

# OCTEON® II CN68XX Multi-Core MIPS64 Processors

Product Brief



## OVERVIEW

The OCTEON II CN68XX family of Multi-Core MIPS64 Processors targets high-performance, high-throughput, service-rich applications in secure datacenter, mobile internet, and borderless enterprise applications. The family includes six software and pin-compatible processors, with 16 to 32 cnMIPS64 v2 cores, over 85 application acceleration engines, and innovative realtime Power Optimizer features, providing the highest compute and services performance of any standard ISA processor with the highest performance per Watt. Extremely high-bandwidth connectivity based on the latest standards-based SERDES I/O's including PCIe Gen2, XAUI, Double-speed XAUI, RXAUI, and Interlaken enable throughputs over 40Gbps using a single chip or scaling to over 100Gbps using multiple chips. The CN68XX offers a 3x compute advantage and 2x performance per Watt advantage over alternative solutions.

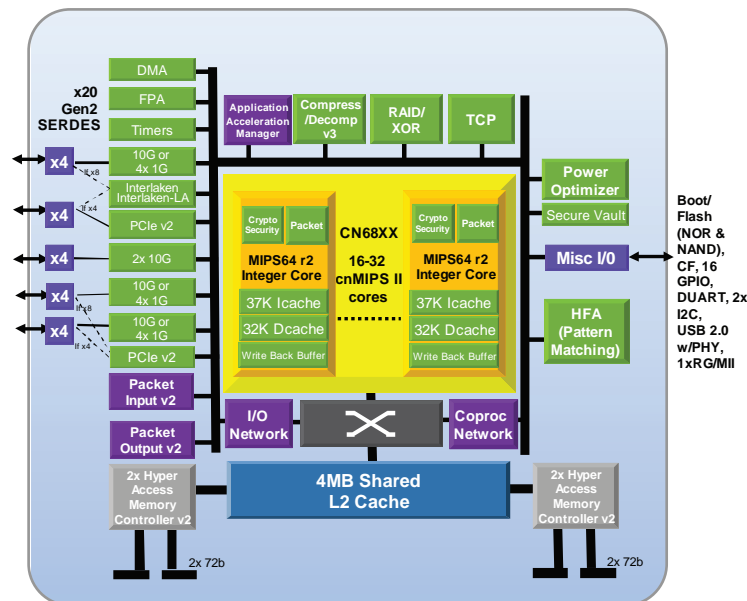
## FEATURES

- Highest Overall Compute and Memory Performance of any standard ISA Embedded Processor
- Latest, Highest-Bandwidth Serial I/O's for Standard Connectivity: XAUI/RXAUI, Interlaken, PCIe Gen 2
- New LZS storage compression mode, compression/decompression performance up to 20Gbps
- Third generation Reg Ex Engine with revolutionary Hyper Finite Automata (HFA) up to 15 Gbps
- High-bandwidth, low-latency I/O and coprocessor networks
- Hardware and software virtualization
- Power Optimizer Technology with flexible, dynamic control of device core power consumption

## BENEFITS

- Up to 48 GHz of total compute in a single chip > 400Gbps DDR3 bandwidth
- > 40 Gbps packet processing and security processing with seamless connectivity to peripherals
- Accelerates LZS to address additional storage applications in addition to ZIP/PKZIP/GZIP support
- Deterministic pattern matching performance, independent of # of flows and rules, most compact graph size
- Linear performance scaling with full coprocessor services at line rate
- Ability to partition into multiple virtual SoCs
- Flexible, dynamic power control to achieve best performance/Watt

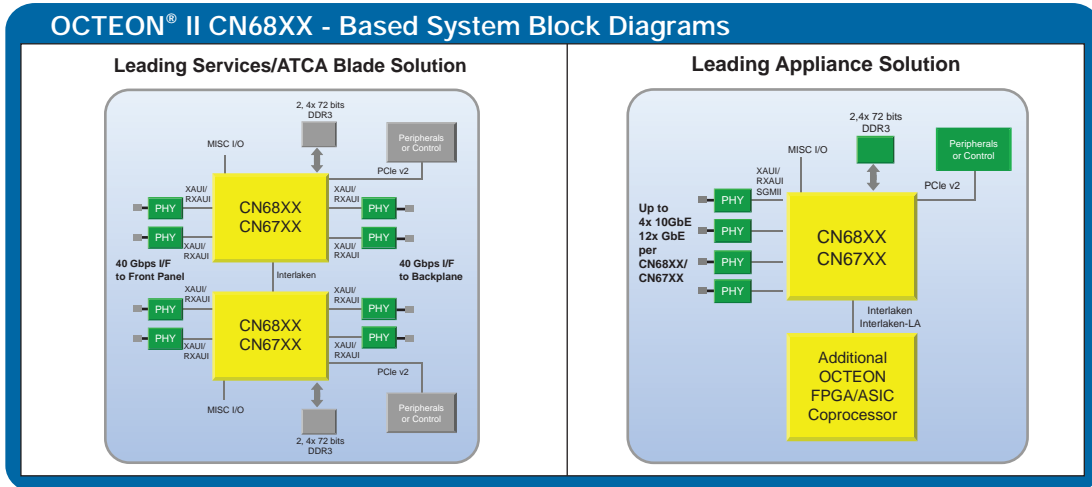
## OCTEON® II CN68XX - Block Diagram



# Multi-Core MIPS64<sup>®</sup> Processors

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Product Brief



### OCTEON II APPLICATIONS

- Borderless Enterprise
  - High-End Enterprise Switches + Routers
  - Wireless LAN Controllers
  - Unified Threat Management Appliances
  - WAN Optimization Appliances
- Secure Cloud Services
  - Application Delivery Switches
  - Secure Storage switches, FC to IP bridges
  - Load Balancers
  - Security Appliances and Blades
- Mobile Internet
  - 3G/4G/LTE Gateways
  - ATCA Blades and AMC's
  - xGSNs, Evolved Packet Core (ePC)

### OCTEON II SOFTWARE SUPPORT

- Cavium SDK includes:
  - Up to 32-way SMP LINUX support
  - Cavium Simple Executive for data plane applications
  - Complete GNU tool-chain, GCC, GDB and DDD
  - Viewzilla, Perfzilla, and Oprofile for performance tuning
  - Optimized C libraries for security, regular expression, de/compression processing offload
  - Support for run-to-completion or pipelined software models
- Complete production quality development toolkits for TCP/IP, IPsec, SSL, SSL-VPN and Deep Packet Inspection available
- Comprehensive Ecosystem support
  - Popular third-party Operating systems and Toolchains
  - Broad range of third-party application software vendors
  - Appliances, AMC, ATCA cards from Cavium's Ecosystem support
- MIPS64/32 support enables thousands of MIPS and other C/C++ applications to be easily ported to OCTEON

### OCTEON<sup>®</sup> II CN68XX - Product Family

| Device | Part Number                   | cnMIPS cores | Performance<br>Max. Available Instructions Per Second | Option |    | L2 Cache | Networking Interfaces  | PCI-Express/SRIO          | Memory IO w/ECC | Package    |
|--------|-------------------------------|--------------|---|--------|----|----------|--|---------------------------|-----------------|------------|
|        |                               |              |   | AAP    | CP |          |  |                           |                 |            |
| CN6860 | CN6860-XXXBG1936- Option Code | 16           | 48B   | Y      | Y  | 4MB      | Up to 3x [XAUI or 4x SGMII] + [1x XAUI or 2x RXAUI], Up to 1x Interlaken/LA x4 or x8 + 1x RG/MII | Up to 1 x8 + 1 x4 PCIe v2 | 4x 72-bit DDR3  | 1936 FCB6A |
| CN6870 | CN6870-XXXBG1936- Option Code | 24           | 72B   | Y      | Y  |          |  |                           |                 |            |
| CN6880 | CN6880-XXXBG1936- Option Code | 32           | 96B   | Y      | Y  |          |  |                           |                 |            |