Marvell Ships 1 Millionth OCTEON-Powered LiquidIO SmartNIC

John Sakamoto

VP Infrastructure Processor BU

September 2020

Overview

Company founded	FY20 revenue
1995	**$2.7B**
Employees	Patents worldwide
5,000+	**10,000+**

Located in **Santa Clara, CA**

R&D centers in **US, Israel, India, Germany, China**

Marvell's Mission

We develop and deliver semiconductor solutions that move, store, process and secure the world's data faster and more reliably than anyone else.

Marvell offers

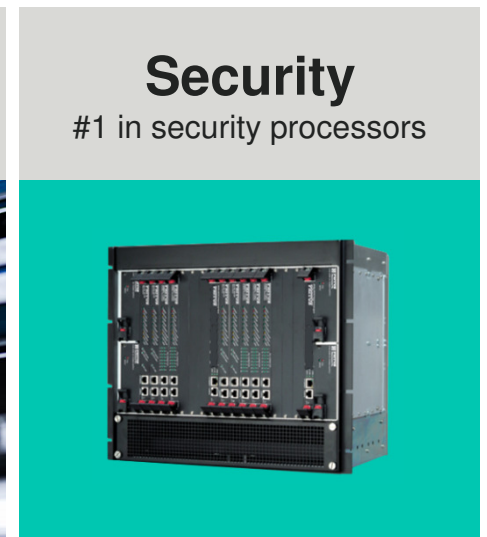the most complete data infrastructure portfolio

Processors

#1 in baseband and data plane processors

Storage

#1 in HDD and SSD controllers, Fibre Channel

Networking

#2 in Switches and PHYs

Security

#1 in security processors
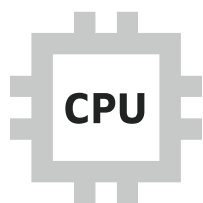
OCTEON: The original DPU

Nitrox®

OCTEON® multicore

LiquidIO®

OCTEON TX®

FIPS security

OCTEON TX2®

Today

| 1998 | 2005 | 2010 | 2016 | 2019 | 2021 |

Industry's 1st Security Processors

Industry's 1st DPU

SmartNIC

4th Generation Marvell DPU

5th Generation Marvell DPU
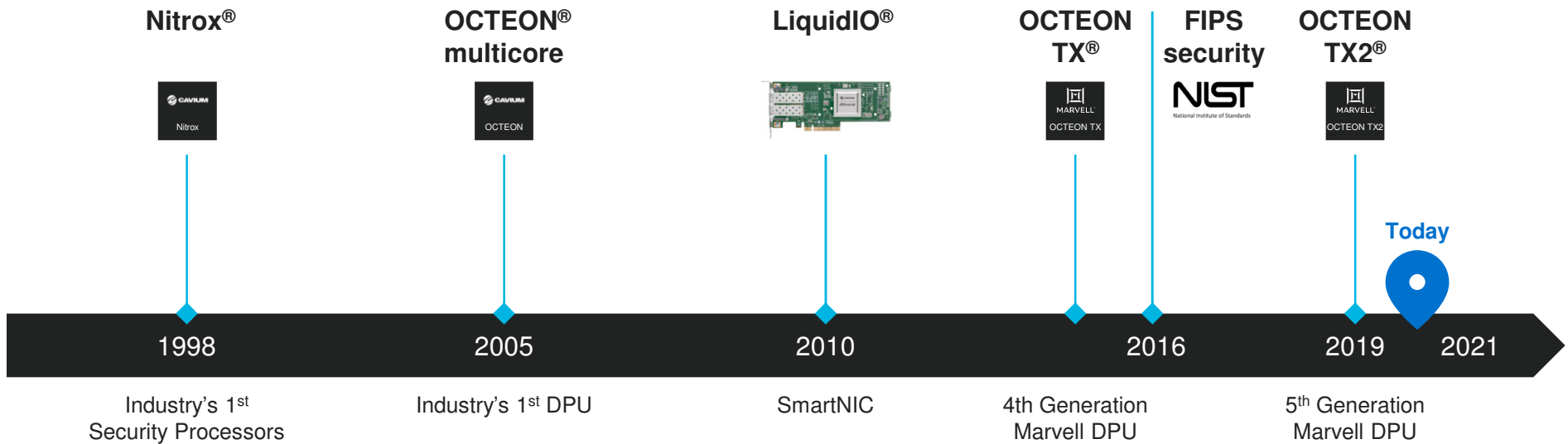
Proven history of compute, security, network innovation

Why OCTEON is ideal for SmartNIC

High performance

CPU

Offloads CPU

Best-in-class accelerators

15+ YEARS

Proven track record

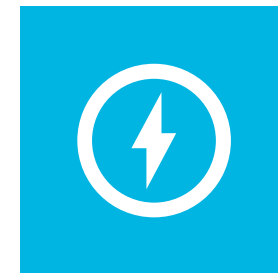# OCTEON supports Data Center requirements

Data Processing

200G line rate traffic

Inline IPSec and SSL

Multi million flows

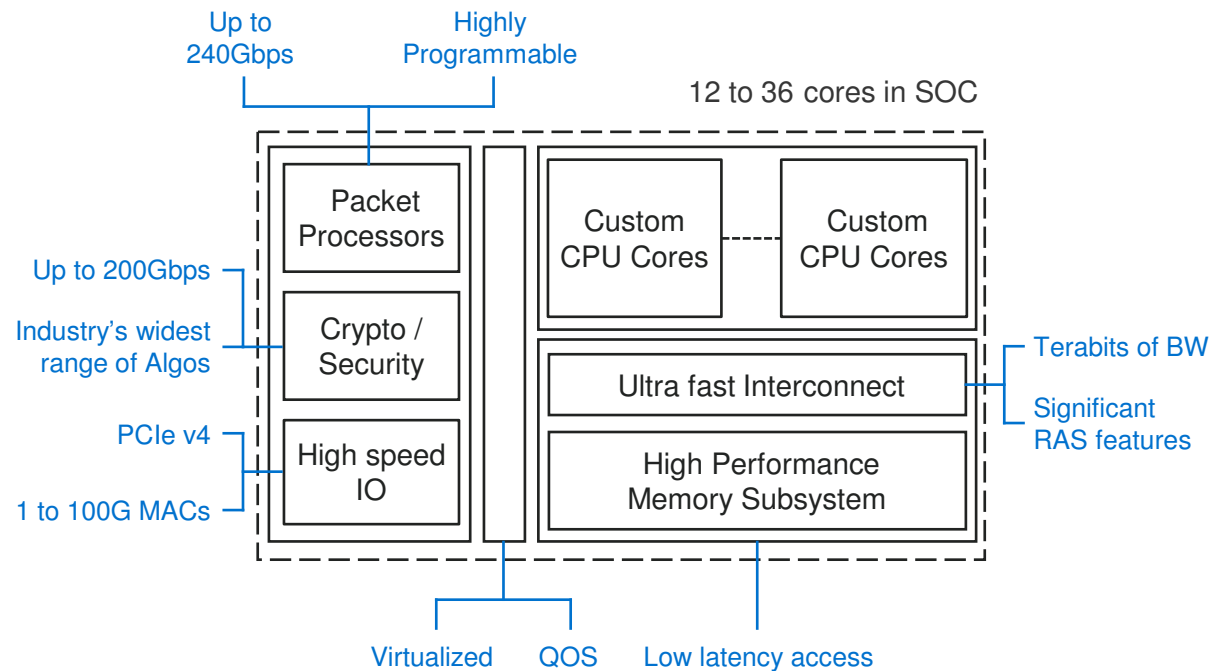## Performance

Integrated
IO-accelerator-compute

Power

Hardware accelerators

Optimized DPDK API
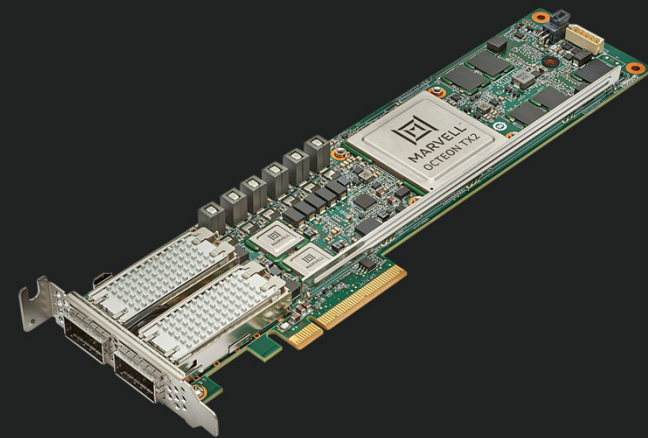
OCTEON TX2 DPU family

- Industry's broadest portfolio

- From 12 to 36 cores, from 1G to 200Gbps and security and programmable networking performance using same software

- Focus on optimized BOM, lowest TCO

Up to 240Gbps   Highly Programmable

12 to 36 cores in SOC

Packet Processors

Up to 200Gbps

Industry's widest range of Algos

Crypto / Security

PCIe v4

High speed IO

1 to 100G MACs

Custom CPU Cores — Custom CPU Cores

Ultra fast Interconnect

High Performance Memory Subsystem

Terabits of BW

Significant RAS features

Virtualized   QOS   Low latency access

Scalable OCTEON
LiquidIO III SmartNIC platform

Features

Compute	• OCTEON TX2 DPU
	• Up to 36 cores ARM V8 at 2.2GHz
SW	• DPDK networking suite
Memory	• 16GB DDR4 +ECC on-board memory
	• Up to 6 channels of DDR4 3200
IO	• Up to 5 x 100G network
	• Up to 2x PCIe Gen4x16 connectivity

Production ready reference design

OCTEON DPU platform

| Full featured DPDK open software stack | User space extensions | Full feature fast data path stack | Control and management | Distro support | **Open SW Arm ecosystem** |

Common open platform portfolio SDK

| Multi-core compute | Arm v8: AES, SIMD, FPU, SMMU, VGIC · Core complex + LLC · Arm v8: AES, SIMD, FPU, SMMU, VGIC | **Most # of Arm cores** |

| High speed network and host | Memory and custom IOs · PCIe · Ethernet MACs | **Industry-leading connectivity** |

| Software enabled accelerators | Packet parser · Crypto · Scheduler · Sharper/QoS · DPI · Virtualizer · Data streamer · Compression · IPSec/SSL | **Optimized HW** |

Legend: User/kernel software — Compute, memory, boot — IO — Accelerators

Open software ecosystem

OCTEON DPU platform

| User Space Service | User Space Service | User Space Service |

| Application Stacks (Network, Transport, Security) | Application Stacks (Network, Transport, Security) | Application Stacks (Network, Transport, Security) |

| Docker / KVM | DPDK | Docker / KVM | DPDK | Docker / KVM | VPP |

Virtual Switch

| Linux Platform | DPDK |

CPU core complex

| Network | Packet | Secure boot | Bare metal/ Virtualization | Crypto |

Over 1 Million LiquidIO units shipped
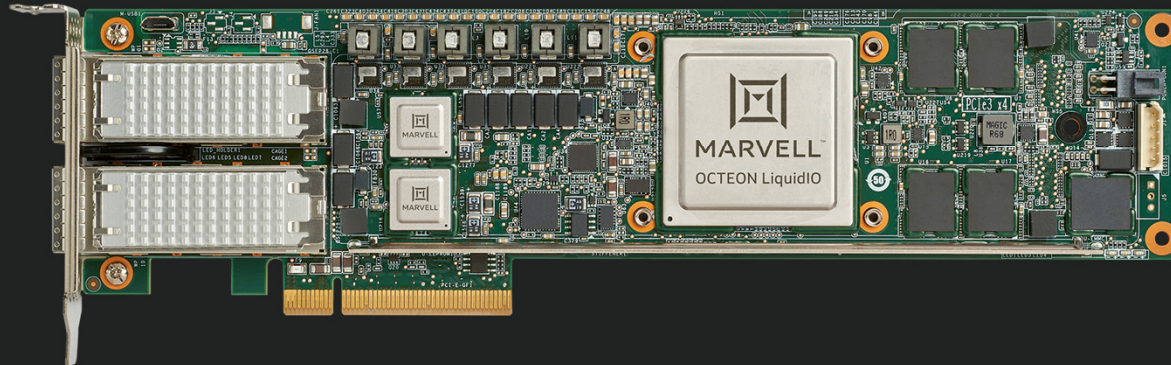
Production deployments at multiple data center customers

Summary

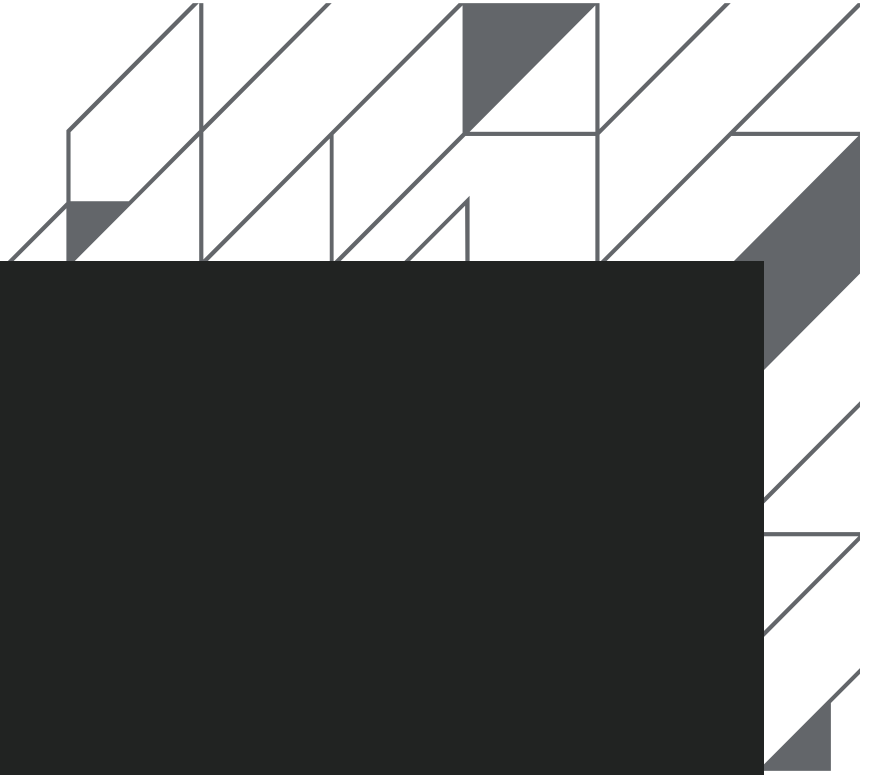|	
1	Surpassed 1 million shipments of OCTEON LiquidIO SmartNICs
2	Open software platform enables ecosystem innovation
3	Best-in-class accelerators with industry-leading (36 Arm v8) compute processing
4	Full-featured DPDK software suite optimized for performance

MARVELL

Q&A

Thank You

MARVELL™

Essential technology, done right™