CAVIUM NETWORKS

Networks That Think™...

Multi-Core MIPS64® Processors

OCTEON™ Plus CN58XX 4 to 16-Core MIPS64-Based SoCs

Product Brief

OVERVIEW

The OCTEON™ Plus CN58XX family of Multi-core MIPS64 processors targets intelligent networking, control plane, storage, and wireless applications in next-generation equipment from 2 Gbps to full-duplex 10 Gbps (20 Gbps) performance. The family includes 10 different software-compatible parts, with four to sixteen cnMIPS64 cores on a single chip that integrate next-generation networking I/Os along with the most advanced security and application hardware acceleration to deliver a 2x – 3x performance, power and real-estate value proposition over alternatives.

FEATURES

Pin and software compatible with the leading OCTEON CN38XX/CN36XX family

- 4-16 cnMIPS™ CPU cores (MIPS64/32 compatible) with MMU
- Available in 500 MHz to 900 MHz 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

- Up to 2MB ECC protected 8-way set associative L2 cache with locking, partitioning features for optimal performance
- Integrated mainstream 128/144-bit DDR2 memory controller with ECC, up to DDR2-800
- Optional, additional, low-latency 2x18-bit or 4x9-bit RLDRAM2 for content based processing, meta-data and TCAM connectivity

Integrated coprocessors for application acceleration

- Packet I/O processing, QoS, TCP Acceleration
- Support for IPsec, SSL, SRTP, WLAN and UMTS/LTE security (includes DES, 3DES, AES-GCM, AES up to 256, SHA1, SHA-2 up to SHA-512, RSA up to 8192, DH, KASUMI)
- Regular Expression, Compression/Decompression

Integrated high-performance networking interfaces

- Up to 2 sets of I/Os - each configurable as 4x 10/100/1000 Ethernet MACs (RGMII) or SPI-4.2
- Integrated 64-bit, 133 MHz PCI-X host or slave

Comprehensive development environment with Linux, VxWorks, OSE and C/C++ support

Optimized power consumption: 15W – 40W

Package: 1521 FCBGA

BENEFITS

Market-leading performance

- Up to 28.8 Billion instructions per second
- Leading-edge application performance
  - Up to 30 Mpps 64B IP forwarding
  - Full-duplex up to 10 Gbps for TCP, IPsec, SSL, KASUMI
  - Up to 5 Gbps for Regular Expression Compression/Decompression

Double L1/L2 caches and up to 3x Interconnect bandwidth along with 1 GHz Core delivers up to 2x performance over OCTEON CN38XX

Sophisticated hardware based QoS support

- Queuing, scheduling
- Very low latency for real-time traffic

Reduced BOM cost with essential interfaces for standalone Routers/Appliances, Line-card and Services-card applications

Flexible architecture allows host and coprocessor Implementations

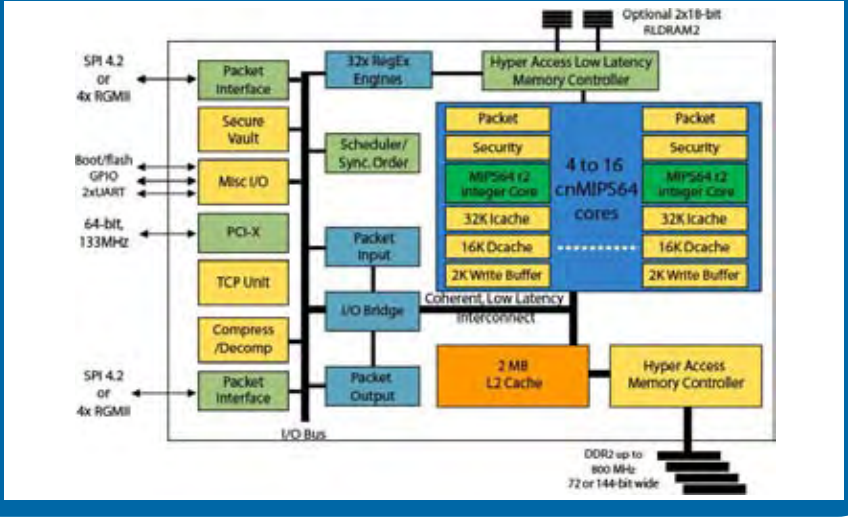
Industry-standard programming model without any need for Proprietary Tools or Micro-coding

Fully software compatible with OCTEON CN31XX and CN30XX to deliver 1- 16 CPU scalability

2x – 3x advantage over alternative system architectures in performance and power for L4-L7 data and security services

2x performance/watt over OCTEON CN38XX

OCTEON Plus CN58XX - Block Diagram



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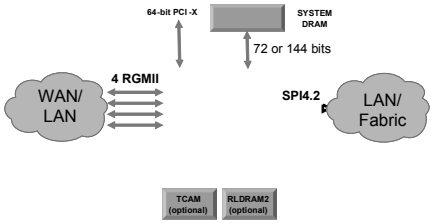
OCTEON Plus CN58XX as 4Gbps+ Single-Chip Network Appliance



CN5830-XXXBG1521- Option Code	Y	Y	Y
CN5840-XXXBG1521- Option Code	Y		Y
CN5850-XXXBG1521- Option Code	Y		Y
CN5860-XXXBG1521- Option Code	Y	Y	Y

* (Part Number Options):
XXX = Device Speed Grade (500LP = 500 MHz Low Power, 600LP = 600 MHz Low Power, 600 = 600 MHz, 750 = 750 MHz, 800 = 800 MHz, 900 = 900 MHz)
Option Code = Device Family Listed Below:
NSP = Network Services Processor: Includes, encryption, reg-ex acceleration, decompression, networking, TCP acceleration and QoS
EXP = Extreme Processor: Includes reg-ex acceleration, decompression, networking, TCP acceleration and QoS
SCP = Secure Communications Processor: Includes, encryption, networking, TCP acceleration and Qos