DATA SHEET

ONE AND TWO-PORT OC-12C/STM-4 PACKET OVER SONET/SDH LINE CARD FOR THE CISCO 7300 INTERNET ROUTER

The OC-12c/STM-4 POS/SDH Line Card is a versatile, high-performance line card well suited for a variety of applications including high-speed WAN uplinks in a CPE deployment, high-speed enterprise backbone, and high-speed uplink for Cisco® 7300 deployment as a medium density, medium speed edge-aggregation router in tier 2 and 3 service provider POPs.

Developed for customers needing a combination of performance and deployment flexibility, the Cisco 7300 is the embodiment of both present day and future requirements for a Mid-Range router. The Cisco 7300 delivers high-performance forwarding and hardware-accelerated services in a compact four rack-unit (4RU), four slot form factor.

Powerful and flexible, the Cisco 7300 provides multiprotocol support, interface granularity, and high-availability features to create a platform that is ideal for deployment in applications such as high-end enterprise routing, medium speed and density leased-line aggregation in service provider tier 2 and 3 POPs, and service provider-managed customer premises equipment (CPE) deployments. Providing WAN connectivity at speeds ranging from DS3 through OC48/STM-16 and LAN connectivity at speeds up to Gigabit Ethernet (via two 10/100/1000 Ethernet ports built into the NSE-100 route processor), the Cisco 7300 supports a wide range of concurrently running applications and lives up to the high standards of the Cisco 7x00 series of Mid-Range routers.

FEATURE AND BENEFITS OVERVIEW

Table 1. Features and Benefits

Features	Benefits
Up to 622 Mbps per port	Provides high-performance routing and connectivity
Online insertion and removal (OIR)	Allows for insertion of the card without rebooting the router
Rich set of services	Supplies an ideal solution for both Service Provider and Enterprise edge

Figure 1

One-Port OC-12c/STM-4 Packet over SONET/SDH Line Card

PRODUCT SPECIFICATIONS: COMPONENTS

Line Card

- SONET/SDH framing
- 1+1 SONET APS and SDH MSP, per port, per line card, and per chassis
- SONET/SDH errors, alarms, performance monitoring, synchronization, etc.
- OIR
- Support for short, intermediate, and long reach optics
- Point-to-Point Protocol (PPP) RFC 1661
- PPP in High-Level Data Link Control (HDLC) like framing RFC 1662
- PPP over SONET/SDH with $1+x^{43}$ self-synchronous payload scrambling, RFC 2615

Table 2. OC-12c/STM-1 POS for the Cisco 7300 Optical Specifications

Fiber Interface	Transmit Power		Wavelength		Input Power	Input Sensitivity	Loss Budgets	Nominal Distance
SM-IR	–15 dBm	–8 dBm	1280 nm	1335 nm	–8 dBm	–28 dBm	0 to 12 dB	9 mi (15 km)

PRODUCT SPECIFICATIONS: CONNECTIVITY

SONET/SDH Compliance

- Telecordia (Bellcore) GR-253-CORE (as applicable)
- ITU-T G.707, G.957, G.825 (as applicable)
- Support for 1+1 SONET Automatic Protection Switching (APS) as per GR-253-CORE – per port, per line card, per chassis (as applicable)

SONET/SDH Errors, Alarms, and Performance Monitoring

- Signal Failure Bit Error Rate (SF-ber)
- Signal Degrade Bit Error Rate (SD-ber)
- Signal Label Payload Construction (C2)
- Section:
  - Loss of Signal (LOS)
  - Loss of Frame (LOF)
  - Error Counts for B1
  - Threshold Crossing Alarms (TCA) for B1

- Line:
  - Line Alarm Indication Signal (LAIS)
  - Line Remote Defect Indication (LRDI)
  - Line Remote Error Indication (LREI)
  - Error Counts for B2
  - TCA for B2
- Path:
  - Path Alarm Indication Signal (PAIS)
  - Path Remote Defect Indication (PRDI)
  - Path Remote Error Indication (PREI)
  - Error Counts for B3
  - TCA for B3
  - Loss of Pointer (LOP)
  - New Pointer Events (NEWPTR)
  - Positive Stuffing Event (PSE)
  - Negative Stuffing Event (NSE)
  - Path Unequipped Indication Signal (PUNEQ)
  - Path Payload Mismatch Indication Signal (PPLM)

SONET/SDH Synchronization

- Local (Internal) Timing (for inter-router connections over dark fiber or wavelength division multiplexer [WDM] equipment)
- Loop (line) timing (for connection to SONET/SDH equipment)
- +/– 20 ppm clock accuracy over full operating temperature

PRODUCT SPECIFICATIONS: CARDS, PORTS, SLOTS

Rack Density

Table 3. One or Two-Port OC-12c/STM-4 POS Cisco 7300 Chassis and Rack Density[1]

OC-12c/STM-4 POS Line Card	Cisco 7304 Chassis Density	Cisco 7304 Rack Density
7300-1OC12POS-X	4 x OC-12/STM-4 (includes 2 GE ports)	44 OC-12/STM-4 (includes 22 GE ports)
7300-2OC12POS-X	8 x OC-12/STM-4 (includes 2 GE ports)	88 OC-12/STM-4 (includes 22 GE ports)

1. Configured with:
   1 NSE-100 per Cisco 7300 chassis
   4 1-port OC-12 POS Line Cards per Cisco 7300 chassis or 2-port OC12 POS Line cards per Cisco 7300
   11 Cisco 7300 chassis per 7´ rack

- Up to four 7300-1OC12POS modules supported in a four-slot chassis
- One OC-12c/STM-4 port supported per line card

PRODUCT SPECIFICATIONS: ENVIRONMENTAL CONDITIONS

Table 4. OC12/STM4 POS

	OC12/STM4 POS
Operating temperature	32 to 104°F (0 to 40°C)
Storage temperature	–4 to 149°F (–20 to 65°C)
Operating humidity	5 to 90% (noncondensing)
Altitude	–500 to 6500 ft

PRODUCT SPECIFICATIONS: PERFORMANCE

- One or two ports of OC-12c/STM-4 at 622 Mbps

PRODUCT SPECIFICATIONS: MIBS

- SONET MIB (RFC 1595), performance Statistics for timed intervals (current, 15 minute, multiple 15 minute, and 1 day intervals)
  - Regenerator section
  - Multiplex section
  - Path errored seconds
  - Severely errored seconds
  - Severely errored framed seconds
- See the NSE-100 data sheet for more MIB support

PRODUCT SPECIFICATIONS

Table 5. Physical Specifications

	OC12/STM4 POS
Height	1.92 in. (4.87 cm)
Width	8.44 in. (21.43 cm)
Depth	12.94 in. (32.87 cm)
Weight	3.0 lb (1.36 kg)
Mean Time Between Failure (MTBF)	5.5 year for system configuration
Connector Type	SC

PRODUCT SPECIFICATIONS

Table 6. Line Card Indicators

LED Label	Color	State	Function
LC Status	Green	On/Off	Indicates power is on/off
OIR	Green	On/Off	Line card is ready to be removed
Carrier/Alarm	Green/Yellow	Green	Valid SONET signal has been detected with no alarm condition
		Yellow	Valid SONET signal has been detected but an alarm condition is present
		Off	No valid SONET signal has been detected
Port Active/Loopback	Green/Yellow	Green	Port has been configured and is enabled
		Yellow	Port is in diagnostic loopback mode
		Off	Port has not been configured

REGULATORY COMPLIANCE AND SAFETY INFORMATION

Product Regulatory Compliance

- Products bear CE marking indicating compliance with the 89/366/EEC and 73/23/ECC directives, which include the following safety and EMC standards.

Safety

- UL 1950
- CSA C22.2 No. 950
- EN60950
- IEC 60950
- TS 001
- AS/NZS 3260

EMC

- FCC Part 15 (CFR 47) Class A
- ICES-003 Class A
- EN55022 Class A
- CISPR 22 Class A
- AS/NZS 3548 Class A
- VCCI Class A

- EN55024
- EN50082-1
- EN300386

Industry EMC, Safety and Environmental Standards

- GE-63-Core NEBS Level 3 Requirement
- GR-1089-Core NEBS Level 3 Requirement
- ETS 300-019 Storage Class 1.1
- ETS 300-019 Transportation Class 2.3
- ETS 300-019 Stationary Use Class 3.1

Software Requirements

- Cisco IOS Software Release 12.1(10) EX

PRODUCT ORDERING DETAILS: ORDERING INSTRUCTIONS

Please visit http://www.cisco.com/public/ordering_info.shtml to place an order.

PRODUCT ORDERING DETAILS

Table 7. Product Part Number and Description

Part Number	Description
7300-1OC12POS-SMI	1-port OC-12c/STM-4 Packet over SONET/SDH, Cisco 7300 Line Card, Single-mode – Intermediate Reach
7300-1OC12POS-SMI=	1-port OC-12c/STM-4 Packet over SONET/SDH, Cisco 7300 Line Card, Single-mode – Intermediate Reach, SPARE
7300-2OC12POS-SMI	2-port OC-12c/STM-4 Packet over SONET/SDH, Cisco 7300 Line Card, Single-mode – Intermediate Reach
7300-2OC12POS-SMI=	2-port OC-12c/STM-4 Packet over SONET/SDH, Cisco 7300 Line Card, Single-mode – Intermediate Reach, 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/en/US/support/.

Corporate Headquarters
Cisco Systems, Inc.
170 West Tasman Drive
San Jose, CA 95134-1706
USA
www.cisco.com
Tel: 408 526-4000
800 553-NETS (6387)
Fax: 408 526-4100

European Headquarters
Cisco Systems International BV
Haarlerbergpark
Haarlerbergweg 13-19
1101 CH Amsterdam
The Netherlands
www-europe.cisco.com
Tel: 31 0 20 357 1000
Fax: 31 0 20 357 1100

Americas Headquarters
Cisco Systems, Inc.
170 West Tasman Drive
San Jose, CA 95134-1706
USA
www.cisco.com
Tel: 408 526-7660
Fax: 408 527-0883

Asia Pacific Headquarters
Cisco Systems, Inc.
168 Robinson Road
#28-01 Capital Tower
Singapore 068912
www.cisco.com
Tel: +65 6317 7777
Fax: +65 6317 7799

Cisco Systems has more than 200 offices in the following countries and regions. Addresses, phone numbers, and fax numbers are listed on the **Cisco Website at** www.cisco.com/go/offices.

Argentina • Australia • Austria • Belgium • Brazil • Bulgaria • Canada • Chile • China PRC • Colombia • Costa Rica
Croatia • Cyprus • Czech Republic • Denmark • Dubai, UAE • Finland • France • Germany • Greece • Hong Kong SAR
Hungary • India • Indonesia • Ireland • Israel • Italy • Japan • Korea • Luxembourg • Malaysia • Mexico
The Netherlands • New Zealand • Norway • Peru • Philippines • Poland • Portugal • Puerto Rico • Romania • Russia
Saudi Arabia • Scotland • Singapore • Slovakia • Slovenia • South Africa • Spain • Sweden • Switzerland • Taiwan
Thailand • Turkey • Ukraine • United Kingdom • United States • Venezuela • Vietnam • Zimbabwe

Pa/LW7239 11/04