

# Marvell® OCTEON TX2® CN92XX, CN96XX and CN98XX

Up to 36 Arm®v8.2 cores Infrastructure Processor Family for Intelligent Networking, Security, Wireless Infrastructure and Multi-access Edge Compute

## Overview

### Industry's first processor family scaling up to 200 Gbps:

The OCTEON TX2 Infrastructure processor family, the only Arm-based SoC family that scales up to 36 cores, utilizes custom designed 64-bit Armv8.2 cores and incorporates security and packet processing accelerators, comprehensive hardware virtualization support, and up to 56 lanes of 25Gbps SerDes. Enabled by a mature and widely deployed SDK, OCTEON TX2 is supported by robust software ecosystems consisting of both open source and commercial offerings. Up to 2X higher performance than the previous generation of OCTEON SoCs.

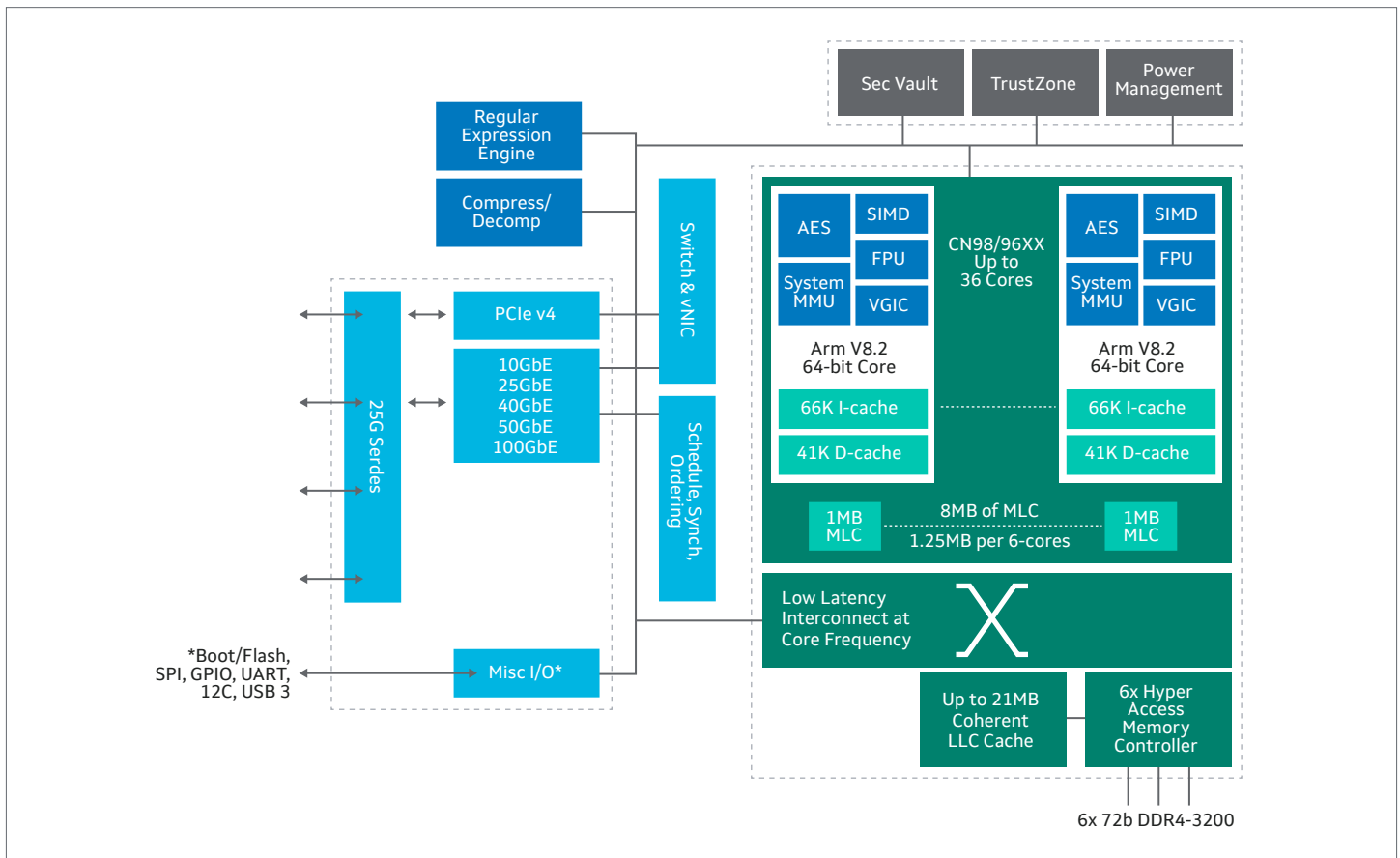
### Leading in Core Performance and Packet Processing Among Arm SoCs:

The fifth generation OCTEON TX2 family has made

significant performance enhancements over its popular predecessor, the OCTEON CN78XX. Both max SPECint rate and coremark benchmarks have doubled. In addition, the new packet processing engine delivers a higher throughput with header processing, QoS, and traffic shaping.

**Industry Leading Security:** The OCTEON TX2 CN92XX, CN96XX and CN98XX utilizes the well renowned NITROX® V security accelerator to reach 200 Gbps IPsec throughput. Additionally, it provides support for algorithms such as SSL, TLS, ECC, MDS, SHA-1, SHA-256, DES/3DES, AES, KASUMI, SNOW 3G, ZUC, SMS4, Camellia, and more.

## Block Diagram



## Applications

Features	Benefits
5G Infrastructure	<ul style="list-style-type: none"><li>• Macro base stations</li><li>• Transport</li><li>• C-RAN, 5G DU, 5G CU</li></ul>
Network and Security Appliances	<ul style="list-style-type: none"><li>• Next generation firewall</li><li>• UTM, IPS/IDS</li><li>• WLAN controller</li><li>• Routers and gateways</li></ul>
Network Function Virtualization	<ul style="list-style-type: none"><li>• NFV servers in edge and centralized cloud datacenters</li><li>• Smart NICs</li></ul>
Control Plane Processing	<ul style="list-style-type: none"><li>• Enterprise and datacenter switches</li><li>• SDN switches</li><li>• Blades/appliances</li></ul>

## Key Features

- 12 to 36 highly optimized 64-bit Arm v8.2 OCTEON TX2 cores, up to 2.4 GHz
- Up to 29 MB L2/L3 caches
- Up to 6x72b DDR4 with ECC, up to 3200MT/s
- Comprehensive hardware accelerators
  - Flexible packet parser
  - Flow classification
  - QoS
  - Buffer management
  - Hierarchical traffic manager
- Integrated time synchronization
  - IEEE 1588v2, PTP
  - Synchronous Ethernet
- Integrated NITROX V security coprocessor
- Rich set of I/O
  - 56x25G SerDes lanes
  - 1/10/25/40/50/100 Gb Ethernet
  - Up to 36 PCIe Gen4 lanes x16
  - SPI/eSPI
  - GPIO, I2C, USB 3.0
  - NCSI
- Comprehensive security protection with Authentik and Secure boot via Arm TrustZone

## Software and Ecosystems

- Feature-Rich SDK with Standard development tools
  - GCC
  - GNU
- Carrier and Commercial-Grade Distros
  - Multiple Linux OS versions supported as part of the SDK
  - Wind River
- Virtualization and Containers
  - KVM
  - Xen
  - OVS
  - Docker
  - Kubernetes
- Standard DPDK, VPP, FD.io, and OpenDataPlane (ODP) APIs

## Feature Matrix Table

Metric	CN92XX	CN96XX	CN98XX
Cores	12-18	18-24	30-36
Max Freq	2.0G	2.4G	2.4G
Cache (MLC, LLC)	5MB, 8MB	5MB, 14MB	8MB, 21MB
DDR4	2@3200MTS	3@3200MTS	6@3200MTS
Ethernet	4x25G, 8x10G	3x100G/12x25G	5x100G/20x25G
Max PPS	Up to 50Mpps	Up to 120Mpps	Up to 220Mpps
IP FWDing	Up to 80G	120G-140G	200G-240G
IPSEC (Gbps)	50Gbps	100Gbps	200Gbps
SerDes	32x16G/25G	32x 6G/25G	56x16G/25G
PCI-e Physical Interface/VF	20 lanes v4/256	20 lanes v4/256	36 lanes v4/512-1K
Estimated TDP	45W-65W	55W-80W	80W-120W



Marvell first revolutionized the digital storage industry by moving information at speeds never thought possible. Today, that same breakthrough innovation remains at the heart of the company's storage, networking and connectivity solutions. With leading intellectual property and deep system-level knowledge, Marvell semiconductor solutions continue to transform the enterprise, cloud, automotive, industrial, and consumer markets. For more information, visit [www.marvell.com](http://www.marvell.com).

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