

Marvell Open Sources OCTEON 10 ML/AI Accelerator Software To Optimize 5G RAN Networks

- *Adding OCTEON® 10 processor to Linux Foundation's Datapath Developer Kit and the Apache device library provides ML model developers standardized API access to the chip's ML/AI acceleration engine.*
- *Improves the performance of 5G RAN networks by enabling OEMs and operators, such as Nokia and Vodafone, to easily develop and implement innovative ML/AI models using open-source tools.*

BARCELONA, Spain and SANTA CLARA, Calif., Feb. 26, 2024 /PRNewswire/ -- [Marvell Technology, Inc.](#) (NASDAQ: MRVL), a leader in data infrastructure semiconductor solutions, today announced the support for its OCTEON 10 processors in the Machine Learning Device Library (MLDEV) of the widely used Datapath Developer Kit (DPDK) open-source software project managed by the Linux Foundation. Through contributions accepted to the [Apache TVM \(Tensor Virtual Machine\) project](#), developers can use open-source tools to build machine learning (ML) models that can be executed in OCTEON 10's integrated ML/AI acceleration engine, simplifying the adoption of these models for 5G Radio Access Network (RAN) optimization.

"We are proud to be the first vendor to incorporate AI/ML into our ReefShark SoCs and AirScale portfolio. This technology allows us to differentiate our solutions and offer the best spectral efficiency and cell edge performance in the industry. We are now at the forefront of bringing machine learning technology to our customers and exploring its enormous possibilities ahead of the 6G era," said Mark Atkinson, Head of RAN at Nokia.

"The ever-increasing complexity of RAN makes AI/ML the ideal technology to efficiently solve challenges around radio resource configuration, allocation, and optimization. Vodafone is a pioneer in this field, having deployed multiple uses of AI/ML in our network since 2017," said Francisco Martin (Paco), Head of Open RAN at Vodafone. "We are pleased to be collaborating with Marvell to bring this to the very core of radio processing, which will enable a fully AI-native RAN."

Using open-source ML frameworks such as TensorFlow, PyTorch, and ONNX, developers can create their own models for optimizing the performance of the RAN Distributed Unit (DU) and Radio Unit (RU). Via standard APIs, these models can be implemented on the OCTEON 10 ML/AI accelerator, providing OEMs and service providers with enhanced ability to optimize massive MIMO beam selection, improve channel estimation, identify security risks or address other tasks to improve network performance, efficiency and operating economics.

The OCTEON 10 ML/AI accelerator features a scalable tiled architecture and best-in-class performance-power ratio at 8 trillion operations per second per watt. The new API access follows the same principles used in DPDK's Ethernet Device framework and Crypto framework already supported by OCTEON 10 processors.

[The OCTEON 10 processor family](#) is purpose-built to serve as the primary processing unit in RUs, DUs, enterprise networking equipment, or as a data processing unit in clouds and AI clusters. Unlike competitive solutions, OCTEON drivers are designed to integrate with open-source frameworks to make them accessible and easy to use by the development community.

Incorporating digital signal processors, Arm® Neoverse™ CPUs, and optimized hardware accelerators like the inference processor and inline crypto engine, OCTEON 10 is the product-of-choice for some of the most intense workloads in wireless and security applications.

"Our commitment to open-source integration is evident in the vast Marvell contribution to DPDK, OPI, and similar initiatives," said Will Chu, senior vice president and general manager, Custom, Compute and Storage Group at Marvell. "Giving developers access to processor modules will enable industry innovations that build smarter, faster, and more secure RAN networks."

Visit Marvell at MWC Barcelona 2024, taking place through February 29, in stand 2F34 in Hall 2 and partner stands including Nokia, hall 3, stand 3A2.

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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