Data Sheet

Cisco ONS 15310 ML-Series 8-Port 10/100 Switched Ethernet Card for the Cisco ONS 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 ML-Series 8-Port 10/100 Ethernet Card Overview

Traditional Ethernet over SONET services consist of simple Layer 1 mapping of Ethernet frames into SONET for transport between two endpoints where SONET protection mechanisms are used to deliver sub-50-millisecond (ms) resiliencies. Consequently, bandwidth must be reserved for both working and protected traffic, resulting in underutilization of available bandwidth. Furthermore, services such as voice over IP (VoIP), digital videoconferencing, surveillance, and VPNs all require interconnectivity between multiple end locations. Using the traditional Ethernet over SONET point-to-point model, these solutions become very complicated and highly inefficient.

Switched Ethernet uses statistical multiplexing, which supports oversubscription and better usage of Ethernet networks. Resilient packet ring (RPR) enables efficient multipoint services, with spatial reuse of bandwidth and sub-50-ms, Layer 2 ring-based protection. By using switched Ethernet and RPR, the result is a more robust, efficient solution that economically addresses the needs of today's advanced services requirements.

The Cisco ONS 15310 ML-Series 8-Port 10/100 Ethernet card is a Layer 2-switched services card that interoperates with the Cisco ONS 15454 ML-Series data cards on the Cisco ONS 15454 SONET Multiservice Provisioning Platform (MSPP), delivering Ethernet and Fast Ethernet solutions that span access metropolitan-area networks.

Key Features and Benefits

Physically, the card provides a mapping of up to eight 10/100 Ethernet encapsulated traffic streams into SONET payloads using high-order (STS-1) contiguous concatenation or virtual concatenation (VCAT) with a choice of Generic Framing Protocol (GFP) or High-Level Data Link Control (HDLC)-based framing. The card also supports Link Capacity Adjustment Scheme (LCAS) that allows hitless dynamic adjustment of SONET link bandwidth. Each 10/100 Ethernet port can be mapped to a SONET channel in increments of STS-1 granularity. Each card supports packet processing, classification, quality of service (QoS)-based queuing, traffic scheduling, RPR protected transport, and packet multiplexing services.

The Cisco ONS 15310 ML-Series 8-Port 10/100 Mbps Ethernet card provides switched operating mode, with eight subscriber interfaces and two virtual packet-over-SONET (POS) or Virtual Concatenation Group (VCG) SONET interfaces mapped through the cross-connect for transport with other services between network elements. Point-to-point transport POS with service aggregation through Layer 2 switching or multiple Cisco ONS 15310 ML-Series cards in a ring topology are configured as an RPR where each POS port represents one direction of the RPR from each individual card. The Ethernet interfaces are switched locally and are then transported over the RPR. The Ethernet traffic is switched based on the dynamically learned MAC addresses and supports 802.1Q VLAN and the QinQ (hierarchical VLAN) to achieve efficient customer-traffic segregation in the transport network while maintaining VLAN transparency across the transport RPR network. Along with Ethernet switching, the card also supports a robust set of QoS features to help ensure end-to-end application and differentiated services delivery.

Each of the two virtual POS and VCG ports is mapped to an STS-1, STS-1-1v, or STS-1-2v SONET circuit. In RPR operation the SONET circuits are commonly unprotected because the RPR data plane provides a resilient 50-ms protection mechanism.

Figure 1
Cisco ONS 15310 ML-Series Switched Ethernet Card

Features

The Cisco ONS 15310 ML-Series 8-Port 10/100 Mbps Ethernet card includes the following features:

- Eight 10/100BASE-T ports
- Two VCG or POS ports, dual rotating-ring support per card
  - 50-Mbps (STS-1) or 100-Mbps (STS-1-2v) RPR ring
  - In-service RPR capacity increment and decrement (LCAS)
  - Sub-50-ms RPR protection
  - Switched Ethernet with RPR spatial reuse
  - Ethernet switching with 802.1Q and QinQ support
- Each 10/100BASE-T port can offer point-to-point and multipoint Ethernet VPN services across the RPR
- POS or RPR encapsulation on two POS ports
  - Each VCG or POS can consist of high-order VCAT (HO-VCAT), or STS-1, STS-1-2v
- Ethernet- and IP-aware advanced QoS
  - IP differentiated services code point (DSCP), IP Precedence, and Ethernet class of service (CoS)-based QoS
  - 2-color, 3-rate policer with CoS marking
  - Priority queue and bandwidth-Weighted Deficit Round Robin (WDRR) queue
- Cisco EtherChannel® technology and Spanning Tree Protocol-based redundant access
- Per-port and per-VLAN CoS-based counters
- Maximum packet size supported: 1548 bytes
- Cisco IOS® Software Remote Monitoring (RMON) through Simple Network Management Protocol (SNMP)

- SONET interoperability with Cisco G-Series (no RPR), and Cisco ML-Series cards
- Provisioned through combination of Cisco IOS Software command-line interface (CLI) and Cisco Transport Manager, Cisco Transport Controller, and Transaction Language 1 (TL1)

Product Applications

The Cisco ONS 15310 ML-Series 8-Port 10/100 Mbps Ethernet card provides the flexibility to meet the demand of a wide variety of network applications and service offerings, including RPRs with Ethernet Private Ring (EPR) services, Metro Ethernet access, Internet access, IP VPN access, and VoIP access over SONET.

Figure 1

Access-Ring RPR Connecting to Core-Ring RPR Architecture

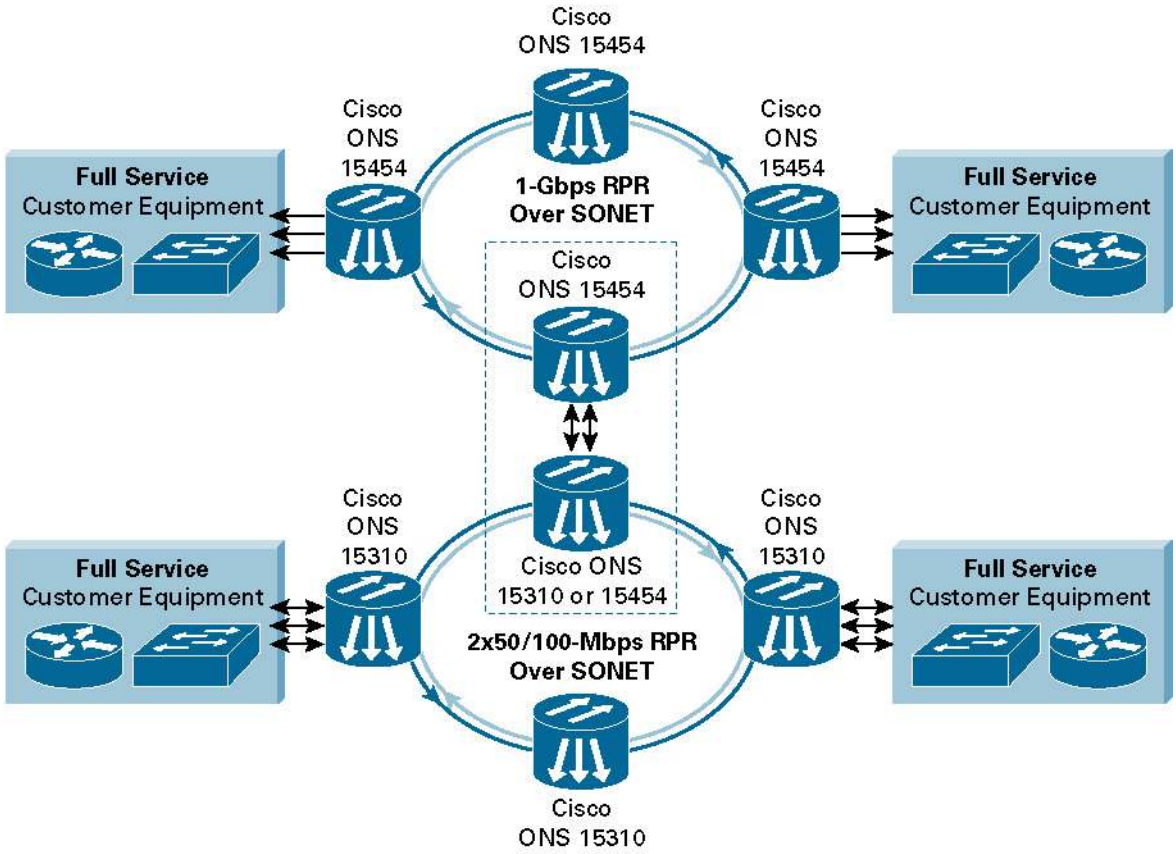

Figure 2

Internet, IP VPN, and VoIP Access Over RPR – RPR and Metro Ethernet Access to Intelligent Network Services

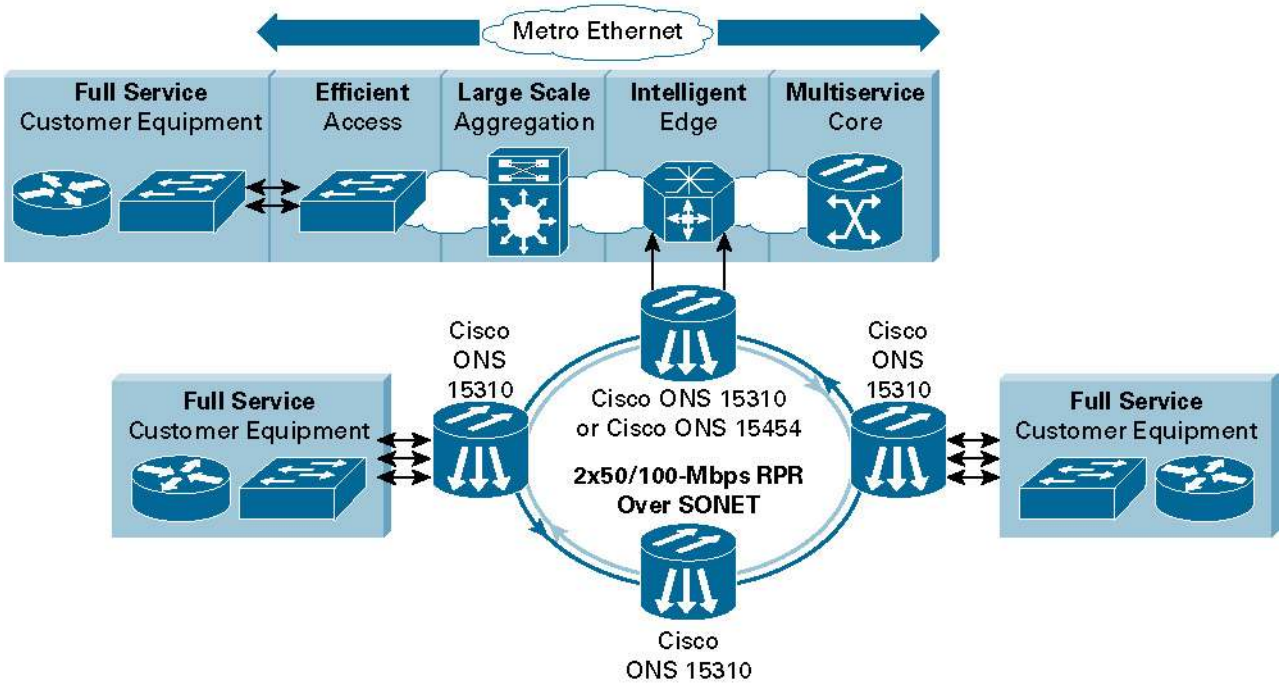

Table 1 shows the valid SONET circuit combinations and the maximum services per card.

Table 1. SONET Circuit Combinations and Maximum Services

POS	Scale
POS per card	2
POS circuit sizes	STS-1, STS-1-1v, and STS-1-2v
Active VLAN	255
Active QinQ	8
MAC entry	8000

RPR

Attribute	Scale
RPR per card	2
RPR ring sizing	STS-1, STS-1-1v, and STS-1-2v
Active VLAN	255
Active QinQ	8
MAC entry	8000

Tables 2 and 3 list the product specifications and ordering information for the Cisco ONS 15310 ML-Series 8-Port 10/100 Mbps Ethernet card.

Table 2. 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 2 virtual POS (VCG) ports supporting HO-VCAT
Transport bandwidth per card	Up to 196 Mbps (2 STS-1-2v equivalent)
Transport bandwidth allocation on virtual POS (VCG) ports	STS-1, STS-1-1v, STS-1-2v
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
Bridging	IEEE 802.1 and IEEE 802.1Q
Routing	Static routing support
QoS	IP DSCP, IP Precedence, 802.1P, 802.1Q and interface-based classification, dual-rate policer, 3 color-marking (CoS bits), and priority and bandwidth queuing
Service provisioning	A-to-Z SONET circuit provisioning and Cisco IOS CLI Layer 2 and Layer 3 provisioning; TL1-based SONET transport circuit 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 3. Ordering Information

Product Number	Description
15310-P-ML-100T-8	Cisco ONS 15310 (CL and MA) “Platform” ML-Series 8-Port 10/100 Mbps Switched Ethernet Card, RJ-45 connectors
15310-ML-100T-8	Cisco ONS 15310-CL ML-Series 8-Port 10/100 Mbps Switched Ethernet Card, RJ-45 connectors

Regulatory Compliance

The Cisco ONS 15310 ML-Series 8-Port 10/100 Mbps Ethernet card meets the following regulatory 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
- Bellcore GR-1089-CORE
- IEC60950/EN60950, 3rd Ed (with all country deviations)
- UL 60950

Environmental

- Bellcore 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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