DATA SHEET

Coherent ELS

Delivering scale and high-capacity coherent Dense Wavelength Division Multiplexing (DWDM) to the edge in a compact, hardened form factor with unprecedented operational simplicity

The launch of fiber densification initiatives, combined with the cost and power reductions now possible with next-generation coherent solutions, is expanding the DWDM requirements at the network edge. Ciena's Coherent ELS is a high-capacity, coherent-optimized, open line system (OLS) that is purpose-built to fully address next-generation edge network requirements today and moving forward.

With Ciena's Coherent ELS, network providers can cost-effectively deliver 100G to 800G coherent DWDM wavelengths to the edge, enabling a full system capacity of up to 48 channels for point-to-point applications or up to 42 channels for linear and hub/spoke applications. The ELS introduces two new chassis: a single-rack unit Optical Add Drop Mux (OADM) and a two-rack unit terminal. The OADM chassis is available in both 6 and 10 channel options, whereas the terminal supports up to 48 channels. Additionally, the OADM is Outside Plant (OSP) Class 2 compliant and can be combined with extended temperature coherent interfaces to enable end-to-end coherent line system deployments in uncontrolled environments. Both the OADM and terminal chassis offer dual feed AC or DC power feed options, and support front-to-rear airflow with a rear cooling fan unit that is easy to replace in service. An optional 1RU front access cooling fan unit is also available. Additionally, the ELS provides carrier-grade 99.999 percent availability in both Central Office (CO) and OSP environments.

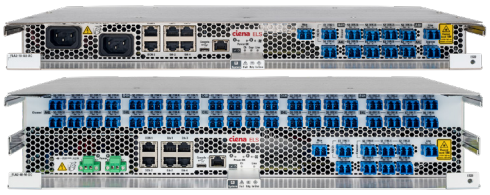

Figure 1. Coherent ELS 10-Channel AC-powered OADM (1RU) and 48-Channel DC-powered Terminal (2RU)

Features and Benefits

- Efficiently scale to meet high-capacity requirements at the network edge with minimal footprint and automated deployments
- Deliver 100G to 800G coherent DWDM across flexible configurations, including 400ZR and 400ZR+ applications
- Cost-efficiently deliver high-capacity connectivity for low channel count DCI applications scaling up to 800G per channel
- Simplify deployment with stackable plug-and-play design, automatic turn-up, and Low Touch Provisioning (LTP)
- Gain ROADM-like operational simplicity with integrated automation and intelligence for faster service turn-up, troubleshooting, and real-time system optimization
- Leverage AC and DC powering options with support for extended temperature deployments to address specific site requirements
- Increase availability with carrier-grade 99.999 percent availability in CO and OSP environments

Flexible configurations

The ELS can be deployed in various configurations, including point-to-point, linear, and hub/spoke applications, over a 100GHz fixed-grid architecture. The design is optimized for transport of 100G to 800G coherent wavelengths, including support for 400ZR and 400ZR+ applications enabled via coherent QSFP-DD plugs. With the ELS, operators can also cost-efficiently deliver high-capacity point-to-point connectivity for low channel count DCI applications, scaling up to 800G per channel. Each OADM chassis fully supports a single degree and at intermediate sites, two OADM chassis can be deployed to provide resiliency in both directions. The ELS features a channel-banded architecture comprised of 5 or 10 bands of up to 8 or 4 channels each, respectively. Two additional channels are dedicated at each edge that can be used for hop-by-hop traffic. This approach makes it easy to deploy dual-homed rings or linear chains consisting of up to 10 intermediate nodes.

Unprecedented operational simplicity

A key differentiation of Ciena's Coherent ELS is the built-in software intelligence and automation that facilitate deployments, accelerate turn up, and optimize system performance—enabling a new operational paradigm for photonics at the network edge.

Architected for easy deployment

The ELS is architected for fast, high-scale deployments and features a stackable, plug-and-play design that reduces fibering complexity through the integration of various components within the chassis. It supports automatic system turn-up ensuring error-free, on-site installation leveraging intuitive LEDs on the chassis for instant verification that all connections are valid, and that the system is ready for operation. Low Touch Provisioning (LTP) simplifies commissioning of the ELS nodes and enables remote system configuration, reducing on-site configuration time.

Fast service turn-up and optimization

The ELS features ROADM-like embedded system intelligence that is unmatched in edge photonic systems. This includes power monitoring capabilities used to perform automatic loss compensation, as well as power control and optimization to maximize system reach and performance in real time. The ELS also includes integrated EDFA amplifiers, supporting up to 30dB span losses to accommodate deployments even in the most challenging fiber environments. Additionally, the system is equipped with a bidirectional OSC channel that extends communication across the optical network enabling automatic topology discovery of the entire line system. With these combined capabilities, providers can benefit from increased operational simplicity, faster troubleshooting, and optimal system performance, while reducing the number of site visits, skilled personnel, and test equipment required.

Simple to manage and integrate

The ELS provides a range of easy-to-manage options including a Command Line Interface (CLI) as well as Node Essentials, a web-based user interface that is integrated within the ELS software for simple configuration, troubleshooting, and monitoring. It can also be deployed with an external controller or Ciena's Manage, Control and Plan (MCP) domain controller, which offers an MCP cloud management option for complete system control from anywhere in the cloud. To drive increased automation, the ELS supports open APIs, including REST and NETCONF, making it easy to integrate into existing operational tools and back-office systems. With this flexibility, providers can develop scripts and customized applications to automate tasks to facilitate installation, optimization, maintenance, and system recovery. Additionally, Ethernet management switching allows the extension of DCN management to subtending equipment such as transponders or packet devices for simple management networking.

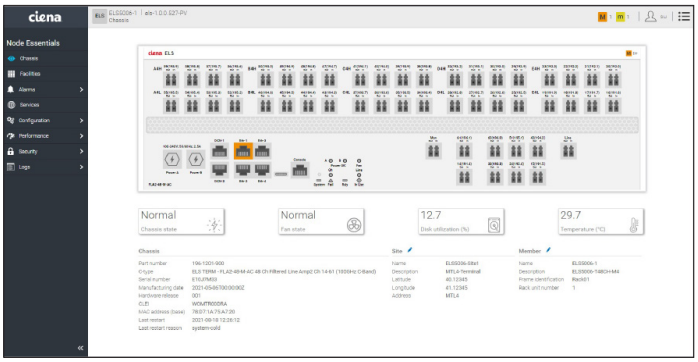

Figure 2. Node Essentials is an intuitive web UI for easy nodal management of ELS

Summary

Ciena's Coherent ELS is designed to address the evolving requirements for the photonic layer at the network edge, while driving ROADM-like operational simplicity. With the ELS, network providers can efficiently deliver high-capacity coherent DWDM to the edge in a compact, hardened form factor that integrates software intelligence and automation to simplify installation, turn-up, system optimization, and management.

Technical Information

Physical Dimensions

48-Channel Terminal (2RU):
88 mm (H) x 438 mm (W) x 280 mm (D)
3.46 in. (H) x 17.25 in. (W) x 11.03 in. (D)

6-Channel OADM (1RU):
44 mm (H) x 438 mm (W) x 280 mm (D)
1.71 in. (H) x 17.25 in. (W) x 11.03 in. (D)

10-Channel OADM (1RU):
44 mm (H) x 438 mm (W) x 280 mm (D)
1.71 in. (H) x 17.25 in. (W) x 11.03 in. (D)

Weights

48-Channel Terminal
DC: 6.9 kg (15.2 lb.)
AC: 7.2 kg (15.9 lb.)

6-Channel OADM
DC: 5.4 kg (11.9 lb.)
AC: 5.7 kg (12.6 lb.)

10-Channel OADM
DC: 5.4 kg (11.9 lb.)
AC: 5.7 kg (12.6 lb.)

Capacity

System: Up to 19.2 Tb/s

WDM: 100G to 800G coherent DWDM

Photonics and Embedded Instrumentation

100 GHz fixed-grid line system

Integrated bi-directional EDFA amplifiers, up to 30 dB span losses

Integrated power monitoring and control

Integrated bi-directional Optical Service Channel (OSC) (1511 nm)

Common equipment

Dual feed AC or DC power supplies

Rear field-replaceable fan module

Front field-replaceable fan unit (optional, 1RU)

Power options

AC or DC power

Operational AC input voltage range: 100 Vac to 240 Vac

Operational DC input voltage range: -40 Vdc to -75 Vdc

Management

CLI, SNMP v1, SNMPv2c

Integrated UI: Node Essentials

API: NETCONF, REST

Ciena's Manage, Control and Plan (MCP)

Low-Touch Provisioning (LTP), remote management

Security

TACACS+, RADIUS, Intrusion detection, Reset-To-Factory-Default (RTFD)

Environmental characteristics

OADM Extended temperature: -40°C to 65°C (-40°F to 149°F)

Terminal Normal operating temperature: 5 °C to 40 °C (41 °F to 104 °F)

Normal operating humidity: 5% to 85% RH

Operational altitude: -61 m to 1829 m at 40°C (-200 ft to 6,000 ft) and from 1829 m to 3960 m at 30°C (6,000 ft to 13,000 ft)

Earthquake/Seismic: Zone 4