

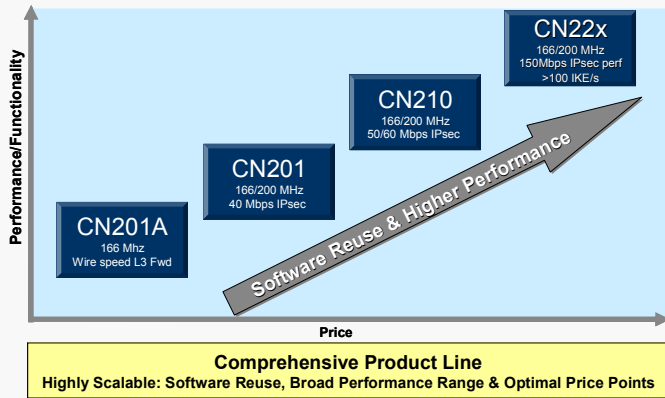
# NITROX™ Soho CN201 & CN210

## Secure Communication Processor

### Product Brief

#### NITROX Soho CN201 & CN210 DESCRIPTION

The NITROX Soho CN201 & CN210 belongs to a full family of Secure Communication Processors™ designed to meet the packet processing performance requirements of a wide range of SOHO and Small and Medium-size Business (SME) secure gateways.



As shown on the right, the NITROX Soho is a highly integrated system on a chip, designed for simplicity of design and economical network solutions. The NITROX Soho CN201 & CN210 include a powerful MIPS32 processor, integrated interfaces: Ethernet MACs, PCI and External Local Bus and a IPsec VPN security engine.

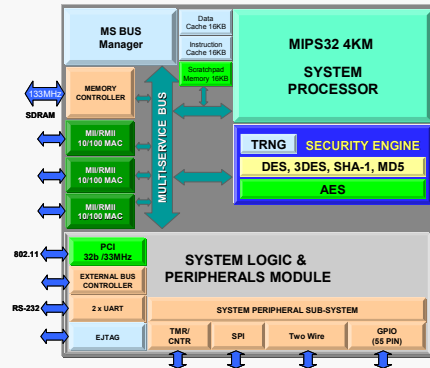
The NITROX Soho CN201 & CN210 have a unique system architecture that provides wire speed performance. This architecture includes a 4.25 Gbps bus, 16KB cache (I/D and Scratchpad), and intelligent context aware DMA engines. The on-chip IPsec engine supports ESP, HMAC, 3DES and AES providing a complete solution for VPN/Firewall and Secure Broadband Gateway designs.

Cavium Networks enables fast time to market with the NITROX Soho CDK, a Development Kit that includes a development system board and support for Linux and VxWorks.

#### PRODUCT FEATURES & BENEFITS

The CN201 & CN210 Secure Communication Processor offers the following advantages:

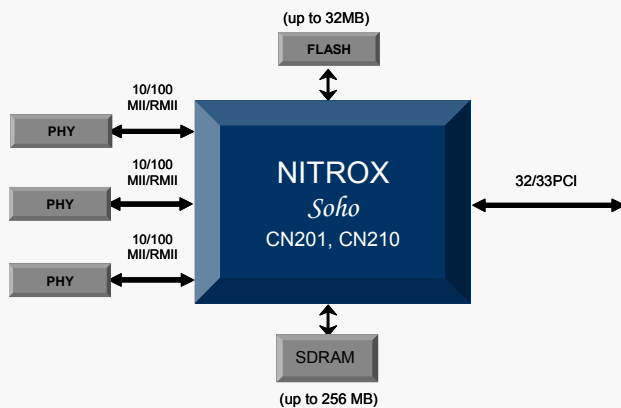
- Industry leading price/performance for VPN & firewall applications
- On-board scratchpad memory for improved routing and NAT performance
- High performance on-chip IPsec engine
- Small footprint solution through the integration of multiple processors and interfaces on a single chip
- Low power solution
- Versatile PCI & ELB Buses provide seamless integration to current & upcoming 802.11 chipsets
- ICSA and VPNc certification ready
- Integrated True Random Number Generator
- Enables FIPS 140-2 compliance
- Available in lead-free package



#### Sample Applications for the CN201 & CN210:

- High Performance SOHO/ SME IPsec and SSL VPN, NAT/Firewall Broadband Gateways
- Wireless Secure Gateways
- Secure Ethernet-Ethernet Routers
- Wireless Access Points

#### Example CN201 & CN210 VPN/FW Broadband Router



#### Example CN201 & CN210 Wireless VPN Gateway



## APPLICATIONS

### SOHO and Small to Medium Enterprise

- SSL / IPSec VPN Gateways
- Remote Access Gateways, Residential Gateways
- Broadband Routers

### Network Access

- DSL Modems, Cable Modems
- Switches, Routers

### Wireless LAN / WAN

- 802.11 Gateways (supports AES acceleration and 802.11i security protocols)
- Wireless LAN NICs

## BENEFITS TO DESIGNERS

### Reduced system cost and complexity

- Single chip high performing solution with low power and small footprint

### Quick time to market with complete solution

- Evaluation board, processor, software
- Software driver and application

### Highly Scaleable solution with NITROX *Sofio* Family

- Common MIPS32 4Km Processor, API and Footprint

## PRODUCT SUMMARY

### System Processor

- High performance MIPS32 4Km processor at 166 & 200 MHz
- 16 KB instruction cache
- 16 KB data cache
- 16 KB Scratchpad

### System Control

- Four interrupt inputs
- 55 GPIOs
- MIPS timer, 2 system timers, and watchdog timer
- Block copy engine

### Security Engine

- IPSec Hardware accelerator for ESP-HMAC
- AES, DES, 3DES encryption
- SHA-1, MD-5 authentication
- 32 Bit true random number generator
- IPSec compliant

### LAN Interface

- 3 x MII/RMII 10/100 Ethernet MACs
- VLAN support

### Memory Controller

- Glueless interface for up to 256 MB of SDRAM
- Glueless interface for up to 32 MB of flash

### High-Performance Buses

- 32-bit, 33MHz PCI (PCI V2.1 & V2.2 compatible)
- Flexible external local bus interface (up to 25 MBps data throughput)

## PRODUCT SUMMARY

### High Speed Internal Bus

- Peak bandwidth of 4.25 Gbps
- True parallel processing

### Electrical

- 276 pin PBGA
- Vcc 3.3V I/O, 1.8V core
- Power consumption 1.7W

### Miscellaneous Interfaces

- 2 UARTs
- SPI/MPI
- Two-wire serial

### Software

- APIs: MACs, Security engine, and Block Copy
- Board support package
- 802.11 Drivers

### Development Tools

- Support for Linux and VxWorks
- Evaluation boards
- Cavium Networks Development Kit
- Third party tool chains

### Third Party Support

- Security Applications
- INTOTO - iGateway™
- EJTAG Debuggers
- EPI - MAJIC® probe
- WindRiver® - visionICE II

## Ordering Information

| Part Number    | System Interfaces                | Package  | IPSec VPN performance |
|----------------|----------------------------------|----------|-----------------------|
| CN210-200BG276 | PCI 32bit 33MHz,<br>3 x RMII/MII | 276 PBGA | >60Mbps               |
| CN210-166BG276 | PCI 32bit 33MHz,<br>3 x RMII/MII | 276 PBGA | >50Mbps               |
| CN201-200BG276 | PCI 32bit 33MHz,<br>3 x RMII/MII | 276 PBGA | >40Mbps               |
| CN201-166BG276 | PCI 32bit 33MHz,<br>3 x RMII/MII | 276 PBGA | >30Mbps               |