INFOBRIEF | INTERCONNECTS

WaveLogic 6 Nano 400G–800G Enhanced Pluggable Transceivers

WaveLogic™ 6 Nano (WL6n) 400G–800G Enhanced Pluggable Transceivers harness Ciena's advanced technology to power a wide range of applications, from 800ZR metro data center interconnect (DCI) to extended-reach IP/Optical 800G packet transport to 400G ultra-long-haul links. Interoperable probabilistic constellation shaping (PCS) is used to achieve 800G reach at 1,000 km distances. This product also supports high-performance 135 GBaud modes, simplifying networking by extending 800G pluggable reach across more applications. Based on 3 nm CMOS, WL6n Enhanced Pluggables support multiple transmission modes to deliver the optimal balance of performance and power as required by the application.

Part order number

WL6n Enhanced OSFP800	C-band	176-639x-9xx
	L-band	176-649x-9xx

What are WL6n Enhanced Pluggables?

These coherent pluggable transceivers harness Ciena's innovation in coherent DSP, electro-optic miniaturization, and high-speed packaging to deliver double the capacity in the same space as 400G pluggables—resulting in cost, power, and operational savings. WL6n Enhanced Pluggables implement semiconductor optical amplifier on silicon photonics (SOA-on-SiP) heterogeneous integration, enabling multiple benefits: high Tx output power compliant with OIF 800ZR Range A for simple deployment over photonic line systems, the ability to support L-band transmission to double capacity achieved over deployed fiber, and the ability to leverage cost-efficient, volume manufacturing processes.

WL6n coherent transceiver design is born from active collaboration in standards and industry forums such as OIF, ITU-T, and OpenROADM. WL6n Enhanced Pluggables are optimized for Ethernet transport and support OIF 800ZR and ITU-T/OpenROADM–compliant 800G, 600G, and 400G modes. In addition, these pluggables also support Ciena high-performance PKT-MAX 800G and 600G, enabling users to extend pluggable connectivity across more network applications. Fully CMIS compliant, WL6n Enhanced Pluggables allow for simple integration across a wide range of third-party host platforms. Furthermore,

with support for customizable registers, WL6n pluggables can be programmed to support specific host requirements to deliver space- and power-efficient 400–800 Gb/s in existing switches and routers, for all applications from metro to long haul.

Where do WL6n Enhanced Pluggables fit?

Addressing higher bandwidth connectivity requirements for Ethernet transport, WL6n Enhanced Pluggables support OpenROADM–compliant 800G ZR+ and 600G ZR+ modes that implement interoperable PCS to extend 800G pluggable reach to 1,000 km and to longer distances at 600G. Moreover, based on Ciena's industry-leading high-performance SFEC and PCS-16QAM, WL6n PKT-MAX modes lengthen 800G reach, extending converged IP/Optical networking coverage at 800 Gb/s for Ethernet transport.

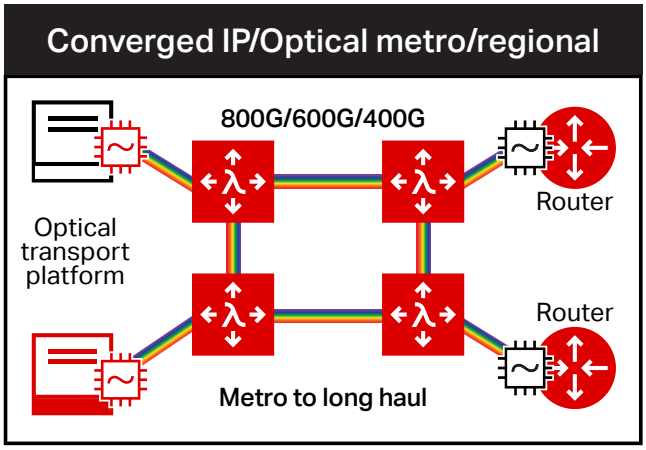

Figure 1. WL6n Enhanced Pluggables enabling converged IP/Optical architectures

For network providers focused on power and space efficiencies looking to extend 400G pluggable reach to ultra-long-haul applications, WL6n delivers a high-performance ITU-T/OpenROADM–compliant 400G QPSK mode that enables 400G across most network links.

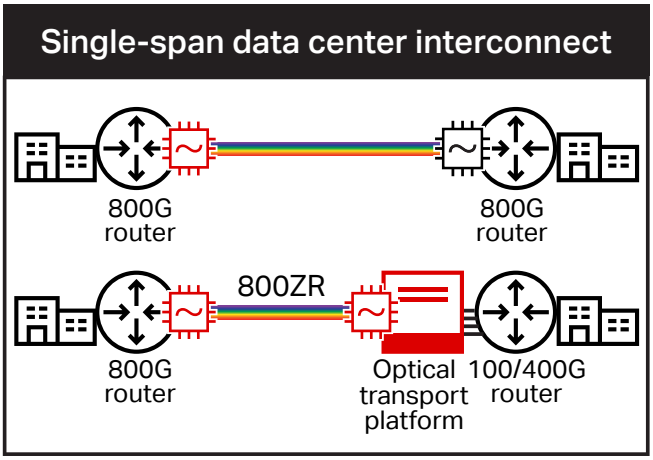

Figure 2. WL6n Enhanced Pluggables in single-span DCI application

For cloud and content providers that need to scale to 800G switches and routers for metro DCI, WL6n delivers interoperable 800G DWDM based on the OIF 800ZR Implementation Agreement (IA). Optimized for Ethernet transport and 150 GHz fixed-grid line systems, WL6n 800ZR supports single-span reaches up to and above the 120 km distance in the OIF IA.

Additional enhancements extend the WL6n 800G 16QAM reach to 500 km, compliant with ITU-T/OpenROADM.

The efficiencies of 3 nm CMOS in an 800G pluggable

Simplifying transport for 400/800GbE client connectivity with ultimate power and space savings, WL6n Enhanced Pluggables deliver:

- High-capacity 800G, 600G, and 400G connectivity in space- and power-efficient pluggable form factors, harnessing low-power 3 nm CMOS technology
- 800ZR for DCI applications (120 km), with the ability to extend to 500 km
- 800G/600G ZR+ that implement interoperable PCS for 1,000 km reaches at 800 Gb/s and longer reaches at 600 Gb/s
- PKT-MAX 800G and 600G—based on Ciena's high-performance SFEC and PCS—simplifying networking by enabling 800G/600G pluggable reach across more applications
- Expanded 400G pluggable network coverage spanning long-haul applications, compliant with ITU-T and OpenROADM
- Ability to double fiber capacity with support for both C- and L-band pluggable variants
- Full CMIS compliance for ease of design and integration into third-party host platforms
- Transport optimized for Ethernet clients
- Fully customizable registers to address specific host requirements

WL6n Enhanced Pluggables supported transmission modes

Mode names	Standards	Line rates (Gb/s)	Mod	FEC	Symbol rates (GBaud)
800ZR	OIF	800G	16QAM	OFEC	118
FlexO-8e-DPO (800G ZR+)	OpenROADM	800G	PCS-16QAM	OFEC	131
FlexO-6e-DPO		600G	PCS-16QAM	OFEC	118
FlexO-8e-DO	ITU-T/OpenROADM	800G	16QAM	OFEC	118
FlexO-4e-DO		400G	QPSK	OFEC	118
800G PKT-MAX	Ciena	800G	PCS-16QAM	SFEC	135
600G PKT-MAX		600G		SFEC	135