

## Cisco 7304 2- and 4-Port OC-3c/STM-1 Packet over SONET/SDH Line Card

### Line-Rate, High-Density OC-3c/STM-1 Connectivity Edge Routing with High-Touch IP Service Delivery

#### Product Overview

The Cisco® 7304 Router is designed for the network edge where high-performance IP services are required to enable profitability, service differentiation, and business agility. Using a compact, 4-rack-unit (4-RU), modular (4-slot) form factor, the Cisco 7304 Router delivers high-touch IP services at optical speeds necessary for applications in the high-end enterprise, service provider edge, and for service provider-managed customer premises equipment (CPE).

High-performance services are critical in these implementations, and the Cisco 7304 Router delivers an evolving set of hardware-accelerated IP services through the Parallel Express Forwarding (PXF) IP Services Processor technology patented by Cisco Systems®. The Cisco 7304 Router provides a range of optical connectivity from OC-3/STM-1 to Gigabit Ethernet, OC-48 performance, an architecture engineered for high availability, and multiprotocol support. With two Gigabit Ethernet ports built into the system, the Cisco 7304 Router is the optical evolution of Cisco 7x00 Series routers

The Cisco 7304 OC-3c/STM-1 Packet over SONET /SDH Line Card (Figure 1), in two or four ports, is a modular, versatile card suited for a variety of solutions: from WAN uplinks in a CPE deployment to aggregation at the edge where service provider and enterprise networks meet. Using the Cisco Network Services Engine (NSE)-100 Route Processor on the Cisco 7304 Router, this line card can use multiprotocol capability from Cisco IOS® Software, and PXF technology to deliver hardware-accelerated IP network services.

#### Figure 1

4-Port OC-3c/STM-1 Packet over SONET/SDH Line Card for the Cisco 7304 Router



## Key Features and Benefits

### Line Card Features

- SONET/SDH Framing
- 1+1 SONET automatic protection switching (APS) and SDH multiplex section protection (MSP), per port, per line card, and per chassis
- SONET/SDH errors, alarms, performance monitoring, synchronization, etc.
- Online Insertion and Removal (OIR)

### Cisco 7304 Router System Features

- Compact (4RU), modular, Network Equipment Building Standards (NEBS)-3 compliant system
- Redundant route processor capable
- Front-to-back airflow
- Centralized PXF for hardware-accelerated features (Cisco Express Forwarding, Turbo access control list [ACL], Netflow v8, etc.)
- Multiprotocol and feature support using Cisco IOS® Software

### Encapsulations

- RFC 1661, Point-to-Point Protocol (PPP)
- RFC 1662, PPP in High-Level Data Link Control (HDLC)-like Framing
- RFC 2615, PPP over SONET/SDH with 1+x43 Self-Synchronous Payload Scrambling

### Rack Density

Table 1 lists the chassis and rack density for the Cisco 7304 OC-3c/STM-1 Packet over SONET /SDH Line Card.

**Table 1.** Chassis and Rack Density<sup>1</sup>

OC-3c/STM-1 POS Line Card	Cisco 7304 Chassis Density	Cisco 7304 Rack Density
7300-2OC3POS-xxx	8 OC-3/STM-1 and 2 Gigabit Ethernet (GE) ports	88 OC-3/STM-1 and 22 GE ports
7300-4OC3POS-xxx	16 OC-3/STM-1 and 2 GE ports	176 OC-3/STM-1 and 22 GE ports

1. Configured with:  
One NSE-100 per Cisco 7304 Router chassis  
Four 4-port OC-3 POS line cards per Cisco 7304 Router chassis or 2-port OC-3 POS line cards  
11 Cisco 7304 Router chassis per 7 foot rack

### Minimum Software Release

- Cisco IOS Software Release 12.2(20)S

### Ordering Information

- To order, visit <https://www.cisco.com/c/en/us/services/order-services.html>.

Table 2 provides ordering information for the Cisco 7304 OC-3c/STM-1 Packet over SONET /SDH Line Card.

**Table 2.** Ordering Information

Part Number	Description
7300-2OC3POS-MM	2-port OC-3c/STM-1 POS/SDH, Cisco 7304 Line Card, Multi-mode (MM )
7300-2OC3POS-MM=	2-port OC-3c/STM-1 POS/SDH, Cisco 7304 Line Card, MM, spare
7300-4OC3POS-SMI	4-port OC-3c/STM-1 POS/SDH, Cisco 7304 Line Card, Single-mode-Intermediate Reach (SM-IR)
7300-4OC3POS-SMI=	4-port OC-3c/STM-1 POS/SDH, Cisco 7304 Line Card, SM-IR, spare
7300-2OC3POS-SMI	2-port OC-3c/STM-1 POS/SDH, Cisco 7304 Line Card, SM-IR
7300-2OC3POS-SMI=	2-port OC-3c/STM-1 POS/SDH, Cisco 7304 Line Card, SM-IR, spare

Please note that "=" denotes a spare order (that is, Cisco 7300-4OC3POS-MM= would be the spare part number if the line card is not ordered within a chassis)

## Technical Specifications

### Physical Specifications

- Occupies one bay in a Cisco 7304 Router chassis
- 2 or 4 OC-3c/STM-1 ports supported per line card
- Up to four Cisco 7304 4-port OC3POS-xxx modules supported in a 4-slot chassis
- Weight: 3.0 lb/1.36 kg
- Mean time between failure (MTBF): 5.5 years for system configuration
- Indicators and LEDs: See Table 3
- Connector Type: MT-RJ
- Optical Specifications: See Table 4
- Environmental Conditions:
  - Operating temperature: 32° to 104°F (0° to 40°C)
  - Storage temperature: -4° to 149°F (-20° to 65°C)
  - Relative humidity: 5 to 90 percent, noncondensing
  - Operating altitude: -500 to 6,500 ft

Tables 3 and 4 list the LED definitions and the optical specifications for the Cisco 7304 OC-3c/STM-1 Packet over SONET /SDH Line Card.

**Table 3.** LED Definition

LED Label	Color	State	Function
LC Status	Green/Yellow	Green	Line card is online
		Yellow	Line card bootstrapping in progress
		Off	Line card is offline
OIR	Green	Green	Line card is ready for OIR extraction
		Off	Default (online)
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

**Table 4.** Optical Specifications

Fiber Interface	Transmit Power		Wavelength		Input Power	Input Sensitivity	Loss Budgets	Nominal Distance
	Min.	Max.	Min.	Max.	Max.	Min.		Max.
MM	-20 dBm	-14 dBm	1270 nm	1380 nm	-8 dBm	-31 dBm	0 to 11 dB	1.2 mi (2km)
SM-IR	-15 dBm	-8 dBm	1261 nm	1360 nm	-8 dBm	-31 dBm	0 to 12 dB	9 mi (15 km)

## SONET/SDH Specifications

### SONET/SDH Compatible Specifications

- Telecordia (Bellcore) GR-253-CORE (as applicable)
- ITU-T G.707, G.957, G.825 (as applicable)
- Support for 1+1 SONET APS as per GR-253-CORE—per port, per line card, per chassis (as applicable)
- Support for 1+1 SDH MSP as per G.783 Annex A—per port, per line card, per chassis (as applicable)

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## For More Information

For more information about the Cisco 7304 routers, visit <http://www.cisco.com/en/US/products/hw/routers/ps352/index.html> or contact your local Cisco account representative.

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