

DATA SHEET

Waveserver



Ciena's Waveserver® stackable interconnect system combines a best-in-class coherent chipset with a data center operations model for cost-effective, web-scale Data Center Interconnect (DCI) applications.

Web-scale DCI requires new solutions designed from the ground up to provide high-capacity metro, regional, and long-haul interconnect with a web-scale operations toolset. Waveserver was created to provide a server-like experience for web-scale applications. It provides simple, scalable metro DCI in a rack-and-stack 1RU form-factor (the smallest rack increment).

Waveserver is powerful but easy to use. Its design combines two key principles: best-in-class coherent technology and web-scale IT. Waveserver incorporates Ciena's WaveLogic 3 Extreme coherent optical processors to increase transport capacity and scalability. It addresses the massive bandwidth requirements of DCI while providing power and space efficiency, and its web-scale IT operations model provides easier integration and operations through programmable, open APIs.

Raising DCI to Web-scale Proportions
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Waveserver is designed for web-scale traffic demands. It's flexible on the line side, powered by Ciena's WaveLogic 3 Extreme chipset, supporting flexible modulation formats such as: QPSK, 8QAM, or 16QAM. This enables Waveserver to drive the highest possible capacity, whatever the distance, by leveraging current net system margin. Waveserver's advanced coherent chipset, WaveLogic 3 Extreme, incorporates technologies such as: spectral shaping, soft Forward Error correction, and Ciena's own analog-to-digital conversion techniques to provide more performance than competing

Features and Benefits

- Enables massive capacity and density—400 Gb/s of line capacity plus 400 Gb/s of client Ethernet ports in a compact, 1RU form-factor—powered by WaveLogic 3 Extreme technology
- Supports flexible modulation: QPSK, 8QAM, and 16QAM for the highest capacity at any distance, from metro and regional to long-haul requirements
- Features rack-and-stack simplicity and up to 24 Tb/s of capacity per fiber
- Offers an ultra-low-latency, AES-256-GCM wire-speed encryption solution for highly secure in-flight data protection
- Provides a new business and operational experience for deploying web-scale DCI solutions—with simplified planning, ordering, installation, operation, and maintenance
- Zero-Touch Provisioning (ZTP) simplifies onsite commissioning and service provisioning to get traffic up and running quickly
- Provides open APIs for automation, provisioning, and management programmability
- Offers a test and development environment to create, test, and fine-tune applications


products. Performance translates directly into economic benefit; more bits per wavelength means higher density, more fiber capacity, less hardware, less power, and less cost.

Waveserver enables massive capacity and density with support for up to 400 Gb/s of line capacity plus 400 Gb/s of client Ethernet ports. It utilizes QSFP+ for 10GbE and 40GbE clients and QSFP28 for 100GbE clients, and it supports a mix of 10GE, 40GE, and 100GE clients on the same device. Flexible modulation allows the Waveserver to optimize its line capacity for each application/need. When configured to use QPSK modulation, Waveserver supports two 100 Gb/s wavelengths for ultra-long reach applications, and in 8QAM mode it supports two 150 Gb/s wavelengths for long-haul and regional interconnect. When using 16QAM modulation, Waveserver provides two 200 Gb/s wavelengths per device for 400 Gb/s of line capacity. It scales up to 24 Tb/s of total fiber capacity when using flexible grid spacing.

It has been designed to work across fixed filter, ROADM, foreign line systems, or it can inter-work with Ciena's 6500 transponders to enable deployments in any network scenario. With flexible network interconnection options, its application space extends beyond simple point-to-point connections enabling a variety of DCI connectivity. Remote Waveservers can be managed through in-band communications, simplifying DCN engineering and management at remote locations. AES-256 wire-speed encryption is provided on the full line capacity enabling a highly secure, ultra-low latency, in-flight data protection strategy across metro, regional or long-haul distances. Waveserver also reduces footprint; since it is only 1RU high it can be used in modular, rack-and-stack deployments.

Built with a data center operations model, Waveserver offers features and capabilities that facilitate server-like deployment, provisioning, openness, and programmability. Its entire lifecycle, from planning and ordering to provisioning and maintenance, has been simplified for ease of use and optimized for data centers.

Waveserver is easy to install and operate; anyone with experience installing a server will be familiar with installing a Waveserver. Out-of-the-box installation is intuitive and requires no tech support. ZTP streamlines onsite configuration and setup with automated commissioning and service provisioning to get traffic up and running with ease. And, it supports LLDP (Link Layer Discovery Protocol) snooping to provide vital

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information about the equipment attached to the Waveserver to simplify client connection management.

Waveserver offers open REST APIs for data center operators to automate manual tasks and manage the platform. Its APIs can be used to communicate with Ciena or third-party developer apps. Furthermore, using Ciena's Emulation Cloud™, Waveserver can be emulated in a test and development environment for DevOps testing and for creation, testing, and fine-tuning of customized applications.

Waveserver brings new features, capabilities, and tools to address metro, regional, and long-haul DCI scenarios with web-scale requirements, such as high capacity, small footprint, low power, programmability, wire-speed encryption for in-flight data security, and rack-and-stack simplicity. By combining Ciena's WaveLogic 3 Extreme coherent chipset with new web-scale IT features, Waveserver frees data center operators from constraints on capacity, density, and operational complexity. Waveserver brings DCI into the web-scale era.

Technical Information

Physical specifications	1U 44.45 mm (H) x 442 mm (W) x 553 mm (D) 1U 1.75 in. (H) x 17.40 in. (W) x 21.79 in. (D) Weight: 13.8kg; 30.4 lbs
Capacity	Client: 10 x QSFP+ (40 x 10GbE; 8 x 40GbE + 8 x 10GbE); 4 x QSFP28 (4 x 100GbE); supports mixed client traffic on a single Waveserver; supports third-party pluggable client optics. Line: 400G (2 x 200 Gb/s; 16QAM); 300G (2x 150G Gb/s; 8QAM); 200G (2 x 100 Gb/s; QPSK) Maximum capacity per fiber: 19.2 Tb/s on 50 GHz grid; 24Tb/s on flexible grid system
Common equipment	Redundant/field replaceable power supply, fan unit Power options: AC or DC power AC input voltage range: 96Vac – 264Vac DC input voltage range: -36Vdc to -72 Vdc Power consumption: 600 W typical
Protection options	Protected or unprotected line
Security Features	FIPS-197 certified, AES-256-GCM (Galois/Counter Mode) wire-speed encryption, Elliptic Curve Cryptography (ECC) algorithms, protocol IKEv2 (blocked for Russian Federation), Secure memory wipe, RADIUS, TACACS+
Management and Automation	Zero-Touch Provisioning (ZTP), LLDP snooping, Blue Planet MCP, CLI, SNMPv3, HTTPS, SCP, Websocket, SSH, TLS, REST API based on YANG model, and NETCONF
Environmental Characteristics	Normal operating temperature: 0°C to +40°C (32°F to 104°F) Operating humidity: 93% relative humidity

