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Marvell, Lumentum and Coherent Demonstrate Industry's First 800G ZR/ZR+ Pluggable Modules for 500km Data Center Interconnects

Ecosystem Enables Cloud Operators to Optimally Scale Regional Data Center Connectivity for the AI Era

SANTA CLARA, Calif., Sept. 5, 2024 /PRNewswire/ -- Marvell Technology, Inc. (NASDAQ: MRVL), a leader in data infrastructure semiconductor solutions, Lumentum Holdings Inc., a market-leading designer and manufacturer of innovative optical and photonic products, and Coherent Corp., a leader in compound semiconductors and high-speed optical networking technology today announced the successful interoperability demonstration of 800G ZR/ZR+ optical modules over transmission links up to 500km. This achievement demonstrates that multivendor standards-based pluggable modules can interoperate while achieving the performance required for data center interconnects between regional cloud data centers spanning distances up to 500km, an industry first for 800G.

Cloud operators are scaling their infrastructure for AI services by building more regional data centers, which require optimized power and cost to interconnect. Pluggable coherent modules and DSPs have increased bandwidth by 8X while reducing power consumption per bit by 30% with each new generation. The emergence of a standards-based, multi-vendor ecosystem has further accelerated innovation and minimized the risk of vendor lock-in.

The 800G ZR/ZR+ optical modules used in the demonstration are all based on the Marvell® Orion 800G coherent optical DSP. Modules from the three companies were used to showcase interoperable metro-distance transmission using 16 quadrature amplitude modulation (QAM) over a 520km G.652 fiber link with more than 2dB margin.

Marvell, Lumentum and Coherent were able to develop modules, each with their own optics and module technology that enabled the reach to be extended from the standard 120km up to 500km leveraging the capabilities of the Orion DSP while maintaining compliance with the OIF 800G ZR specification.

"At more than 100% CAGR since 2022, the deployment growth of pluggable coherent modules exceeds that of any other coherent technology in history," said Scott Wilkinson, lead analyst at Cignal AI. "Their performance increasingly rivals traditional embedded optics, and the interoperable test results with 800 Gbps ZR/ZR+ modules for long-distance DCI delivered by Marvell, Lumentum, and Coherent demonstrate that the application space for pluggables is expanding well beyond short-reach data center interconnect."

"Long-distance optical connectivity used to be the exclusive domain of embedded optical solutions but that's no longer the case," said Stephen Adolph, Vice President of Marketing at

Marvell. "Interoperable ZR/ZR+ modules like the Marvell® COLORZ® 800 are now available from multiple vendors to address the longer data center interconnect distances of cloud operators as they scale their infrastructure for the AI era."

"The demand for greater bandwidth and longer distances continues to grow rapidly across all parts of the network, from data center interconnect to submarine cables," said Wupen Yuen, President of Cloud and Networking at Lumentum. "We're excited to collaborate with Marvell on developing this latest generation of high-performance optics and pluggable modules. Our partnership demonstrates how pluggable modules can scale even the largest networks to meet future challenges, offering cost-effective, space-efficient and power-efficient solutions."

"Pluggability everywhere is a critical inflection point in the transmission space," said Pranay Aiya, Vice President, Product Line Management for Transmission Solutions at Coherent. "Each generation of pluggable coherent modules further expands network coverage, enabling 800G services beyond data center interconnects to metro and regional applications. These results demonstrate interoperability at optimal performance for 800G pluggables and support a cost-efficient supplier ecosystem for both cloud and traditional network operators."

About Marvell
To deliver the data infrastructure technology that connects the world, we're building solutions on the most powerful foundation: our partnerships with our customers. Trusted by the world's leading technology companies for over 25 years, we move, store, process and secure the world's data with semiconductor solutions designed for our customers' current needs and future ambitions. Through a process of deep collaboration and transparency, we're ultimately changing the way tomorrow's enterprise, cloud, automotive, and carrier architectures transform—for the better.

About Lumentum
Lumentum is a market-leading designer and manufacturer of innovative optical and photonic products enabling optical networking and laser applications worldwide. Lumentum optical components and subsystems are part of virtually every type of telecom, enterprise, and data center network. Lumentum lasers enable advanced manufacturing techniques and diverse applications, including next-generation 3D sensing capabilities. Lumentum is headquartered in San Jose, California, with R&D, manufacturing, and sales offices worldwide. For more information, visit www.lumentum.com.

About Coherent Corp.
Coherent empowers market innovators to define the future through breakthrough technologies, from materials to systems. We deliver innovations that resonate with our customers in diversified applications for the industrial, communications, electronics, and instrumentation markets. Headquartered in Saxonburg, Pennsylvania, Coherent has research and development, manufacturing, sales, service, and distribution facilities worldwide. For more information, please visit us at coherent.com.

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