# Cisco ONS 15310-MA CE-Series 6-Port Multirate Ethernet Card

The 6-port Multirate Ethernet Card for the Cisco ONS 15310-MA Multiservice Provisioning Platform (MSPP) enables the delivery of true carrier-class Ethernet private line services.

## Product Overview

The Cisco® ONS 15310-MA can be equipped with Ethernet cards to facilitate the delivery of carrier-class, private-line Gigabit 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 CE-MR-6 Carrier Ethernet card, with industrial temperature rating, is ideal for cellsite or remote plant Ethernet backhaul applications.

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, Gigabit Ethernet, and Fast Ethernet services are provisioned and maintained with the same design that carriers have become accustomed to for traditional service delivery.

With the introduction of the Cisco ONS 15310-MA CE-Series 6-Port Multirate Ethernet Card (CE-MR-6, Figure 1), the Cisco CE-Series card portfolio – which includes the 10/100/100 Mbps (15454-CE-MR-10), 10/100 Mbps (15454-CE-100T-8, 15310-P-CE-100T-8), and the 1000 Mbps (15454-CE-1000-4) cards on the Cisco ONS 15454 and 15310 platforms – gives service providers the ability to scale from 1.5-Mbps to 1-Gigabit Ethernet Private Line services. Additionally, the Cisco CE-MR-6 card provides the service flexibility for customers to deploy multirate Ethernet services (10, 100, 1000 Mbps) over a single card by supporting 10 Small Form-Factor Pluggable (SFP)-based multirate ports.

The Cisco CE-MR-6 card meets important requirements for an end-to-end Ethernet Private Line application with features such as generic framing procedure (GFP), VCAT, software link capacity adjustment scheme (LCAS and SW-LCAS), link integrity, and comprehensive Ethernet and SONET statistics – including bandwidth utilization statistics and flow control. The Cisco CE-MR-6, with GFP and VCAT, helps service providers and enterprises maximize bandwidth utilization and promote industry-wide interoperability for Ethernet Private Line services. With LCAS, the Cisco CE-MR-6 gives service providers the flexibility to dynamically add and remove bandwidth on Ethernet Private Line services. Ethernet and SONET statistics provide service-monitoring capabilities. For example, bandwidth utilization statistics reveal the usage patterns of end customers – data that can be critical for operations personnel or for network and business planners. Features such as link integrity provide faster convergence capability to end customers' Layer 2 networks connected through Ethernet private lines.

**Figure 1.**    Cisco CE-Series 6-Port Ethernet Multirate Card for Cisco ONS 15310-MA MSPP



## Applications

The Cisco ONS 15310 CE-MR-6 Carrier Ethernet card provides the flexibility to meet the demands of a wide variety of network applications and service offerings, including Ethernet Private Line (Figure 2), Metro Ethernet access (Figure 3), cellsite backhaul, 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.

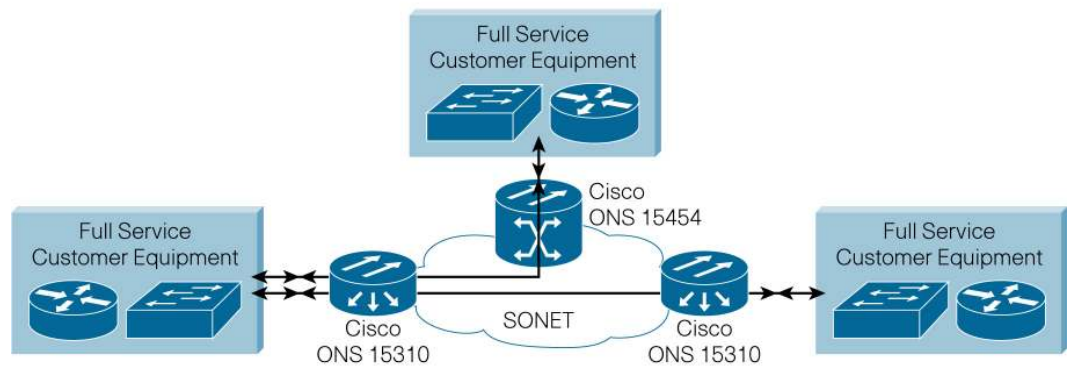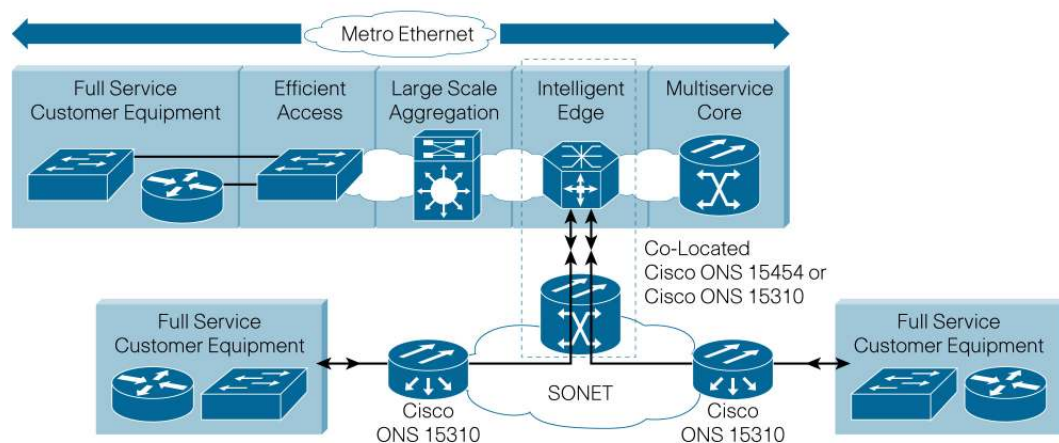**Figure 2.**    Point-to-Point Ethernet Private Line Service Between Sites

**Figure 3.**     Metro Ethernet Access to Intelligent Core Network Services



## Product Specifications

### Compact Design

- Single-width card slot design for increased shelf flexibility and scalability
- Up to four Cisco CE-Series cards per shelf assembly
- Up to 24 Ethernet ports (10/100/1000 Mbps) per shelf assembly

### Data Architecture Options

- Point-to-point
- Hub-and-spoke using multiple circuits

### Optical Transport Options

- Unidirectional-path switched ring (UPSR)
- Automatic protection switching (APS) and subnetwork connection (SNC) (1+1 uni- or bidirectional)
- Path-protected mesh networking (PPMN)
- Unprotected (0+1)

Table 1 outlines valid SONET circuit combinations for the Cisco CE-MR-6 card according to service type. Table 2 lists various product specifications for the Cisco CE-MR-6 card.

**Table 1.**     SONET Circuit Combinations

|   | Service Type | SONET Circuit Type |
|---|---|---|
| 1 | Line-rate 1000 Mbps | STS-1-21v<br>STS-3C-7v<br>STS-24C |
| 2 | Sub-rate 1000 Mbps | STS-1-nv , n = 1 to 20<br>STS-3C-nv, n = 1 to 6<br>STS-1, -3c, -6c, -9c, -12c |
| 3 | Line-rate 100 Mbps | STS-3c<br>STS-1-3v<br>STS-1-2v |

| | Service Type | SONET Circuit Type |
|---|---|---|
| 4 | Sub-rate 100 Mbps | STS-1<br>STS-1-1v<br>VT1.5-Xv (X = 1 to 64) |
| 5 | Line-rate 10 Mbps | STS-1<br>VT1.5-Xv (X = 7) |
| 6 | Sub-rate 10Mbps | VT1.5-Xv (X = 1 to 6) |

**Table 2.**  Product Specifications

| Attributes | Description |
|---|---|
| Platform | ONS 15310 MA |
| Ports | 6 SFP ports |
| Port speed | 10/100/1000 Mbps |
| SFP types | 10/100/1000 Mbps BASE-T; 100 Mbps FX, LX, BX; 1000 Mbps SX, LX, ZX |
| Software release | Cisco ONS 15310 Software Release 8.51 and later |
| Duplex | Full and autonegotiation |
| Flow control | Asymmetrical |
| Transport | Up to 6 "Virtual" POS (VCG) ports supporting HO-VCAT and LO-VCAT |
| Transport bandwidth per card* | 2.5 Gbps |
| Transport bandwidth allocation on "virtual" POS (VCG) ports | SONET: STS-1-nv (n = 1 to 21), STS-3C-nv (n = 1 to 7), vt1.5-nv (n = 1 to 64), STS-1, -3c, -6c, -9c, -12c, -24c |
| Transport bandwidth adjustment | LCAS and SW-LCAS (dynamic addition and removal of bandwidth) |
| Ethernet-over-SONET encapsulation | ITU-T G.7041 GFP-F and Cisco HDLC options |
| QoS | 802.1p and IP TOS-based prioritization |
| Frame size | 64 to 9600 bytes |
| Link integrity | Yes |
| Service provisioning | A-to-Z service provisioning on Cisco Transport Controller, TL1-based service provisioning |
| Maximum power | 60W |
| Operating temperature | –40 to 149°F (–40 to 65°C) |
| Operating humidity | Noncondensing 5–85% |
| Dimensions (H x W x D) | 7.25 in. x 1.425 in x 10.15 in |

*Bandwidth usage restrictions when using LO-VCAT

## Regulatory Compliance

### EMC (Class A)

- NEBS Bellcore GR-1089-CORE, Issue 4 (Type 2, and Type 4)
- IC ICES-003 Issue 3, 1997
- FCC 47CFR15(2006)
- EN 300 386 Telecommunications Network Equipment (EMC), 2005-04)
- EN55022(2006), EN55024(1998)
- CISPR 22(2006), CISPR 24(2006)
- VCCI (2007)
- EN61000-6-1 Generic Immunity Standard (2001)
- Resolution 237 (Brazil)

**Product Safety**

- NEBS Bellcore GR-1089-CORE, Issue 4 (Type 2, and Type 4)
- IEC/EN 60950-1(2001/10) with Amendment 11:2004 to EN 60950-1:2001, 1st Edition (CB report/certificate with all country deviations)
- UL/CSA 60950-1, 2006

**Laser Safety**

- EN or IEC-60825-2
- IEC 60825-1 Consol. Ed. 1.2 (incl. am1+am2) 2001-08
- CSA60950-1 or IEC 60950-1/EN60950-1
- 21CFR1040 (2004/04) (Accession Letter and CDRH Report)

**Environmental**

- NEBS Bellcore GR-63-CORE,Issue 3
- ETS 300 019-2-1 (2000) (Storage, Class 1.1)
- ETS 300 019-2-2 (1999) (Transportation, Class 2.3)
- ETS 300 019-2-3 (2003) (Operational, Class 3.1E)

## Ordering Information

To place an order, visit the [Cisco Ordering Home Page](#). Table 3 outlines the ordering information for the Cisco ONS 15310 CE-Series 6-Port Multirate Ethernet Card.

**Table 3.** Ordering Information

| Product Description | Part Number |
|---|---|
| Cisco CE-Series 10/100/1000-Mbps multirate Ethernet card, 6 ports | 15310-CE-MR-6= |
| Cisco CE-Series 10/100/1000-Mbps multirate Ethernet card, 6 ports | 15310-CE-MR-6 |
| SFP – 10/100/1000 Ethernet BASE-T multirate copper RJ-45 | ONS-SE-ZE-EL= |
| SFP – 10/100/1000 Ethernet BASE-T multirate copper RJ-45 | ONS-SE-ZE-EL |
| SFP – 1000BASE-SX Gigabit Ethernet, 850 nm, MM, I-TEMP | ONS-SI-GE-SX= |
| SFP – 1000BASE-SX Gigabit Ethernet, 850 nm, MM, I-TEMP | ONS-SI-GE-SX |
| SFP – 1000BASE-LX Gigabit Ethernet, 1310 nm, SM, I-TEMP | ONS-SI-GE-LX= |
| SFP – 1000BASE-LX Gigabit Ethernet, 1310 nm, SM, I-TEMP | ONS-SI-GE-LX |
| SFP – 1000BASE-ZX Gigabit Ethernet, 1550 nm, SM, I-TEMP | ONS-SI-GE-ZX= |
| SFP – 1000BASE-ZX Gigabit Ethernet, 1550 nm, SM, I-TEMP | ONS-SI-GE-ZX |
| SFP – 100 Mbps Short Reach – 1310 nm, MM, LC, I-TEMP | ONS-SI-100-FX= |
| SFP – 100 Mbps Short Reach – 1310 nm, MM, LC, I-TEMP | ONS-SI-100-FX |
| SFP – 100 Mbps Long Reach – 1310 nm, SM, LC, I-TEMP | ONS-SI-100-LX10= |
| SFP – 100 Mbps Long Reach – 1310 nm, SM, LC, I-TEMP | ONS-SI-100-LX10 |
| SFP – 10/100 BX-U, EXT | ONS-SE-100-BX10U= |
| SFP – 10/100 BX-U, EXT | ONS-SE-100-BX10U |
| SFP – 10/100 BX-D, EXT | ONS-SE-100-BX10D= |
| SFP – 10/100 BX-D, EXT | ONS-SE-100-BX10D |

## Service and Support

Cisco offers a wide range of services programs to accelerate customer success. These innovative services programs are delivered through a unique combination of people, processes, tools, and partners, resulting in high levels of customer satisfaction. Cisco services help you to protect your network investment, optimize network operations, and prepare the network for new applications to extend network intelligence and the power of your business. For more information about Cisco Services, see Cisco Technical Support Services or Cisco Advanced Services.

## For More Information

For more information about the Cisco ONS 15310 Multiservice Platform, visit http://www.cisco.com/en/US/products/hw/optical/index.html or contact your local account manager.

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