March 31, 2025

# Marvell Demonstrates Silicon Photonics Light Engine for Low-power, Rack-scale Interconnect in AI Networks

- *Highly integrated optical engine enables lower power and reduced latency for high-bandwidth LPO and on-board optics*
- *1.6T light engine contains linear driver, TIA, and silicon photonics chip supporting 200 Gbps per lane, with embedded microcontroller and firmware in a single package*
- *Demonstrated at OFC 2025 in a 1.6T OSFP LPO module, 1.6T light engine simplifies system integration and accelerates time to market for rack-scale AI server deployments*

SANTA CLARA, Calif., March 31, 2025 /PRNewswire/ -- Marvell Technology, Inc. (NASDAQ: MRVL), a leader in data infrastructure semiconductor solutions, will demonstrate at OFC 2025 its 1.6T silicon photonics light engine integrated into a linear-drive pluggable optics (LPO) module. The new product is the second in the Marvell® light engine family, which also includes the 6.4T light engine for co-packaged optics (CPO) demonstrated at OFC 2024. Designed to address next-generation AI scale-up network requirements, the 1.6T light engine supports eight channels of 200 Gbps PAM4 optical interconnect with standards-based signaling (1.6T DR8). With low power and a highly integrated implementation, the engine can be used in LPO modules or integrated directly in-system to help overcome the reach limitations of passive copper interconnects for mid-density rack-scale connectivity. By providing a single-package engine and validated reference design, Marvell offers its ecosystem partners a rapid path to LPO module commercialization. The 1.6T light engine further serves as a foundation for CPO system development with hyperscale customers.

For 1.6T pluggable applications, the light engine provides flexibility and accelerated time-to-market for both ecosystem module vendors and hyperscalers. As AI scale-up domains increase in size from rack-scale to row-scale, the scale-up fabric will transition from passive copper interconnects to customized and optimized optics. Even at rack-scale, for moderate compute-density racks, LPO at 200G per lane can serve as an alternative to passive copper, offering low power, low latency and longer reach than copper. Prior to the introduction of XPUs with integrated CPO, LPO modules and on-board optics can address row-scale reach requirements at 200 Gbps-per-lane rates.

The new light engine is a quarter-scale implementation of the 6.4T light engine. Like its predecessor, the 1.6T light engine is a highly integrated device featuring 200G electrical and optical interfaces. It consumes less than 5 picojoules per bit (pJ/bit), including laser power, measured under typical operating conditions. The 1.6T light engine consolidates hundreds of components such as modulators, photodetectors, modulator drivers, transimpedance amplifiers (TIAs), microcontrollers, and a host of other passive components in a single package optimized for use in pluggables such as LPO modules, transmitter-retimed optics and fully retimed optics modules.

"Marvell is advancing power-efficient AI scale up with its 1.6T light engine, delivering deployment-ready solutions for module vendors and hyperscalers," said Josef Berger, associate vice president marketing, Cloud Platforms at Marvell. "As the long-term transition from copper to optics in the scale-up domain unfolds, Marvell is well-positioned to co-develop the custom CPO systems that will be needed for high-density, row-scale scale-up domains."

"Demand for 1.6T optics is strong, but power consumption remains a challenge," said Vlad Kozlov, CEO and Chief Analyst at LightCounting. "Linear drive pluggables offer a lower power option for customers to consider and completes Marvell's product portfolio for 1.6T interconnects."

**Availability**
The 1.6T light engine is sampling to select customers.

**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.

Marvell and the M logo are trademarks of Marvell or its affiliates. Please visit www.marvell.com for a complete list of Marvell trademarks. Other names and brands may be claimed as the property of others.

This press release contains forward-looking statements within the meaning of the federal securities laws that involve risks and uncertainties. Forward-looking statements include, without limitation, any statement that may predict, forecast, indicate or imply future events, results or achievements. Actual events, results or achievements may differ materially from those contemplated in this press release. Forward-looking statements are only predictions and are subject to risks, uncertainties and assumptions that are difficult to predict, including those described in the "Risk Factors" section of our Annual Reports on Form 10-K, Quarterly Reports on Form 10-Q and other documents filed by us from time to time with the SEC. Forward-looking statements speak only as of the date they are made. Readers are cautioned not to put undue reliance on forward-looking statements, and no person assumes any obligation to update or revise any such forward-looking statements, whether as a result of new information, future events or otherwise.

**For further information, contact:**
pr@marvell.com

MARVELL™

View original content to download multimedia:https://www.prnewswire.com/news-releases/marvell-demonstrates-silicon-photonics-light-engine-for-low-power-rack-scale-interconnect-in-ai-networks-302415565.html

SOURCE Marvell