

## Cisco 12000 Series Gigabit Switch Router Channelized OC-12/STS3 Line Card

### ENHANCING THE GIGABIT SWITCH ROUTER 12000 CHANNELIZATION CAPABILITY AND ENABLING SCALABILITY IN IP TRANSPORT CAPACITY FOR THE SDH MARKET

The Internet traffic continues to grow at an explosive rate with the number of users doubling each year. This unsurpassed growth is increasing the demand for higher capacity interfaces from OC3/STM1 to OC48/STM16. In addition, Packet-Over-SONET/SDH (POS) enables efficient transport of IP traffic and uses SONET/SDH concatenated payloads (i.e. STS-3c/VC-4, STS-12c/VC-4-4c or STS-48c/VC-4-16c) to achieve a higher order of statistical multiplexing. At present, concatenated services at VC-4 rates only are available in some parts of the world (for example Europe), with higher rates not yet readily available. The new channelized OC-12/STS3 line card provides customers in these areas with an STM-4 POS interface which can be provisioned through the legacy network.

The CHOC12/STS3 line card for the Cisco 12000 series Gigabit Switch Router builds on the SONET/SDH channelization capability. This new line card provides four STS-3c/VC-4 POS channels within a single OC-12/STM-4 port.

#### Feature Summary

##### Packet Layer

- Multiple virtual output queues, eliminating head-of-line blocking
- 512-KB burst buffers, which smooth out the arriving packet bursts
- Default 64 MB/64 MB (TX/RX) packet buffer memory, for Transmission Control Protocol (TCP) goodput
- A Cisco Express Forwarding (CEF) table that can accommodate up to 1 million forwarding entries
- Application-specific integrated circuit (ASIC)-based queuing
- Quality-of-service (QoS) support
- Configurable with up to 256 MB of code and route table memory
- Support for a standard suite of POS routing protocols and encapsulations
- Supports optional use of DCEF loadsharing across some or all of the embedded channels

##### SONET/SDH Layer

- Standards-compliant SONET/SDH interface
- Single bidirectional STM-4 physical interface channelized to four VC-4 logical router interfaces
- Supports OC-12 channelized to four STS-3c for the North American SONET market
- SONET/SDH alarm processing
- SONET/SDH APS<sup>1</sup>
- Support for SONET DCC channels<sup>1</sup>
- Single-mode intermediate reach line card that complies with Bellcore GR-253, ITU G.707, and G.703
- Interworks with both Line and Trib interfaces of commonly available SDH ADM equipment

##### Physical Layer

- SC duplex connectors
- Local (internal) or loop (recovered from network) clocking mode
- Both local (diagnostic) and network (line) loopback
- Receive and transmit alarm processing

##### Software Features

- On-line Insertion and Removal (OIR)
- Weighted Random Early Discard (WRED)<sup>1</sup>
- Deficit Round Robin (DRR)<sup>1</sup>
- MPLS/Tag Switching<sup>1</sup>
- IP Multicast support<sup>1</sup>
- On-line diagnostics

<sup>1</sup>(post-initial FCS release)

#### Specifications

##### Physical

- Occupies a single slot
- Weight: 6 lb. (2.7 kg)
- Height: 14.5 in. (35.6 cm)
- Depth: 18.5 in. (45.7 cm)

##### Environmental

- Operating temperature: 32 to 104 F (0 to 40 C)
- Storage temperature: -4 to 149 F (-20 to 65 C)
- Relative humidity: 10 to 90%, noncondensing

## Regulatory Compliance

### Safety

- UL 1950, Third Edition
- CSA C22.2, No. 950-95, Third Edition
- EN 60950
- EN 41003
- AUSTEL TS001
- AS/NZS 3260
- EN 60825 Laser Safety (Class 1)
- Network Equipment Building Systems (NEBS) Level 3

### Electromagnetic Emissions Certification

- FCC Class A
- AS 3548 Class A
- EN 55022 Class A
- VCCI Class 1

### Immunity

- EC-1000-4-2 ESD
- IEC-1000-4-3 radiated immunity
- IEC-1000-4-4 EFT
- IEC-1000-4-5 surge
- IEC-1000-4-6 low-frequency common immunity
- IEC-1000-4-11 voltage dips and sags
- IEC-1000-3-2 power-line harmonics

### LEDs

- Active
- Receive carrier detect (OC-12 level)
- Packet receive

## Connector

- SC-duplex connector

## Network Management

- CiscoView
- Simple Network Management Protocol (SNMP)
- Management Information Base II (MIB-II)
- SONET/SDH MIB

## Optical Power Budget

Table 1: Fiber Power Budget

<b>Transceiver</b>	Single-mode Intermediate Reach at 1270 to 1380 nm
<b>Power Budget</b>	12 dB
<b>Transmit Power</b>	-15 to -8 dBm
<b>Receive Power</b>	-28 to -8 dBm
<b>Maximum Distance</b>	15 km

## Ordering and Availability

<b>Part No.</b>	CHOC12/STS3-IR-SC
<b>Description</b>	Single port Channelized OC-12/STM-4 with four STS3c/VC-4 POS channels
<b>Availability</b>	January 1999
<b>IOS Release</b>	11.2(14)GS3 or higher, 12.0(1)S or higher, and 12.0(3)T or higher

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