

Multi-Core MIPS64® Processors

# OCTEON™ CN30XX MIPS64-Based Secure Communication Processors

## Product Brief

### OVERVIEW

The OCTEON CN30XX family of MIPS64 processors targets intelligent broadband networking, control plane, storage, and wireless applications in next-generation equipment from 100 Mbps to 1Gbps. This family consists of 4 different software-compatible processors, with a cnMIPS64 core and integrated next-generation I/Os including Fast Ethernet, Gigabit Ethernet, TDM/PCM, and USB 2.0, along with the most advanced security, packet processing and QoS features. CN30XX processors are the industry's first products to deliver the performance of 64-bit computing and integrated L2 cache starting at sub-\$20 price points. Supported by industry-standard software toolchains and operating systems, the CN30XX is ideal for 802.11a/b/g/n, VDSL2, PON, triple-play, UTM, SOHO/SMB NAS, and VoIP applications.

### FEATURES

- Custom CPU Core Optimized for Networking**
- cnMIPS™ CPU core (MIPS64/32 compatible) with MMU
  - Available in 300MHz to 500MHz versions
  - Enhanced MIPS64 integer (Release2) instruction set
  - Dual-issue, five-stage pipeline, optimized latencies
  - Auto instruction pre-fetching and advanced data pre-fetching features to minimize memory stalls

- High Performance Coherent Memory Subsystem**
- 64KB – 128KB ECC protected L2 cache with locking, partitioning features for optimal performance
  - Integrated mainstream 16 – 32b DDR2 memory controller with ECC, up to DDR2-533

- Integrated Coprocessors for Application Acceleration**
- Packet I/O processing, QoS, TCP Acceleration
  - Support for IPsec, SSL, SRTP, WLAN security (includes DES, 3DES, AES (up to 256 bit), SHA1, SHA-2 up to SHA-512, RSA, DH)

- Integrated High-Performance Networking Interfaces**
- Up to 3 Configurable Ethernet I/Os - 3x FE/GE MACs (RGMII) or 1x RGMII/MII + 1x GMII/MII
  - Integrated 32bit, 66MHz PCI host or slave
  - TDM/PCM interface for glueless VoIP support
  - USB 2.0, high-speed (480Mbps), host with integrated PHY

- Low Power Consumption:**
- 2W - 4W

- Small Footprint Package:**
- 525 HSBGA (CN3010), 350 PBGA (CN3005)

### BENEFITS

- Market Leading Performance**
- Up to 1 Billion instructions per second
  - 100Mbps to 1Gbps application performance
    - Up to 1Gbps 64B IP forwarding
    - Up to 1Gbps for TCP, IPsec, SSL

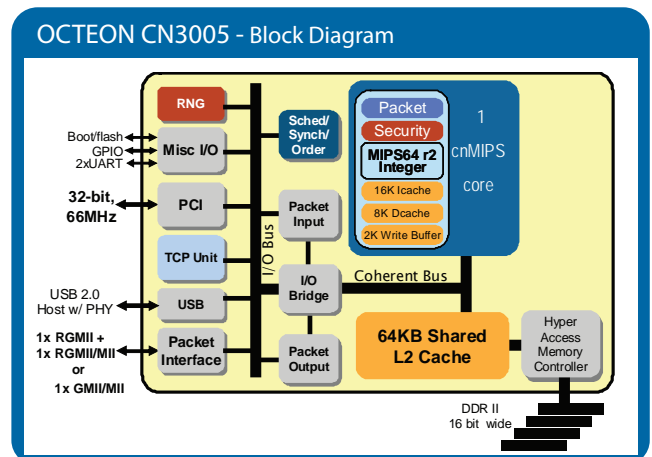
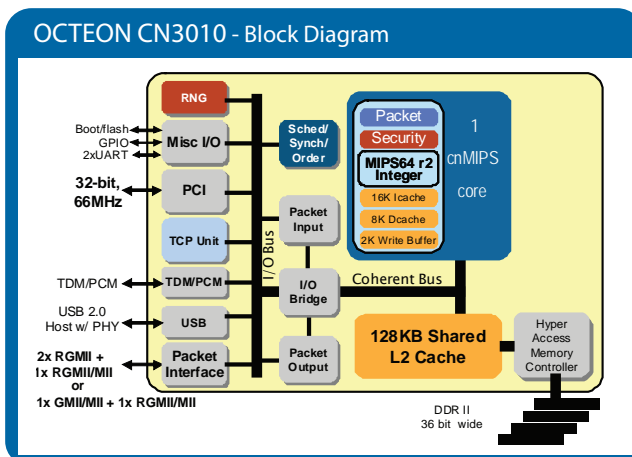
- Support for Voice, Video and Data with integrated Hardware**
- Queuing, scheduling
  - Very low latency for real-time traffic

- Reduced BOM Cost with Essential Interfaces for Next Generation Networking Equipment**
- Glueless support for switching, WLAN, voice and video
  - High-speed USB2.0 enables printer, storage connectivity

Flexible Architecture allows Host and Co-processor Implementations

Industry-Standard Programming Model without any Need for Proprietary Tools or Micro-coding

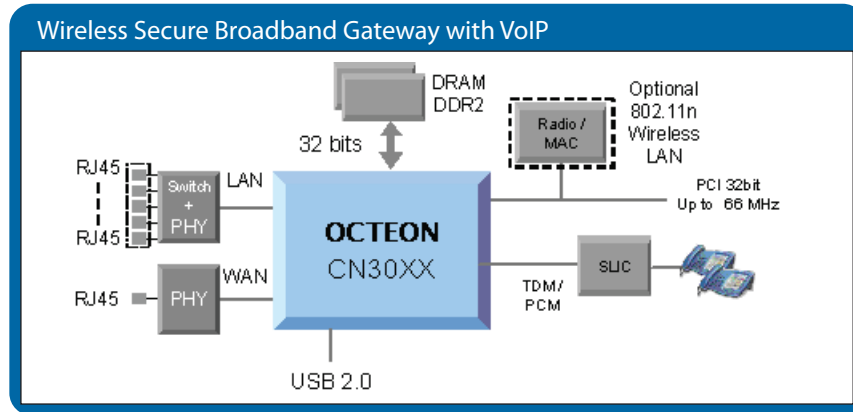
Fully Software Compatible with OCTEON CN38XX, CN36XX, CN31XX to deliver 1- 16 CPU scalability



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### OCTEON CN30XX Applications

- Wired and Wireless Broadband Gateway with security and packet processing
- Unified Threat Management (UTM) security appliances with Firewall, VPN (IPsec, SSL), IDS, IPS and Anti-virus scanning
- Triple-play voice, video and data wired and wireless gateways
- Integrated management and route processor cards
- Network acceleration cards for security, TCP, content processing, compression
- Switch/router line card and services card control and datapath processing
- Intelligent PCI NIC cards and motherboards

### OCTEON Software Support

- Cavium Networks SDK includes:
  - LINUX support
  - Cavium Simple Executive for data plane apps
  - Complete GNU tool-chain, GDB, DDD and viewzilla for tuning
  - Optimized C libraries for security, regular expression, de/compression processing offload
- Complete production quality development toolkits for IP, IPsec, SSL, TCP, SSL-VPN available
- Comprehensive Ecosystem support
  - Popular third party Operating systems and toolchains, including MontaVista Linux, WindRiver VxWorks, ENEA OSE
  - Broad range of third-party application software vendors, including 6Wind, Intoto, D2 Technologies
- MIPS64/32 support enables thousands of MIPS and other C/C++ applications to be easily ported to OCTEON

### OCTEON CN30XX - Product Family

Device	Part Number*	cnMIPS cores	Performance Max. Available Instructions Per Second	Option		L2 Cache	Interfaces			PCI	Memory I/O	Package
				SCP	CP		USB 2.0	TDM	Ethernet			
CN3005	CN3005-XXXBG350-Option Code	1	800M	x	x	64KB	x	—	1xRGMII/MII + 1xRGMII or 1xGMII/MII	32bit/66MHz	16bit DDR2-533	350 BGA
CN3010	CN3010-XXXBG525-Option Code	1	1.0G	x	x	128KB	x	x	1xRGMII/MII + 2xRGMII or 1xRGMII/MII + 1xGMII/MII	32/36 bit DDR2-533		525 BGA

\* (Part Number Options):

XXX = Device Speed Grade (300 = 300MHz, 400 = 400MHz, 500 = 500MHz)

Option Code = Device Family (listed below):

SCP = Secure Communications Processor Includes: encryption, networking, TCP acceleration and QoS

CP = Communication Processor Includes: high performance packet processing, TCP acceleration and QoS