

Cisco 12000 Series Internet Router One-Port OC-12c/STM-4c **ATM** Line Card

Overview

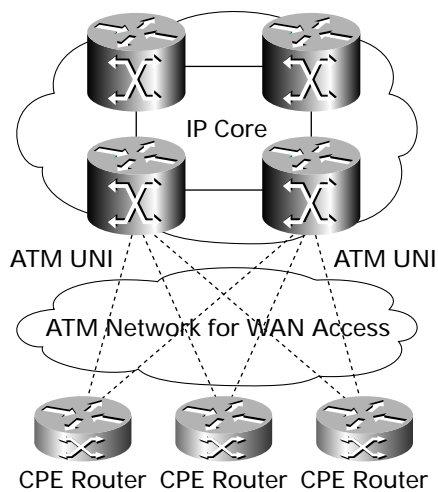
The one-port OC-12c/STM-4c ATM line card expands the connectivity options for the Cisco® 12000 series Internet routers so that service providers can attach the Cisco 12000 series router directly to their existing ATM infrastructure. This allows Internet service providers (ISPs) to offer wire-speed Internet access via ATM virtual circuits (VCs). The new line card performs the segmentation and reassembly (SAR) of IP packets in accordance with RFC 1483, Multiprotocol Encapsulation over ATM Adaptation Layer 5 (AAL5).

The Cisco 12000 series ATM line cards enable the integration of legacy ATM networks with next-generation IP backbones in a multitude of ways. The following applications provide several examples of how the ATM line cards for the Cisco 12000 series will be used by service providers to build tomorrow's Internet.

Application 1: ATM WAN Connectivity

With the use of the Cisco 12000 series ATM line cards, service providers can now offer Internet connectivity to enterprise customers via an ATM network. (See Figure 1.)

Figure 1
 ATM Network for WAN Services

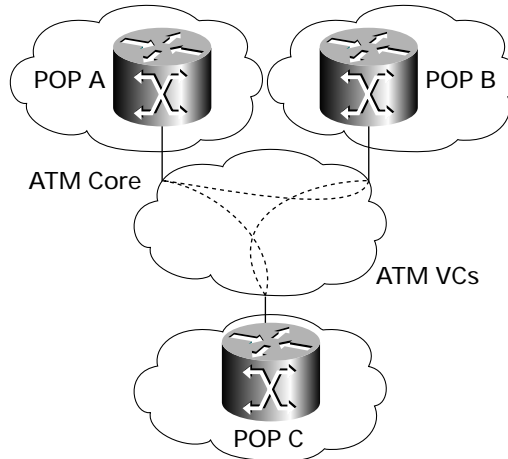




Application 2: Inter-POP Connectivity

Using the Cisco 12000 series ATM line cards, service providers can interconnect their points of presence (POPs) via a core ATM network. (See Figure 2.)

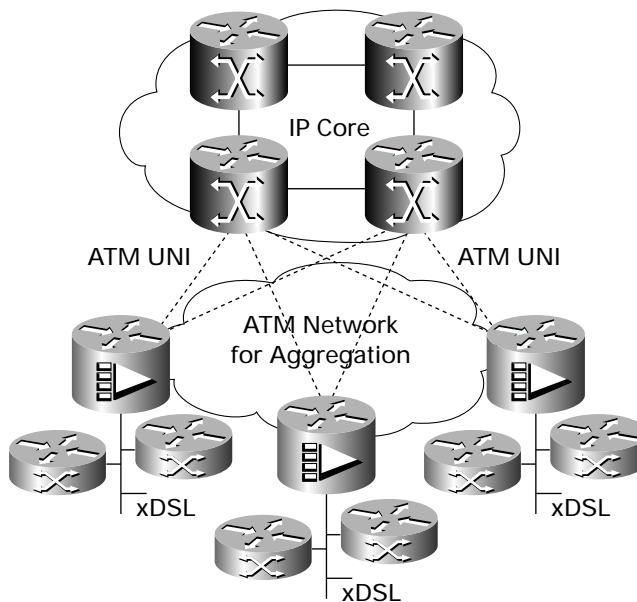
Figure 2
ATM Network for POP Interconnection



Application 3: DSL Aggregation

Service providers that provide digital subscriber line (DSL)-based Internet access will connect to their Internet backbones via the Cisco 12000 series ATM line cards. (See Figure 3.)

Figure 3
ATM Network for DSL Aggregation





Feature Summary

Packet Layer

- OC-12 line-rate forwarding for packet sizes greater than 280 bytes
- Cisco Express Forwarding (CEF) table that can accommodate up to 1 MB of forwarding entries
- Interleaved IP Version 4 (IPv4) and Multiprotocol Label Switching (MPLS) (Tag Switching) packets
- IP and MPLS load balancing on up to six paths
- Weighted Random Early Detection (WRED)
- Access control lists (ACLs) and extended access control lists (EACLs)
- Maximum transfer unit (MTU) of 9188 bytes
- Hardware-assisted IP multicast
- Committed Access Rate (CAR)
- 64 MB of route table memory, expandable to 256 MB
- 128 MB of packet buffer memory, expandable to 256 MB
- Packet/byte count, Synchronous Optical Network/Synchronous Digital Hierarchy (SONET/SDH) errors, queue size, and WRED statistics without performance degradation (per port)

ATM Layer

- Unspecified bit rate (UBR) transport over ATM AAL5
- RFC 1577 Classical IP over ATM
- RFC 1483 Multiprotocol Encapsulation over AAL5
- User-Network Interface (UNI) 3.0 and 3.1 (including Integrated Local Management Interface [ILMI] support)
- F5 Operation, Administration, and Maintenance (OAM) cell processing
- Support for up to 2048 VCs

SONET/SDH Layer

- Standards-compliant SONET/SDH interface
- Synchronization, including local (internal) or loop timed (recovered from network); 20-ppm clock accuracy over full operating temperature range; and pointer activity monitoring
- Local (diagnostic) and line (network) loopback

Specifications

Physical

- Occupies a single slot
- Weight: 7.2 lb (3.3 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

SONET/SDH

- Telcordia (Bellcore GR-253 as applicable)
- ITU-T G.957 as applicable
- ITU-T G.958 as applicable

Safety

- UL 1950
- CSA C22.2, No. 950
- EN 60950
- IEC 60950
- ACA TS001
- AS/NZS 3260
- EN 60825 laser safety (Class 1)

Electromagnetic Emissions Certification

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

Immunity

- EN61000-4-2 ESD
- EN61000-4-3 radiated immunity
- EN61000-4-4 EFT
- EN61000-4-5 surge
- EN61000-4-6 low-frequency common immunity

Network Equipment Building Systems

- GR-1098-Core—NEBS: EMC and safety



LEDs

- Active—indicates port is enabled
- Carrier—indicates valid SONET framing
- Rx cell—indicates receipt of ATM cells
- Alpha-numeric management display

Optical Power Characteristics

Product Number	Output Optical Power		Input Optical Power		Maximum Distance
	Minimum	Maximum	Minimum	Maximum	
LC-1OC12/ATM-SM	-15	-8	-28	-8	15 km
LC-1OC12/ATM-MM	-20	-14	-26	-14	500 m*

* All multimode cards on the Cisco 12000 series router 12000 use 1300-nm optics. Other products may use 850-nm optics for multimode. The specified maximum distance is valid only when the multimode card on the Cisco 12000 series router is connected to another multimode card that uses 1300-nm optics.

Connector

- SC connector (1300-nm transceiver for both single-mode and multimode fiber)

Network Management

- CiscoView
- Simple Network Management Protocol (SNMP)
- Management Information Base II (MIB-II)
- SONET Management Information Base (MIB) RFC 1595 supported through SNMP
- ATM MIB (RFC1695)
- Cisco AAL5 MIB

Ordering and Availability

Product Model Number	Product Description	Availability	Cisco IOS® Release
LC-1OC12/ATM-MM	One-port OC-12/STM-4 ATM, multimode, SC connectors	Now	12.0(10)S*
LC-1OC12/ATM-SM	One-port OC-12/STM-4 ATM, single-mode intermediate reach, SC connectors	Now	12.0(10)S*
MEM-GRP/LC-128 or MEM-GRP/LC-256	Code and route table memory options for the one-port OC-12c/STM-4c ATM line card	Now	-
MEM-DF-LC1-PKT-256	Packet memory option for the one-port OC-12c/STM-4c ATM line card	Now	-

* The one-port OC-12 ATM LC was introduced in the Cisco IOS Version 11.2(14)GS, but not all features indicated in this data sheet were supported at that point. For full functionality, Version 12.0(10)S is recommended.

Special Note

For additional information, please e-mail us at cs-12000@cisco.com or visit our Web site at:

<http://www.cisco.com/go/12000series>



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.
Capital Tower
168 Robinson Road
#22-01 to #29-01
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 Web site at www.cisco.com/go/offices

Argentina • Australia • Austria • Belgium • Brazil • Bulgaria • Canada • Chile • China PRC • Colombia • Costa Rica • Croatia
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

All contents are Copyright © 1992-2003 Cisco Systems, Inc. All rights reserved. Cisco, Cisco IOS, Cisco Systems, and the Cisco Systems logo are registered trademarks of Cisco Systems, Inc. and/or its affiliates in the U.S. and certain other countries.

All other trademarks mentioned in this document or Web site are the property of their respective owners. The use of the word partner does not imply a partnership relationship between Cisco and any other company.
(0303R) DB/LW4433 0403