# Marvell® OCTEON TX® CN82XX and CN83XX

Eight to Twenty Four Core Armv8 Embedded Processors with Hardware Virtualization

Overview

The OCTEON TX® CN82XX/CN83XX families of multi-core processors target Integrated routers, security appliances, Storage Controllers, Storage appliances, SD-WAN, vCPE, control plane for routers and switches, SDN and data center accelerators, virtualized storage, virtualized cable and wireless infrastructure markets. The families includes many software and pin-compatible processors, with eight to twenty four 64-bit Armv8 cores on a highly- integrated SoC that includes a rich set of I/O's including up to 3 x 40GbE, up to 12 x 10 GbE controllers, up to 12 x 1GbE controller, PCIe Gen3, USB 3.0, and up to 6 x SATA 3.0 along with Marvell most advanced networking and security application hardware acceleration.

Block Diagram
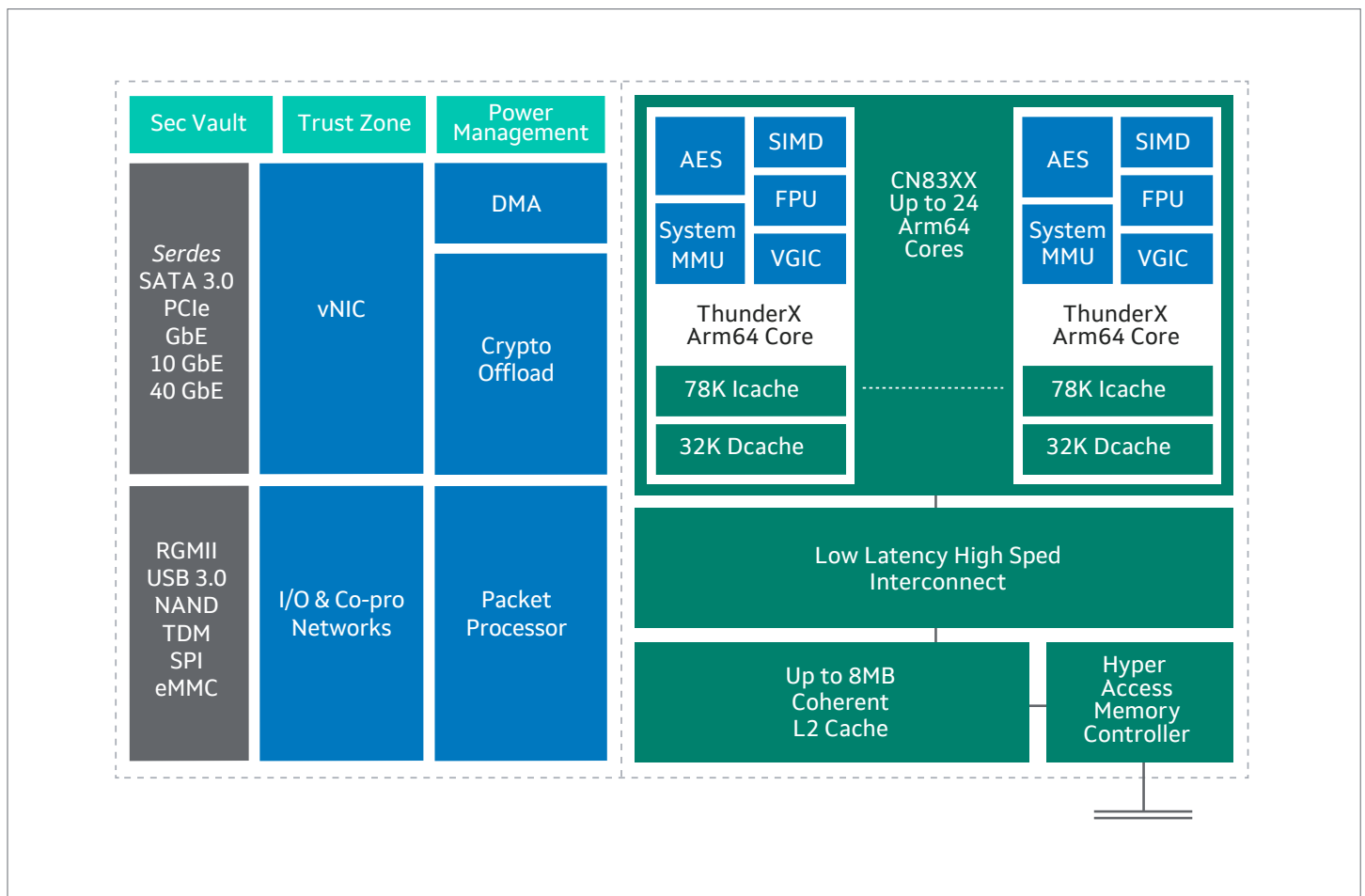
OCTEON TX CN82XX/CN83XX

Key Features

Features	Benefits
Up to 24 custom designed 64-bit Armv8 ThunderX cores at 2.2GHz per core with large 78K/32K L1 cache and shared up to 8MB L2 cache	· Virtualization support enables legacy OS and applications to be firewalled
Rich I/O interfaces including DDR3/4, 40GE XLAUI, 10GE (XFI, 10G-KR, XAUI), QSGMII, SATA3.0, USB 3.0, and PCIe Gen3	· Full SOC virtualization
High performance security acceleration engines without additional memory requirements	· Unified packet processing for both NFV workloads and high performance networking applications
Low power down to 15W	· 80M packets-per-second of networking performance
Integrated multi-core acceleration for networking, QoS, RAID, De-Dup and multicore scaling	· 240K Coremarks with gcc compiler
Per core floating point unit and hardware virtualization	· Twenty four core scalability for performance and feature headroom. Single platform for variety of applications and OEM SKU
Up to 2 x 72b DDR3/4 up to 2133MT/s	· High performance SDN and fully virtualized services accelerator cards

Target Applications

· Switch Control Plane Processors
· Control Plane Processors for Plades/Appliances and top of the Rack SDN Switches
· Firewall (FW), Virtual Private Network (VPN), UTM Security Appliances
· Integrated Routers
· Storage Controllers, Appliances and Accelerators
· Data Center Accelerators
· Storage Security/Compression Appliances
· Wireless Transport and Base Station
· UTM and Security Appliances
· Network attached Storage
· SMB/SME Routers and Switches
· Network attached Printers
· Industrial Control
· Mil/Aero Applications

Software Support

· Industry's most Comprehensive Software Development kit for Embedded Applications Including
  - Commercial-grade Linux
  - Complete GNU tool-chain, GDB, DDD
  - Performance analysis and Profiling Tools
  - Optimized C libraries for Security
  - OpenWRT for Gateway and Router Applications
  - DPDK Support
  - Open Data Plane (ODP) Support

Product Table

Part Number	ThunderX cores	Max Frequency (MHz)	Networking I/F	Other System I/F	Memory I/O w/ECC
CN8240	8	1200, 1500, 1800	Up to 12 XFI/SGMII or 2 x QSGMII	Up to 4 x CIev3 x4 or 2 x 8 + x4 or 6 SATA	1 x 72-bit DDR3/4 with ECC
CN8250	12				
CN8340	8	1500, 1800, 2000, 2200	Up to 3 XLAUI or 12 x (XFI/SGMII) or 1 x QSGMII	Up to 4 x PCIev3 x4 or 2 x 8 + x4 or 6 SATA	2 x 72-bit DDR3/4 with ECC
CN8350	12				
CN8360	16				
CN8365	20				
CN8370	24				