

## DATA SHEET

# 6500-T12/T24

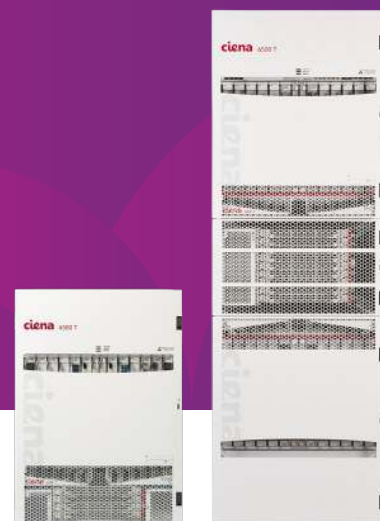
## 6500 Packet-Optical Platform

With the ability to scale to Terabit/s switching per slot and flexibly route wavelengths without restriction across any one of 16 directions, the programmable 6500 T-Series configurations enable service providers to efficiently distribute customizable content to their end-users and provide an on-demand, superior customer experience.

As traffic demands continue to grow and become more unpredictable, providers need a more adaptive network that can scale and respond on demand, based on the applications and services running on top of it. Ciena's 6500 T-Series shelf configurations provide the capacity, flexibility, and resiliency to address today's unpredictable traffic patterns to drive ongoing efficiency and programmability required for a more adaptive network.

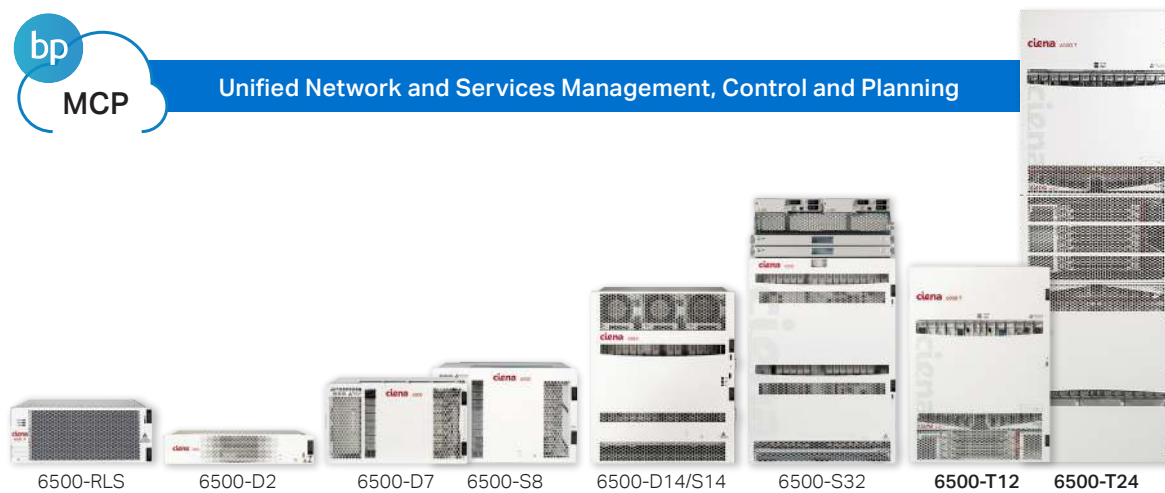
Ciena's 6500 Packet-Optical Platform converges packet, Optical Transport Network (OTN), and flexible WaveLogic Photonics capabilities in a single platform, as well as across multiple shelf configurations, helping service providers streamline operations and optimize footprint, power, and capacity to specific site requirements.

Capable of scaling to Terabit/s switching per slot, the 6500 T-Series shelves evolve from the 6500 S-Series (100 Gb/s per slot Packet/OTN switching) shelves to address high-capacity applications in a very dense and compact form factor. Inherent with the rest of the 6500 Family of Packet-Optical platforms, the 6500 T-Series offers the same programmability benefits for ultra-high-capacity switching sites in the network. These include multilayer control plane and flexible grid CDC ROADM, eliminating service routing restrictions and maximizing service availability, network bandwidth utilization, and return on investment.



### Features and Benefits

- Addresses ultra-high capacity requirements using less hardware via converged packet, OTN, and DWDM functions in a single platform
- Provides significant power and space savings with support of 6Tb/s of capacity in less than half a rack and 12Tb/s per rack scaling to double the nodal capacity in the future
- Leverages fully non-blocking ODU0 granular switching, with ODUFlex capabilities, to quickly respond to on-demand bandwidth needs with the most efficient use of network resources
- Supports a modular photonic architecture, providing lowest first-in costs and pay-as-you-grow benefits
- Provides fully flexible wavelength routing without restrictions using Ciena's industry-leading WaveLogic Photonics with Flexible Grid CDC ROADM
- Enables programmability with multilayer control plane offering ease-of-management advantages as well as a wide breadth of SLA offerings



Single converged platform addressing networking requirements from the edge to the core

Figure 1. 6500 Family

The 6500-T12/T24 shelves, operate with the robust and feature-rich 6500 software, and support high-density, high-capacity hardware modules. The 6500-T12 supports initial switching capacities of 6 Tb/s in half a rack, with the ability to scale to 12 Tb/s in the future. For applications that require only photonic capabilities, operators have the flexibility to deploy a cost- and power-optimized 6500-T12 shelf variant that supports only photonic modules.

To address ultra-high capacity applications, the 6500-T24, provides initial switching capacities of 12 Tb/s in 36RU, with the ability to scale to 24 Tb/s in the future.

Key hardware modules include:

- Fully non-blocking, agnostic packet/OTN switch modules supporting 500 Gb/s switching capacity per slot
- 500G packet/OTN service interface modules, provisionable from 100 percent packet to 100 percent OTN
- Integrated CDC ROADM/line amplifier module providing 'degree-on-a-blade' capability
- Colorless Channel Mux/Demux modules providing full flexibility with flexible grid, colorless, directionless, and contentionless capability in a single card option that can drop up to 12 wavelengths or a compact pluggable module that can drop up to 4 wavelengths
- Optical Time Domain Reflectometer (OTDR) pluggable module with the ability to run OTDR traces over in-service links, on up to 4 degrees, with no impact to traffic

The 6500 T-Series shelves leverage Ciena's industry-leading WaveLogic Photonics, which combine superior performance coherent optics with intelligent software to offer better visibility, programmability, and control of the optical layer. Intelligent software capabilities, such as photonic connection validation with Cable Trace signaling, ensure robust operations and fast turn-up. PinPoint Integrated OTDR increases network availability and reduces outage times by enabling quick troubleshooting and repair of fiber degradation or faults in the network. In the event of a fiber cut, the system will automatically initiate an OTDR trace, and within seconds the trace is available to any remote user enabling the NOC to precisely pinpoint the fault location. Operators can now compare OTDR traces over time by using the original baseline trace to compare new traces post-failure to validate that the fiber repair has been properly completed as well as run OTDR traces over traffic-carrying links to proactively identify potential fiber issues that can quickly be dealt with prior to impacting service. These capabilities enable a modular photonic architecture that provides lowest first-in costs and pay-as-you-grow benefits.

Ciena's OneConnect Intelligent Control Plane allows the network to automate and distribute many functions formerly performed through a combination of

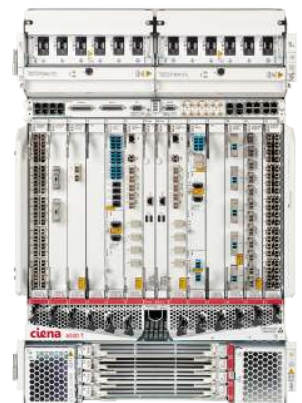


Figure 2. 6500-T12 shelf equipped with 500G/slot switching modules

centralized management systems and manual processes. Operators can leverage both photonic and OTN OneConnect control planes for several advantages, including:

- Accurate inventory of equipment and bandwidth resources
- Faster service provisioning and turn-up
- Tunable SLAs via flexible protection and restoration options
- Network optimization and maintenance

Additionally, Ciena's Blue Planet Manage, Control and Plan (MCP) provides end-to-end network and service lifecycle management

across Ciena's packet-optical infrastructure. Through software-defined control, MCP provides a unified interface—GUI or open REST APIs—with which operators can rapidly plan, provision, turn up, and troubleshoot multi-layer services.

The 6500 T-Series extends the functional integration, flexibility and programmability benefits of the 6500 to new levels of densities and scale to address today's unpredictable traffic patterns and drive toward a more adaptive network.

Visit the Ciena Community  
Get answers to your questions



## Technical Information

6500 T-Series Shelf	6500-T12	6500-T24
<b>Physical Dimensions</b>	17U 754mm (H) x 498mm (W) x 430mm (D) 17U 29.7 in (H) x 19.6 in (W) x 16.9 in (D)	36U 1590 mm (H) x 498 mm (W) x 433 mm (D) 36U 62.6 in (H) x 19.6 in (W) x 17.0 in (D)  Shelf in 44RU EIA Rack : 2134 mm (H) x 660 mm (W) x 457 mm (D) 84.0 in (H) x 26.0 in (W) x 18.0 in (D)
<b>Mounting Options</b>	ETSI, EIA 23 in.	Pre-mounted in EIA 23 in. rack
<b>Cooling</b>	Energy-efficient, variable speed, redundant, and field-replaceable shelf fan modules	
<b>Power</b>	<ul style="list-style-type: none"> <li>• Redundant, field-replaceable power input modules</li> <li>• Operational input voltage: -40V to -75Vdc</li> </ul>	
<b>Control and Timing Module</b>	Redundancy supported	
<b>Switch Modules</b>	<ul style="list-style-type: none"> <li>• 500 Gb/s switching per slot, up to 6 Tb/s per T12 shelf and up to 12 Tb/s per T24 shelf</li> <li>• Agnostic for both OTN and Packet switching</li> <li>• Non-blocking OTN switching, ODU0 granularity – ODU0 to ODU4, incl. ODUflex</li> <li>• Quality of Service (QoS)-aware packet switching with 8 Classes of Service (CoS)</li> <li>• Redundant equipment protection: 3:1 for the T12 and 8:1 for the T24</li> </ul>	
<b>Service Interfaces</b>	<ul style="list-style-type: none"> <li>• 40x10G SFP+ PKT/OTN I/F Module – 10GbE, OC-192, STM-64, OTU2, OTU2e</li> <li>• 5 x 100G / 12 x 40G QSFP28/QSFP+ PKT/OTN I/F Module – 10GbE, 40GbE, 100GbE, OTU3, OTU4</li> <li>• 5 x 100G WaveLogic 3 Nano CFP2 coherent DWDM PKT/OTN I/F Module – OTU4</li> <li>• 20x10G SFP+ OTN I/F Module – 10GbE, OC-192, STM-64, OTU2, OTU2e</li> <li>• 2 x 100G CFP2 OTN I/F Module – OTU4, 100GbE</li> <li>• 2 x 100G WaveLogic 3 coherent DWDM OTN I/F Module – OTU4</li> </ul>	
<b>Photonic Modules</b>	<ul style="list-style-type: none"> <li>• Integrated 20x1 Flexible Grid ROADM and Line Interface Module</li> <li>• 8-Degree, 4-Channel Colorless Channel Mux/Demux Module</li> <li>• 16-Degree, 12-Channel Colorless Channel Mux/Demux Module</li> <li>• Pluggable OTDR Module</li> <li>• Pluggable amplifier Module</li> <li>• Fiber Interconnect Module</li> </ul>	
<b>Environment Characteristics</b>	<b>Normal Operating Temperature</b> +5°C to +40°C (+41° F to + 104° F) <b>Short Term Operating Temperature</b> -5° C to +50° C (+23° F to +122° F) <b>Normal Operating Humidity</b> 5% to 85% RH <b>Earthquake/seismic</b> Zone 4	

