



Data Sheet

Cisco ONS 15310 CE-Series 8-Port 10/100 Carrier Ethernet Card for the 15310 SONET Multiservice Platforms

The Cisco® ONS 15310 SONET multiservice provisioning platforms are optimized for use at the customer location and at aggregation nodes in a service provider's network or business campus environments. The Cisco ONS 15310 supports a broad range of Layer 1 transport and Layer 2 packet-switching functions, allowing for flexible packet services over Ethernet and SONET.

Cisco ONS 15310 CE-Series 8-Port 10/100 Card Overview

The Cisco ONS 15310 can be equipped with Ethernet cards to facilitate the delivery of carrier-class, private-line Ethernet and Fast Ethernet services. Virtual concatenation (VCAT), Link Capacity Adjustment Scheme (LCAS), standard encapsulation, and SONET sub-50-millisecond (ms) resiliency schemes are used to deliver these point-to-point data services efficiently and in conjunction with the traditional TDM service-delivery requirements.

The Cisco ONS 15310 Carrier Ethernet solution allows service providers and enterprise customers to easily migrate their traditional SONET networks to a converged network architecture where all DS-1, DS-3, Ethernet, and Fast Ethernet services are provisioned and maintained with the same design that carriers have become accustomed to for traditional service delivery.

The Cisco ONS 15310 CE-Series 8-Port 10/100 Carrier Ethernet Card (Figure 1) is a Layer 1 card providing port-mapped services and interoperability with the Carrier Ethernet services supported on the Cisco ONS 15454 SONET multiservice provisioning platform (MSPP), delivering Ethernet and Fast Ethernet solutions that span access and metropolitan-area networks.

Key Features and Benefits

Physically, the card provides a mapping of up to eight 10/100 Ethernet encapsulated traffic streams into a SONET payload. The SONET payload makes use of low-order virtual concatenation (VT1.5) and high-order (STS-1) contiguous concatenation (CCAT) with a choice of Generic Framing Protocol (GFP) or High-Level Data Link Control (HDLC)-based framing. The card also supports LCAS, which allows hitless dynamic adjustment of SONET link bandwidth. Each 10/100 Ethernet port can be mapped to a SONET channel in increments of VT1.5 or STS-1 granularity. Each card supports packet processing, classification, quality of service (QoS)-based queuing, and traffic-scheduling features.

The Cisco ONS 15310 CE-Series 8-Port 10/100 Carrier Ethernet Card provides eight Ethernet client interfaces ported to eight packet-over-SONET (POS) or Virtual Concatenation Group (VCG) ports. Each of the Ethernet client interfaces is encapsulated into a SONET payload and exits the Carrier Ethernet card through one of the eight available virtual POS or VCG ports for cross-connection to the Cisco ONS 15310 optical interface. Each of the virtual POS or VCG ports is mapped to a STS-1 or STS-3c SONET circuit or to a VCAT SONET circuit where the members of the VCAT could be either VT1.5 (Low-Order VCAT [LO-VCAT], VT1.5-xv) or STS-1 (High-Order VCAT [HO-VCAT], STS-1-xv [x=1, 2, 3]) SONET circuits selected by the user during service provisioning. Ethernet frames are encapsulated to SONET payload using either the standard ITU-T G.7041 Generic Framing Procedure (GFP) or HDLC encapsulation for interoperability with other compatible Cisco products. The member circuits of the VCG can be transported as protected circuits (unidirectional-path switched ring [UPSR], path-protected mesh network [PPMN], and 1+1) or unprotected circuits, providing the level of resiliency specified by the network administrator or available bandwidth. Optionally the VCG ports may use the ITU-T G.7042 LCAS scheme to manage the dynamic increase or decrease of transport bandwidth for Ethernet traffic with no or minimal service interruption.

Figure 1

Cisco ONS 15310 CE-Series 8-Port 10/100 Carrier Ethernet Card



Features

The Cisco ONS 15310 CE-Series 8-Port 10/100 Carrier Ethernet Card includes the following features:

- 8-port 10/100BASE-T, RJ-45 connectors
- 300-Mbps (2xSTS-3) SONET transport bandwidth per card
- Each 10/100BASE-T port mapped to SONET VCG or POS port using GFP-F (ITU-T G.7041) or LAN Extension (LEX which is a Cisco proprietary [HDLC] encapsulation)
- Each VCG or POS port can consist of CCAT (STS-1, STS-3c) or HO-VCAT (STS-1-1v, STS-1-2v, STS-1-3v) circuits
- Each VCG or POS port can consist of LO-VCAT (VT1.5-xv, x=1-64) circuits
- In-service capacity increment and decrement (ITU-T G.7042 LCAS)
- Sub-50-ms SONET protection and restoration of transport circuits
- Transparent to Layer 2 bridging, switching, Ethernet MAC protocols (such as Cisco EtherChannel® technology, 802.1x, Cisco Discovery Protocol, VLAN Trunking Protocol [VTP], Spanning Tree Protocol), and VLAN (802.1Q and QinQ)
- Ethernet link functions: autonegotiation, link-speed autosense, full and half duplex, flow control (802.3x)
- Packet prioritization based on IP type of service (ToS) or 802.1P
- Maximum packet size supported: 1548 bytes
- Low-latency transport
- A-to-Z provisioning Cisco Transport Controller and Cisco Transport Manager, Transaction Language 1 (TL1) provisioning
- Simple Network Management Protocol (SNMP) alarms and Cisco IOS® Software Remote Monitoring (RMON) performance monitoring
- Cisco Transport Controller, Cisco Transport Manager, and TL1 management
- Interoperation (over SONET) with Cisco G-Series and Cisco ML-Series cards
- Backpressure flow control
- Terminal and facility loopback
- Link-integrity support

Product Applications

The Cisco ONS 15310 CE-Series 8-Port 10/100 Carrier Ethernet Card provides the flexibility to meet the demand of a wide variety of network applications and service offerings, including Ethernet Private Line (Figure 2), Metro Ethernet access (Figure 3), Internet access, IP VPN access, and VoIP access, all with the option to provide SONET-layer service protection. The service bandwidth is managed and provided by the appropriate VCAT circuit size for each individual service.

Figure 2

Point-to-Point Ethernet Private Line Service Between Sites

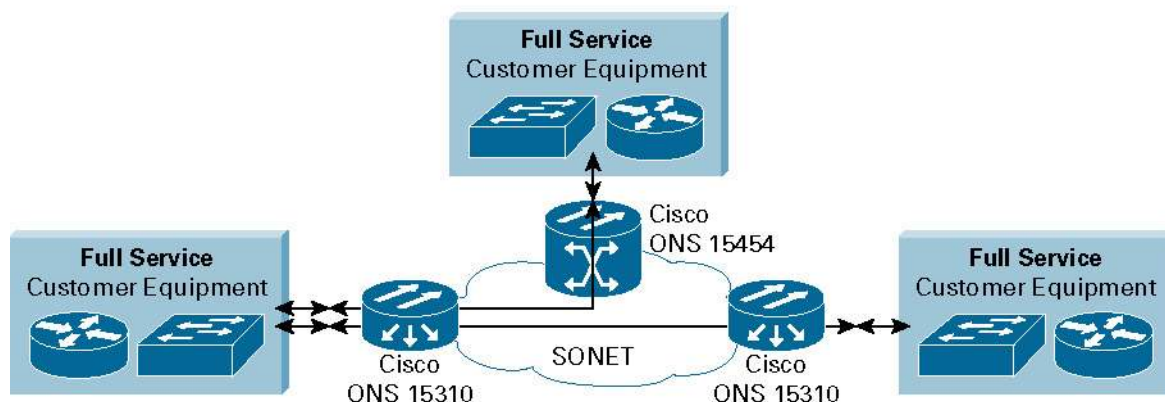
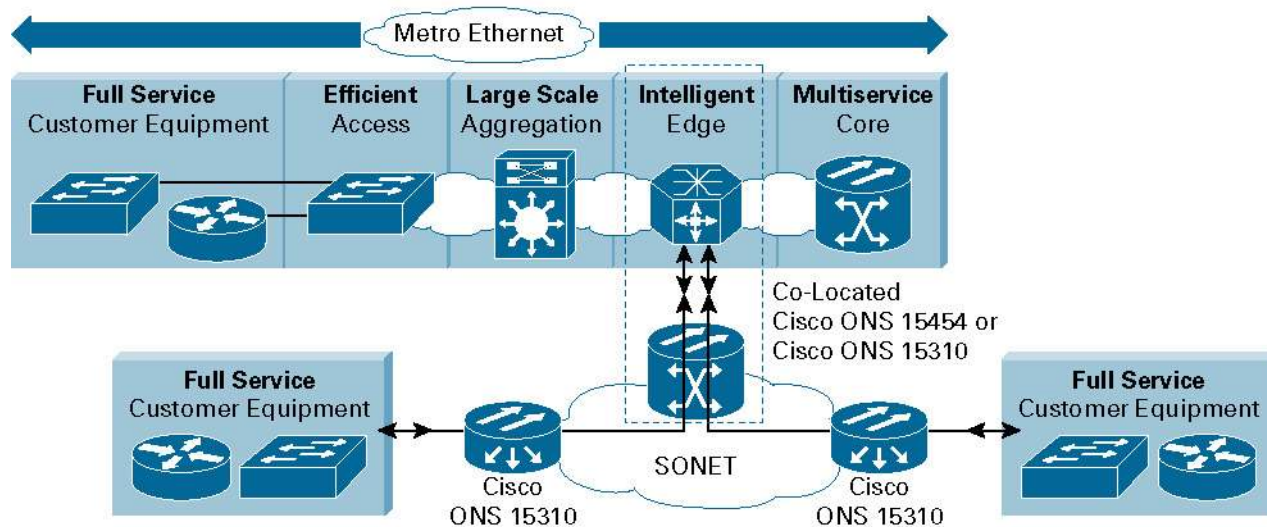


Figure 3

Metro Ethernet Access to Intelligent Core Network Services



Tables 1 and 2 list the SONET circuit combinations and maximum services per card for the Cisco ONS 15310 CE-Series 8-Port 10/100 Carrier Ethernet Card.

Table 1. Valid SONET Circuit

Service Type	SONET Circuit Type
Line Rate 100BASE-T	STS-3c STS-1-3v STS-1-2v*
Sub Rate 100BASE-T	STS-1 STS-1-1v VT1.5-xv (x = 1-64)
Line Rate 10BASE-T	STS-1 VT1.5-xv (x = 7)
Sub Rate 10BASE-T	VT1.5-xv (x = 1-6)

*STS-1-2v provides a total transport capacity of 98 Mbps.

Table 2. Maximum Services per Card

Service Mix Options per Card	100BASE-T – Line Rate		100BASE-T – Sub Rate	10BASE-T – Line Rate or Sub Rate	Total Active Services
	STS-3c, STS-1-3v	STS-1-2v	STS-1	VT1.5-xv	
1	2	0	0	0	2
2	1	1	1	0	3
3	1	0	3	0	4
4	1	0	0	7 (x = 1-12) ¹	8 ¹
5	0	2	2	0	4
6	0	1	1	6 (x = 1-14)	8
7	0	1	0	7 (x = 1-12) ¹	8 ¹
8	0	0	6	0	6
9	0	0	3	5 (x = 1-16)	8
10	0	0	0	8 (x = 1-21)	8

1. This LO-VCAT circuit combination is achievable if the first circuit created on the card is a LO-VCAT circuit. If the first circuit created on the card is HO-VCAT or CCAT STS, then a maximum of six LO-VCAT circuits can be added on the card.

Tables 3 and 4 list the product specifications and ordering information for the Cisco ONS 15310 CE-Series 8-Port 10/100 Carrier Ethernet Card.

Table 3. Product Specifications

Attributes	Description
Ports	Eight 10/100BASE-T Ethernet ports
Port speed	10/100 Mbps
Duplex	Full-, half-, and autonegotiation
Flow control	Supported
Transport	Up to 8 virtual POS (VCG) ports supporting LO-VCAT/HO-VCAT
Transport bandwidth per card	Up to 310 Mbps (6 STS-1 equivalent)
Transport bandwidth allocation on virtual POS (VCG) ports	VT1.5-xv (x=1-64), STS-1, STS-1-1v, STS-1-2v, STS-1-3v, and STS-3c

Attributes	Description
Transport bandwidth adjustment	Optional using the ITU-T G.7042 LCAS mechanism
Ethernet over SONET encapsulation	ITU-T G.7041 GFP-F, Cisco LEX (HDLC) options
QoS	Classification and queuing
Service provisioning	A-to-Z service provisioning on Cisco Transport Controller, TL1-based service provisioning
Maximum power	50W
Operating temperature	32 to 122°F (0 to 50°C)
Operating humidity	Noncondensing 5 to 95%
Dimensions	6.94 in. (176.3 mm) wide x 1.35 in. (34.29 mm) tall x 8.81 in. (223.8 mm) deep
Weight	2 lb (0.91 kg)

Table 4. Ordering Information

Product Number	Description
15310-P-CE-100T-8	Cisco ONS 15310 (CL and MA) "Platform" CE-Series 8-Port 10/100 Carrier Ethernet card, RJ-45 connectors
15310-CE-100T-8	Cisco ONS 15310-CL CE-Series 8-Port 10/100 Carrier Ethernet card, RJ-45 connectors

Regulatory Compliance

The Cisco ONS 15310 CE-Series 8-Port 10/100 Carrier Ethernet Card meets the following compliances:

EMC (Class A)

- ETSI 300-386-TC
- Bellcore GR-1089-CORE, Level 3
- CISPR 22, CISPR24
- IC ICES-003 Issue 3, 1997
- FCC 47CFR15
- EN55022, EN55024

Safety

- CAN/CSA-C22.2 No. 950-95, 3rd Ed
- Telcordia GR-1089-CORE
- IEC60950/EN60950, 3rd Ed
- UL 60950

Environmental

- Telcordia GR-63-CORE, Level 3
- ETS 300 019-2-1 (Storage, Class 1.1)
- ETS 300 019-2-2 (Transportation, Class 2.3)
- ETS 300 019-2-3 (Operational, Class 3.1E)

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Pa/LW9883 11/05

