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Overview

Cavium Networks (NASDAQ: CAVM) is a leading provider of highly integrated semiconductor processors that enable intelligent networking, communications, storage, video and security applications. Cavium Networks offers a broad portfolio of integrated, software compatible processors ranging in performance from 10+ Mbps to 40Gbps that enable secure, intelligent functionality in Enterprise, Data-Center, Broadband/Consumer and Access and Service Provider equipment. Cavium Networks’ processors are supported by ecosystem partners that provide operating systems, tools and application support, hardware reference designs and other services. Cavium Networks is headquartered in Mountain View, CA with design team locations in California, Massachusetts and India.

Products

Cavium Networks’ product portfolio includes:

- **OCTEON® Multi-core MIPS64 Processors**: Includes OCTEON II CN68XX and CN63XX, and OCTEON Plus CN58XX, CN57XX, CN56XX, CN55XX, CN54XX, CN52XX, and CN50XX SoC processors. These processors provide a scalable range from one to thirty-two cnMIPS™ cores on a single chip along with the most advanced networking, security and application hardware acceleration. The cnMIPS™ core is Cavium’s custom implementation of MIPS64 release 2, optimized for networking, and services with very low power consumption. Application hardware acceleration engines for QoS, packet processing, TCP, compression, encryption, RAID, de-duplication and pattern matching allow the family to deliver unmatched scalability, performance and integration in a fully compatible manner from 100 Mbps to full-duplex 40 Gbps of network performance. Flexible, standards-based I/O’s including gigabit Ethernet, 10 gigabit Ethernet, PCI Express Gen 1&2, USB2.0, serial Rapid I/O (sRIOTM) and Interlaken enable flexible, high-bandwidth network and system connectivity.

- **NITROX® DPI Layer 7 Content Processors**: Includes NITROX DPI CN17XX processor and board family. These products provide leading L7 content processing performance with PCI-Express connectivity for enterprise routers and switches, data center networking appliances, integrated security appliances and service provider infrastructure. It includes innovative, patent pending deep-packet inspection technology. The NITROX DPI CN17XX family includes three different products that range in performance from 4 to 20 Gbps in a software compatible manner.

- **NITROX® Security Processors**: Includes four families of security processors, NITROX, NITROX Lite, NITROX II and NITROX PX span in performance from 50 Mbps to 10 Gbps of IPsec and SSL security, and 1K to 40K sessions/sec. These products provide a high degree of flexibility, hardware scalability and software compatibility, as well as the highest performance in the marketplace.

- **ECONA™ ARM Processors**: Includes three product lines for connected home and office applications. The ECONA CNS1XXX and CNS2XXX provide an integrated ARM CPU, comprehensive I/Os and hardware offload blocks for low BOM cost broadband and consumer applications. The ECONA CNS3XXX family of highly integrated ARM-based SoC processors offer a rich set of integrated hardware accelerators and a range of I/Os for glueless voice, video and data connectivity. The CNS3XXX sophisticated power management techniques enable super low power operation starting at less than 1 watt.

- **PureVu™ Video Processors**: Includes the CNW3XXX video processors and the CNW2XXX micro-mezzanine modules. The PureVu CNW3XXX H.264 codecs provide industry’s lowest latency, highest video processing resolution and multi-stream capability for several application, including HD home video distribution, video conferencing and various interactive video applications. The CNW2XXX modules provide ready-to-use low latency HD/SD processing for industrial and embedded video applications.

- **10GbE Intelligent Network Adapters**: Includes the PCI-Express 10GbE Intelligent Network Adapters which are available in a full-height, half-length, single-slot PCI Express form factor. The PCI-Express 10GbE adapters support the OCTEON Plus CN56/57XX processors with up to 12 MIPS64 cores, and include integrated hardware acceleration for TCP, encryption/decryption, iSCSI, FCoE and compression/decompression.
COMPANY OVERVIEW - continued

- **OCTEON Accelerator Boards**: Includes security accelerator and multifunction boards for security compression and TCP applications that span from 50 Mbps to 10 Gbps in a variety of form factors including PCI/PCI-X and PCI-Express add-in cards and Gigabit Ethernet and 10Gbe NICs.

- **NITROX and FIPS 140-2 Level 2 and 3 Acceleration Boards**: Includes FIPS 140-2 Level 2 and 3 compliant security accelerator boards for customers with the highest level of security requirements. This scalable product family offers the best performance and price/performance to OEM customers targeting the highly security conscious government, financial and healthcare markets.

**Cavium Services and Solutions**:

- Cavium Services and Solutions (CSS) provides a group of highly experienced Cavium Architects and Developers who are dedicated to help customers accelerate development of OCTEON based software and systems. CSS offers dedicated services that complement Cavium Networks’ Sales and Customer support organizations.

**Target Applications**

Cavium Networks’ products are used in a wide variety of networking applications including:

- **Data Centers**: Application Delivery Switches, XML Gateways and Server Offload.

- **Enterprise Networks**: Routers, Security Appliances, WAN Optimization and Enterprise Switches.

- **Broadband and Consumer**: Broadband Routers, Triple Play Gateways, Retail and Small Office Wired and WLAN Routers, VoIP Phones and Network Storage Devices.

- **Access and Service Provider**: Mobile 3G/4G Infrastructure Equipment, Security Gateways, Session Border Controllers and Routers.

- **Storage**: FC to IP Routers, Disc Arrays, Switches, TCP, Compression, De-duplication and Security Offload.

- **Connected Home of Office Devices**: Broadband Multi-media Gateways, Connected Picture Frames and Intelligent Network Attached Storage.

- **Video Conferencing**: Full 1080p with Sub-frame Latency.

- **netHD**: Video and game distribution via Ethernet, WiFi, Powerline and G.hn.

- **Embedded Video Processing**: Telemedicine, Distance Learning and Wireless Broadcasting.

- **Video Surveillance**: HD IP cameras, Multi-Channel DVR and IP Video servers.
Overview
The Cavium Networks OCTEON family of Multi-Core MIPS64 processors is the industry’s most scalable, highest-performance, and lowest-power solution for intelligent networking applications ranging from 100Mbps to 40Gbps. These software-compatible processors, with one to thirty-two cnMIPS cores on a single chip, integrate next-generation networking I/Os along with the most advanced security, storage, and application hardware acceleration, offering unprecedented throughput and programmability for the Layer 2 through Layer 7 processing requirements of intelligent networks.

Target Applications
The OCTEON processors are targeted for use in a wide variety of OEM networking and storage equipment, including routers, switches, unified threat management (UTM) appliances, content-aware switches, application-aware gateways, triple-play gateways, WLAN and 3G/4G access, aggregation devices and gateways, storage arrays, storage networking equipment, servers, and intelligent NICs.

Product Line
The OCTEON product family consists of nine product lines based upon the distinct performance, feature, and cost requirements of the target equipment. All OCTEON processors are software compatible and supported by industry-standard software toolchains and operating systems. Various product options are available within each OCTEON family to suit the specific needs of each individual application. OCTEON XL acceleration boards are also available, providing the ability to rapidly extend the performance and capabilities of existing appliance systems. OCTEON processors are available in multiple versions to address market specific requirements, including Network Services Processors (NSP), Application Acceleration Processors (AAP), Storage Services Processors (SSP), Secure Communication Processors (SCP) and Communication Processors (CP).

Benefits
- Industry’s most scalable processor line enables single solution for low to high-end
- Highest performance and integration
- Most advanced security, networking and application acceleration
- Fully software-compatible for maximum protection of software investment
- Very low power consumption enables high performance in challenging form-factors
- Comprehensive software and ecosystem support
### OCTEON Processor Product Line Summary

<table>
<thead>
<tr>
<th>Device</th>
<th>Cores</th>
<th>CPU Speed (MHz)</th>
<th>L2 Cache</th>
<th>Interfaces</th>
<th>Options</th>
<th>Package</th>
</tr>
</thead>
<tbody>
<tr>
<td>CN63XX</td>
<td>2-6</td>
<td>800 - 1500</td>
<td>2MB</td>
<td>XAUI or GMII/PCIe/sRIO</td>
<td>AAP, CP</td>
<td>900 FCBGA</td>
</tr>
<tr>
<td>CN58XX</td>
<td>4-16</td>
<td>600 - 800</td>
<td>2MB</td>
<td>XAUI or GMII/PCIe/sRIO</td>
<td>EXP, NSP, SCP</td>
<td>1521 FCBGA</td>
</tr>
<tr>
<td>CN57XX</td>
<td>8-12</td>
<td>600 - 800</td>
<td>2MB</td>
<td>XAUI or GMII/PCIe/sRIO</td>
<td>SP, SSP</td>
<td>1217 FCBGA</td>
</tr>
<tr>
<td>CN56XX</td>
<td>8-12</td>
<td>600 - 800</td>
<td>2MB</td>
<td>XAUI or GMII/PCIe/sRIO</td>
<td>NSP, SCP</td>
<td>1217 FCBGA</td>
</tr>
<tr>
<td>CN55XX</td>
<td>4-6</td>
<td>500 - 700</td>
<td>1MB</td>
<td>XAUI or GMII/PCIe/sRIO</td>
<td>SP, SSP</td>
<td>1217 FCBGA</td>
</tr>
<tr>
<td>CN54XX</td>
<td>4-6</td>
<td>500 - 700</td>
<td>1MB</td>
<td>XAUI or GMII/PCIe/sRIO</td>
<td>CP, NSP</td>
<td>1217 FCBGA</td>
</tr>
<tr>
<td>CN52XX</td>
<td>2-4</td>
<td>500 - 750</td>
<td>512KB</td>
<td>XAUI or GMII/PCIe/sRIO</td>
<td>SCP, CP</td>
<td>564 HSBGA</td>
</tr>
<tr>
<td>CN50XX</td>
<td>1-2</td>
<td>300 - 700</td>
<td>128KB</td>
<td>XAUI or GMII/PCIe/sRIO</td>
<td>CP, SCP</td>
<td>564 HSBGA</td>
</tr>
</tbody>
</table>

**Device Option**

- **Networking TCP, QoS**
  - SSP: Y
  - SP: Y
  - NSP: Y
  - EXP: Y
  - SCP: Y
  - AAP: Y

- **Security**
  - Y
  - EXP: Y

- **Pattern Matching**
  - Y (if available)

- **Compression/Decompression**
  - Y (if available)

- **RAID**
  - Y
Overview
The NITROX® DPI CN17XX processor family is the most advanced hardware acceleration co-processor family for Layer 7 content processing. When used with OCTEON® and other general purpose processors, it enables intelligent, deep packet inspection in next-generation networking and wireless applications from 4 to 20 Gbps performance. The CN17XX processor family integrates PCI Express I/Os along with the most advanced deep packet inspection engines, Hyper Finite Automation Thread Engine (HTE), to deliver the highest performance that is deterministic, has low latency and is independent of the pattern rule-set size and traffic flows. NITROX DPI processors are targeted for a wide range of applications including application level firewalls, intrusion prevention (IPS), gateway anti-virus, unified threat management and content-based QoS in routers, switches, appliances and services blades.

Target Applications
The NITROX DPI CN17XX processor is targeted for use in a wide variety of enterprise routers and switches, networking appliances, Integrated security appliances.

Product Line
The NITROX DPI CN17XX processor and board family offers look-aside L7 content processing with PCI-Express connectivity. These processors offer up to 20 Gbps of performance and can be used in conjunction with the OCTEON family and other general purpose processors such as the x86 to increase DPI performance. The same engines are also integrated on Cavium's OCTEON II processor family, enabling seamless software migration from CN17XX family to OCTEON II. For future designs that need even higher performance, the CN17xx family can be used in conjunction with Cavium's high end OCTEON II processor family to deliver up to 40 Gbps performance. The ability to use the HFA technology as a coprocessor as well as integrated in a CPU, with performance ranging from 4 Gbps – 40 Gbps provides customers with the most flexible, scalable and highest performing L7 content processing solution in the marketplace. The NITROX DPI CN17XX family includes four different products.

Benefits
• High performance for look-aside RegEx processing up to 20G
• Commodity memory for regular expression pattern rule-sets DDR2
• Small memory footprint for regular expression pattern
• Latest interfaces PCIe v1
• Rich regular expression processing Syntax with PCRE and POSIX support
• Comprehensive development environment with compiler and SDK
• Tried and tested solution with real world signature sets
• Integrated SNORT application performance
## NITROX DPI Processors Product Line Summary

<table>
<thead>
<tr>
<th>Device</th>
<th>Part Number</th>
<th>Performance</th>
<th>Board Interfaces</th>
<th>Pattern Memory</th>
</tr>
</thead>
<tbody>
<tr>
<td>CN1701</td>
<td>CN1701-XXXBG1738 Option Code</td>
<td>4 Mbps</td>
<td>PCI Express v1 x4/x8</td>
<td>DDR2</td>
</tr>
<tr>
<td>CN1705</td>
<td>CN1705-XXXBG1738 Option Code</td>
<td>8 Gbps</td>
<td>PCI Express v1 x4/x8</td>
<td>DDR2</td>
</tr>
<tr>
<td>CN1710</td>
<td>CN1710-XXXBG1738 Option Code</td>
<td>12 Gbps</td>
<td>PCI Express v1 x4/x8</td>
<td>DDR2</td>
</tr>
</tbody>
</table>
Overview
Cavium Networks’ award winning NITROX families of security processors offer solutions delivering 50 Mbps to 10Gbps of encryption bandwidth with 1K to 50K RSA/DH operations per second. Cavium Networks highly integrated, feature rich NITROX families of Security processors deliver unprecedented performance in wired and wireless network security applications, SSL based secure e-Business and Storage data-at-rest security applications while significantly reducing the cost and complexity of deployment.

Target Applications
The NITROX Security Processor family targets medium-to-high performance applications in the Broadband, Enterprise, Data Center, and Access and Service Provider market segments. These processors are used in integrated Security Appliances, L4 - L7 Switches, Server Load Balancers, WLAN Switches, Web Servers, UTM appliances and Application Aware Gateways.

Product Line
Cavium Networks’ market share leading NITROX families of security processors are divided into three product lines, NITROX Lite, NITROX II and NITROX PX. These three families of security processors have been developed using custom CPU design techniques and span in performance from 50 Mbps to 10+ Gbps, and 1K to 40K sessions/sec. The NITROX security processors offer lookaside and inline functionality options with the widest range of interface connectivity. These products provide a high degree of flexibility, hardware scalability and software compatibility, as well as the highest performance in the market place.

Benefits
• The NITROX family provides the widest range of encryption performance from 500Mbps - 10+ Gbps for any type of application
• The unique adaptive multi-core design enables high performance multi-protocol processing with varying and dynamic symmetric and assymetric encryption performance
• Full protocol processing allow for the most efficient processing with the lowest CPU impact
• Inline and look aside options for maximum flexibility of system design
NITROX® Family of Security Processors

NITROX Security Processor Family

NITROX Processors Product Line Summary

<table>
<thead>
<tr>
<th>Device</th>
<th>Performance</th>
<th>IPsec (i) SSL (s) Wireless (w) MultiService (p) Support</th>
<th>Data Interface</th>
<th>Local DDR</th>
<th>Package</th>
</tr>
</thead>
<tbody>
<tr>
<td>CN5XX</td>
<td>200 Mbps</td>
<td>i,s,w,p</td>
<td>PCI 32-bit/66 MHz</td>
<td>No</td>
<td>128 LQFP</td>
</tr>
<tr>
<td>CN10XX</td>
<td>1 Gbps</td>
<td>i,s,w,p</td>
<td>PCI -X 64-bit/133 MHz</td>
<td>No</td>
<td>256 BGA</td>
</tr>
<tr>
<td>CN15XX</td>
<td>2.5 Gbps</td>
<td>i,s,w,p</td>
<td>PCI-X 64-bit/133 MHz</td>
<td>No</td>
<td>256 BGA</td>
</tr>
<tr>
<td>CN16XX</td>
<td>2.5 Gbps</td>
<td>i,s,w,p</td>
<td>PCI-Express, 4 Lanes</td>
<td>No</td>
<td>233 BGA</td>
</tr>
<tr>
<td>CN21XX</td>
<td>4 Gbps</td>
<td>i,s,w,p</td>
<td>SPI-3, PCI-X 64-bit/133 MHz</td>
<td>Yes</td>
<td>1096 HSBGA</td>
</tr>
<tr>
<td>CN22XX</td>
<td>4 Gbps</td>
<td>i,s,w,p</td>
<td>2x SPI-3, PCI-X 64-bit/133 MHz</td>
<td>Yes</td>
<td>1096 HSBGA</td>
</tr>
<tr>
<td>CN23XX</td>
<td>5 Gbps</td>
<td>i,s,w,p</td>
<td>SPI-3, SPI-4.2, PCI-X 64-bit/133 MHz</td>
<td>Yes</td>
<td>1096 HSBGA</td>
</tr>
<tr>
<td>CN24XX</td>
<td>10 Gbps</td>
<td>i,s,w,p</td>
<td>SPI-4.2, PCI-X 64-bit/133 MHz</td>
<td>Yes</td>
<td>1096 HSBGA</td>
</tr>
<tr>
<td>CN25XX</td>
<td>10 Gbps</td>
<td>i,s,w,p</td>
<td>2x SPI-4.2, PCI-X 64-bit/133 MHz</td>
<td>Yes</td>
<td>1096 HSBGA</td>
</tr>
</tbody>
</table>
ECONA ARM Processor Family

Overview
The Cavium Networks ECONA family of ARM processors delivers a wide variety of highly integrated embedded SoC options at industry leading BOM cost and performance per watt. These processors implement the ARM™ core processor technology along with innovative hardware offload engines to provide up to Gigabit rate processing in the 0.5 -1.5W power range. Additionally, optional advanced features such as L7 content inspection hardware are available to provide value added product features for the network connected home and office.

Target Applications
The ECONA processor families are targeted for use in a wide variety of network connected home and office applications ranging from retail and small office wired and 802.11n WLAN routers. The ECONA CNS2XXX family provides the best solution for price and power sensitive application such as IP cameras and home and office equipment. The ECONA CNS3XXX family provides highly integrated interfaces for applications including broadband gateways and routes, network attached storage appliances, multimedia picture frames and print servers, IP surveillance and wireless access points.

Product Line
The ECONA family consists of three product lines based upon the distinct performance, feature, and cost requirements of the target network connected home and office products. The ECONA CNS1XXX provides an integrated ARM CPU, comprehensive I/Os and hardware offload blocks for high performance home and office routers and gateways. The ECONA CNS2XXX provides even greater integration for the most cost and power sensitive home and retail network applications. The ECONA CNS3XXX provides highly integrated dual ARM11MP Core comprehensive I/Os and hardware offload blocks for home and office security routers and gateways, network storage and multimedia appliance.

Benefits
- The ARM™ core performance for network connected home and office applications
- Hardware acceleration for maximum CPU offload
- Highly integrated I/O and low cost design for price sensitive applications
- Low-power design with intelligent power management
### ECONA ARM Processor Family

<table>
<thead>
<tr>
<th>Device</th>
<th>Parallel Flash</th>
<th>Memory I/O</th>
<th>Embedded Switch</th>
<th>Hardware NAT/NAPT</th>
<th>Interfaces</th>
<th>PC/PCI Express</th>
<th>Package</th>
</tr>
</thead>
<tbody>
<tr>
<td>CNS1XXX</td>
<td>YES</td>
<td>16/32 bit</td>
<td>YES</td>
<td>YES</td>
<td>2 ports</td>
<td>YES</td>
<td>YES</td>
</tr>
<tr>
<td>CNS2XXX</td>
<td>YES</td>
<td>16-bit</td>
<td>NO</td>
<td>NO</td>
<td>2 ports</td>
<td>NO</td>
<td>YES</td>
</tr>
<tr>
<td>CNS3XXX</td>
<td>YES</td>
<td>16/32 bit</td>
<td>YES</td>
<td>YES</td>
<td>2 Ports (Host x 1, OTG x 1)</td>
<td>YES</td>
<td>YES</td>
</tr>
</tbody>
</table>
Overview
The Cavium Networks family of PureVu CNW3XXX video processors is the industry’s lowest latency, highest channel density and lowest-power solution for interactive and recording video applications. These processors integrate an H.264 encoder and decoder on a single chip with support for 1080p60 encode/decode, as well as encoding and decoding multiple HD, SD and CIF streams. Through Cavium’s Super Low Latency (SLL) Technology™ the most demanding interactive video applications are possible, using the CNW3XXX processors.

Target Applications
The PureVu CNW3XXX processors are targeted for use in either highly interactive video applications or in high channel-density video recording applications or in applications that require both low latency and high channel-density; including video conferencing, wireless HDMI adapters, video surveillance DVRs and video servers, and single or multi-sensor HD and SD IP cameras.

Product Line
The PureVu CNW3XXX product family consists of the CNW31XX, CNW35XX and the CNW36XX product lines, which are differentiated based on HD and SD capabilities and number of video ports. All PureVu CNW3XXX processors are register-programmed and software compatible. An SDK provides Linux driver support and an extensive API set for the target applications. Application-specific PureVu CNW3XXX evaluation systems and reference designs are also available.

Benefits
• Up to 1080p60 encode or decode
• Encode and decode of multiple HD and SD streams
• Up to 32 streams of encode or decode
• Up to 8 BT.1120/BT.656 bi-directional video ports
• Sub frame rate encode-decode latency
• Stream duplication
• Transsizing and transrating
• Stream tiling and cropping for display
• 32-bit PCI bus 32-bit generic host bus interface
PureVu™ Family of Video Processors

PureVu CNW3XXX Video Processor Family

PureVu CNW3XXX Video Processors Product Line Summary

<table>
<thead>
<tr>
<th>Device</th>
<th>Part Number*</th>
<th>Streams HD</th>
<th>Streams SD</th>
<th>Video Ports No</th>
<th>Video Ports Interface</th>
<th>Host I/F</th>
<th>Memory</th>
<th>Package</th>
</tr>
</thead>
<tbody>
<tr>
<td>CNW3108</td>
<td>CNW3108 233BG676</td>
<td>1x 1080p60</td>
<td>1x 1080p30</td>
<td>8 D1 32x CIF</td>
<td>8 BT.1120/ BT.656</td>
<td>PCI 32-bit, 33/66MHz or 32-bit synchronous/asynchronous generic host I/F</td>
<td>2x 32-bit wide memory bus I/F DDR 266MHz</td>
<td>676 PBGA</td>
</tr>
<tr>
<td>CNW3108</td>
<td>CNW3108 133BG676</td>
<td>1x 1080p30</td>
<td>1x 1080p60</td>
<td>4 D1 16x CIF</td>
<td>8 BT.1120/ BT.656</td>
<td>PCI 32-bit, 33/66MHz or 32-bit synchronous/asynchronous generic host I/F</td>
<td>2x 32-bit wide memory bus I/F DDR 266MHz</td>
<td>676 PBGA</td>
</tr>
<tr>
<td>CNW3508</td>
<td>CNW3508 233BG676</td>
<td>No</td>
<td>8 x D1 32x CIF</td>
<td>8 BT.656</td>
<td>PCI 32-bit, 33/66MHz or 32-bit synchronous/asynchronous generic host I/F</td>
<td>2x 32-bit wide memory bus I/F DDR 266MHz</td>
<td>676 PBGA</td>
<td></td>
</tr>
<tr>
<td>CNW3602</td>
<td>CNW3602 233BG676</td>
<td>1x 1080p60</td>
<td>2x 1080p30</td>
<td>2 D1</td>
<td>2 BT.1120</td>
<td>PCI 32-bit, 33/66MHz or 32-bit synchronous/asynchronous generic host I/F</td>
<td>2x 32-bit wide memory bus I/F DDR 266MHz</td>
<td>676 PBGA</td>
</tr>
</tbody>
</table>

PureVu CNW22XX Video Modules Product Line Summary

<table>
<thead>
<tr>
<th>Device</th>
<th>Part Number*</th>
<th>Input</th>
<th>Output</th>
<th>Host I/F</th>
<th>Board I/F</th>
<th>LxW</th>
<th>RoHS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Encoder</td>
<td>WW20BACM-P</td>
<td>Video: 1080p30/60, 720p30/60, 480p30/60, 576p25/50, BT.1120/ BT.601, Audio: Stereo analog, Stereo I2S</td>
<td>MPEG-2 TS - 8-bit, DVB support, H.264 video, PCM audio</td>
<td>SPI or UART</td>
<td>Dual 50-pin fine-pitch Hirose connectors</td>
<td>100mm x 55mm</td>
<td>Pb-free RoHS-6</td>
</tr>
<tr>
<td>Decoder</td>
<td>WW20BACM-P</td>
<td>MPEG-2 TS - 8-bit, DVB support, H.264 video, PCM audio</td>
<td>Videos: 1080p30/60, 720p30/60, 480p30/60, 576p25/50, BT.1120/ BT.601, Audio: Stereo analog, Stereo I2S</td>
<td>SPI or UART</td>
<td>Dual 50-pin fine-pitch Hirose connectors</td>
<td>100mm x 55mm</td>
<td>Pb-free RoHS-6</td>
</tr>
</tbody>
</table>
### OCTEON® II CN63XX Multi-Core MIPS64® Processors

#### Features & Benefits
- Up to 1.5 GHz / core with large 2MB L2 cache and enhanced core architecture
- Packet I/O processors and hardware application acceleration manager
- New security acceleration engine with expanded algorithm support (SNOW 3G)
- Third-generation pattern search capability with new Hyper Finite Automata (HFA) engines
- Latest memory and I/O Interfaces: DDR3, sRIO, PCIe Gen2, 10GbE/GbE
- 7W to 17W max power and power optimizer technology
- Powerful DMA, RAID, and De-dup engines
- 2x control plane performance per core with total compute of up to 9 GHz
- Up to 10+Gbps of packet processing with QoS
- Up to 10+Gbps security, addition of encryption support for 4G wireless
- 4Gbps+ Deep Packet Inspection, with mainstream pattern memory and 10X+ reduction in graph size
- Future proof I/O's along with seamless connectivity to DSP's and peripherals
- 2x performance/watt over best alternatives
- Enables 10 Gbps storage HBAs, intelligent server offload cards

#### OCTEON® II CN63XX Block Diagram

#### OCTEON® II CN63XX Processor Family

<table>
<thead>
<tr>
<th>Device</th>
<th>cnMIPS Cores</th>
<th>Performance Max. Available Instructions Per Second</th>
<th>Option</th>
<th>L2 Cache</th>
<th>Networking Interfaces</th>
<th>PCI-Express/ SRI0</th>
<th>Memory IO w/ECC</th>
<th>Package</th>
</tr>
</thead>
<tbody>
<tr>
<td>CN6320</td>
<td>2</td>
<td>6.0G</td>
<td>Y Y</td>
<td>2MB</td>
<td>1x XAUI or 4x SRGMII</td>
<td>2x4 lanes PCIe v2 or 4x lanes SRI0</td>
<td>DDR3 up to 1600 MHz 72-bit or 1 x 72-bit wide</td>
<td>900 FCBGA</td>
</tr>
<tr>
<td>CN6330</td>
<td>4</td>
<td>12.0G</td>
<td>Y Y</td>
<td>2MB</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CN6335</td>
<td>6</td>
<td>18.0G</td>
<td>Y Y</td>
<td>2MB</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Device Options:
- Device Speed Grade (800 = 800 MHz, 1000 = 1 GHz, 1200 = 1.2 GHz, 1500 = 1.5 GHz)

Option code for device family listed below:
- AAP = Application Acceleration Processor: Includes RAID, encryption, RegEx acceleration, compression/decompression, networking, TCP acceleration, and QoS
- CP = Communication Processor: Includes networking, TCP acceleration, and QoS
**Solutions**

### Wireless Base Stations

- **Application**
  - 3G Base Station
  - 4G/LTE eNodeB Base Station
  - WiMAX Base Station

- **Benefits**
  - High density computing (9GHz) within stringent thermal budget
  - Direct connectivity to FPGA/DSP for PHY interface
  - Complete solution for MAC, PDCP processing and L3-L7 processing in single chip
  - High throughput (Up to 15M pps)

### Appliance

- **Application**
  - Security Appliance
  - L4-L7 Appliance
  - Storage Encryption/Compression Appliance

- **Benefits**
  - Complete motherboard processing solution with performance up to 10Gbps
  - Very low power
  - Complete acceleration for networking, security, storages

### Integrated Management and Data Application

- **Application**
  - Single-chip Intelligent services router
  - L2 – L7 integrated processing solution

- **Benefits**
  - Single-chip solution with up to 10Gbps performance
  - PCIe v2, XAUI, SGMII, and SRI0 for flexible system and network I/O
  - Advanced QoS for Hypernetworking applications
  - Integrated control and dataplane applications with resource protection
Features & Benefits

Highest performance multicore processor family
- 4-16 cnMIPS cores, up to 800 MHz on a single chip
  - Up to 25.6B MIPS64 instructions per second
  - Up to 2MB L2 Cache
- Most advanced networking, application and security acceleration
  - Delivers the highest performance for L3 to L7 applications
  - Most complete and advanced encryption support for current and emerging protocols
  - 32 RegEx engines for highest throughput pattern matching applications > 5 Gbps
  - Best compression ratio and throughput with enhanced compression/decompression engine up to 10 Gbps
- Integrated memory controller and networking interfaces
  - Increases performance while reducing BOM cost
  - Standard OS and C/C++ based programming model
  - Allows for quick porting and new development
  - Software compatible
  - Single software code base across performance points ranging from 50 Mbps to 10 Gbps Full-duplex
- Pin compatible with widely adopted OCTEON CN38XX and CN36XX processors
- Highest performance per dollar and watt ideal for demanding infrastructure requirements

OCTEON Plus CN58XX Block Diagram

OCTEON Plus CN58XX Processor Family

<table>
<thead>
<tr>
<th>Device</th>
<th>cnMIPS</th>
<th>Performance Max. Available Instructions</th>
<th>L2 Cache</th>
<th>Networking Interfaces</th>
<th>PCI/PCI-X</th>
<th>Memory IO w/ECC</th>
<th>DFA Memory IO w/ECC</th>
<th>Package</th>
</tr>
</thead>
<tbody>
<tr>
<td>CN5830</td>
<td>4</td>
<td>6.0G</td>
<td>2MB</td>
<td>2x</td>
<td>64-bit/133 MHz PCI-X</td>
<td>DDR2 up to 800 MHz 72 or 144-bit wide</td>
<td>2 x 18-bit RDLRAM2 (optional)</td>
<td>FCBGA 1521</td>
</tr>
<tr>
<td>CN5840</td>
<td>8</td>
<td>12.0G</td>
<td>2MB</td>
<td>2x</td>
<td>64-bit/133 MHz PCI-X</td>
<td>DDR2 up to 800 MHz 72 or 144-bit wide</td>
<td>2 x 18-bit RDLRAM2 (optional)</td>
<td>FCBGA 1521</td>
</tr>
<tr>
<td>CN5850</td>
<td>12</td>
<td>19.2G</td>
<td>2MB</td>
<td>2x</td>
<td>64-bit/133 MHz PCI-X</td>
<td>DDR2 up to 800 MHz 72 or 144-bit wide</td>
<td>2 x 18-bit RDLRAM2 (optional)</td>
<td>FCBGA 1521</td>
</tr>
<tr>
<td>CN5860</td>
<td>16</td>
<td>25.6G</td>
<td>2MB</td>
<td>2x</td>
<td>64-bit/133 MHz PCI-X</td>
<td>DDR2 up to 800 MHz 72 or 144-bit wide</td>
<td>2 x 18-bit RDLRAM2 (optional)</td>
<td>FCBGA 1521</td>
</tr>
</tbody>
</table>

Device Options:
Device Speed Grade: (600 = 600 MHz, 750 = 750 MHz, 800 = 800 MHz: 12 and 16-core only)

Option code for device family listed below:

NSP = Network Services Processor: Includes, encryption, reg-ex acceleration, compression/decompression, networking, TCP acceleration and QoS
EXP = Extreme Processor: Includes reg-ex acceleration, compression/decompression, networking, TCP acceleration and QoS (4 and 16-core 750 MHz only)
SCP = Secure Communications Processor: Includes, encryption, networking, TCP acceleration and QoS
OCTEON® Plus Family of Multicore MIPS64® Processors

OCTEON Plus CN58XX Multicore MIPS64 Processors

Solutions

Line Cards and Service Blades for Chassis and ATCA

- **Application**
  - Layer 4+ Switching, Application Routing and Storage
  - Integrated Control and Data Plane
  - Enterprise, Data Center, Edge, Core networks and 3G/4G Wireless

- **Benefits**
  - Up to 10 Gbps of application performance

Single-Chip Network Appliance

- **Application**
  - Unified Threat Management
  - WAN Optimization appliance
  - Storage Networking appliance

- **Benefits**
  - 1U motherboard appliance with 1 - 10Gbps throughput
  - Low-power and BOM cost
  - PCI-X support for add-in cards

OCTEON Plus XL NICPro2

- **Application**
  - L4 - L7 Networking Switches and appliances
  - Storage appliances
  - Application Aware Switches
  - WAN Optimization appliances
  - UTM appliances

- **Benefits**
  - Production ready for rapid deployment of acceleration for TCP, IPsec, SSL, compression/decompression
  - C-programmable for user-customized processing requirements
OCTEON® Plus Family of Multicore MIPS64® Processors

OCTEON Plus CN57XX Multicore MIPS64 Storage Processors

Features & Benefits

- 8-12 cnMIPS cores, up to 800 MHz on a single chip
  - Up to 19.2 Billion MIPS64 instructions per second
  - 2MB L2 Cache
- High-density, high-bandwidth serial I/O for storage and system connectivity
  - 16 high-speed SERDES, flexibly configured in blocks of 4
  - Flexible combinations of PCI Express x4, x8, XAUI (10GbE), SGMII (GbE)
- Complete hardware acceleration for storage, networking and security
  - Includes full encryption suite from OCTEON CN38XX/CN58XX plus XTS for securing data at rest
  - Compression/decompression engine with up to 10Gbps throughput and highest compression ratios
  - RAID/XOR Acceleration coprocessor for RAID 5 and 6
  - Key Reliability/Availibility/Serviceability features

- Powerful hardware DMA engines for maximum I/O and system performance
- Dual integrated DDR2 memory controllers up to DDR2-800 and ODT features
  - Increased memory performance with simplified layout and timing
- Standard OS and C/C++ based programming model
  - Allows for quick porting and new development
- Software compatible
  - Single software code based across performance points ranging from 50Mbps to 10Gbps full-duplex
- Highest performance and integration for next-generation storage equipment requirements
- De-duplication acceleration
  - Hardware acceleration up to 8 GB/s

OCTEON Plus CN57XX Block Diagram

OCTEON Plus CN57XX Processor Family

<table>
<thead>
<tr>
<th>Device</th>
<th>cnMIPS Cores</th>
<th>Performance</th>
<th>Option</th>
<th>Networking Interfaces</th>
<th>PCI-Express</th>
<th>Memory IO w/ECC</th>
<th>Package</th>
</tr>
</thead>
<tbody>
<tr>
<td>CN5740</td>
<td>8</td>
<td>12.0B</td>
<td>Y</td>
<td>2MB</td>
<td>2x</td>
<td>DDR2 up to 800 MHz 1x or 2x 72-bit wide</td>
<td>1217 FCBGA</td>
</tr>
<tr>
<td>CN5745</td>
<td>10</td>
<td>16.0B</td>
<td>Y</td>
<td>2MB</td>
<td>2x [4x SGIII or x XAUI]</td>
<td>DDR2 up to 800 MHz 1x or 2x 72-bit wide</td>
<td>1217 FCBGA</td>
</tr>
<tr>
<td>CN5750</td>
<td>12</td>
<td>19.2B</td>
<td>Y</td>
<td>2MB</td>
<td>2x [4x SGIII or x XAUI]</td>
<td>DDR2 up to 800 MHz 1x or 2x 72-bit wide</td>
<td>1217 FCBGA</td>
</tr>
</tbody>
</table>

Device Options:

<table>
<thead>
<tr>
<th>Device Speed Grade</th>
<th>(600 = 600 MHz, 750 = 750 MHZ, 800 = 800 MHz: 10 and 12-core only)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Option code for device family listed below:</td>
<td></td>
</tr>
</tbody>
</table>

SSP = Secure Storage Processor: Includes RAID, encryption, compression/decompression, networking, TCP acceleration and QoS
SP = Storage Processor: Includes RAID, compression, networking, TCP acceleration and QoS
OCTEON® Plus Family of Multicore MIPS64® Processors

OCTEON Plus CN57XX Multicore MIPS64 Storage Processors

Solutions

Storage Router

- **Application**
  - OCTEON-based FC to 10G IP router
  - Protocol termination
  - Storage encryption
  - Storage archival

- **Benefits**
  - Integrated solution for Storage protocol processing
  - High I/O density and throughput for maximum scalability
  - Maximum performance for compression/encryption and stateful processing
  - Simultaneous support for FC and up to 10GE

OCTEON-Based NAS Appliance

- **Application**
  - Network Attached Storage
  - SME, NAS appliance

- **Benefits**
  - Full TCP termination and full iSCSI processing
  - CIFS, NFS, HTTP processing support
  - RAID in hardware
  - Inline disk data encryption

OCTEON-Based Disk Array

- **Application**
  - OCTEON-based Disk Array Blade
  - FC, iSCSI to SAS bridge
  - OCTEON-based NAS appliance
  - Storage encryption appliance
  - Storage archival appliance

- **Benefits**
  - Integrated RAID 5, 6 accelerated in hardware
  - High-performance connectivity to SATA/SAS/FC controllers
  - RAS features provide robust operation
  - Single-chip solution for integrated Storage services
  - High throughput for TCP, encryption and compression
  - Up to 3m virtual IOPs
**Features & Benefits**

- 8-12 cnMIPS cores, up to 800 MHz on a single chip
  - Up to 19.2 Billion MIPS64 instructions per second
  - Up to 2MB L2 Cache
- High-density, high-bandwidth serial I/O for network and system connectivity
  - 16 high-speed SERDES, flexibly configured in blocks of 4
  - Flexible combinations of PCI Express x4, x8, XAUI (10GbE), SGMII (Gbe)
- Complete hardware acceleration for networking and security
  - Includes compatible encryption suite from OCTEON CN38XX/CN58XX
  - Compression/decompression engine with up to 10Gbps throughput and highest compression ratios
- Powerful DMA engines for maximum I/O and system performance
- Dual integrated DDR2 memory controllers up to DDR2-800 and ODT features
  -Increased memory performance with simplified layout and timing
- Standard OS and C/C++ based programming model
  - Allows for quick porting and new development
- Software compatible
  - Single software code based across performance points ranging from 50Mbps to 10Gbps full-duplex
- Highest performance and integration for next-generation networking equipment requirements

### OCTEON Plus CN56XX Block Diagram

![OCTEON Plus CN56XX Block Diagram](image)

### OCTEON Plus CN56XX Processor Family

<table>
<thead>
<tr>
<th>Device</th>
<th>cnMIPS Cores</th>
<th>Performance</th>
<th>Option</th>
<th>L2 Cache</th>
<th>Networking Interfaces</th>
<th>PCI-Express</th>
<th>Memory IO w/ECC</th>
<th>Package</th>
</tr>
</thead>
<tbody>
<tr>
<td>CN5640</td>
<td>8</td>
<td>12.0B</td>
<td>NSP</td>
<td>Y</td>
<td>2MB</td>
<td>2x</td>
<td>DDR2 up to 800 MHz 1x or 2x 72-bit wide</td>
<td>1217 FCBGA</td>
</tr>
<tr>
<td>CN5645</td>
<td>10</td>
<td>16.0B</td>
<td>NSP</td>
<td>Y</td>
<td>2MB</td>
<td>2x</td>
<td>DDR2 up to 800 MHz 1x or 2x 72-bit wide</td>
<td>1217 FCBGA</td>
</tr>
<tr>
<td>CN5650</td>
<td>12</td>
<td>19.2B</td>
<td>NSP</td>
<td>Y</td>
<td>2MB</td>
<td>2x</td>
<td>DDR2 up to 800 MHz 1x or 2x 72-bit wide</td>
<td>1217 FCBGA</td>
</tr>
</tbody>
</table>

Device Options:
- Device Speed Grade (600 = 600 MHz, 750 = 750 MHz, 800 = 800 MHz: 10 and 12-core only)
- Option code for device family listed below:
  - NSP = Network Services Processor: Includes encryption, compression/decompression, networking, TCP acceleration and QoS
  - CP = Communications Processor: Includes encryption, networking, TCP acceleration and QoS

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**Solutions**

**Single-Chip Network Appliance**

- **Application**
  - Unified Threat Management
  - WAN optimization appliance
  - Storage networking appliance

- **Benefits**
  - 1U motherboard appliance with 1 - 10Gbps throughput
  - Low-power and BOM cost
  - PCI-Express support for add-in cards

**Integrated Management and Data Application**

- **Application**
  - Single-chip intelligent edge router
  - L2 - L7 integrated processing solution

- **Benefits**
  - Single-chip solution with multi GE performance
  - PCIe, XAUI and SGMII for flexible system and network I/O
  - Advanced QoS for Triple-Play applications
  - Ability to run OS and dataplane together on same chip or across separate cores

**Offload Module**

- **Application**
  - SSL/TCP offload cards
  - Compression offload cards
  - Multi-function acceleration cards

- **Benefits**
  - High-performance compression and encryption offload
  - TCP/IP Offload and SSL offload
  - 10Gbe, GbE interfaces for flexible network connectivity
  - Fully programmable for user-customized processing
**Features & Benefits**

- 4-6 cnMIPS cores, up to 700 MHz on a single chip
  - Up to 8.4 Billion MIPS64 instructions per second
  - 1MB L2 cache
- High-density, high-bandwidth serial I/O for storage and system connectivity
  - 16 high-speed SERDES
  - 2x PCI Express x8, XAUI (10GbE) or 4 SGMII (GbE)
- Complete hardware acceleration for storage and networking
  - Includes full encryption suite from OCTEON CN38XX/CN58XX plus XTS for securing data at rest
  - Compression/decompression engine with up to 6Gbps throughput and highest compression ratios
  - RAID/XOR Acceleration coprocessor for RAID 5 and 6
  - Key Reliability/Availability/Serviceability features
- Powerful DMA engines for maximum I/O and system performance
- Integrated DDR2 memory controller up to DDR2-800 and ODT features
  - Increased memory performance with simplified layout and timing
- Standard OS and C/C++ based programming model
  - Allows for quick porting and new development
- Software compatible
  - Compatible with full OCTEON family providing performance points ranging from 50Mbps to 10Gbps full-duplex
- High-performance, low cost, and integration for next-generation Storage and networking equipment requirements

**OCTEON Plus CN55XX Block Diagram**

**OCTEON Plus CN55XX Processor Family**

<table>
<thead>
<tr>
<th>Device</th>
<th>cnMIPS Cores</th>
<th>Max. Available Instructions Per Second</th>
<th>Option</th>
<th>L2 Cache</th>
<th>Networking Interfaces</th>
<th>PCIe v1</th>
<th>Memory IO w/ECC</th>
<th>Package</th>
</tr>
</thead>
<tbody>
<tr>
<td>CN5530</td>
<td>4</td>
<td>5.6B</td>
<td>Y</td>
<td>1MB</td>
<td>4x SGMII or 1x XAUI</td>
<td>2x [x4 or x8 Lanes]</td>
<td>1x 72-bit/2x 72-bit</td>
<td>1217 FCBGA</td>
</tr>
<tr>
<td>CN5534</td>
<td>6</td>
<td>8.4B</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Device Options:
- Device Speed Grade (500LP = 500 MHz Low Power, 600 = 600 MHz, 700 = 700 MHz)
- Option code for device family listed below:
  - **SSP** = Secure Storage Processor: Includes RAID, compression/decompression, encryption, networking, TCP acceleration, and QoS
  - **SP** = Storage Processor: Includes RAID, compression, networking, TCP acceleration and QoS
Solutions

High-Performance RAID Controller

- Application
  - OCTEON-based Disk Array Blade
  - Storage encryption appliance
  - Storage archival appliance

- Benefits
  - Integrated 5GB/s RAID 5, 6 accelerated in hardware
  - High-performance connectivity to SATA/SAS/FC controllers
  - RAS features provide robust operation
  - Single-chip solution for integrated Storage services
  - High throughput for RAID encryption

Acceleration Card

- Application
  - Storage Networking Accelerator card for
  - De-duplication
  - Compression
  - Hashing/Security Data-at-rest

- Benefits
  - 10 GE packet processing
  - 1 Million plus IOPS with Hashing
  - 2.5GB/s IEE1619 encryption/De-Dup
  - > 1GB compression
  - 10Gbe, GbE, and FC connectivity options

OCTEON-Based Storage Network Interface Card

- Application
  - Secure Host Bus Adapter
  - Storage virtualization accelerator card

- Benefits
  - Single-chip solution for 1Gb, 4Gb, 10Gb, iSCSI
  - PCIe, XAUI and SGMII for flexible system and network I/O
  - Full protocol termination, block mapping (VLUN), error propagation, hardware mirroring, striping
  - Full TCP termination, iSCSI processing
  - Full IPSec processing and SSL offload
OCTEON® Plus Family of Multicore MIPS64® Processors

OCTEON Plus CN54XX Multicore MIPS64 Processors

Features & Benefits

- 4-6 cnMIPS cores, up to 700 MHz on a single chip
  - Up to 8.4 Billion MIPS64 instructions per second
  - 1MB ECC protected L2 cache
- High-density, high-bandwidth serial I/O for network and system connectivity
  - 16 high-speed SERDES
  - 2 x 8 PCI Express, 4 SGMII or XAUI
- Complete hardware acceleration for networking and security
  - Includes compatible encryption suite from OCTEON CN38XX/CN58XX
  - Compression/decompression engine with up to 6Gbps throughput and highest compression ratios
- Powerful DMA engines for maximum I/O and system performance
- Integrated DDR2 memory controller up to DDR2-800 and ODT features
  - Increased memory performance with simplified layout and timing
- Standard OS and C/C++ based programming model
  - Allows for quick porting and new development
- Software compatible
  - Compatible with full OCTEON family providing performance points ranging from 50Mbps to 10Gbps full-duplex

OCTEON Plus CN54XX Block Diagram

OCTEON Plus CN54XX Processor Family

<table>
<thead>
<tr>
<th>Device</th>
<th>cnMIPS Cores</th>
<th>Performance</th>
<th>Option</th>
<th>Networking Interfaces</th>
<th>PCIe v1</th>
<th>Memory IO w/ECC</th>
<th>Package</th>
</tr>
</thead>
<tbody>
<tr>
<td>CN5430</td>
<td>4</td>
<td>5.6B</td>
<td>NSP</td>
<td>1MB</td>
<td>2x [4x or 8x Lanes]</td>
<td>DDR2 up to 800 MHz</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>CP</td>
<td>1MB, XAUI</td>
<td></td>
<td>1x or 2x 72-bits wide</td>
<td>1217 FCBGA</td>
</tr>
<tr>
<td>CN5434</td>
<td>6</td>
<td>8.4B</td>
<td>Y</td>
<td>4x SGMII or 1x XAUI</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Device Options:
Device Speed Grade (500LP = 500 MHz Low Power, 600 = 600 MHz, 700 = 700 MHz)
Option code for device family listed below:
NSP = Network Services Processor: Includes encryption, compression/decompression, networking, TCP acceleration and QoS
CP = Communication Processor: Includes high performance packet processing, TCP acceleration and QoS
Solutions

Multiple DSP Blade Design
- **Application**
  - WiMAX BTS
  - 3G, 4G BTS
- **Benefits**
  - Low cost GbE WiMAX BTS blade
  - Low cost GbE 3G/4G BTS
  - Single-chip solution for Control, Data, and MAC functions

Single-Chip Network Appliance
- **Application**
  - Unified Threat Management
  - WAN optimization appliance
  - Storage networking appliance
- **Benefits**
  - 1U motherboard appliance with 1 - 5Gbps throughput
  - Low-power and BOM cost
  - PCI-Express Host support for add-in cards

OCTEON-Based Network Interface Card
- **Application**
  - Server TOE
  - Intelligent NIC
  - Secure coprocessing
- **Benefits**
  - Low-cost 10 Gbps compression coprocessing /offload
  - High throughput for TCP termination and offload
  - High throughput IPsec offload
  - Load balancing, QoS
### Features & Benefits

- 2-4 cnMIPS cores, up to 750 MHz on a single chip
  - Up to 6 Billion MIPS64 instructions per second
  - 512KB ECC protected L2 cache
- High-density, high-bandwidth serial I/O for network and system connectivity
  - 8 high-speed SERDES
  - PCIe x4, 4x SGMII or XAUI
- Complete hardware acceleration for networking, security and storage
  - Includes compatible encryption suite from OCTEON CN38XX/CN58XX plus XTS for securing data at rest
  - RAID/XOR Acceleration coprocessor for RAID 5 and 6
- Powerful DMA engines for maximum I/O and system performance
- Integrated DDR2 memory controller up to DDR2-800 and ODT features
  - Increased memory performance with simplified layout and timing
- Standard OS and C/C++ based programming model
  - Allows for quick porting and new development
- Software compatible
  - Compatible with full OCTEON family providing performance points ranging from 50Mbps to 10Gbps full-duplex

### OCTEON Plus CN52XX Block Diagram

#### OCTEON Plus CN52XX Processor Family

<table>
<thead>
<tr>
<th>Device</th>
<th>cnMIPS Cores</th>
<th>cnMIPS Instructions</th>
<th>Option</th>
<th>L2 Cache</th>
<th>Networking Interfaces</th>
<th>PCIe v1</th>
<th>Memory IO w/ECC</th>
<th>Package</th>
</tr>
</thead>
<tbody>
<tr>
<td>CN5220</td>
<td>2</td>
<td>3.0B</td>
<td>SCP</td>
<td>512KB</td>
<td>2x MII, 4x SGMII or 1x XAUI</td>
<td>2x2 Lanes</td>
<td>DDR2 up to 800 MHz 1x 72-bits wide</td>
<td>729 HSBGA</td>
</tr>
<tr>
<td>CN5230</td>
<td>4</td>
<td>6.0B</td>
<td>CP</td>
<td></td>
<td>1x4 Lanes or 2x2 Lanes</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Device Options:**
- Device Speed Grade (600 = 600 MHz, 700 = 700 MHz, 750 = 750 MHz)

**Option code for device family listed below:**
- SCP = Secure Communications Processor: Includes, encryption, networking, TCP acceleration, QoS, RAID, De-dup acceleration
- CP = Communication Processor: Includes networking, TCP acceleration and QoS
Solutions

Integrated Management and Data Application

- Application
  - Single-chip intelligent edge router
  - L2 - L7 integrated processing solution

- Benefits
  - Single-chip solution with multi GE performance
  - PCIe, XAUI and SGMII for flexible system and network I/O
  - Advanced QoS for Triple-Play applications
  - Ability to run OS and dataplane together on same chip or across separate cores

OCTEON-Based Storage Network Interface Card

- Application
  - Secure Host Bus Adapter
  - Storage virtualization accelerator card

- Benefits
  - Single-chip solution for 1Gb, 4Gb, 10Gb, iSCSI
  - PCIe, XAUI and SGMII for flexible system and network I/O
  - Full protocol termination, block mapping (VLUN), error propagation, hardware mirroring, striping
  - Full TCP termination, iSCSI processing
  - Full IPsec processing and SSL offload

Single-Chip Network Appliance

- Application
  - Unified Threat Management
  - WAN optimization appliance
  - Storage networking appliance

- Benefits
  - 1U motherboard appliance with 1-4Gbps throughput
  - Low-power and BOM cost
  - PCI-Express Host support for add-in cards
OCTEON® Plus Family of Dual Core MIPS64® Embedded Processors

OCTEON® Plus CN50XX Dual Core MIPS64 Embedded Processors

Features & Benefits

Custom CPU cores optimized for networking
- 1-2 cnMIPS™ CPU cores (MIPS64/32 compatible) with MMU
- Available in 300-700 MHz version
- OCTEON Plus Enhanced MIPS64 integer (Release 2) instruction set

High-performance coherent memory subsystem
- 128KB ECC protected 4-way set associative L2 cache with locking, partitioning features for optimal performance
- Integrated mainstream 16/32-bit DDR2 memory controller with ECC, up to DDR2-667

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), SHA-1, SHA-2 up to SHA-512, RSA, DH

OCTEON Plus CN50XX Block Diagram

OCTEON Plus CN50XX Processor Family

<table>
<thead>
<tr>
<th>Device</th>
<th>cnMIPS Cores</th>
<th>Max. Available Instructions Per Second</th>
<th>Option</th>
<th>L2 Cache</th>
<th>Networking Interfaces</th>
<th>PCI</th>
<th>Memory IO w/ECC</th>
<th>Package</th>
</tr>
</thead>
<tbody>
<tr>
<td>CN5010</td>
<td>1</td>
<td>1.4B</td>
<td>SCP</td>
<td>128KB</td>
<td>1 x RGMII/MII + 2 x RGMII or 1 x RGMII + 1x GMII/MII</td>
<td>32-bit/66MHz</td>
<td>DDR2 up to 667 MHz 18 or 36-bit wide</td>
<td>564 HSBGA</td>
</tr>
<tr>
<td>CN5020</td>
<td>2</td>
<td>2.8B</td>
<td>Y</td>
<td>128KB</td>
<td>1 x RGMII/MII + 2 x RGMII or 1 x RGMII + 1x GMII/MII</td>
<td>32-bit/66MHz</td>
<td>DDR2 up to 667 MHz 18 or 36-bit wide</td>
<td>564 HSBGA</td>
</tr>
</tbody>
</table>

Device Options:
Device Speed Grade (300 = 300 MHz, 400 = 400 MHz, 500 = 500 MHz, 600 = 600 MHz, 700 = 700 MHz)
Option code for device family listed below:

SCP = Secure Communication Processor: Includes, encryption, networking, TCP acceleration and QoS
CP = Communication Processor: Includes high performance packet processing, TCP acceleration and QoS
CPE Gateway Design

Single-chip OCTEON CN50XX
Wired and Wireless gateways
- Application
  - 802.11 a/b/g/n wireless support
  - Hardware enabled QoS
  - VoIP gateway functionality
- Benefits
  - Up to Gigabit Ethernet rates for next-generation PON, VDSL2, and Cable networks
  - Granular, hardware enabled QoS for high quality Voice, Video, and Data service
  - Best wireless performance for in-home data and multimedia distribution

Home Media Server

- Application
  - High-performance NAS
  - Audio/Video storage and distribution
  - Consumer market media server
- Benefits
  - Excellent NAS throughput for delay free video and music access and data back up
  - Hardware offload provides headroom for applications such as video en/decoding, wireless and future value added features
  - DDR2, highly integrated I/O and economical package for consumer class BOM cost

802.11n Access Point

- Application
  - Highest performance 802.11n AP
  - Managed enterprise solution
  - Power-over-Ethernet ready devices
- Benefits
  - Industry-leading dual band through-put for > 300Mbps 802.11n
  - Outstanding CPU processing headroom for AP management and other advanced services
  - Low-power consumption for PoE designs
Features & Benefits

- Performance up to 20Gbps
- Multiple clusters of Hyper-Finite-Automata Threading Engine (HTEs): include both Nondeterministic Finite Automata (NFA) and Deterministic Finite Automata (DFA) capability
- Innovative deep packet inspection HFA technology allows commodity memory for patterns
- 15x smaller memory footprint for regular expression patterns
- No limit on number of rule-sets and number of patterns in rule-set
- PCIe, DDR2
- Supports Perl Compatible Regular Expression (PCRE) and POSIX Regular Expression Syntax
- Feature rich NITROX DPI CN17XX SDK includes RegEx compiler, functional simulator, drivers for Linux/Simple Executive on OCTEON Plus and drivers for Linux on x86
- Tested on several tier 1 customer RegEx patterns with excellent performance and rule-set footprint
- 4 to 20 Gbps SNORT application performance with OCTEON Plus
- High performance for look-aside DPI processing
- Commodity memory for regular expression pattern rule-sets
- Small memory footprint for regular expression pattern
- Latest interfaces
- Rich regular expression processing Syntax
- Comprehensive development environment
- Tried and tested solution
- Integrated SNORT application

NITROX DPI CN17XX Block Diagram

NITROX CN17XX L7 Content Processor Family

<table>
<thead>
<tr>
<th>Device</th>
<th>Part Number</th>
<th>Interfaces</th>
<th>Pattern Memory</th>
</tr>
</thead>
<tbody>
<tr>
<td>CN1701</td>
<td>CN1701-XXXXBG1738</td>
<td>PCI Express v1 x4/x8</td>
<td>DDR2</td>
</tr>
<tr>
<td></td>
<td>Option Code</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CN1705</td>
<td>CN1705-XXXXBG1738</td>
<td>PCI Express v1 x4/x8</td>
<td>DDR2</td>
</tr>
<tr>
<td></td>
<td>Option Code</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CN1710</td>
<td>CN1710-XXXXBG1738</td>
<td>PCI Express v1 x4/x8</td>
<td>DDR2</td>
</tr>
<tr>
<td></td>
<td>Option Code</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Solutions

Leading 5 to 8 Gbps Router & Security Appliance Solution:

- Application
  - Enterprise Routers and Switches
  - Data Center Networking Appliances
  - Integrated Security Appliances
  - Service Provider Infrastructure

- Benefits
  - High performance for look-aside DPI processing
  - Rich regular expression processing Syntax

Leading 10+ Gbps Router & Security Appliance Solution:

- Application
  - Enterprise Routers and Switches
  - Data Center Networking Appliances
  - Integrated Security Appliances
  - Service Provider Infrastructure

- Benefits
  - High performance for look-aside DPI processing
  - Rich regular expression processing Syntax
NITROX® Family of Security Processors

Features & Benefits
- World’s highest-performing security processor family for IPsec, SSL and WLAN security processing
- Two scalable families of security processors: NITROX Lite and NITROX PX
  - 50 Mbps to 10 Gbps, and 1K to 40K sessions/sec
- Provides a maximum flexibility in both hardware and software design
  - Widest set of I/O options, including PCIe and PCI/PCI-X
  - Programmable multi-protocol support in a single design
- Complete single-chip security solution for both symmetric and asymmetric security processing with dynamic adaptability

NITROX Security Block Diagram

NITROX Security Processors

<table>
<thead>
<tr>
<th>Device</th>
<th>IPsec (i)</th>
<th>SSL (s)</th>
<th>Wireless (w)</th>
<th>MultiService (p)</th>
<th>Support</th>
<th>Interface</th>
<th>Package</th>
<th>Local DDR</th>
<th>Performance</th>
</tr>
</thead>
<tbody>
<tr>
<td>NITROX Lite</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>PCI 32-bit/66 MHz</td>
<td>LQFP 128</td>
<td>No</td>
<td>Max RSA 1024-bit Exponent with CRT</td>
</tr>
<tr>
<td>CN501</td>
<td>i,s or w</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>PCI 32-bit/66 MHz</td>
<td>LQFP 128</td>
<td>No</td>
<td>900</td>
</tr>
<tr>
<td>CN505</td>
<td>i,s or w or p</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>PCI 32-bit/66 MHz</td>
<td>LQFP 128</td>
<td>No</td>
<td>1,750</td>
</tr>
<tr>
<td>CN101</td>
<td>i,s or w</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>PCI 32-bit/64-bit, 66 MHz; PCI-X 64-bit/100 MHz (-X)</td>
<td>BGA 256</td>
<td>No</td>
<td>1,750</td>
</tr>
<tr>
<td>CN1005</td>
<td>i,s or w or p</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>PCI 32-bit/64-bit, 66 MHz; PCI-X 64-bit/100 MHz (-X)</td>
<td>BGA 256</td>
<td>No</td>
<td>3,500</td>
</tr>
<tr>
<td>CN1010</td>
<td>i,s or w or p</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>PCI 32-bit/64-bit, 66 MHz; PCI-X 64-bit/100 MHz (-X)</td>
<td>BGA 256</td>
<td>No</td>
<td>7,000</td>
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</table>

NITROX PX

<table>
<thead>
<tr>
<th>Device</th>
<th>IPsec (i)</th>
<th>SSL (s)</th>
<th>Wireless (w)</th>
<th>MultiService (p)</th>
<th>Support</th>
<th>Interface</th>
<th>Package</th>
<th>Local DDR</th>
<th>Performance</th>
</tr>
</thead>
<tbody>
<tr>
<td>NITROX PX CN15XX - PCI-X Look-Aside Processors</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>PCI-X 64-bit/133 MHz</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CN1505</td>
<td>i,s or w or p</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>BGA 256</td>
<td>No</td>
<td>4,000</td>
<td>6,500</td>
</tr>
<tr>
<td>CN1510</td>
<td>i,s or w or p</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>BGA 256</td>
<td>No</td>
<td>8,000</td>
<td>13,000</td>
</tr>
<tr>
<td>CN1515</td>
<td>i,s or w or p</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>BGA 256</td>
<td>No</td>
<td>13,000</td>
<td>20,000</td>
</tr>
<tr>
<td>CN1520**</td>
<td>i,s or w or p</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>BGA 256</td>
<td>No</td>
<td>17,000</td>
<td>27,000</td>
</tr>
</tbody>
</table>

NITROX PX CN16XX - PCI-Express Look-Aside Processors

<table>
<thead>
<tr>
<th>Device</th>
<th>IPsec (i)</th>
<th>SSL (s)</th>
<th>Wireless (w)</th>
<th>MultiService (p)</th>
<th>Support</th>
<th>Interface</th>
<th>Package</th>
<th>Local DDR</th>
<th>Performance</th>
</tr>
</thead>
<tbody>
<tr>
<td>CN1605</td>
<td>i,s or w or p</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>PCI-Express x4</td>
<td>BGA 233</td>
<td>No</td>
<td>4,000</td>
</tr>
<tr>
<td>CN1610</td>
<td>i,s or w or p</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>BGA 233</td>
<td>No</td>
<td>8,000</td>
<td>13,000</td>
</tr>
<tr>
<td>CN1615</td>
<td>i,s or w or p</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>BGA 233</td>
<td>No</td>
<td>13,000</td>
<td>20,000</td>
</tr>
<tr>
<td>CN1620**</td>
<td>i,s or w or p</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>BGA 233</td>
<td>No</td>
<td>17,000</td>
<td>27,000</td>
</tr>
</tbody>
</table>

* Performance limited by IO interfaces.
** 400 MHz only
Solutions

SSL System Performance: 200Mbps - 2.5+ Gbps

- **Application**
  - SSL and Server Load Balancing appliances
  - SSL VPN Gateways

- **Benefits**
  - Best industry record processing performance
  - Best industry RSA and TPS performance
  - Full protocol offload for maximum CPU headroom

IPsec VPN System Performance: 200Mbps - 2.5+ Gbps

- **Application**
  - IPsec SME Gateways
  - IPsec Enterprise appliances
  - IPsec or UTM appliances

- **Benefits**
  - Full encryption protocol en/decrypt offload
  - High-performance asymmetrical crypto operation offload
  - High-performance bulk crypto operation offload

iSCSI or Disk Encryption Performance: 200Mbps to 2.5+ Gbps

- **Application**
  - iSCSI Appliances
  - Tape Back-up
  - Data at Rest/Disk Encryption

- **Benefits**
  - High-performance bulk crypto
  - Full protocol offload for maximum CPU headroom
## Features & Benefits

- World’s highest-performing In-line and Look-aside security processor family for IPsec, SSL and WLAN security processing
  - 1 to 10 Gbps IPsec packet processing
  - 1 to 20 Gbps SSL record processing
- Tremendous interface flexibility
  - Widest set of I/O options, including SPI-3, SPI-4.2 and PCI/PCI-X
  - Programmable multi-protocol support in a single design
- Complete single-chip security solution for both symmetric and asymmetric security processing with dynamic adaptability

## NITROX II Block Diagram

![NITROX II Block Diagram](image)

## NITROX II Security Processors

<table>
<thead>
<tr>
<th>Device</th>
<th>IPsec (i) Support</th>
<th>SSL (s) Wireless (w) Support</th>
<th>MultiService (p) Support</th>
<th>Data Interface</th>
<th>Control Interface or Alternate Data Path</th>
<th>Local DDR for IPsec SA or SSL Context (packet store on-chip)</th>
<th>Max RSA 1024-bit Exponent</th>
<th>Max DH 180-bit Exponent with 1024-bit Mod</th>
<th>In-line Full IPsec Processing Mbps (includes inbound look-up, local SA storage, L2 handling etc.)</th>
<th>Full SSL Record Throughput Mbps (w/ARC4+ MDS)</th>
<th>Package</th>
</tr>
</thead>
<tbody>
<tr>
<td>CN2130</td>
<td>i or s</td>
<td>1xSPI-3</td>
<td></td>
<td></td>
<td>PCI-X 64-bit / 133 MHz</td>
<td>Yes</td>
<td>10,000</td>
<td>18,000</td>
<td>3 Gbps</td>
<td>3 Gbps</td>
<td>1096 BGA</td>
</tr>
<tr>
<td>CN2230</td>
<td>i or s</td>
<td>1xSPI-3</td>
<td></td>
<td></td>
<td>PCI-X 64-bit / 133 MHz</td>
<td>Yes</td>
<td>10,000</td>
<td>18,000</td>
<td>3 Gbps</td>
<td>3 Gbps</td>
<td>1096 BGA</td>
</tr>
<tr>
<td>CN2240</td>
<td>i or p</td>
<td>2xSPI-3</td>
<td></td>
<td></td>
<td>PCI-X 64-bit / 133 MHz</td>
<td>Yes</td>
<td>20,000</td>
<td>36,000</td>
<td>6 Gbps</td>
<td>6 Gbps</td>
<td>1096 BGA</td>
</tr>
<tr>
<td>CN2340</td>
<td>i or p</td>
<td>1xSPI-3 and 1xSPI-4.2</td>
<td></td>
<td></td>
<td>PCI-X 64-bit / 133 MHz</td>
<td>Yes</td>
<td>10,000</td>
<td>18,000</td>
<td>3 Gbps</td>
<td>3 Gbps</td>
<td>1096 BGA</td>
</tr>
<tr>
<td>CN2450</td>
<td>i or p</td>
<td>1xSPI-4.2</td>
<td></td>
<td></td>
<td>PCI-X 64-bit / 133 MHz</td>
<td>Yes</td>
<td>20,000</td>
<td>36,000</td>
<td>6 Gbps</td>
<td>6 Gbps</td>
<td>1096 BGA</td>
</tr>
<tr>
<td>CN2530</td>
<td>i or p</td>
<td>2xSPI-4.2</td>
<td></td>
<td></td>
<td>PCI-X 64-bit / 133 MHz</td>
<td>Yes</td>
<td>30,000</td>
<td>50,000</td>
<td>10 Gbps</td>
<td>10 Gbps</td>
<td>1096 BGA</td>
</tr>
<tr>
<td>CN2560</td>
<td>i or p</td>
<td>2xSPI-4.2</td>
<td></td>
<td></td>
<td>PCI-X 64-bit / 133 MHz</td>
<td>Yes</td>
<td>40,000</td>
<td>60,000</td>
<td>10 Gbps</td>
<td>10 Gbps</td>
<td>1096 BGA</td>
</tr>
</tbody>
</table>

* Performance limited by IO interfaces.
Solutions

NITROX II High-Performance In Line Security

- Application
  - In-line, bump-in-the-wire architecture; no CPU intervention required
  - Separate control/exception path to system controller
  - Configurable look-aside operation option

- Benefits
  - Offloads CPU for application processing
  - Data path free from control overhead
  - In-line or look aside configuration for design and flexibility

NITROX II High-Performance SSL

- Application
  - Fully programmable/configurable
  - Both IPsec and SSL support for high number of simultaneous sessions
  - 2M IPsec SAs with 512MB DRAM
  - 4M SSL contexts with 4GB DRAM
  - All parts include PCI/PCI-X for control/data, and DDR SDRAM for session context storage

- Benefits
  - Fast simple multi-core/multi-protocol processing
  - Excellent performance even with mixed protocol traffic
  - Separate memory for context for minimal system memory impact

High-Performance SSL/IPsec Line Card

- Application
  - High performance bulk data encryption
  - 1 to 10Gbps IPsec packet processing
  - 1 to 2Gbps SSL record processing
  - Automatically adapts to changes in symmetric and asymmetric load conditions
  - Heavy tunnel establishment or heavy bulk data traffic processing loads
  - Tremendous interface flexibility
  - Single or dual SPI-3, or single or dual SPI-4
  - SPI-3/SPI-4 combo options

- Benefits
  - Maximum encrypt/decrypt performance for line card deployment
  - Flexible processing under multi-protocol loads
  - Ease of system design with multiple interface options
Features & Benefits

- Single ARM922 32-bit RISC core, up to 250MHz
- 8K I-Cache / 8K D-Cache
- Built in Gigabit MAC (10/100/1000M) MAC
- Integrated 10/100M Ethernet PHY
- Integrated 2-port USB2.0 Host PHY/CTL
- IDE Controller
- PCI Host which can support up to 3 devices (PCI 32-bit, 33/66MHz)
- Combo SDR/DDR

- PCM interface for SLICs connection (VOIP phones)
- Misc Interfaces: I2S/ SPI/ I2C/ UART/ GPIO
- Parallel/Serial Flash
- Intelligent Power Management
- Our Advantages
  - Low Cost
  - Integrated PHY
  - 16-bit local bus interface

ECONA ARM CNS2XXX Block Diagram

ECONA ARM CNS2XXX Processor Family

<table>
<thead>
<tr>
<th>Device</th>
<th>Part Number</th>
<th>SPI Serial Flash</th>
<th>Parallel Flash</th>
<th>DDR/ SDR</th>
<th>Memory I/O</th>
<th>PHY + MAC</th>
<th>MAC only RGMII/ MII</th>
<th>USB Host 1.1/2.0 PHY/CTL</th>
<th>USB Host 1.1/2.0 PHY/CTL</th>
<th>IDE</th>
<th>I2S &amp; I2C</th>
<th>PCM</th>
<th>UART</th>
<th>PCI 2.2 Host</th>
<th>Package</th>
</tr>
</thead>
<tbody>
<tr>
<td>CNS2131</td>
<td>CNS2131-XXXFP128</td>
<td>y</td>
<td>y</td>
<td>y</td>
<td>y</td>
<td>2 ports</td>
<td>y</td>
<td>y</td>
<td>y</td>
<td>y</td>
<td>2 ports</td>
<td>PQFP-128</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CNS2132</td>
<td>CNS2132-XXXFP128</td>
<td>y</td>
<td>y</td>
<td>y</td>
<td>y</td>
<td>2 ports</td>
<td>1 ports</td>
<td>y</td>
<td>1 ports</td>
<td></td>
<td></td>
<td>PQFP-128</td>
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<td></td>
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<tr>
<td>CNS2133</td>
<td>CNS2133-XXXBG269</td>
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<td>y</td>
<td>y</td>
<td>y</td>
<td>2 ports</td>
<td>1 ports</td>
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<td>y</td>
<td>y</td>
<td>2 ports</td>
<td>32 bit/66MHz Up to 2 devices</td>
<td>LFBGA-269</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CNS2181</td>
<td>CNS2181-XXXFP128</td>
<td>y</td>
<td>y</td>
<td>y</td>
<td>y</td>
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<td></td>
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<td>PQFP-128</td>
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<tr>
<td>CNS2182</td>
<td>CNS2182-XXXBG269</td>
<td>y</td>
<td>y</td>
<td>y</td>
<td>y</td>
<td>2 ports</td>
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<td></td>
<td></td>
<td>32 bit/66MHz Up to 2 devices</td>
<td>LFBGA-269</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Solutions

Low-end NAS

- Applications
  - Retail low end NAS
  - External USB hard drives

- Benefits
  - Low cost CPU
  - High throughput USB
  - HNAT will make it as the DHCP server.

IP Camera System

- Application
  - Security Cameras
  - IP Cameras

- Benefits
  - Low cost CPU
  - Easy network connection (wired or WL)
  - Easy back up option to HDD through IDE

Home Media Gateway

- Application
  - Low cost Home Media Gateway
  - Residential Gateway

- Benefits
  - Low cost CPU
  - Easy network connection (wired or WL)
  - Easy back up option to HDD through IDE
  - VOIP support
Features & Benefits
- Single ARM922 32-bit RISC core, up to 250MHz
- 16K I-Cache / 16K D-Cache
- Built in Gigabit MAC (10/100/1000M) MAC
- Integrated 2-port USB2.0 Host PHY/CTL
- PCI Host which can support up to 3 devices (PCI 32-bit, 33/66MHz)
- DDR interface
- Misc Interfaces: I2S/ SPI/ I2C/ UART/ GPIO
- Parallel Flash (NOR)
- HNAT: offloads CPU and gives more room for other applications
- Content Inspection Engine
- L2/L3 switch engine: Just need dump switch externally to make up a managed Router
- Intelligent Power Management
- Our Advantages
  - Built in HNAT
  - Built in Content Inspection Engine (For Parental Controls type apps)
  - 16-bit Local bus interface
  - Integrated L2/L3 switch Engine
  - Native PCMCIA support

ECONA ARM CNS1XXX Block Diagram

ECONA ARM CNS1XXX Processor Family

<table>
<thead>
<tr>
<th>Device</th>
<th>Part Number*</th>
<th>Parallel Flash</th>
<th>Memory I/O</th>
<th>Content Inspection Engine</th>
<th>Embedded Switch</th>
<th>Hardware NAT/NAPT</th>
<th>USB 1.1/2.0 PHY/CTL</th>
<th>PCMCIA</th>
<th>Ethernet</th>
<th>PCI 2.2 Host</th>
<th>Package</th>
</tr>
</thead>
<tbody>
<tr>
<td>CNS1101</td>
<td>CNS1101-XXXXFP208</td>
<td>8/16-bit</td>
<td>16-bit</td>
<td>y</td>
<td>y</td>
<td>y</td>
<td>1 x MII</td>
<td>32-bit/66 MHz up to 2 devices</td>
<td>PQFP-128</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CNS1102</td>
<td>CNS1102-XXXXBG304</td>
<td>8/16-bit</td>
<td>16-bit</td>
<td>y</td>
<td>y</td>
<td>y</td>
<td>2 ports</td>
<td>32 bit / 66MHz Up to 3 devices</td>
<td>BGA-304</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CNS1104</td>
<td>CNS1104-XXXXBG257</td>
<td>8/16-bit</td>
<td>16-bit</td>
<td>y</td>
<td>y</td>
<td>y</td>
<td>2 ports</td>
<td>2 x MII</td>
<td>LFBGA-257</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CNS1105</td>
<td>CNS1105-XXXXBG304</td>
<td>8/16-bit</td>
<td>16-bit</td>
<td>y</td>
<td>y</td>
<td>y</td>
<td>2 ports</td>
<td>32-bit/66 MHz</td>
<td>BGA-304</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CNS1109</td>
<td>CNS1109-XXXXFP208</td>
<td>8/16-bit</td>
<td>16-bit</td>
<td>y</td>
<td>y</td>
<td>y</td>
<td>1 x MII</td>
<td>32-bit/66 MHz up to 2 devices</td>
<td>PQFP-208</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CNS1202</td>
<td>CNS1202-XXXXBG304</td>
<td>8/16-bit</td>
<td>16-bit</td>
<td>y</td>
<td>y</td>
<td>y</td>
<td>2 ports</td>
<td>32-bit/66 MHz up to 3 devices</td>
<td>BGA-304</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CNS1205</td>
<td>CNS1205-XXXXBG304</td>
<td>8/16-bit</td>
<td>16-bit</td>
<td>y</td>
<td>y</td>
<td>y</td>
<td>2 ports</td>
<td>32-bit/66 MHz up to 3 devices</td>
<td>BGA-304</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Solutions

Wired or WLAN Retail Router

- Application
  - Retail VPN Routers
  - Security Routers

- Benefits
  - External CPU will give high performance/features Router
  - HNAT will offload the CPU for other applications
  - Integrated Switch Engine will only need dump external switch for managed switch.

PON ONU Router

- Application
  - Low cost GPON router

- Benefits
  - Low cost CPU
  - HNAT and CIE are value add
  - Easy back up option to HDD through IDE
  - VOIP support

xDSL/Cable Modem Broadband Router

- Application
  - xDSL Broadband Router
  - Cable Modem Router

- Benefits
  - Low cost CPU
  - HNAT and CIE are value add
  - Easy back up option to HDD through IDE
  - VOIP support
### Features

**Video Compression**
- H.264 Baseline & Main Profile up to L4.2

**Resolutions**
- 1080p24/25/30/50/60, 1080i50/60
- 720p24/25/30/50/60
- 480i60, 480p24/30/60, 576i50, 576p25/50

**Noise Reduction**
- CA-MCTF

**Error Resiliency & Concealment**
- Intra-frame forcing
- Intra-refresh
- Variable GOP size
- Variable slice size
- Skip-frame
- Skip-macro block

**Rate Control**
- Constant bit rate control
- Variable bit rate control
- Fixed QP

**Network Support**
- Encoder NAL bit stream formatting
- Decoder NAL bit stream parsing

**Memory Interfaces**
- 2x DDR2 -266 MHz interfaces
- SPI Serial FLASH interface

**Miscellaneous Interfaces**
- JTAG
- GPIO
- Two wire serial bus

**Operational Characteristics**
- Core clock frequency 233 MHz
- Power dissipation 2.5W typical
- 0 – +85˚ C ambient temperature
- 0-90% RH

**Package**
- 676 pin BGA
- 27mm x 27mm

---

### PureVu CNW36XX Processor Family

<table>
<thead>
<tr>
<th>Device</th>
<th>Part Number</th>
<th>Streams</th>
<th>Video Ports</th>
<th>Host I/F</th>
<th>Memory</th>
<th>Package</th>
<th>RoHS</th>
</tr>
</thead>
<tbody>
<tr>
<td>CNW3602</td>
<td>CNW3602-233BG676-Option Code</td>
<td>1x 1080p60</td>
<td>2x SD</td>
<td>PCI 32-bit, 33/66 MHz or 32-bit synchronous/asynchronous generic host I/F</td>
<td>2x 32-bit wide memory bus I/F DDR2 266 MHz</td>
<td>676 PBGA</td>
<td>Pb-free RoHS-6</td>
</tr>
</tbody>
</table>
### Solutions

**HDMI video cable replacement adapter**

- **Application**
  - Wireless HDMI cable replacements
  - IEEE802.11n or UWB wireless connectivity
  - G.hn power-line connectivity
  - Gaming, interactive Blu-Ray, set-top box, PC

- **Benefits**
  - HD video quality (1080p60/30 & 720p60/30)
  - Super Low Latency (SLL) Technology™
  - Channel-adaptive rate control
  - Error resiliency & concealment
  - Transrating & transsizing
  - Stream duplication

---

**HD security cameras**

- **Application**
  - HD IP cameras

- **Benefits**
  - HD video quality (1080p/i & 720p)
  - 2 simultaneous HD streams
  - Super Low Latency (SLL) Technology™ for PTZ control
  - Channel-adaptive rate control
  - Error resiliency & concealment
  - Transrating & transsizing
  - Stream duplication
PureVu™ CNW35XX Multi-Stream Video Codec

**Features**

**Video Compression**
- H.264 Baseline & Main Profile up to L3

**Resolutions**
- 480i60, 480p24/30/60
- 576i50, 576p25/50
- CIF, QCIF, VGA, QVGA, SIF, others

**Noise Reduction**
- In-loop, low-delay filtering
- CA-MCTF

**Error Resiliency & Concealment**
- Intra-frame forcing
- Intra-refresh
- Variable GOP size
- Variable slice size
- Skip-frame
- Skip-macro block

**Rate Control**
- Single pass, low-delay bit rate control
- Constant bit rate control
- Variable bit rate control
- Fixed QP

**Network Support**
- Encoder NAL bit stream formatting
- Decoder NAL bit stream parsing

**Video Input and Output Ports**
- 8 bi-directional video ports
- Embedded sync support for multiplexed streams
- ITU-R BT.656

**Motion Detection**
- Motion vector & SAD information

**Super Low Latency Technology™**
- Sub 40ms multi-stream encode-decode latency

**Multi-stream Support**
- 960 CIF frames/sec encode capacity
- 8x D1 encode or decode
- 32x CIF encode or decode
- 4x D1 simultaneous encode and decode
- 16x CIF simultaneous encode and decode

**Pre & Post-Processing**
- Transsizing & transrating
- YUV 4:2:2 <-> YUV 4:2:0 sample conversion
- Blanking/Blocking input video regions
- Stream duplication
- OSD

**Host Bus Interface**
- 32/16-bit, 133 MHz sync/async host bus
- 32-bit, 33/66 MHz PCI 2.2 compatible bus
- 67 virtual PCI DMA channels
- Raw video transport

**Configuration Support Per Stream**
- Frame rate
- Statistics
- GOP size
- Error resiliency & concealment
- Noise filtering
- Resolution
- CBR/VBR control

**Memory Interfaces**
- 2x DDR2 -266 MHz interfaces
- SPI Serial FLASH interface

**Miscellaneous Interfaces**
- JTAG
- GPIO
- Two-Wire serial bus

**Operational Characteristics**
- Core clock frequency 233 MHz
- Power dissipation 2.5W typical
- 0 – +85˚ C ambient temperature
- 0-90% RH

**Package**
- 676 pin BGA
- 27mm x 27mm

---

### PureVu CNW35XX Processor Family

<table>
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<tr>
<th>Device</th>
<th>Part Number</th>
<th>Streams</th>
<th>Video Ports</th>
<th>Host I/F</th>
<th>Memory</th>
<th>Package</th>
<th>RoHS</th>
</tr>
</thead>
<tbody>
<tr>
<td>CNW3508</td>
<td>CNW3508-233BG676-</td>
<td>8 D1</td>
<td>8</td>
<td>BT.656</td>
<td>2x 32-bit wide memory</td>
<td>676 PBGA</td>
<td>Pb-free</td>
</tr>
<tr>
<td></td>
<td>Option Code</td>
<td>32x CIF</td>
<td></td>
<td></td>
<td>bus I/F DDR2 266 MHz</td>
<td></td>
<td>RoHS-6</td>
</tr>
</tbody>
</table>
**Solutions**

**SD digital video recorders**
- Application
  - Multi-channel D1 DVRs
- Benefits
  - D1 video quality
  - 8 D1 encode or decode
  - 32 CIF encode or decode
  - Error resiliency & concealment
  - Transrating & transsizing

**SD video servers**
- Application
  - Multi-channel D1 IP video servers
- Benefits
  - D1 video quality
  - 8 D1 encode or decode
  - 32 CIF encode or decode
  - Error resiliency & concealment
  - Transrating & transsizing

**SD multi-sensor video surveillance cameras**
- Application
  - Multi-sensor D1 IP cameras
- Benefits
  - D1 video quality
  - 8 simultaneous D1 streams
  - Super Low Latency (SLL) Technology™ for instant PTZ control
  - Channel-adaptive rate control
  - Error resiliency & concealment
  - Transrating & transsizing
  - Stream duplication
Features

**Video Compression**
- H.264 Baseline & Main Profile up to L4.2

**Resolutions**
- 1080p24/25/30/50/60, 1080i50/60
- 720p24/25/30/50/60
- 480i60, 480p24/30/50/60
- 576i50, 576p25/50
- CIF, QCIF, VGA, QVGA, SIF, others

**Noise Reduction**
- In-loop, low-delay filtering
- CA-MCTF

**Error Resiliency & Concealment**
- Intra-frame forcing
- Intra-refresh
- Variable GOP size
- Variable slice size
- Skip-frame
- Skip-macro block

**Rate Control**
- Single pass, low-delay bit rate control
- Constant bit rate control
- Variable bit rate control
- Fixed QP

**Network Support**
- Encoder NAL bit stream formatting
- Decoder NAL bit stream parsing

**Video Input and Output Ports**
- 8 bi-directional video ports
- Embedded sync support for multiplexed streams
- ITU-R BT.1120 & BT.656

**Motion Detection**
- Motion vector extraction information

**Super Low Latency Technology™**
- Sub 1ms 1080p60 encode-decode latency
- Sub 40ms multi-stream encode-decode latency

**Multi-stream Support**
- 1200 CIF frames/sec encode/decode capacity
- 1x 1080p60 encode or decode
- 2x 1080p30 encode or decode
- 2x 720p60 encode or decode
- 4x 720p30 encode or decode
- 8x 480p30 encode or decode
- 32x CIFp30 encode or decode
- 1x 1080p30 simultaneous encode and decode
- 1x 720p60 simultaneous encode and decode
- 2x 720p30 simultaneous encode and decode
- 4x 480p30 simultaneous encode and decode
- 16x CIFp30 encode and decode

**Pre & Post- Processing**
- Transsizing & transrating
- Scaling down resolution and frame rate
- YUV 4:2:2 <-> YUV 4:2:0 sample conversion
- Blanking/Blocking input video regions
- Stream duplication
- OSD

**Miscellaneous Features**
- Motion vector & SAD data

**Host Bus Interface**
- 32/16-bit, 133 MHz sync/async host bus
- 32-bit, 33/66 MHz PCI 2.2 compatible bus
- 67 virtual PCI DMA channels
- Raw video transport

**Memory Interfaces**
- 2x DDR2-266 MHz interfaces
- SPI Serial FLASH interface

**Miscellaneous Interfaces**
- JTAG
- GPIO
- Two-Wire serial bus

**Operational Characteristics**
- Core clock frequency 233 MHz
- Power dissipation 2.5W typical
- 0 – +85˚ C ambient temperature
- 0-90% RH

**Operational Characteristics**
- 676 pin BGA
- 27mm x 27mm
**Solutions**

### HD video conferencing and telepresence terminals
- **Application**
  - Enterprise video conferencing terminals
  - Telepresence video terminals
  - Telemedicine video terminals
  - Distance learning video terminals
- **Benefits**
  - HD video quality (1080p 60/30 & 720p 60/30)
  - Low bandwidth
  - Super Low Latency (SLL) Technology™
  - Error resiliency & concealment
  - Transrating & transsizing

### HD multimedia routers
- **Application**
  - Routing HD video output data simultaneously with Internet, file, voice and audio traffic
  - Wireless HDMI cable replacement
  - IEEE802.11n or UWB wireless connectivity
  - G.hn power-line connectivity
  - Gaming, interactive Blu-Ray, set-top box, PC
- **Benefits**
  - HD video quality (1080p 60/30 & 720p 60/30)
  - Super Low Latency (SLL) Technology™
  - Channel-adaptive rate control
  - Error resiliency & concealment
  - Transrating & transsizing

### HD video surveillance cameras
- **Application**
  - Multi-sensor HD IP cameras
- **Benefits**
  - HD video quality (1080p/60 & 720p)
  - 4 simultaneous HD streams
  - Super Low Latency (SLL) Technology™ for instant PTZ control
  - Channel-adaptive rate control
  - Error resiliency & concealment
  - Transrating & transsizing
  - Stream duplication
Cavium Networks provides a comprehensive acceleration solution for compression/decompression, encryption/decryption, pattern matching, TCP, and networking:

- Market-leading performance with multifunction acceleration in a single card

Broad range of PCI-X and PCIe boards with advanced features suiting coprocessor and inline NIC applications from 2 to 14 Gbps.

- Rapid Time to Market for production solution in standard PCI-X/PCIe form factor, addressing wide range of x86 based appliance systems

Optional C/C++ programmability of OCTEON multi-core MIPS64 processor for user-customized processing

- Allows addition of differentiating features using industry-standard GNU toolchain

### OCTEON XL Family of Accelerator Boards and 10Gbe Intelligent Network Adapters

<table>
<thead>
<tr>
<th>Device</th>
<th>Gigabit Ethernet I/O</th>
<th>PCI/PCI-X</th>
<th>Additional I/O and Features</th>
<th>Dimension (inches)</th>
<th>Performance</th>
<th>Security Services</th>
</tr>
</thead>
<tbody>
<tr>
<td>OCTEON CN38XX</td>
<td>4x RJ-45</td>
<td>3.3V PCI/PCI-X 64-bit, 133 MHz</td>
<td>N/A</td>
<td>4.2 x 6.6</td>
<td>2 - 4 Gbps</td>
<td>2.5 - 4 Gbps</td>
</tr>
<tr>
<td>(4-16 core, 600 MHz)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>OCTEON CN38XX</td>
<td>4x RJ-45</td>
<td>3.3V PCI/PCI-X 64-bit, 133 MHz</td>
<td>SPI 4.2 connector, 256MB RLDAM2</td>
<td>4.5 x 6.6</td>
<td>2 - 6 Gbps</td>
<td>2.5 - 10 Gbps</td>
</tr>
<tr>
<td>(4-16 core, 500/600 MHz)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>OCTEON CN58XX</td>
<td>4x GE (RJ-45 or SFP)</td>
<td>3.3V PCI/PCI-X 64-bit, 133 MHz</td>
<td>SPI 4.2 connector, 256 MB RLDAM2</td>
<td>4.2 x 12.3</td>
<td>5 - 10 Gbps</td>
<td>5 - 25 Gbps</td>
</tr>
<tr>
<td>(16 core)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>OCTEON CN55XX</td>
<td>4x GE</td>
<td>8-Lane PCIe</td>
<td>N/A</td>
<td>4.2 x 12.3</td>
<td>5 - 10 Gbps</td>
<td>2.5 - 10 Gbps</td>
</tr>
<tr>
<td>(6 core)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>OCTEON CN57XX</td>
<td>4x GE</td>
<td>8-Lane PCIe</td>
<td>N/A</td>
<td>4.2 x 12.3</td>
<td>5 - 10 Gbps</td>
<td>5 - 20 Gbps</td>
</tr>
<tr>
<td>(12 core)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>OCTEON CN57XX</td>
<td>2x 10Gbe</td>
<td>4-Lane PCIe</td>
<td>N/A</td>
<td>4.2 x 12.3</td>
<td>5 - 10 Gbps</td>
<td>5 - 20 Gbps</td>
</tr>
<tr>
<td>(12 core)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
NITROX XL provides the highest-performing acceleration solution for IPsec, SSL and wireless LAN security.

- 10 distinct security accelerator board products with highly scalable performance from 900 to 65,000 RSA Ops/second and 100 Mbps to 10 Gbps
- Only solution with SSL TPS and record processing with dynamic adaptability based on traffic with product options for FIPS 140-2 Level 3 compliance
- Standard PCI, PCI-X, and PCI-Express form factors

### NITROX XL Accelerator Boards and FIPS Boards

#### NITROX XL Accelerator Boards

<table>
<thead>
<tr>
<th>Device</th>
<th>Interface</th>
<th>Dimension inches</th>
<th>Local DDR (optional)</th>
<th>Performance</th>
<th>Max RSA 1024-bit Exp CRT OPs/sec</th>
<th>Max DH 1024-bit Exp with 1024-bit Mod OPs/sec</th>
<th>Full IPsec Packet Processing Mbps</th>
<th>Full SSL Record Throughput Mbps</th>
</tr>
</thead>
<tbody>
<tr>
<td>CN10XX-NHB-G</td>
<td>i, s, w or p</td>
<td>2.1 x 6.6</td>
<td>No</td>
<td>PCI 32-bit / 64-bit or PCI-X 133 MHz</td>
<td>1,750</td>
<td>3,000 - 12,000</td>
<td>200 - 1,000</td>
<td>200 - 1,000</td>
</tr>
<tr>
<td>CN1120-NHB-G</td>
<td>i, s, w or p</td>
<td>2.1 x 6.6</td>
<td>No</td>
<td>3,500 - 14,000</td>
<td>24,000</td>
<td>200 - 1,000</td>
<td>1,000</td>
<td></td>
</tr>
<tr>
<td>CN1220-NPB-G</td>
<td>i, s, w or p</td>
<td>4.2 x 6.6</td>
<td>Yes</td>
<td>14,000</td>
<td>24,000</td>
<td>1,200</td>
<td>1,200</td>
<td></td>
</tr>
<tr>
<td>CN1230-NPB-G</td>
<td>i, s, w or p</td>
<td>4.2 x 6.6</td>
<td>Yes</td>
<td>28,000</td>
<td>48,000</td>
<td>2,000</td>
<td>2,000</td>
<td></td>
</tr>
</tbody>
</table>

#### NITROX XL NFB Boards

<table>
<thead>
<tr>
<th>Device</th>
<th>Interface</th>
<th>Dimension inches</th>
<th>Local DDR (optional)</th>
<th>Performance</th>
<th>Max RSA 1024-bit Exp CRT OPs/sec</th>
<th>Max DH 1024-bit Exp with 1024-bit Mod OPs/sec</th>
<th>Full IPsec Packet Processing Mbps</th>
<th>Full SSL Record Throughput Mbps</th>
</tr>
</thead>
<tbody>
<tr>
<td>CN1120-NFB-G</td>
<td>s</td>
<td>4.2 x 7.1</td>
<td>Std</td>
<td>10,000</td>
<td>NA</td>
<td>500</td>
<td>500</td>
<td></td>
</tr>
<tr>
<td>CN1010-NF</td>
<td>s</td>
<td>4.2 x 7</td>
<td>Std</td>
<td>6,000</td>
<td>NA</td>
<td>250</td>
<td>250</td>
<td></td>
</tr>
</tbody>
</table>

#### NITROX XL NPB Boards

<table>
<thead>
<tr>
<th>Device</th>
<th>Interface</th>
<th>Dimension inches</th>
<th>Local DDR (optional)</th>
<th>Performance</th>
<th>Max RSA 1024-bit Exp CRT OPs/sec</th>
<th>Max DH 1024-bit Exp with 1024-bit Mod OPs/sec</th>
<th>Full IPsec Packet Processing Mbps</th>
<th>Full SSL Record Throughput Mbps</th>
</tr>
</thead>
<tbody>
<tr>
<td>CN15XX-350-NHB-G</td>
<td>i,s,w or p</td>
<td>2.1 x 6.6</td>
<td>No</td>
<td>4,000 - 13,000</td>
<td>6,000 - 20,000</td>
<td>500 - 1,500</td>
<td>500 - 1,500</td>
<td></td>
</tr>
<tr>
<td>CN1520-400-NHB-G</td>
<td>i,s,w or p</td>
<td>2.1 x 6.6</td>
<td>No</td>
<td>17,000</td>
<td>6,000 - 20,000</td>
<td>2,500</td>
<td>2,500</td>
<td></td>
</tr>
<tr>
<td>CN16XX-350-NHB-G</td>
<td>i,s,w or p</td>
<td>2.1 x 6.6</td>
<td>No</td>
<td>4,000 - 13,000</td>
<td>20,000</td>
<td>500 - 1,500</td>
<td>500 - 1,500</td>
<td></td>
</tr>
<tr>
<td>CN1620-400-NHB-G</td>
<td>i,s,w or p</td>
<td>2.1 x 6.6</td>
<td>No</td>
<td>17,000</td>
<td>25,000</td>
<td>2,500</td>
<td>2,500</td>
<td></td>
</tr>
<tr>
<td>CN1620-400-NHB4-G</td>
<td>i,s,w or p</td>
<td>2.1 x 6.6</td>
<td>No</td>
<td>65,000</td>
<td>90,000</td>
<td>6,000</td>
<td>6,000 +</td>
<td></td>
</tr>
</tbody>
</table>
Cavium Networks provides complete low cost evaluation/reference boards based on the Cavium Networks’ ECONA line of ARM network processors. These boards provide a quick and effective means for evaluating the quality and performance of the ECONA network processors as well as being a reference to assisting customers in bringing their own products to market.

- Boards are application specific, pre-configured, allow for code development in parallel with OEM/ODM platform development
- Provide known good reference for OEM/ODM platform development
- Quick time to market
- Market leading high integration and performance

### ECONA Evaluation/Reference Boards

<table>
<thead>
<tr>
<th>Device</th>
<th>Interface</th>
<th>Memory Sub-System</th>
<th>Extension</th>
<th>Performance IP Forwarding</th>
<th>Dimensions</th>
</tr>
</thead>
<tbody>
<tr>
<td>CNS1102-EVB-02</td>
<td>1 x UART, 2 x USB 1 x Mini-PCI</td>
<td>8MB Serial Flash 64MB DDR SDRAM</td>
<td>N/A</td>
<td>917Mbps</td>
<td>19.4cm x 20.4cm</td>
</tr>
<tr>
<td>CNS2132-EVB-01</td>
<td>1 x UART, 2 x USB 1.1/2.0 1 x RJ-45</td>
<td>8MB Serial Flash 32MB DDR SDRAM</td>
<td>I2C/I2S/GPIO</td>
<td>95Mbps</td>
<td>10cm x 13.3cm</td>
</tr>
<tr>
<td>CNS2133-EVB-01</td>
<td>2 x UART, 2 x USB 1.1/2.0 2 x Mini-PCI, 1 x RJ-45 1 x IDE / SATA Bridge</td>
<td>8MB Serial Flash 32MB DDR SDRAM</td>
<td>16-bit SRAM I/F I2C/I2S/SP/GPIO SMC header for H.264 Codec</td>
<td>95Mbps</td>
<td>15.4cm x 18.2cm</td>
</tr>
<tr>
<td>CNS2182X-EVB-01</td>
<td>1 x UART, 2 x USB 1.1/2.0 1 x RJ-45</td>
<td>8MB Parallel Flash 32MB DDR SDRAM</td>
<td>N/A</td>
<td>220Mbps</td>
<td>25.7cm x 20.5cm</td>
</tr>
</tbody>
</table>
Cavium Networks provides complete low cost evaluation/reference boards based on the Cavium Networks’ PureVu line of video processors. These boards provide a quick and effective means for evaluating the quality and performance of the PureVu video processors as well as being a reference to assisting customers in bringing their own products to market.

- Boards are application specific, pre-configured, allow for code development in parallel with OEM/ODM platform development
- Provide known good reference for OEM/ODM platform development
- Quick time to market
- Market leading video quality and performance

### PureVu Evaluation/Reference Boards

<table>
<thead>
<tr>
<th>Device</th>
<th>Part Number</th>
<th>Inputs</th>
<th>Outputs</th>
<th>Board I/F</th>
<th>Video Compression</th>
<th>Video Resolutions</th>
<th>Dimensions</th>
</tr>
</thead>
<tbody>
<tr>
<td>CNW3602 Lanai 2</td>
<td>CNW3602-EVB-LNI2</td>
<td>1x HDMI 1x VGA DC Power Jack</td>
<td>1x HDMI S/PDIF</td>
<td>RJ-45 ethernet USB 2.0 type A Console debug port Mini-PCI</td>
<td>H.264/MPEG-4 (part 10) AVC sub-frame encode-decode latency</td>
<td>Up to 1080p60</td>
<td>16.5cm x 15cm</td>
</tr>
</tbody>
</table>

### PureVu Carrier Boards

<table>
<thead>
<tr>
<th>Device</th>
<th>Part Number</th>
<th>Inputs</th>
<th>Outputs</th>
<th>Host I/F</th>
<th>Board I/F</th>
<th>Dimensions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Input Carrier</td>
<td>WW201CB-KT</td>
<td>Video: -BNC Connector -BT.1120/BT.601 Audio: -2.5mm plug -Stereo analog -Stereo 12S</td>
<td>Video: -BNC Connector -MPEG-2 TS -8-bit -DVB support -H.264 video -PCM audio</td>
<td>SPI or UART</td>
<td>Dual 50-pin fine-pitch Hirose connectors</td>
<td>20cm x 15cm</td>
</tr>
<tr>
<td>Output Carrier</td>
<td>WW200CB-KT</td>
<td>Video: -BNC Connector -BT.1120/BT.601 Audio: -2.5mm plug -Stereo analog -Stereo 12S</td>
<td>Video: -BNC Connector -MPEG-2 TS -8-bit -DVB support -H.264 video -PCM audio</td>
<td>SPI or UART</td>
<td>Dual 50-pin fine-pitch Hirose connectors</td>
<td>20cm x 15cm</td>
</tr>
</tbody>
</table>
OCTEON® Development Kit and Production Software Toolkits

OCTEON Development Kit (CDK)
The Cavium Development Kit (CDK) for the OCTEON multi-core MIPS64 processor family provides a feature-rich environment for rapid development of intelligent next-generation networking and storage products. The OCTEON CDK includes:

Powerful Development Tools
- Industry-standard GNU toolchain, cycle-accurate simulator
- Cavium ViewZilla for graphical performance analysis, RegEx pattern compiler

Rich Code Infrastructure
- OS: Linux 2.6 64-bit SMP OS, OCTEON Simple Executive (thin data plane OS) and partner products
- Libraries: ‘C’ acceleration libraries for compression/decompression, pattern matching, encryption/decryption, robust header compression and partner products
- BSP/Drivers: Bootloader/BSP, host drivers, PCI, diagnostics
- Reference Software: Rich set of software-demonstrating application programming and features

Hardware Development Kits
- Reference schematics and models to enable rapid and error-free hardware development

Evaluation and Development Boards
- Full OCTEON hardware systems with networking and debug I/O. Enables complete application software development prior to availability of the OEM/ODM hardware.

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Cavium Development Kit Contents/Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CN5000-CDK-HSS-Y</td>
<td>Includes OCTEON CN50XX Evaluation Board, Software Development Kit, and Hardware Development Kit</td>
</tr>
<tr>
<td>CN5500-CDK</td>
<td>Includes OCTEON CN5500 Evaluation Board, Software Development Kit, and Hardware Development Kit</td>
</tr>
<tr>
<td>CN5600-CDK</td>
<td>Includes OCTEON CN5600 Evaluation Board, Software Development Kit, and Hardware Development Kit</td>
</tr>
<tr>
<td>CN5700-CDK</td>
<td>Includes OCTEON CN5700 Evaluation Board, Software Development Kit, and Hardware Development Kit</td>
</tr>
<tr>
<td>CN5800-CDK-NIC4</td>
<td>Includes OCTEON CN5800 Evaluation Board, Software Development Kit, and Hardware Development Kit</td>
</tr>
<tr>
<td>CN6300-CDK</td>
<td>Includes OCTEON CN6300 Evaluation Board, Software Development Kit, and Hardware Development Kit</td>
</tr>
</tbody>
</table>

The OCTEON Software Toolkits are optional packages and reduce time-to-market. These toolkits deliver production-quality, feature-rich applications provided as ‘C’ source. OCTEON toolkits are optimized for maximum performance and support all OCTEON processor family members. Available OCTEON toolkits include:

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Cavium Development Kit Contents/Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CN3000-APP-IPsec</td>
<td>IPsec Toolkit Source License</td>
</tr>
<tr>
<td>CN3000-APP-TCP</td>
<td>TCP Toolkit Source Code License</td>
</tr>
<tr>
<td>CN3000-APP-SSL</td>
<td>SSL Toolkit Source Code License</td>
</tr>
<tr>
<td>CN3000-APP-SRTP</td>
<td>SRTP Toolkit Source Code License</td>
</tr>
<tr>
<td>CN3000-APP-SNORTXL-MAINT</td>
<td>SNORTXL Toolkit Annual Support and Maintenance</td>
</tr>
<tr>
<td>CN3000-APP-CLAMXL</td>
<td>CLAMXL Toolkit Source Code License</td>
</tr>
<tr>
<td>CN3000-APP-AVG</td>
<td>Antivirus Gateway Toolkit Source Code License</td>
</tr>
</tbody>
</table>

Variety of ADKs for Rapid Evaluation and development. All packages have ‘mix & match’ feature build options.

<table>
<thead>
<tr>
<th>Packages</th>
<th>ADK Package Functionality- Debian or uClibc File Systems and Single Core or SMP Support</th>
</tr>
</thead>
<tbody>
<tr>
<td>Router/Firewall</td>
<td>NAT/FW (iptables), ipfw offload, Broadcom 802.11 n multiband driver</td>
</tr>
<tr>
<td>IPsec VPN</td>
<td>NAT/FW (iptables), ipfw offload, Cavium IPsec stack (KLM)</td>
</tr>
<tr>
<td>SSL VPN</td>
<td>NAT/FW (iptables), ipfw offload, Cavium EasyAccess (binary only) distribution</td>
</tr>
<tr>
<td>Combo IPsec &amp; SSL VPN</td>
<td>NAT/FW (iptables), ipfw offload, Cavium IPsec stack (KLM), Cavium Easy Access (binary only) distribution</td>
</tr>
<tr>
<td>NAS/Media Vault</td>
<td>NAT/FW (iptables), ipfw offload, multiband driver, Samba package, Media Vault, Gmedia Server, RAID 0, 1, 5</td>
</tr>
<tr>
<td>UTM</td>
<td>Cavium Antivirus Gateway and Snort IPS</td>
</tr>
<tr>
<td>VoIP</td>
<td>Linux SLIC driver supporting TAPI interface. Asterisk-1.2.12.1, PBX-SIP software, with: SIP connectivity and Conferencing, Interoperability with PC based Soft SIP client</td>
</tr>
</tbody>
</table>
**NITROX® and EasyAccess**

### NITROX Cavium Development Kit (CDK)

The CDK for NITROX Security Processor family provides a robust and easy-to-use environment for development of IPsec, SSL and WLAN security applications in a range of inline and look-aside coprocessor configurations for next-generation secure networking equipment. The CDK includes the following:

**Software Development Kit** has four major components including microcode, drivers, API and reference stacks. Source code is provided for drivers, APIs and reference stacks.
- Microcode and APIs: IPsec, SSL and WLAN security
- Drivers: highly portable, available for Linux 2.4, Linux 2.6, FreeBSD, Windows 2003®
- Reference application stacks: FreeS/WAN, KAME, OpenSSL

**Hardware Development Kit**
- Reference schematics and models for rapid time-to-market

**Hardware Boards**
- NITROX evaluation and production boards are available with PCI, PCIe and PCI-X Gigabit Ethernet connectivity. They enable complete application development prior to hardware prototype availability

### EasyAccess SSL VPN Application Toolkit

The EasyAccess SSL VPN solution provides everything OEM/ODMs need for advanced small-to-medium business SSL VPN appliances. This software toolkit provides comprehensive and customizable SSL VPN and remote access functionality, via as source code optimized for Cavium Networks’ MIPS32 and MIPS64 processor solutions to enable superior performance and fastest time-to-market. For EasyAccess SSL VPN information contact your local sales representative.

### NITROX Development Kits

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Cavium Development Kit Contents/Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CN1000-CDK</td>
<td>Includes NITROX Lite Software Development Kit, Evaluation Board, and Hardware Development Kit</td>
</tr>
<tr>
<td>CN1500-CDK</td>
<td>Includes NITROX Software Development Kit, Evaluation Board, and Hardware Development Kit</td>
</tr>
<tr>
<td>CN1600-CDK</td>
<td>Includes NITROX PX Software Development Kit, Evaluation Board, and Hardware Development Kit</td>
</tr>
<tr>
<td>CN2200-CDK</td>
<td>Includes NITROX II Software Development Kit, Evaluation Board, and Hardware Development Kit</td>
</tr>
</tbody>
</table>
ECONA Development Kits

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Cavium Development Kit Contents/Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CNS1102-EVB-02</td>
<td>Includes ECONA CNS1102 Evaluation Board, Software Development Kit, and Hardware Development Kit</td>
</tr>
<tr>
<td>CNS2132-EVB-01</td>
<td>Includes ECONA CNS2132 Evaluation Board, Software Development Kit, and Hardware Development Kit</td>
</tr>
<tr>
<td>CNS2133-EVB-01</td>
<td>Includes ECONA CNS2133 Evaluation Board, Software Development Kit, and Hardware Development Kit</td>
</tr>
<tr>
<td>CNS2182X-EVB-01</td>
<td>Includes ECONA CNS2182X Evaluation Board, Software Development Kit, and Hardware Development Kit</td>
</tr>
</tbody>
</table>
PureVu™ Development Kit and Production Software Toolkits

PureVu Cavium Development Kit (CDK)
The Cavium Development Kit (CDK) for the PureVu CNW3XXX processor family provides a feature-rich environment for rapid development of PureVu CNW3XXX-based video subsystems for video conferencing, video surveillance and wireless display netHD systems.

Software Development Kit
- BSL, CSL, DSL, OSAL
- VAPI
- RTP
- Drivers
- Utilities

Hardware Development Kit
- Hardware schematics
- Bill of materials
- IBIS models

Development Tools
- Industry-standard GNU C/C++ tool chain, available through open source distributions

Rich Code Infrastructure
- OS: Linux, kernel version 2.6 32-bit version
- PCI drivers
- Chip support libraries
- Board support libraries
- Encoder application
- Decoder application

Evaluation and Development Boards
- Application-specific, pre-configured, PCI boards
- Allows for code development in parallel with OEM/ODM platform development
- Provides known-good reference for OEM/ODM platform development

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Cavium Development Kit Contents/Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CNW3602-CDK-RWD</td>
<td>PureVu CNW36XX CDK for wireless HDMI and IP camera applications</td>
</tr>
<tr>
<td>CNW3108-CDK-CDR</td>
<td>PureVu CNW31XX CDK for video conferencing applications</td>
</tr>
<tr>
<td>CNW3602-EVB-RWD</td>
<td>PureVu CNW36XX evaluation board for wireless HDMI and IP camera applications</td>
</tr>
<tr>
<td>CNW3108-EVB-CDR</td>
<td>PureVu CNW31XX evaluation board for video conferencing applications</td>
</tr>
<tr>
<td>CNW3602-EVB-LNI2</td>
<td>PureVu CNW3602-LNI2 evaluation board for</td>
</tr>
</tbody>
</table>
Cavium Services and Solutions

Cavium Solutions and Services (CSS) is a group of highly experienced Cavium Architects and Developers who are dedicated to help customers develop and accelerate OCTEON based software and systems. CSS offers dedicated services that complement Cavium Networks’ Sales and Customer support organizations.

With over 25 successfully completed projects, CSS has extensive real world experiencing the development of Parallel software for a variety of multi-core architectures.

CSS takes a holistic approach to software and solutions development by leveraging Cavium’s software and hardware architecture and performance tuning experience across a variety of end-system hardware and software designs CSS offers three different services to address a variety of customer needs:

ArchitecturePLUS
Help customers extract the highest performance from OCTEON processors by efficiently mapping their existing software and recommending specific architecture or performance tuning. The end result of this exercise is a 40 page architecture document and example code that validates the customer’s multi-core software architecture, performance estimates and project plans.

PerformancePLUS
Help customers fine tune their existing OCTEON multi-core software to achieve maximum performance. The end result of this exercise is a architecture document and example code that will increase the OCTEON based system performance.

DevelopmentPLUS
Full life cycle multi-core software development. This service helps customers to rapidly develop their software by developing full turn-key software and training customer’s engineering team.

Cavium Services and Solutions’ Benefits:
- Time-to-market
- Cost Reduction
  - Reduced software development time, effort and iterations
  - Detailed performance modeling reduces requirement for over-engineering systems to meet marketing requirements
- Risk Mitigation
  - Detailed performance modeling reduces surprises during hardware and software development
  - Experienced software planning and architecture enables accurate scheduling and resources requirements to meet market deadlines
- Deliver optimal performance and headroom
- Customer engineering team ramp-up --- “It’s an enablement tool not just a service!”
  - Service team fields all technical question
  - Development environment setup
  - Dedicated Cavium resources make every project a success
Cavium Networks provides a rich ecosystem for its ECONA, NITROX, OCTEON and PureVu family of processors. Below is a selected list of Ecosystem Partners.

<table>
<thead>
<tr>
<th>Operating System and Development Tools</th>
<th>Website</th>
<th>About</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENEA</td>
<td><a href="http://www.enea.com">www.enea.com</a></td>
<td>Leading supplier of embedded real-time operating systems, middleware, and solutions</td>
<td>OSE support, data plane management software</td>
</tr>
<tr>
<td>Green Hills</td>
<td><a href="http://www.ghs.com">www.ghs.com</a></td>
<td>Leader in device software optimization (DSO) and real-time operating systems (RTOS)</td>
<td>MULTI IDE, TimeMachine tools suite, compilers, DoubleCheck, µ-velOSity and Probe</td>
</tr>
<tr>
<td>Kyma</td>
<td><a href="http://www.kymasys.com">www.kymasys.com</a></td>
<td>Kyma provides a BSD distribution and professional services</td>
<td>Kyma BSD based on NetBSD 4.x with SMP support</td>
</tr>
<tr>
<td>MontaVista</td>
<td><a href="http://www.mvista.com">www.mvista.com</a></td>
<td>The source for commercial grade Linux for intelligent devices</td>
<td>Professional Edition 4.0 and GGE 5.0</td>
</tr>
<tr>
<td>QNX</td>
<td><a href="http://www.qnx.com">www.qnx.com</a></td>
<td>Middleware, development tools, real time OS Software and services for superior embedded design</td>
<td>Neutrino RTOS support</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Software Stacks and Applications</th>
<th>Website</th>
<th>About</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>6-WIND</td>
<td><a href="http://www.6wind.com">www.6wind.com</a></td>
<td>Leader in Linux embedded networking software suites for OEM licensing</td>
<td>6 Wind Gate networking stacks for MIPS processors</td>
</tr>
<tr>
<td>AFORE</td>
<td><a href="http://www.aforesolutions.com">www.aforesolutions.com</a></td>
<td>Custom R &amp; D services</td>
<td>Ethernet switching platforms for carrier ethernet and wireless backhaul markets</td>
</tr>
<tr>
<td>Apogee</td>
<td><a href="http://www.apogee.com">www.apogee.com</a></td>
<td>Provider of Java for embedded systems</td>
<td>JRE (Java) – demo available today</td>
</tr>
<tr>
<td>Arada Systems</td>
<td><a href="http://www.aradasystems.com">www.aradasystems.com</a></td>
<td>Leading developer of WiFi software</td>
<td>WiFi software for Atheros xSPAN 802.11n technology</td>
</tr>
<tr>
<td>Aricent</td>
<td><a href="http://www.aricent.com">www.aricent.com</a></td>
<td>Aricent is a global leader in communications software</td>
<td>SIP User Agent Toolkit, services and benchmarking</td>
</tr>
<tr>
<td>Broadweb</td>
<td><a href="http://www.broadweb.com">www.broadweb.com</a></td>
<td>BroadWeb is a leading IPS provider of network-based intrusion prevention systems that provides application-layer protection, including hacker’s detection and prevention, worm/virus protection, and information security enforcement (Web, P2P, and IM software control)</td>
<td>IPS/IDS/Antivirus</td>
</tr>
<tr>
<td>D2 Technologies</td>
<td><a href="http://www.d2tech.com">www.d2tech.com</a></td>
<td>The leader in RISC-based VoIP software solutions</td>
<td>VoIP software for OCTEON and ECONA</td>
</tr>
<tr>
<td>Data Connection</td>
<td><a href="http://www.dataconnection.com">www.dataconnection.com</a></td>
<td>Leading telephony and communications technology supplier</td>
<td>SBC, MPLS, &amp; Routing Software</td>
</tr>
<tr>
<td>Jungo</td>
<td><a href="http://www.jungo.com">www.jungo.com</a></td>
<td>Complete suite of residential gateway software</td>
<td>Networking gateway software platform</td>
</tr>
<tr>
<td>Kaspersky</td>
<td><a href="http://www.kaspersky.com">www.kaspersky.com</a></td>
<td>Provider of anti-virus software for ODMs</td>
<td>Support for Safe Stream Technology</td>
</tr>
</tbody>
</table>
## Ecosystem Partners

### Software Stacks and Applications

<table>
<thead>
<tr>
<th>Software Stacks and Applications</th>
<th>Website</th>
<th>About</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>LanBird</td>
<td><a href="http://www.lanbird.com">www.lanbird.com</a></td>
<td>Solution provider for software application developers</td>
<td>Multi-core Development Kit/ASN Gateway Application Suite</td>
</tr>
<tr>
<td>MindTree</td>
<td><a href="http://www.mindtree.com">www.mindtree.com</a></td>
<td>Datapath support, APIs and testing</td>
<td>IP-Sec, TCP Stack, and IPv4 and engineering services on OCTEON</td>
</tr>
<tr>
<td>Paxym</td>
<td><a href="http://www.paxym.com">www.paxym.com</a></td>
<td>Software engineering services</td>
<td>FreeBSD, Linux, networking &amp; security software on OCTEON</td>
</tr>
<tr>
<td>Qosmos</td>
<td><a href="http://www.qosmos.com">www.qosmos.com</a></td>
<td>Leading DPI software provider</td>
<td>Q-Engine software support</td>
</tr>
<tr>
<td>RSA Security</td>
<td><a href="http://www.rsasecurity.com">www.rsasecurity.com</a></td>
<td>RSA Security Inc., is the expert in protecting online identities and digital assets</td>
<td>RSA BSAFE toolkit support</td>
</tr>
<tr>
<td>Sophos</td>
<td><a href="http://www.sophos.com">www.sophos.com</a></td>
<td>World leader in IT security and solutions</td>
<td>SAV Interface, an anti-virus scanning engine</td>
</tr>
<tr>
<td>TeamF1</td>
<td><a href="http://www.teamf1.com">www.teamf1.com</a></td>
<td>Enabling embedded innovations</td>
<td>Complete UTM &amp; middleware, IPsec, SSL, WiFi</td>
</tr>
<tr>
<td>Wipro</td>
<td><a href="http://www.wipro.com">www.wipro.com</a></td>
<td>Engineering services</td>
<td>WiMAX ASN GW, IP-DSLAM, home GW &amp; L2 switching stack</td>
</tr>
</tbody>
</table>

### JTAG Probe

<table>
<thead>
<tr>
<th>JTAG Probe</th>
<th>Website</th>
<th>About</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abatron</td>
<td><a href="http://www.abatron.ch">www.abatron.ch</a></td>
<td>High-quality, high-speed JTAG Debug Tools</td>
<td>BDI2000 and BDI3000 support for OCTEON and OCTEON Plus processors</td>
</tr>
<tr>
<td>Green Hills</td>
<td><a href="http://www.ghs.com">www.ghs.com</a></td>
<td>Advanced hardware debug device</td>
<td>Green Hills Probe</td>
</tr>
<tr>
<td>Lauterbach</td>
<td><a href="http://www.lauterbach.com">www.lauterbach.com</a></td>
<td>World’s largest producer of hardware assisted debug tools</td>
<td>TRACE32-ICD in-circuit debugger</td>
</tr>
<tr>
<td>Macraigor Systems</td>
<td><a href="http://www.macraigor.com">www.macraigor.com</a></td>
<td>JTAG tools to debug your embedded CPU</td>
<td>MIPS USB Wiggler</td>
</tr>
<tr>
<td>Mentor Graphics</td>
<td><a href="http://www.mentor.com">www.mentor.com</a></td>
<td>Reliable JTAG Debug Connections</td>
<td>MAJIC - MT JTAG probe for NITROX Soho &amp; OCTEON</td>
</tr>
<tr>
<td>Wind River</td>
<td><a href="http://www.windriver.com">www.windriver.com</a></td>
<td>Advanced JTAG tools</td>
<td>Wind River OCD ICE</td>
</tr>
</tbody>
</table>

### Appliances (server form factors)

<table>
<thead>
<tr>
<th>Appliances (server form factors)</th>
<th>Website</th>
<th>About</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Advantech</td>
<td><a href="http://www.advantech.com">www.advantech.com</a></td>
<td>Trusted for platform services</td>
<td>Single and Dual-OCTEON 1U servers</td>
</tr>
<tr>
<td>Lanner</td>
<td><a href="http://www.lannerinc.com">www.lannerinc.com</a></td>
<td>Creating value in applied computing</td>
<td>1U and 2U rackmount OCTEON servers with Reg-ex and TCP acceleration</td>
</tr>
<tr>
<td>Portwell</td>
<td><a href="http://www.portwell.com">www.portwell.com</a></td>
<td>Worldwide supplier of speciality computing</td>
<td>OCTEON server with configurable I/O mode</td>
</tr>
</tbody>
</table>
# Ecosystem Partners

## Ecosystem Partners (con’t) *

<table>
<thead>
<tr>
<th>Complementary Silicon</th>
<th>Website</th>
<th>About</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>Entropic</td>
<td><a href="http://www.entropic.com">www.entropic.com</a></td>
<td>Connected home entertainment</td>
<td>Reference design with CN3120 and MoCA</td>
</tr>
<tr>
<td>ICPlus</td>
<td><a href="http://www.icplus.com.tw">www.icplus.com.tw</a></td>
<td>IC Plus Corp. is a leading SoC manufacturer in Taiwan that focuses on Giga Ethernet Receiver and Transceiver ICs</td>
<td>Switch/PHY</td>
</tr>
<tr>
<td>Imagia</td>
<td><a href="http://www.imagiatek.com">www.imagiatek.com</a></td>
<td>Imagia Technologies Co is a leading media codec provider for the IP surveillance camera industry</td>
<td>MPEG4/H.264 Codec</td>
</tr>
<tr>
<td>Intellon</td>
<td><a href="http://www.intellon.com">www.intellon.com</a></td>
<td>Intellon is a leader in powerline, HomePlug, communications ICs</td>
<td>HomePlug</td>
</tr>
<tr>
<td>JMicron</td>
<td><a href="http://www.jmicron.com.tw">www.jmicron.com.tw</a></td>
<td>JMicron Technology Corporation is a leading provider of SATA, USB, and Ethernet PHY ICs</td>
<td>WSata Controller/PHY</td>
</tr>
<tr>
<td>Legerity</td>
<td><a href="http://www.legerity.com">www.legerity.com</a></td>
<td>SLICS for adding VoIP functionality in CN31XX and CN30XX</td>
<td>SLICS used in VoIP ref. design</td>
</tr>
<tr>
<td>Metalink</td>
<td><a href="http://www.mtlk.com">www.mtlk.com</a></td>
<td>Metalink Ltd. is a leading provider of high performance wireless and wireline broadband communication silicon solutions</td>
<td>Wireless LAN 802.11a/b/g/Draft-N</td>
</tr>
<tr>
<td>Metanoia</td>
<td><a href="http://www.metanoia-comm.com">www.metanoia-comm.com</a></td>
<td>Metanoia Communications Inc delivers integrated semiconductor and software solutions for VDSL2</td>
<td>VDSL2 Modem</td>
</tr>
<tr>
<td>Phoenics Electronics</td>
<td><a href="http://www.phoenicselectronics.com">www.phoenicselectronics.com</a></td>
<td>Phoenics Electronics, Micron’s RLDRAM Distributor</td>
<td>Special RLDRAM pricing</td>
</tr>
<tr>
<td>PLX Technology</td>
<td><a href="http://www.plxtech.com">www.plxtech.com</a></td>
<td>Leading global supplier of PCI Express I/O Silicon</td>
<td>PCIe Switches and Bridges plus Software</td>
</tr>
<tr>
<td>Si Labs</td>
<td><a href="http://www.silabs.com">www.silabs.com</a></td>
<td>SLICS for adding VoIP functionality in CN31XX and CN30XX</td>
<td>SLICS used in VoIP reference design</td>
</tr>
<tr>
<td>Teknovus</td>
<td><a href="http://www.teknovus.com">www.teknovus.com</a></td>
<td>Leading supplier of GEPON chipsets</td>
<td>Joint GEPON reference design</td>
</tr>
<tr>
<td>Vitesse</td>
<td><a href="http://www.vitesse.com">www.vitesse.com</a></td>
<td>Vitesse is an industry leader in Gigabit Ethernet LAN, Ethernet-over-SONET, Advanced Switching, Fibre Channel, Serial Attached SCSI (SAS), Optical Transport and other applications</td>
<td>GbE Switch / PHY</td>
</tr>
</tbody>
</table>
## Ecosystem Partners

### Ecosystem Partners (cont’d) *

<table>
<thead>
<tr>
<th>CPE Gateways and Home Appliances</th>
<th>Website</th>
<th>About</th>
<th>Description</th>
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<tbody>
<tr>
<td>ASUSTeK</td>
<td><a href="http://www.asus.com">www.asus.com</a></td>
<td>The trustworthy partner for the long-term</td>
<td>OCTEON-based SME gateways</td>
</tr>
<tr>
<td>CyberTAN</td>
<td><a href="http://www.cybertantech.com">www.cybertantech.com</a></td>
<td>Bringing broadband to life</td>
<td>Dual-band 802.11n AP/gateway</td>
</tr>
<tr>
<td>NetKlass</td>
<td><a href="http://www.netklass.com">www.netklass.com</a></td>
<td>Intelligent Internet Device Research</td>
<td>OCTEON-based SOHO gateways</td>
</tr>
<tr>
<td>SerComm</td>
<td><a href="http://www.sercomm.com">www.sercomm.com</a></td>
<td>Worldwide leading manufacturer of broadband and wireless networking equipment</td>
<td>OCTEON-based SOHO gateways</td>
</tr>
<tr>
<td>Wistron NeWeb Corp</td>
<td><a href="http://www.wneweb.com.tw">www.wneweb.com.tw</a></td>
<td>Design and manufacturing house specializing in advanced communication</td>
<td>OCTEON WLAN controllers and switches for SOHO and SMB</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>AMC and ATCA Cards</th>
<th>Website</th>
<th>About</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>Avonaco</td>
<td><a href="http://www.avonaco.com">www.avonaco.com</a></td>
<td>Next generation broadband wireline and wireless voice and video services</td>
<td>MicroTCA Carrier Hub</td>
</tr>
<tr>
<td>CCPU Continuous Computing</td>
<td><a href="http://www.ccpu.com">www.ccpu.com</a></td>
<td>Solutions comprised of telecom platforms and Trillium software</td>
<td>Trillium LTE Software</td>
</tr>
<tr>
<td>Emerson</td>
<td><a href="http://www.emersonnetworkpower.com">www.emersonnetworkpower.com</a></td>
<td>Leader in enabling Business-Critical Continuity</td>
<td>Dual OCTEON ATCA blade</td>
</tr>
<tr>
<td>GE Fanuc Intelligent Platforms</td>
<td><a href="http://www.gefanuc.com">www.gefanuc.com</a></td>
<td>Provider of AMC, PCI-X, ATCA cards and MicroTCA platforms</td>
<td>OCTEON-based AMC, PCI-X and ATCA cards</td>
</tr>
<tr>
<td>Interphase</td>
<td><a href="http://www.iphase.com">www.iphase.com</a></td>
<td>Network solutions for the telecommunications server market</td>
<td>OCTEON-based AMC card</td>
</tr>
<tr>
<td>LANBIRD</td>
<td><a href="http://www.lanbird.co.kr">www.lanbird.co.kr</a></td>
<td>AdvancedTCA solutions and first choice company</td>
<td>Dual OCTEON ATCA blade</td>
</tr>
<tr>
<td>Nari Networks</td>
<td><a href="http://www.narinet.com">www.narinet.com</a></td>
<td>Trusted provider of packet processing and storage solutions</td>
<td>OCTEON based ATCA cards</td>
</tr>
<tr>
<td>RadiSys</td>
<td><a href="http://www.radisys.com">www.radisys.com</a></td>
<td>Leading provider of advanced embedded solutions</td>
<td>OCTEON-based ATCA and AMC solutions</td>
</tr>
<tr>
<td>VadaTech</td>
<td><a href="http://www.vadatech.com">www.vadatech.com</a></td>
<td>Leading provider of AMC &amp; custom boards</td>
<td>Quad Port GbE and Dual Port 10-GbE AMC Packet Processors</td>
</tr>
</tbody>
</table>

* For other Ecosystem areas under planning, please contact marketing@caviumnetworks.com.
Cavium Product Ordering Codes

Cavium Networks product ordering codes are organized as follows.

Processor Part Numbers

![Processor Part Numbers Diagram]

Example: CN3850-500-BG1521-NSP-G represents Cavium Networks, OCTEON, 2x (4x GE or 1x SPI-4.2), 12 cores, 500 MHz, Ball Grid Array 1521 balls, Network Services Processor, ROHS6.

<table>
<thead>
<tr>
<th>Processor Family</th>
<th>Ordering Options</th>
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<tr>
<td>NITROX Lite</td>
<td>1 or absent for 5XX</td>
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<tr>
<td>NITROX</td>
<td>1</td>
</tr>
<tr>
<td>NITROX PX</td>
<td>1</td>
</tr>
<tr>
<td>NITROX II</td>
<td>2</td>
</tr>
<tr>
<td>OCTEON</td>
<td>3</td>
</tr>
<tr>
<td>OCTEON Plus</td>
<td>5</td>
</tr>
<tr>
<td>ECONA</td>
<td>S1, S2</td>
</tr>
<tr>
<td>PureVu</td>
<td>W3</td>
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<tr>
<th>Sub-Family</th>
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<tr>
<td>NITROX Lite</td>
<td>0, 5</td>
</tr>
<tr>
<td>NITROX</td>
<td>1, 2, 3</td>
</tr>
<tr>
<td>NITROX PX</td>
<td>5, 6</td>
</tr>
<tr>
<td>NITROX II</td>
<td>1, 2, 3, 4, 5</td>
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<tr>
<td>OCTEON</td>
<td>0, 1, 6, 8</td>
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<tr>
<td>OCTEON Plus</td>
<td>0, 2, 4, 5, 6, 7, 8</td>
</tr>
<tr>
<td>ECONA</td>
<td>1, 2</td>
</tr>
<tr>
<td>PureVu</td>
<td>1, 5, 6</td>
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<table>
<thead>
<tr>
<th>Frequency (MHz)</th>
<th>Ordering Options</th>
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<tbody>
<tr>
<td>ECONA</td>
<td>200, 250</td>
</tr>
<tr>
<td>NITROX Lite</td>
<td>183, 350</td>
</tr>
<tr>
<td>NITROX PX</td>
<td>350, 400 (PX)</td>
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<tr>
<td>NITROX II</td>
<td>350, 400 (CN1620/CN1520 only)</td>
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<tr>
<td>OCTEON</td>
<td>300, 400, 500, 550, 600</td>
</tr>
<tr>
<td>OCTEON Plus</td>
<td>300, 400, 500LP, 600LP, 600, 700, 750, 800, 900</td>
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<tr>
<td>PureVu</td>
<td>133, 266</td>
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<table>
<thead>
<tr>
<th>Package and Pin Count</th>
<th>Ordering Options</th>
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<tbody>
<tr>
<td>NITROX Lite</td>
<td>LQ128, BG256</td>
</tr>
<tr>
<td>NITROX</td>
<td>BG256, BG600</td>
</tr>
<tr>
<td>NITROX PX</td>
<td>BG233, BG256</td>
</tr>
<tr>
<td>NITROX II</td>
<td>BG1096</td>
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<tr>
<td>OCTEON</td>
<td>BG564, BG868, BG1521</td>
</tr>
<tr>
<td>OCTEON Plus</td>
<td>BG564, BG729, BG1217, BG1521</td>
</tr>
<tr>
<td>ECONA</td>
<td>BG257, BG269, BG304, FP128, FP208</td>
</tr>
<tr>
<td>PureVu</td>
<td>BG676</td>
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<tr>
<th>Grade Option</th>
<th>Ordering Options</th>
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<tr>
<td>Not applicable to all parts</td>
<td>1 for Industrial temperature</td>
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<table>
<thead>
<tr>
<th>Feature Option</th>
<th>Ordering Options</th>
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<tbody>
<tr>
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<tr>
<td>NITROX Lite</td>
<td>P, X</td>
</tr>
<tr>
<td>NITROX</td>
<td>P</td>
</tr>
<tr>
<td>NITROX PX</td>
<td>P</td>
</tr>
<tr>
<td>NITROX II</td>
<td>P</td>
</tr>
<tr>
<td>OCTEON</td>
<td>CP, SCP, EXP, NSP</td>
</tr>
<tr>
<td>OCTEON Plus</td>
<td>CP, SCP, EXP, NSP, SSP, SP</td>
</tr>
</tbody>
</table>
Cavium Product Ordering Codes

Cavium Networks product ordering codes are organized as follows.

**Accelerator Board Part Numbers**

```
CN X X X X - X X X - X X X - X X X X
```

- **Cavium Networks**
- **Processor Number**
  - See Processor Part Number description
- **Frequency**
- **Board Type**
  - Variable length
- **Feature Option**
  - Variable length
- **Special Option**
  - Variable length

Example: CN3860-500-NSP-NIC4 represents Cavium Networks, OCTEON 3830, 500 MHz, Network Services Processor, NIC4P board.

<table>
<thead>
<tr>
<th>Frequency (MHz)</th>
<th>Ordering Options</th>
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<tbody>
<tr>
<td>NITROX Lite</td>
<td>183, 300 (SV), 350 (3.3V)</td>
</tr>
<tr>
<td>NITROX</td>
<td>350</td>
</tr>
<tr>
<td>NITROX PX</td>
<td>350, 400 (CN1620/CN1520 only)</td>
</tr>
<tr>
<td>OCTEON</td>
<td>500, 600</td>
</tr>
<tr>
<td>OCTEON Plus</td>
<td>600, 800</td>
</tr>
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</table>

<table>
<thead>
<tr>
<th>Board Type</th>
<th>Ordering Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>NITROX Lite</td>
<td>NMB, NHB, NFB</td>
</tr>
<tr>
<td>NITROX</td>
<td>NHB, NPB, NFB</td>
</tr>
<tr>
<td>NITROX PX</td>
<td>NHB, NHB4</td>
</tr>
<tr>
<td>OCTEON</td>
<td>CPB, NIC4, NIC4P</td>
</tr>
<tr>
<td>OCTEON Plus</td>
<td>NIC4P2, NIC4P2NR, NIC4P2F, NIC4P2FNR</td>
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<table>
<thead>
<tr>
<th>Feature Option</th>
<th>Ordering Options</th>
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<tr>
<td>OCTEON</td>
<td>NSP</td>
</tr>
<tr>
<td>OCTEON Plus</td>
<td>NSP</td>
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</table>

<table>
<thead>
<tr>
<th>Special Option</th>
<th>Ordering Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>NITROX Lite</td>
<td>P, X, 5V</td>
</tr>
<tr>
<td>NITROX</td>
<td>P, DDR</td>
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<tr>
<td>NITROX PX</td>
<td>P, X</td>
</tr>
<tr>
<td>OCTEON</td>
<td>M, M2</td>
</tr>
<tr>
<td>OCTEON Plus</td>
<td>M2, M4</td>
</tr>
<tr>
<td>All parts</td>
<td>G (ROHS6)</td>
</tr>
</tbody>
</table>
Cavium Networks Resources

**Cavium Networks’ Website**
- www.caviumnetworks.com

**Cavium Networks’ Sales and Distributors**
- www.caviumnetworks.com/sales.html

**Cavium Networks’ Technical Support**
- www.caviumnetworks.com/support.html
<table>
<thead>
<tr>
<th>Location</th>
<th>Address</th>
<th>Phone</th>
<th>Fax</th>
<th>Email</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Headquarters</strong></td>
<td>Cavium Networks</td>
<td></td>
<td></td>
<td><a href="mailto:sales@caviumnetworks.com">sales@caviumnetworks.com</a></td>
</tr>
<tr>
<td></td>
<td>805. E. Middlefield Rd.</td>
<td>Tel: +1-650-623-7000</td>
<td>Fax: +1-650-625-9751</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Mountain View, CA 94043 USA</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Japan Office</strong></td>
<td>Cavium Networks</td>
<td>Phone: +81-3-4360-8300</td>
<td>Fax: +81-3-4360-8201</td>
<td><a href="mailto:sales@caviumnetworks.com">sales@caviumnetworks.com</a></td>
</tr>
<tr>
<td></td>
<td>ARK Mori Building West 12F, Suite# 37</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1-12-32 Akasaka, Minato-ku</td>
<td>Tokyo 107-6012</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Taiwan Office</strong></td>
<td>Cavium Networks</td>
<td>Phone: +886-2-2627-1125</td>
<td>Fax: +886-2-2627-1167</td>
<td><a href="mailto:sales@caviumnetworks.com">sales@caviumnetworks.com</a></td>
</tr>
<tr>
<td></td>
<td>Connected Home &amp; Office Group</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>4F, No.52, Lane 10</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Kee Hu Road, Nei Hu</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Taipei, 11492, Taiwan R.O.C.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>China Office</strong></td>
<td>Cavium Networks</td>
<td>Phone: +86-2-2627-1125</td>
<td>Fax: +86-2-2627-1167</td>
<td><a href="mailto:sales@caviumnetworks.com">sales@caviumnetworks.com</a></td>
</tr>
<tr>
<td></td>
<td>PUFFA TOWER No. 588,</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Pudong Rd. (5), Pudong New Area,</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Shanghai, China</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Europe Office</strong></td>
<td>Cavium Networks</td>
<td>Phone: +44-20-7027-3000</td>
<td>Fax: +44-20-7027-3001</td>
<td><a href="mailto:sales@caviumnetworks.com">sales@caviumnetworks.com</a></td>
</tr>
<tr>
<td></td>
<td>20-22 Beford Row, London</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>WC1R4JS</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Taiwan Office</strong></td>
<td>Cavium Networks</td>
<td>Phone: +886-3-567-9225</td>
<td>Fax: +886-3-567-9225</td>
<td><a href="mailto:sales@caviumnetworks.com">sales@caviumnetworks.com</a></td>
</tr>
<tr>
<td></td>
<td>Connected Home &amp; Office Group</td>
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</tr>
<tr>
<td></td>
<td>4F, No.1, Chin-Shan 8th St.</td>
<td></td>
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</tr>
<tr>
<td></td>
<td>Hsin-Chu 30080, Taiwan R.O.C.</td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

For Cavium Networks’ Representative and Distributor listings visit our website at www.caviumnetworks.com