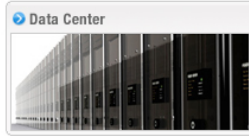> **Products**

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- **NITROX Processors**
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NITROX® Security Processors

Server XL Boards

Security Appliance

Data Center

Enterprise Firewall VPNs

Cavium award winning NITROX families of security processors offer solutions delivering 50 Mbps to 40Gbps of encryption bandwidth with 1K to 200K RSA/DH operations per second. Cavium highly integrated, feature rich NITROX families of Security Processors deliver unprecedented performance in wired and wireless network security applications and SSL based secure e-Business while significantly reducing the cost and complexity of deployment.

Click below for more information about

- NITROX III
- NITROX PX
- NITROX Lite Processors
- NITROX II Processors

Related Links

- Certicom Press Release
- NITROX PX XL Press Release

Security Processors	Typical Performance			
	SSL Processing	**IPsec Processing**	**DH (180 bit)**	**RSA OPS (1024 bit)**
NITROX III	5 Gbps - 40 Gbps	5 Gbps - 40 Gbps	35K - 200K	35K - 200K
NITROX PX	500 Mbps - 2.5 Gbps	500 Mbps - 2.5 Gbps	6.5K - 27K	4K - 17K
NITROX Lite	100 Mbps - 1 Gbps	100 Mbps - 1 Gbps	1K - 12K	1K - 7K
NITROX II	2 Gbps – 10 Gbps	2 Gbps – 10 Gbps	Up to 60K	10K - 40K

This product includes cryptographic software written by Eric Young (eay@cryptsoft.com)
This product includes software written by Tim Hudson (tjh@cryptsoft.com)

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NITROX® III SECURITY PROCESSOR FAMILY

The Cavium Networks NITROX III Security Processor family is fully compatible with the market leading NITROX Security Processor product line. These new NITROX III processors combine:

1. The industry's highest performance cryptographic acceleration with the latest security algorithms
2. Industry leading GZIP & LZS compression
3. Virtualization support

To provide an ideal platform for the next-generation of security applications.

NITROX III products are software compatible with the Cavium NITROX PX and NITROX Lite family of security processors.

NITROX III processors are highly scaleable and deliver performance ranging from 5 Gbps to 40 Gbps for full IPsec protocol or SSL offload, 1024bit exponent RSA from 35K to 200K RSA operations per second, and 2048bit exponent RSA up to 35K RSA operations per second enabling an optimal solution for applications such as:

- Application Delivery Controller (ADC)
- WAN Optimization
- Cloud Computing
- Server Offload - Web, Mail, Search
- Integrated VPN/Firewall appliances
- UTM Gateway, Routers
- Load Balancers/L4+ Switches
- Wireless LAN and WAN equipment
- Security Telco gateways
- SAN appliances
- 3G & 4G/LTE infrastructure equipment

For applications requiring 2.5 Gbps or below see our software compatible NITROX PX family.

Related Links
- Security processors handle up to 40 Gbits/s
- Press Release
- NITROX III Product Brief

Device	Data Interface	Local Memory for SA or Context	Max RSA 1024-bit Exponent	RSA 2048bit Exponent	Performance Inline full IPsec Processing Throughput Mbps (w/AES +SHA2)	Full SSL Record Throughput Mbps	Compression
NITROX III PCI-Express CNN35XX- PCIe Look-aside Processor - Crypto, Compression & Virtualization							
CNN3510-500-C5		No	35K	6K	5Gbps	5Gbps	5Gbps
CNN3530-500-C10	PCI Express Gen 2 x4, x8 or x16	No	75K	13K	10Gbps	10Gbps	10Gbps
CNN3550-500-C20		No	136K	24K	20Gbps	20Gbps	20Gbps
CNN3550-C20		No	200K	35K	30Gbps	30Gbps	20Gbps

Note: Standalone Security and Compression options are available for some SKUs

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NITROX® PX SECURITY PROCESSOR FAMILY

The Cavium NITROX PX Security Processor family is fully compatible with the market leading NITROX Security Processor product line. The NITROX PX processors combine cryptographic acceleration with the latest security algorithms providing an ideal platform for the next-generation of security applications. The NITROX PX family includes two variations:

1. CN16XX family with PCI-Express interface
2. CN15XX family with PCI-X interface support

NITROX PX products are software compatible with the Cavium NITROX III and NITROX Lite family of security processors.

Additionally, the CN15XX family is hardware compatible with the NITROX Lite CN10XX Product Family.

NITROX PX processors are highly scaleable and deliver performance ranging from 500Mbps to 2.5 Gbps for full IPsec protocol or SSL offload, 1024bit exponent RSA from 4K to 17K RSA operations per second, enabling an optimal solution for applications such as:

- Application Delivery Controller (ADC)
- WAN Optimization
- SSL, Compression, Virtualization
- Server Offload - Web, Mail, Search
- Integrated VPN/Firewall appliances
- UTM Gateway, Routers
- Load Balancers/L4+ Switches
- Wireless LAN and WAN equipment
- Security Telco gateways
- SAN appliances
- 3G & 4G/LTE infrastructure equipment

For applications requiring 5 Gbps to 40 Gbps or that also need compression or virtualization support see our NITROX III family.

Related Links

- NITROX PX Product Brief

					Performance			
Device	IPsec (i) SSL (s) MultiService (p) support	Data Interface	Control Interface or alternate data path	Local DDR2 for SA or Context	Max RSA 1024-bit Exponent	Max DH 180-bit Exponent with 1024bit Mod	Inline full IPsec Processing Throughput Mbps (w/AES +SHA1)	Full SSL Record Throughput Mbps (w/AES +MD5)
NITROX PX CN15XX - PCI -X Look-aside Processor								
CN1505	i,s,w or p	PCI-X 64bit/133 MHz	PCI-X 64bit/133 MHz	No	4K	6.5K	500 Mbps	500 Mbps
CN1510	i,s,w or p			No	8K	13K	1.0 Gbps	1.0 Gbps
CN1515	i,s,w or p			No	13K	20K	1.5 Gbps	1.5 Gbps
CN1520	i,s,w or p			No	17K	27K	2.5 Gbps	2.5 Gbps
NITROX PX PCI-Express CN16XX - PCIe Look-aside Processor								
CN1605	i,s,w or p	PCI Express x4	PCI Express x4	No	4K	6.5K	500 Mbps	500 Mbps
CN1610	i,s,w or p			No	8K	13K	1.0 Gbps	1.0 Gbps
CN1615	i,s,w or p			No	13K	20K	1.5 Gbps	1.5 Gbps
CN1620	i,s,w or p			No	17K	27K	2.5 Gbps	2.5 Gbps

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NITROX® Lite

The NITROX Lite Security Processor targets cost sensitive applications in the Soho and SME market segments. The NITROX Lite custom designed processor provides lowest area, cost and power consumption when compared to ASIC based security chips. At the heart of NITROX Lite are multiple micro-programmed GigaCipher cores, which allow for future upgrades and flexibility in supporting all cryptographic operations and protocol layer functions. This family provides 50Mbps to 1 Gbps of IPsec throughput and 1-7K RSA Ops.

NITROX Lite is the only processor that has the capability to process high-level IPsec and IKE, IPv6, SSL and Wireless LAN security protocol macro commands that reduce the host I/O traffic and dramatically offload the system processor to increase the total system throughput. The NITROX Lite SDK includes an evaluation board with modified KAME, Free S/WAN or OpenSSL stacks using Cavium Network's TurboIPsec/SSL Macro APIs and software drivers for Linux, BSD and VxWorks.

Related Links

- 📄 CN501 Product Brief
- 📄 CN505 Product Brief
- 📄 Nitrox Lite IPsec Product Brief
- 📄 Nitrox Lite SSL Product Brief
- 📄 Mini-PCI Board Product Brief

Device	IPsec (i) SSL (i) Wireless (w) Multiservice (p) support	Interface	Package	Performance			
				Max RSA 1024-bit Exponent with CRT	MaxDH 180-bit Exponent with 1024 bit Mod	Full IPsec or Wireless Packet Processing (w/AES/3Des) Mbps	Full SSL Record Throughput (w/RC4+MD5) Mbps
NITROX *Lite*							
CN505	i,s,w or p	PCI 32 bit/66MHz	LQFP128	1750	3000	200	200
CN1001	i,s or w	PCI 32bit / 64bit 66MHz	BGA 256	1750	3000	200	200
CN1005	i,s,w or p	PCI-X 64/133 MHz (-X)	BGA 256	3500	6000	400	400
CN1010	i,s,w or p		BGA 256	7000	12000	1000	1000

For new designs, we recommend using the NITROX PX (for 2.5Gbps or below) or NITROX III (for 5 to 40Gbps) Security Processors.

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NITROX® II

The NITROX II Security Processor targets in-line, multi-gigabit performance applications in the Enterprise Edge and Data Center market segments. The NITROX II custom designed processor provides lowest area, cost and power consumption when compared to ASIC based security chips. At the heart of NITROX II are multiple micro-programmed GigaCipher cores, which allow for future upgrades and flexibility in supporting all cryptographic operations and protocol layer functions. NITROX II also has highly flexible interfaces including SPI-4.2, SPI-3 and PCI-X. This family provides 2 Gbps to 10 Gbps of IPsec throughput and 10 - 40K RSA Ops.

NITROX II is the only in-line security processor that has the capability to process high-level IPsec and IKE, IPv6, SSL and Wireless LAN security protocol macro commands that dramatically offload the CPU or NPU to increase the total system throughput. The NITROX II SDK includes an evaluation board with modified KAME, Free S/WAN or OpenSSL stacks using Cavium Network's TurboIPsec/SSL Macro APIs and software drivers for Linux, BSD and VxWorks.

Related Links

- NITROX II IPsec Product Brief
- NITROX II SSL Product Brief

Device	IPsec (i) SSL (s) MultiService (p) support	Interface	Control Interface or alternate data path	Performance			
				Max RSA 1024-bit Exponent	Max DH 180-bit Exponent with 1024bit Mod	Inline full IPsec Processing inbound look-Storage, L2 handling etc.	Full SSL Record Throughput Mbps MD5
NITROX II – Inline Processor							
CN2130*	i,s or p	1xSPI-3		10K	18K	3Gbps	3Gbps
CN2230	i,s or p	2xSPI-3		10K	18K	3Gbps	3Gbps
CN2240*	i,s or p			20K	36K	6Gbps	6Gbps
CN2330	i,s or p	1xSPI-3 and 1xSPI-4.2	PCI-X 64/133	10K	18K	3Gbps	3Gbps
CN2340*	i,s or p			20K	36K	6Gbps	6Gbps
CN2450*	i,s or p	1xSPI-4.2		30K	50K	10Gbps	10Gbps
CN2530	i,s or p	2xSPI-4.2		10K	18K	3Gbps	3Gbps
CN2560*	i,s or p			40K	60K	10Gbps	10Gbps

For new designs, we recommend using the NITROX PX (for 2.5Gbps or below) or NITROX III (for 5 to 40Gbps) Security Processors.