

Multi-Core MIPS64® Processors

OCTEON III® CN73XX and CN72XX: 4 to 16 cores Embedded Processors for Enterprise, Data Center and Real time Cloud Applications

Product Brief



OVERVIEW

The OCTEON® III CN73XX/CN72XX families of Multi-Core MIPS64 Processors target Integrated Routers, Security Appliances, Control Plane for Routers and Switches, SDN and Data Center Accelerators, Virtualized Storage, Virtualized Cable and Wireless Infrastructure markets. Cavium's new OCTEON III SOCs pack up to 35GHz of compute, 100Gbps of L3 processing and 120Gbps of connectivity in a low-power envelope and compact footprint to address these next generation requirements. With 22 10Gbps serdes, it provides a broad range of connectivity options for 40GbE/10GbE/1GbE along with wide PCI-e v3 interfaces for connectivity to host, ASIC, HBA, Storage controllers and line-cards in a wide range of systems. Support for network and storage virtualization is provided via SRIOV, NVMe over fabric, and SoC HW virtualization capabilities. The powerful programmable packet parser handles both existing and emerging protocols protocols such as NVGRE, MPLS, and VxLAN at line rate while new traffic management capabilities provide the sophisticated traffic shaping and QOS required for application-centric networks. The security performance and capabilities are turbo charged with support for new crypto algorithms such as Elliptical Crypto (ECC), SHA2/SHA3, and high SSL transaction rates for large key sizes. This new family also features Deep Packet Inspection (DPI) and compression capabilities in a highly integrated System on a Chip.

The families includes several software and pin-compatible processors, with four to sixteen cnMIPS64 v3 cores on a highly-integrated SoC that includes a rich set of I/O's including PCIe Gen3 with SRIOV and Storage Virtualization, 40GbE/10GbE/1GbE, USB 3.0, and SATA 3.0 along with Cavium's most advanced fourth-generation application hardware acceleration.

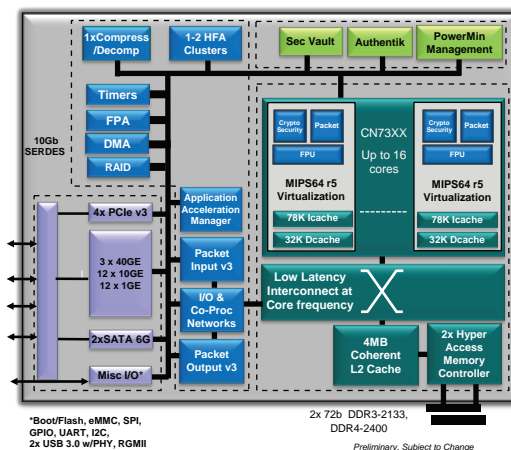
FEATURES

- From four to 16 cores at up to 2.2GHz
- Single (CN72XX) or Dual (CN73XX) 72-bit DDR3/4 controllers at up to 2400MT/s
- High networking and security performance, and connectivity
 - Up to 100Gbps of L3 processing
 - 40Gbps of Security, Application Visibility, and Control
 - 1G/10G/40GbE, PCIev3, SATA 3.0, USB 3.0
- Extremely-low power consumption
 - Configurations as low as 8W
 - Meets stringent power requirements for PCIe offload adapter applications
- Powerful Application Acceleration and Virtualization
 - Fully-flexible packet parser with rich traffic management
 - Unique network and storage virtualization features including SRIOV and NVMe

BENEFITS

- 35GHz of compute, 100Gbps of L3 processing in a low-power and compact foot print
- SOC Virtualization support for virtualized networked infrastructure
- Fits in PCI-e power spec and deliver multigigabits of performance for Data Center application
- 130K Coremark with gcc compiler (no special or custom compilers)
- Very High IOPS for Virtualized Storage over fabric
- Programmable packet parser handles both existing and emerging protocols such as NVGRE, MPLS, and VxLAN
- 40Gbps of security performance with support for new crypto algorithms such as ECC, SHA2/SHA3, Camellia, ZUC besides the bulk crypto of MD5,DES/3DES, AES, and high SSL transaction rates for large key sizes.
- 4 to 16 cores in single foot print and SW compatible providing scalability for performance and feature headroom.

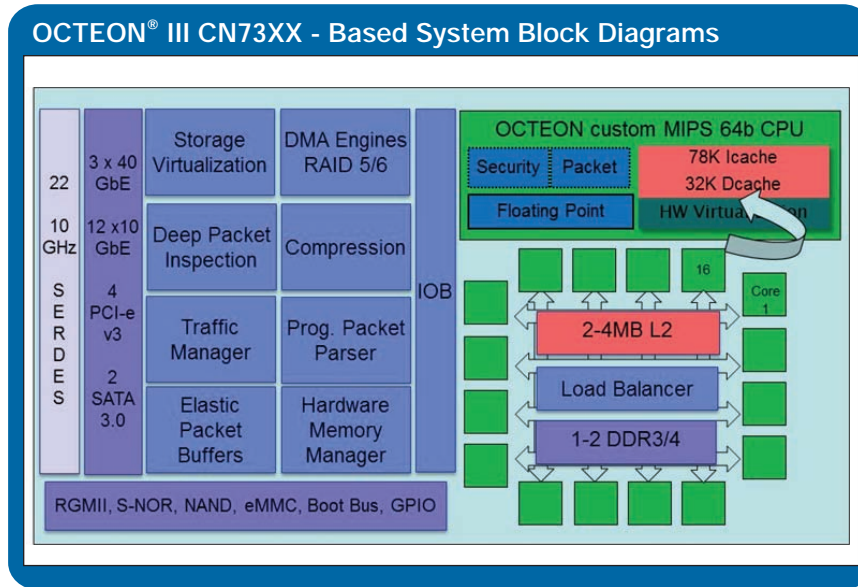
OCTEON® III CN73XX - Block Diagram



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OCTEON III Applications

- In-line packet processing
- Firewall (FW), Virtual Private Network (VPN), UTM Security Appliances
- Integrated Routers
- Storage Controllers, Appliances and Accelerators
- Data Center accelerators
- Control Plane for switches and routers
- Storage Security/Compression Appliances

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 and DPI
- Green Production-grade software toolkits for TCP/IP, IPSec, SSL, Deep Packet Inspection
- OpenWRT for Gateway and Router applications

OCTEON® III CN73XX - Product Family

Device	cnMIPS cores	Frequency Bins (MHz)	Networking I/F	Other System I/F	Memory I/O w/ ECC
CN7230	4	1200, 1500, 2000	12 x10GbE or 3 x40GbE	2 x8 or 4 x4 PCI-e v3 2 x SATA 3.0 2 x USB 3.0	1 x 64-bit DDR3/DDR4 at max 2400 MTS
CN7240	8				2 x 64-bit DDR3/DDR4 at max 2400 MTS
CN7340	8	1500, 1800, 2000			
CN7350	12				
CN7360	16				