

# SENETAS CN SERIES HIGH-ASSURANCE ENCRYPTORS

## FEATURES AND SPECIFICATION GUIDE



### WHO SHOULD READ THIS DOCUMENT

#### Service Providers

System Integrators, Cloud and Data Centre Services, Data Security Specialists, Telecommunications, Managed Services, Data Storage, CCTV and other Value-Add Resellers.

#### Customers

Layer 2 Carrier Ethernet Data Networks Managers, Network Architects, Network Engineers, Data Security Professionals, Chief Information Officers, Chief Information Security Officers and IT Procurement Staff.



### KEYWORDS

High-Assurance Network Data Encryption, Layer 2 Data Networks, Network Encryption Hardware, Carrier Ethernet Networks, Fibre Network Security, High-Speed Networks, Network Data Security, ADVA Optical Networks, Avaya Networks, Encryption Security, Network Encryption, Certified Encryption, Fibre Channel Encryptors, 10Mbps, 100Mbps, 1Gbps, 10Gbps, 100Gbps Data Encryptors, High-Speed Encryption, Cloud, CCTV, Big Data, SCADA Network Security.

# An Introduction to Senetas Certified High-Assurance CN Series Carrier Ethernet WAN and MAN Encryptors

According to the Gemalto Breach Level Index, an average of 4.5 million data records are lost or stolen every day.

Recent increases in high-profile data breaches and the emergence of new, tougher, data protection legislation have brought the need to encrypt data in motion to everyone's attention.

However, Senetas encryptors have been used to secure much of the world's most sensitive data for more than 20 years.

Senetas high-assurance encryptors are certified by the leading independent certification authorities (Common Criteria, FIPS and NATO) as suitable for government and defence use.

They are trusted to protect network transmitted data in more than 35 countries. Applications include: Cloud and data centre services; government information and secrets; commercially sensitive data, intellectual property, defence and military information, business and financial data, banking transactions, CCTV networks and more.

Not all encryption is the same, Truly robust network data encryption solutions feature high-assurance credentials, are independently certified and are crypto-agile by design.

## HIGH-ASSURANCE

High-assurance network data encryption features four key elements:

### Dedicated encryption hardware

Secure, tamper-proof hardware, dedicated to encryption only.

### State-of-the-art encryption key management

Encryption keys themselves should be encrypted, stored in a secure device and only accessible to the customer; regardless of data and key storage methods.

### Authenticated, end-to-end data encryption

The encryption process must start and end behind the network itself, to ensure that no unencrypted data is exposed during transit.

### Standards-based encryption

The encryption model must be based on validated standards (e.g. AES256) and the encryption process must include authentication.

## MULTI-CERTIFIED

Independent security certification provides government and non-government customers alike with full confidence in their chosen solution. Senetas CN Series encryptors are certified by multiple testing authorities as suitable for government and defence use.

- > FIPS 140-2 level 3
- > Common Criteria EAL 2+/4+
- > NATO Restricted Green

As governments typically mandate the use of certified security solutions, commercial organisations seeking to work with them must meet the same exacting standards.

## CRYPTO-AGILE

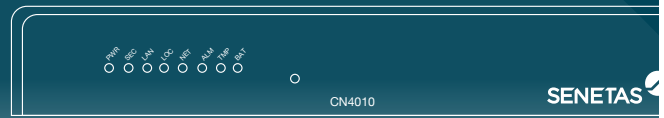
Cryptographic protocols and algorithms evolve over time to counter new security threats. That's why Senetas encryptors are designed to be "crypto-agile" out of the box. They provide extra assurance that your investment keeps pace with cryptographic advances.

Key components of agility include support for:

- > AES 128 and 256bit algorithms
- > Custom curves and BYO entropy
- > Quantum Key Distribution (QKD)
- > CFB, CTR and GCM encryption modes

## CN4000 SERIES ENCRYPTORS

- > Compact, encrypt anywhere device
- > 10Mbps to 1Gbps Ethernet encryption



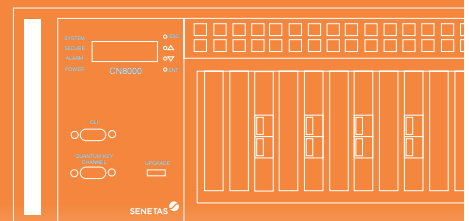
## CN6000 SERIES ENCRYPTORS

- > Rack mounted, carrier-grade device
- > 1GBps to 10Gbps Ethernet and Fibre Channel encryption



## CN8000 SERIES ENCRYPTORS

- > Rack mounted, multi-link, multi-port device
- > 10x 1-10Gbps Ethernet and Fibre Channel encryption



## CN9000 SERIES ENCRYPTORS

- > Supports big data applications across all topologies
- > Ultra-fast 100Gbps Ethernet encryption

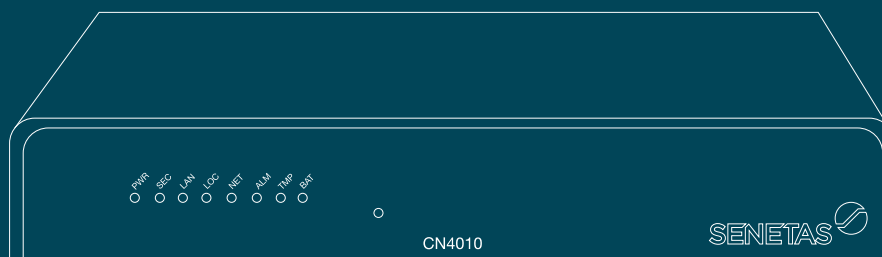


# THE SENETAS HIGH-ASSURANCE CN SERIES PLATFORM

- > High-Assurance
- > Multi-Certified
- > Crypto-Agile

# SENETAS CN4000 SERIES

**MULTI-CERTIFIED | HIGH-ASSURANCE | CRYPTO-AGILE**



Compact, Cost-Effective  
10Mbps-1 Gbps Encryption

Model	CN4010	CN4020
<b>Network Protocols Supported</b>	<b>ETHERNET</b>	<b>ETHERNET</b>
<b>Protocols and Connectivity</b>		
Ethernet all topologies	✓	✓
Physical encryption channels	1	1
Maximum speed	1Gbps	1Gbps
Link/rate limiting	✓	✓
Support for jumbo frames	✓	✓
Protocol and application transparent	✓	✓
Encrypts Unicast, Multicast and Broadcast traffic	✓	✓
Automatic network discovery and connection establishment	✓	✓
Network interfaces (optional SFP to RJ45 adapter available)	RJ45	SFP, SFP+
<b>Security</b>		
Tamper resistant and evident enclosure	✓	✓
Anti-probing barriers	✓	✓
Flexible encryption policy engine	✓	✓
Robust AES encryption algorithm	✓	✓
Per packet confidentiality and integrity with AES-GCM encryption	✓	✓
Automatic, zero-touch key management	✓	✓
Traffic flow analysis protection (TRANSEC)	✓	✓
<b>Encryption and Policy</b>		
AES 128 or 256bit keys	128/256	128/256
Policy based on MAC address or VLAN ID	✓	✓
Encryption modes	CFB, CTR, GCM	CFB, CTR, GCM
Self-healing key management	✓	✓

Model	CN4010	CN4020
Network Protocols Supported	ETHERNET	ETHERNET
<b>Certifications</b>		
Common Criteria	✓	✓
FIPS	✓	✓
NATO	✓	✓
<b>Performance</b>		
Low overhead full duplex line-rate encryption	✓	✓
FPGA based cut-through architecture	✓	✓
Ultra low latency for high performance	✓	✓
Latency (µs per encryptor) - microseconds	<10 @ 1Gbps <50 @ 100Mbps <650 @ 10Mbps	<10 @ 1Gbps <50 @ 100Mbps <650 @ 10Mbps
<b>Management</b>		
Central config. and management using CM7 and SNMPv3	✓	✓
SNMPv1/2 monitoring (read-only)	✓	✓
Certificate signing	RSA, EC	RSA, EC
Support for external (X.509v3) CAs	✓	✓
Remote management using SNMPv3 (inband and out-of-band)	✓	✓
NTP (time server) support	✓	✓
CRL and OCSP(certificat) server support	✓	✓
<b>Maintainability/ Interoperability</b>		
In-field firmware upgrades	✓	✓
Fan cooled	-	✓
Fully interoperable with all CN models	✓	✓
<b>Physical and Installation</b>		
Form factor (optional rack-mount kit available)	Desktop	Desktop
Physical dimensions (mm) W / D / H	180 / 126 / 32	180 / 126 / 32
Weight	500g	500g
Power source	AC plug pack	AC plug pack
Power input rating	9-15 VDC, 1.0 A at DC input 100-240 VAC, 0.7 at AC input	12 VDC, 1.0 A at DC input 100-240 VAC, 0.7 at AC input
Power consumption at highest data rate	6W at DC input 10W at AC input	7W at DC input 11W at AC input
<b>Environment, Regulatory and Safety</b>		
RoHS compliant	✓	✓
Maximum operating temperature	0-80% RH at 40°C	0-80% RH at 40°C
Safety standards	EN 60950-1 (CE) UL / IEC 60950-1 AS/NZS 60950.1	EN 60950-1 (CE) UL / IEC 60950-1 AS/NZS 60950.1
UL listed	✓	✓
FCC Part 15 / CISPR 32 / EN 55032 Emissions	Class B	Class B

# SENETAS CN6000 SERIES

**MULTI-CERTIFIED | HIGH-ASSURANCE | CRYPTO-AGILE**



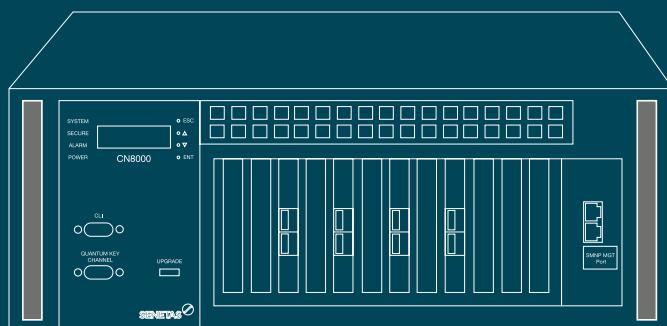
## Rack-Mounted, Carrier-Grade 1-10Gbps Encryption

Model	CN6010	CN6040		CN6100
Network Protocols Supported	ETHERNET	FIBRE CHANNEL	ETHERNET	ETHERNET
<b>Protocols and Connectivity</b>				
Network topologies	All	Point-to-Point	All	All
Maximum speed	1Gbps	4Gbps	1Gbps	10Gbps
Link/rate limiting	✓	✓	✓	✓
Support for jumbo frames	✓	-	✓	✓
Protocol and application transparent	✓	-	✓	✓
Encrypts Unicast, Multicast and Broadcast traffic	✓	-	✓	✓
Automatic network discovery and connection establishment	✓	-	✓	✓
Network interfaces	RJ45, SFP	SFP	RJ45, SFP	XFP
<b>Security</b>				
Tamper resistant and evident enclosure	✓	✓	✓	✓
Anti-probing barriers	✓	✓	✓	✓
Flexible encryption policy engine	✓	✓	✓	✓
Robust AES encryption algorithm	✓	✓	✓	✓
Per packet confidentiality and integrity with AES,GCM encryption	✓	✓	✓	✓
Automatic, zero-touch key management	✓	✓	✓	✓
Traffic flow security (TRANSEC)	✓	-	✓	✓
<b>Encryption and Policy</b>				
AES 128 or 256bit keys	128/256	256	128/256	128/256
Policy based on MAC address or VLAN ID	✓	-	✓	✓
Encryption modes	GCM, CFB, CTR	CFB	GCM, CFB, CTR	GCM, CFB, CTR
Self healing key management	✓	✓	✓	✓

Model	CN6010	CN6040		CN6100
Network Protocols Supported	ETHERNET	FIBRE CHANNEL	ETHERNET	ETHERNET
<b>Certifications</b>				
Common Criteria	✓	✓	✓	✓
FIPS	✓	✓	✓	✓
NATO	✓	✓	✓	✓
<b>Performance</b>				
Low overhead full duplex line-rate encryption	✓	✓	✓	✓
FPGA based cut-through architecture	✓	✓	✓	✓
Ultra low latency for high performance	✓	✓	✓	✓
Latency (µs per encryptor) - microseconds	< 10 @ 1Gbps < 5 @ 10Gbps < 650 @ 10Mbps	< 1	< 4 @ 1Gbps < 5 @ 10Gbps <650 @10Mbps	< 10
<b>Management</b>				
Config & management via CM7 and SNMPv3	✓	✓	✓	✓
SNMPv1/2 monitoring (read-only)	✓	✓	✓	✓
Certificate signing	RSA, EC	RSA, EC	RSA, EC	RSA, EC
Support for external (X.509v3) CAs	✓	✓	✓	✓
Remote management using SNMPv3 (in-band and out-of-band)	✓	✓	✓	✓
NTP (time server) support	✓	✓	✓	✓
CRL and OCSP (certificate) server support	✓	✓	✓	✓
<b>Maintainability/Interoperability</b>				
In-field firmware upgrades	✓	✓	✓	✓
Dual swappable AC and/or DC power supply	✓	✓	✓	✓
User replaceable fans and batteries	✓	✓	✓	✓
Fully interoperable with all CN models	✓	✓	✓	✓
<b>Physical and Installation</b>				
Form factor	1U rack mount	1U rack mount	1U rack mount	1U rack mount
Physical dimensions (mm) W / D / H	435/329/43	425/485/175	425/485/175	425/485/175
Weight	8.5g	8.5g	8.5g	8.5g
Power source	Mains	Mains	Mains	Mains
Power input rating	100-240V AC, 50/60 Hz, 1.5A or 40.5-60V DC, 2A	100-240V AC, 50/60 Hz, 1.5A or 40.5-60V DC, 2A	100-240V AC, 50/60 Hz, 1.5A or 40.5-60V DC, 2A	100-240V AC, 50/60 Hz, 1.5A or 40.5-60V DC, 2A
Power consumption at highest data rate	14W	38W	38W	50W
<b>Environment, Regulatory and Safety</b>				
RoHS compliant	✓	✓	✓	✓
Maximum operating temperature	0-80% RH at 50°C	0-80% RH at 50°C	0-80% RH at 50°C	0-80% RH at 50°C
Safety standards	EN 60950-1 (CE) UL / IEC 60950-1 AS/NZS 60950.1	EN 60950-1 (CE) UL / IEC 60950-1 AS/NZS 60950.1	EN 60950-1 (CE) UL / IEC 60950-1 AS/NZS 60950.1	EN 60950-1 (CE) UL / IEC 60950-1 AS/NZS 60950.1
UL listed	✓	✓	✓	✓
FCC Part 15 / CISPR 32 / EN 55032 Emissions	Class B	Class B	Class B	Class B

# SENETAS CN8000 SERIES

**MULTI-CERTIFIED | HIGH-ASSURANCE | CRYPTO-AGILE**



## Multi-Tenant, Multi-Link 10x 1-10Gbps Encryption

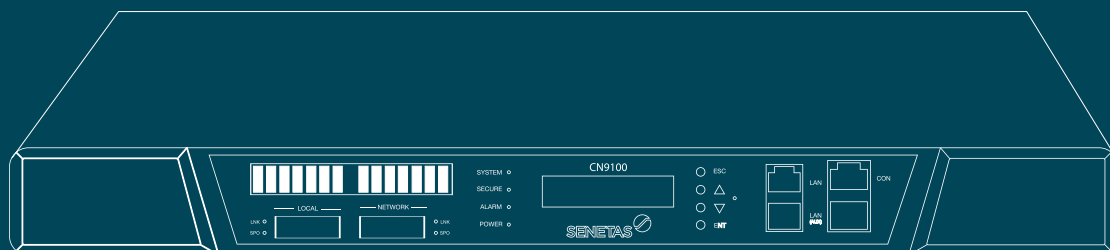
Model	CN8000	
	FIBRE CHANNEL	ETHERNET
<b>Network Protocols Supported</b>		
<b>Protocols and Connectivity</b>		
Network topologies	Point-to-Point	All
Physical encryption channels	Up to 10	Up to 10
Maximum speed	1, 2, 4, 8Gbps	10Gbps
Support for jumbo frames	-	✓
Protocol and application transparent	✓	✓
Encrypts Unicast, Multicast and Broadcast traffic	-	✓
Automatic network discovery and connection establishment	✓	✓
Network interfaces (optional SFP to RJ45 adapter available)	SFP, SFP+	SFP, SFP+
<b>Security</b>		
Tamper resistant and evident enclosure	✓	✓
Anti-probing barriers	✓	✓
Flexible encryption policy engine	✓	✓
Robust AES encryption algorithm	✓	✓
Per packet confidentiality and integrity with AES-GCM encryption	✓	✓
Automatic, zero-touch key management	✓	✓
<b>Encryption and Policy</b>		
AES 128 or 256 bit keys	256	128/256
Policy based on MAC address or VLAN ID	-	✓
Encryption modes	CFB	CFB, CTR, GCM
Self healing key management	✓	✓



Model	CN8000	
Network Protocols Supported	FIBRE CHANNEL	ETHERNET
<b>Certifications</b>		
Common Criteria	pending	pending
FIPS	✓	✓
<b>Performance</b>		
Low overhead full duplex line-rate encryption	✓	✓
FPGA based cut-through architecture	✓	✓
Ultra low latency for high performance	✓	✓
Latency (µs per encryption channel) - microseconds	< 1	< 10 @ 1Gbps < 5 @ 10Gbps
<b>Management</b>		
Central config. and management using CM7 and SNMPv3	✓	✓
SNMPv1/2 monitoring (read-only)	✓	✓
Certificate signing	RSA, EC	RSA, EC
Support for external (X.509v3) CAs	✓	✓
Remote management using SNMPv3 (in-band and out-of-band)	✓	✓
NTP (time server) support	✓	✓
CRL and OCSP (certificate) server support	✓	✓
<b>Maintainability/ Interoperability</b>		
In-field firmware upgrades	✓	✓
Dual swappable AC and/or DC power supply	-	-
Fan cooled	✓	✓
Fully interoperable with all CN models	✓	✓
<b>Physical and Installation</b>		
Form factor	4U rack mount	4U rack mount
Physical dimensions (mm) W / D / H	425 / 485 / 175	425 / 485 / 175
Weight	24kg	24kg
Power source	Mains	Mains
Power input rating	100-240V, 50/60Hz, 5.2A	100-240V, 50/60Hz, 5.2A
Power consumption at highest data rate	300W (fully loaded)	300W (fully loaded)
<b>Environment, Regulatory and Safety</b>		
RoHS compliant	✓	✓
Maximum operating temperature	0-80% RH at 40°C	0-80% RH at 40°C
Safety standards	EN 60950-1 (CE) IEC 60950-1 AS/NZS 60950.1	EN 60950-1 (CE) IEC 60950-1 AS/NZS 60950.1
UL listed	✓	✓

# SENETAS CN9000 SERIES

**MULTI-CERTIFIED | HIGH-ASSURANCE | CRYPTO-AGILE**



## Ultra-Fast, 100Gbps Ethernet Encryption

Model	CN9100	CN9120
<b>Network Protocols Supported</b>	<b>ETHERNET</b>	<b>ETHERNET</b>
<b>Protocols and Connectivity</b>		
Support for all Ethernet network topologies	✓	✓
Maximum speed	100Gbps	100Gbps
Support for jumbo frames	✓	✓
Protocol and application transparent	✓	✓
Encrypts Unicast, Multicast and Broadcast traffic	✓	✓
Automatic network discovery and connection establishment	✓	✓
Network interface	CFP4	QSFP28
Link distance of available optical transceiver	up to 10km	up to 80km
<b>Security</b>		
Tamper resistant and evident enclosure	✓	✓
Anti-probing barriers	✓	✓
Flexible encryption policy engine	✓	✓
Robust AES encryption algorithm	✓	✓
Per packet confidentiality and integrity with AES-GCM encryption	✓	✓
Automatic, zero-touch key management	✓	✓
<b>Encryption and Policy</b>		
AES 128 or 256 bit keys	128/256	128/256
Policy based on VLAN ID	✓	✓
Encryption modes	CTR	CTR
Self healing key management	✓	✓

Model	CN9100	CN9120
Network Protocols Supported	ETHERNET	ETHERNET
<b>Certifications</b>		
Common Criteria EAL 2+	✓	✓
FIPS 140-2 Level 3	✓	✓
<b>Performance</b>		
Low overhead full duplex line-rate encryption	✓	✓
FPGA based cut-through architecture	✓	✓
'Store and forward' data transmission mode support	✓	✓
Ultra low latency for high performance	✓	✓
Latency (µs per encryption channel) - microseconds	< 2	< 2
<b>Management</b>		
Central config. and management using CM7 and SNMPv3	✓	✓
SNMPv1/2 monitoring (read-only)	✓	✓
Certificate signing	RSA, EC	RSA, EC
Support for external (X.509v3) CAs	✓	✓
Remote management using SNMPv3 (in-band and out-of-band)	✓	✓
NTP (time server) support	✓	✓
CRL and OCSP (certificate) server support	✓	✓
<b>Maintainability/ Interoperability</b>		
In-field firmware upgrades	✓	✓
Dual swappable AC and/or DC power supply	✓	✓
Fan cooled	✓	✓
User replaceable fans	✓	✓
Fully interoperable with all CN models	✓	✓
<b>Physical and Installation</b>		
Form factor	1U rack mount	1U rack mount
Physical dimensions (mm) W / D / H	435 / 480 / 43	435 / 480 / 43
Weight	8kg	8kg
Power source	AC/DC	AC/DC
Power input rating	100-240V AC, 50/60Hz, 2A or 40.5-60V DC 4.5A	100-240V AC, 50/60Hz, 2A or 40.5-60V DC 4.5A
Power consumption at highest data rate	80W	80W)
<b>Environment, Regulatory and Safety</b>		
RoHS compliant	✓	✓
Maximum operating temperature	0-80% RH at 40°C	0-80% RH at 40°C
Safety standards	EN 60950-1 (CE) IEC 60950-1 AS/NZS 60950.1	EN 60950-1 (CE) IEC 60950-1 AS/NZS 60950.1
UL listed	✓	✓
FCC Part 15 / CISPR 32 / EN 55032 Emissions	Class B	Class B

## SENETAS CORPORATION LIMITED

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Senetas designs, develops and deploys high-assurance network data encryption solutions. Designed for today's core Metro Area and Carrier Ethernet WAN infrastructures, Senetas solutions support all Layer 2 protocols and topologies.

Our multi-certified CN Series hardware encryptors have crypto-agility built in and are used by some of the world's most secure organisations; including governments and defence forces, commercial and industrial enterprises, Cloud, data centre and telecommunications service providers in more than 35 countries.

**gemalto**

[www.gemalto.com](http://www.gemalto.com)

Senetas CN Series certified high-assurance network encryptors and CV Series virtual encryptors are distributed and supported internationally by Gemalto (North America, Europe, Asia, Middle East and Africa) as SafeNet Ethernet Encryptors.

## INTERNATIONAL SUPPORT AND DISTRIBUTION

Senetas CN Series High-Assurance Encryptors and CV Series Virtual Encryptors are distributed and supported by Gemalto, the world's largest data security company, as SafeNet Ethernet Encryptors.

Gemalto also provides pre-sales technical support to hundreds of accredited partners around the world; including systems integrators, data network providers, Cloud and data centre service providers, telecommunications companies and network security specialists.

## TALK TO SENETAS OR OUR PARTNERS

Senetas and Gemalto also work with customers' own data network service providers, systems integrators and information security specialists to specify the optimal encryption solution for their needs.

Wherever you are, simply contact Senetas or Gemalto directly to discuss your needs. Or, if you prefer, your service provider may contact us on your behalf.

## ENCRYPTION SECURITY WITHOUT COMPROMISE

Whatever your Layer 2 Ethernet network security needs, Senetas has an encryption solution to suit. They support data network links from modest 10Mbps and 100Mbps bandwidths to high speed 1Gbps, 10Gbps and even ultra-fast 100Gbps networks.

HIGHAS-PD0818