN300386: V1.3.3: 2005 • EN50082-1: 1992 • EN50082-1: 1997 • EN55024: 1998 [+ amd 1 & 2] • EN61000-6-1: 2001

Platform Support

The Cisco T1/E1 HWIC is supported in the HWIC slot of the Cisco 1861 Integrated Services Router. The minimum Cisco IOS Software Release is 12.4(11)XW.

Ordering Information

The Cisco T1/E1 HWIC is currently available for order from the Cisco Ordering Tool.

Table 5 lists the product numbers of the Cisco T1/E1 HWIC and the cables for balanced and unbalanced E1.

Table 5. Ordering Information

Product Number	Description
HWIC-1T1/E1	1-port T1/E1 high-speed WAN interface card
CAB-E1-RJ45BNC	E1 cable RJ-45 to dual BNC (unbalanced)

Service and Support

Using the Cisco Lifecycle Services approach, Cisco and its partners provide a broad portfolio of end-to-end services and support that can help increase your network's business value and return on investment. This approach defines the minimum set of activities needed, by technology and by network complexity, to help you successfully deploy and operate Cisco technologies and optimize their performance throughout the lifecycle of your network.

For More Information

For more information about the Cisco 1-Port T1/E1 High-Speed WAN Interface Card and the Cisco 1861 Integrated Services Router, please visit http://www.cisco.com/en/US/products/ps5949/products_data_sheets_list.html or contact your local account representative.

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