

Cisco 10000 Series Six-Port Channelized T3 Line Card

The Cisco 10000 Series Six-Port Channelized T3 line card sets a new standard for flexibility, scalability, and price/performance in the T1 and T3 aggregation market. The line card supports six T3 physical connections with each T3 capable of supporting a full “clear-channel” DS3 or six ports of DS3 channelized down to DS1 or DS0.

Key Benefits

Flexibility to Add, Modify, and Enhance Services without Changing Your T3 Connection

- The Cisco 10000 Series six-port channelized T3 line card is capable of supporting a variety of T3, NxT1, T1, FT1, and DS0 configurations on each of the six ports of every module. This flexibility enables customers to easily increase bandwidth from DS0 up to a full clear-channel DS3 to support new software

Scalability to Increase Services and Grow the Network

- With the ability to scale from 168 DS1s to 6048 DS1s, the Cisco 10000 Series provides service providers with industry-leading scalability that enables them to add more customers and services without deploying additional routers in the point of presence (POP).
- The Cisco 10000 six port CT3 line card enables service providers to distribute costs over the largest number of ports, reducing the overall cost per port.

Table 1 illustrates the densities of the Cisco 10000 with the six port CT3 line card.

Figure 1
Cisco 10000 Series
Six-Port Channelized T3
Line Card

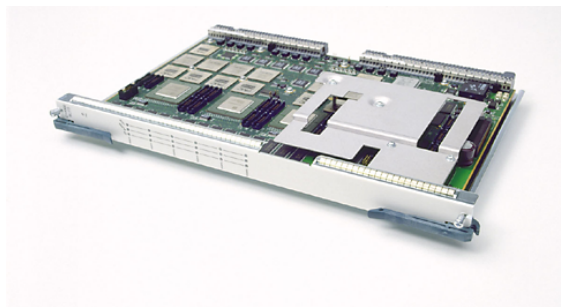


Table 1

Cisco 10000 Series CT3 Line Card Port Densities

Capabilities:	Ports per Line Card	Ports per Chassis	Ports per 7' Rack
DS1 (CT3)	168	1008	6048
DS3 (CT3)	6	36	216

Key Features

- Six T3 ports per line card
- Online insertion and removal (OIR)
- Supports various subrate DS3 formats
- Supports NxT1, T1, FT1, or DS0
- T3-level physical interface compliant with ANSI T1.102 and BellCore TR-TSY-000499, 12 Bayonet-Neill-Concelman (BNC) 75-ohm coaxial connectors
- Integrated CSU/DSUs
- 28 DS1 streams multiplexed onto a single DS3 connection
- Full-rate DS3, channelized DS3, DS1, and fractional DS1 supported on every port; up to 128 usable nxDSD0 channels (where n is 1 to 24) that can be allocated among the 28 DS1 ports on each DS3
- 56-kbps or 64-kbps DS0 time slots
- Internal or line-derived (loop) clocking selectable on each DS1 or DS3
- Local, line, and remote loopback capabilities for DS3 and DS1 levels
- Respond to embedded loopback commands
- Insertion of loopback commands into transmitted signal
- Full bit-error-rate testing capabilities on any T1 or T3
- Programmable pseudo-random pattern up to 32 bits in length including 2^9-1 , $2^{11}-1$, $2^{15}-1$, $2^{20}-1$, $2^{23}-1$, $2^{26}-1$, and $2^{32}-1$
- Detect test patterns with bit-error rates up to 10^{-2}
- Alarm detection-alarm indication signal (AIS), loss of signal (LOS) (DS3 only), Far End Bit Errors (FEBE), out of frame (OOF)
- On-board processor for real-time Facilities Data Link (FDL) messaging, in-band-code detection and insertion, alarm integration, and performance monitoring
- Support for the following serial encapsulation protocols:
 - Frame Relay
 - Point-to-Point Protocol (PPP)
 - High-Level Data Link Control (HDLC)
- Supports IP networking protocols

- 16-bit or 32-bit CRC supported

DS1 Specific Features

- Superframe (SF) and Extended Superframe (ESF) support
- ANSI T1.403 FDL support
- Alarm detection-cyclic redundancy check (CRC) errors, OOF, errored seconds, failed seconds, severely errored seconds, error events, failed signal rate, bursty seconds, AIS
- Alarm reporting-24-hour history maintained, 15-minute intervals on all errors
- Internal and loop (recovered from network) clocking

T3 Specific Features

- T3 level interface with dual female 75-ohm BNC coaxial connectors per port (separate RX and TX)
- Full duplex connectivity at DS3 rate (44.736 Mbps)
- Scrambling and subrate support of the following DSU vendors' algorithms:
 - Digital Link
 - Kentrox
 - Larscom
 - Verilink
 - Adtran
- Scrambling and subrate can be independently or simultaneously enabled for each port in any DSU mode.
- Line build-out-Programmable for up to 900 feet of 734A or equivalent coaxial cable
- C-bit or M23 framing (software selectable)
- B3ZS line coding
- DS3 far end alarm and control (FEAC) channel support
- 24-hour history maintained for error statistics and failure counts, 15-minute intervals
- DS3 alarm/event detection
- AIS
- Detects OOF
- Detects line code violation (LCV)
- Detects excessive zeros (EXZ)
- Detects far-end receive failure (FERF)
- T3 line and local loopback paths

Specifications

Physical

- Weight: 4.75 lb (2.16 kg)
- Dimensions: 16.0 x 1.12 x 9.97 in. (40.64 x 2.83 x 25.32 cm) (H x W x D)

Product Regulatory Compliance Environmental Conditions

- Storage temperature: -38 to 150 F (-40 to 70 C)
- Operating temperature, nominal: 41 to 104 F (5 to 40 C)
- Operating temperature, short term: 23 to 131 F (-5 to 55 C)
- Storage relative humidity: 5 to 95% relative humidity (RH)
- Operating humidity, nominal: 5 to 85% RH
- Operating humidity, short term: 5 to 90% RH
- Operating altitude: -60 to 4000m

Product Regulatory Approvals

- UL60950/CAN/CSA-C22.2 No. 60950-00, third edition, dated December 1, 2000, with no deviation considered to be less stringent than IEC 60950
- EN60950 with Amendments 1-4, for CE Marking to the LVD directive
- IEC 60950 third edition with Amendments 1-4, including all national/group deviations
- AS/NZS 60950:2000
- AS/NZS 3260-1993 with Amendments 1-4
- ACA TS001-1997
- NOM-019-SCFI-1998

Electromagnetic Emissions Certification

- AS/NZ 3548:1995 (including Amd I + II) Class B
- EN55022:1998 Class B
- CISPR 22:1997
- EN55022:1994 (including Amd I+ II)
- 47 CFR Part 15:2000 (FCC) Class B
- VCCI V-3/01.4 Class 2
- CNS-13438:1997 Class B
- GR1089:1997 (including Rev1: 1999)

Immunity

- EN300386:2000—TNE EMC requirements; product family standard; high priority of service; central office and non-central office locations
- EN50082-1:1992/1997
- EN50082-2:1995—Generic Immunity Standard, Heavy Industrial
- CISPR24:1997

- EN55024:1998—Generic ITE Immunity Standard
- EN61000-4-2:1995+AMD I + II-ESD, Level 4, 8-kV contact, 15-kV air
- IEC-1000-4-3:1995+AMD 1—Radiated Immunity, 10 V/m
- IEC-1000-4-4:1995—Electrical Fast Transients, Level 4, 4 kV/B
- IEC-1000-4-5:1995+AMD 1—DC Surge Class 3; AC surge Class 4
- EN61000-4-6:1996+AMD 1—RF Conducted Immunity, 10V rms
- EN61000-4-11:1995—Voltage Dips and Sags
- ETS300 132-2:1996+corregendum, Dec. 1996
- GR1089:1997 (including Rev1: 1999)

Network Equipment Building Systems

- Level 3 compliant
- Telcordia SR-3580 Criteria Levels, issued November 1995
- GR1089-Core: Electromagnetic Compatibility & Electrical Safety, issued February 1999
- GR63-Core: Physical Protection Requirements, issued April 2002
- SBC equipment requirements: TP76200 MP and TP76400 MP
- Verizon equipment requirements: SIT.NEBS.TE.NPI.2002.010

LEDs

- Line card fail (1 per card)
- Alarm (1 per DS3, 6 per card)
- Loopback active (1 per DS3, 6 per card)
- Carrier signal (1 per DS3, 6 per card)

Network Management

- Network Management via
 - Telnet (CLI)
 - Console port (CLI)
 - Simple Network Management Protocol (SNMP)
- MIB-II
- RFC 1406
- RFC 1407

Power Budget

- Unit Power: 75W

Product System Requirements and Compatibility Hardware Requirements

- **Chassis**—The 6-port CT3 line card is supported on all Cisco 10000 Series chassis
- **Performance routing engines (PREs)**—The 6-port CT3 line card is supported on all PREs available on the Cisco 10000 Series

Software Requirements

Initial IOS Releases: The 6-port CT3 line card is supported in 12.0(9)SL, 12.0(17)ST, 12.0(22)S, 12.2(8)BZ and later Cisco IOS® releases. For the latest IOS release information, refer to:

<http://www.cisco.com/cgi-bin/front.x/Support/HWSWmatrix/hwswwmatrix.cgi>.

Ordering Information

Part Number	Description
ESR-6CT3	Six-Port Channelized T3 Line Card
ESR-6CT3=	Six-Port Channelized T3 Line Card, SPARE

Service and Support

Cisco Systems offers a wide range of service and support options for its customers. More information on Cisco service and support programs and benefits can be found at:

http://www.cisco.com/public/Support_root.shtml.

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