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Marvell Extends Borderless Enterprise Networking Portfolio to Industrial Applications

Highly Integrated, Secure Offering Facilitates IT/OT Network Convergence

SANTA CLARA, Calif., Nov. 8, 2022 /PRNewswire/ -- [Marvell Technology, Inc.](#) (NASDAQ: MRVL), a leader in data infrastructure semiconductor solutions, today announced the extension of its campus networking portfolio into the operational technology (OT) networks common to industrial and critical infrastructure organizations. Marvell's Secure Deterministic Ethernet solution, comprised of Prestera® switches and Alaska® PHYs, is designed for switch appliances used in these often-harsh environments. By enabling the more widespread use of Ethernet in the OT environment, the new solution facilitates the adoption of modern IT tools and security methods in OT networks, enabling a common management and automation approach from the cloud to the OT network edge. According to 650 Group, the shift to Ethernet is driving double-digit growth in this sub-segment, increasing Marvell's addressable market.

The OT networks in which these switches operate require precision timing and predictable latency—attributes not typically required in corporate IT networks. Traditionally, proprietary protocols have been required to meet these needs, known collectively as deterministic networking. The new solution addresses these deterministic networking requirements with a set of Ethernet standards known as time-sensitive networking (TSN). With TSN, virtually any kind of Ethernet traffic can share a network, allowing siloed IT and OT networks to converge, thus reducing costs and facilitating in OT networks the analytics, automation and intelligence that are transforming IT networks.

In addition to being characterized by harsh physical environments, networks in manufacturing and critical infrastructure industries such as electric utilities, railways, and energy production are at heightened risk of cyberattack. Risks are further increased due to the location of some networking equipment, which places it at relatively greater risk of physical security breach. To better protect these networks, the new Prestera industrial-grade switches with TSN offer industry-first device- and link-level security, in the form of Secure Boot and MACsec.

For OEMs, semiconductor power, footprint and design complexity are critical considerations. Unlike alternative approaches that require a separate field-programmable gate array (FPGA) to process TSN flows, the new switches integrate TSN functionality without requiring an FPGA. A complete industrial networking solution requires only a switch and one or more PHYs and, in some cases, only a single, integrated chip. This architectural approach dramatically reduces power, board space and device design complexity.

The new Marvell® Secure Deterministic Ethernet solution includes a family of ruggedized Prestera switches, offering a comprehensive TSN feature set, and Alaska Ethernet PHYs. The TSN standards enable reliable, deterministic real-time communications over Ethernet by offering bounded latency, low delay variation and extremely low packet loss. The Prestera DX1500 switch family scales from eight ports to 54 ports and is designed to be paired with the Alaska E1781 series of 10/100/1000Base-T, octal-port copper transceivers. In the case of the 8-port switch, the PHY is integrated.

"Ethernet-based communications technologies are increasingly being adopted for industrial applications and devices, enabling integration with IT. Real-time determinism and time-sensitive networking technology, however, remain important requirements and not features that are historically part of Ethernet," said Anna Ahrens, senior research analyst, Manufacturing Technology, at Omdia.

Deterministic Ethernet-based systems are expected to grow from less than 15 percent of the Ethernet switches sold for industrial use to nearly half by 2026, with the total industrial Ethernet market climbing to approximately \$1.7 billion, according to 650 Group.

"This new solution enables us to offer the most complete portfolio of highly secure, TSN-capable industrial switches that will help our customers accelerate their customers' digital transformation and network convergence initiatives," said John DaCosta, vice president of marketing for the Switch Business Unit at Marvell. "As standards-based deterministic networking gains traction, there's new opportunity for traditional IT networking vendors to enter this rapidly growing market."

Features and Benefits

The Secure Deterministic Ethernet solution offers the following features and benefits:

- **Integrated switching, CPU and Ethernet PHY**—reduces power and footprint versus separate components.
- **Time-Sensitive Networking: 802.1AS, 802.1CB, 802.1Qav, 802.1Qbv, 802.1Qbu, 802.1Qci, 802.1Qat**—supports reliable, low-latency Ethernet performance.
- **IEC/IEEE 60802 TSN profile for Industrial Automation**—enables real-time end-to-end communications with guaranteed reliable performance and data delivery.
- **802.1AE MACsec**—provides Layer-2 security for data integrity and confidentiality.
- **Secure Boot**—allows only trusted software to execute on the system.
- **Parallel Redundancy Protocol (PRP) and Highly-available Seamless Redundancy (HSR)**—provide no-loss failover in case of failure of any single network element.
- **TrackIQ**—provides rich telemetry data for use in network analytics and observability tools.
- **Ruggedized -40°C to +85°C system operation**—enables reliable operation in harsh environments and an expected lifetime of at least 10 years.

Availability

The Prestera DX1500 and Alaska E1781 product families are sampling now.

For more information about Marvell's new enterprise networking solutions portfolio, please visit the Marvell [Industrial switching](#) and [Ethernet PHY](#) web pages.

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.

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For further information, contact:

Kim Markle
pr@marvell.com



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