

Marvell® OCTEON 10 DPU Platform

DPU family designed for demanding cloud, 5G wireless, enterprise, carrier and datacenters applications

Overview

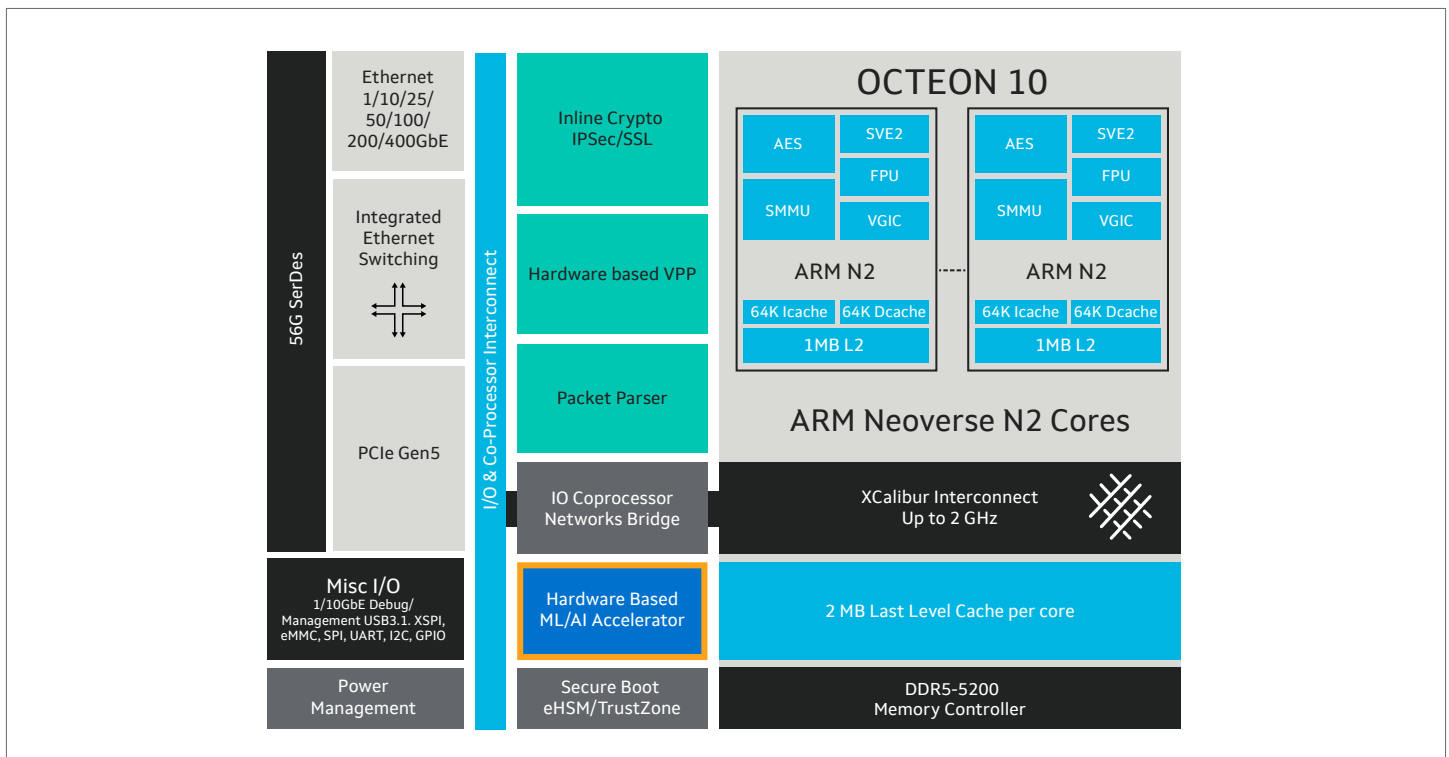
Industry's first processor family based on 5nm ARM Neoverse N2 platform: OCTEON 10 DPU family is built on TSMC's 5nm process and incorporates 64-bit ARM Neoverse N2 cores. This technology combination enables 3x jump in compute performance (SPECint/Core/GHz) and 50% reduction in power over previous generation of OCTEON DPUs.

Delivering Superior Performance with innovative Hardware Acceleration Engines: OCTEON 10 sets new standards for power, control and dataplane acceleration with integrated 1 Terabit switch, true inline crypto and highly programmable

packet processing. Datapath and security workloads performance ranges from power optimized 50G to over 400G. Hardware based ML engine delivers 100x performance gains over software processing. VPP based hardware accelerators improve packet processing rate by up to 5x.

High Speed I/O: OCTEON 10 family supports advanced I/O interfaces including DDR5, PCIe Gen 5, and highly optimized silicon proven 56G SerDes.

Block Diagram



Key Features

- 8 to 36 64-bit ARM Neoverse N2 cores with speeds up to 2.5 GHz
- Up to 36 MB L2 and 72 MB L3 cache
- Up to 12 DDR5 at 5200 MTS
- Comprehensive hardware accelerators
 - Hardware ML/AI Acceleration Engine
 - Hardware based VPP accelerator
 - Integrated 1Tb switch
 - True inline crypto
 - Highly programmable packet processors
 - Secure Boot
 - Physically unclonable function (PUF)
 - PCIe DMA Acceleration
- Rich set of I/O
 - 8-36 PCIe Gen 5 lanes
 - Up to 16 x50G ethernet lanes
 - Up to 56G SerDes lanes

Software and Ecosystems

- Feature Rich SDK with standard toolchain
 - GCC
 - GDB, BinUtils
- Virtualization and Containers
 - KVM
 - Docker/CNI
 - OVS
 - Kubernetes
- Standard DPDK, VPP, SPDK

Feature Matrix Table

Metric	CN103XX	CN106XX	CN106XXS	DPU400
N2 Cores	Up to 8	Up to 24	Up to 24	Up to 36
Max Frequency	2.5 GHz	2.5 GHz	2.5 GHz	2.5 GHz
SPECint (2006)	>275	>800	>800	>1200
Cache (L2, L3)	8MB, 16MB	24MB, 48MB	24MB, 48MB	36MB, 72MB
DDR5	2 at 4800MTS	6 at 5200MTS	6 at 5200MTS	12 at 5200MTS
Crypto	Supported	Supported	Supported	Supported
Ethernet	4x50G/25G/10G + 2x10G or 16x1G	4 x50G or 16x25/10/1G	16 x50G	Up to 400G
PCIe controllers	Up to 6 Gen3/5	Up to 6 Gen5	Up to 4 Gen5	Up to 8 Gen5
Typical power	10-25W	40W	50W	60W



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 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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