VALIANT COMMUNICATIONS

NEXCON TELECOMUNICACIONES

VCL-Xcöde

IEC 60870-5-104 and DNP Protocol Encryptor

Introduction:

Valiant's VCL-Xcöde is an integrated IEC 60870-5-104 and DNP Data Encryption Equipment with extremely advanced features that may be installed to secure and protect RTU data in critical infrastructure such as Sub-Stations, Smart Grid Distribution Systems, Oil and Gas Infrastructure and Railway Signalling Networks from being compromised or accessed by hostile elements.

The VCL-Xcöde may be installed in point-to-point or point-to-multi-point applications in centrally managed networks consisting of multiple edge locations to provide secure communications between multiple RTU Terminals and their corresponding IEC 60870-5-104 and DNP central server(s) located in Load Dispatch Centre(s) / SCADA Management Centre(s) and Rail Traffic Control Room(s).
Additionally, the VCL-Xcöde also protects the RTUs against hostile network attacks and intrusions arising out of Denial of Service (DoS) attacks and MitM (Man-In-the-Middle).
Access to the VCL-Xcöde is password protected with advanced firewall capabilities that meet and exceed NERC as well as all mandatory requirements of Password Protection and Control as provided in the GR-815-CORE-2 specifications. VCL-Xcöde can optionally be managed centrally from a RADIUS Server to provide enhanced levels of access security and centralized password management and control.

Applications:

- Utilities: Electric generation, transmission and distribution
- Smart Grid Distribution Systems
- Oil & Gas production, pipelines
- Remote nodes in SCADA multi-drop networks
- Railway Signalling Infrastructure: Rail Traffic Control Room(s)
- All distributed data networks consisting of a central server and multiple edge locations.

Deployment Topology:

- Point-to-Point (i.e., encrypting RTU data between two Terminals)
- Point-to-Multipoint (i.e. encrypting data between multiple RTU Terminals and the IEC 60870-5-104 as well as DNP server(s) located in Load Dispatch Centres / SCADA Management Centres and Rail Traffic Control

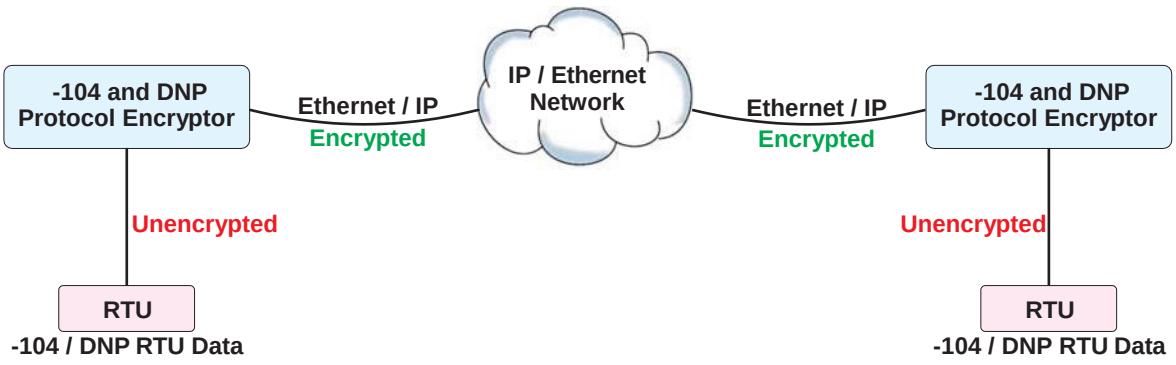
Supported Data Encryption Algorithms:

- 3DES, AES128, AES192, AES256 Encryption Algorithm

Interfaces - Terminal:

- Total Number of Ethernet Interfaces : 5
  - Four 10/100 RJ45 equipment interfaces in the local (trusted) network
  - One 10/100/1000 RJ45 network interface to the WAN (untrusted) network
- Integrated four-port Ethernet switch
- Auto MDI/X (straight or crossover Ethernet cable correction)
- USB serial port for local access and configuration.

Applications Diagram:



Interfaces Server:

- Total Number of Ethernet Interfaces : 3
  - One 10/100/1000 RJ45 interface in the local (trusted) network
  - One 10/100/1000 RJ45 network interface to the WAN (untrusted) network
  - One 10/100/1000 RJ45 interface for configuration and management
- Integrated four-port Ethernet switch
- Auto MDI/X (straight or crossover Ethernet cable correction)
- USB serial port for local access and configuration.

Firewall - Features and Capabilities:

- Deep Packet Inspection
- Per-frame/packet authentication
- Firewall
  - Port (Soft) - based
  - MAC -based
  - IP Address - based
  - IP Domain - based
- White List and Black List options
  - White List Exception allowed and blocks all other traffic by default (system default mode)
  - Black List Exception blocked and allows all other traffic by default
- Seamless scalability
- Infrastructure neutral
- Transparent to network and applications
- Easy installation and management

Firewall Throughput:

- ≤ 60Mbps (Compact, DIN-Rail Remote Data Encryption Terminal)
- ≤ 60Mbps (1U, 19-Inch Rack Mountable Remote Data Encryption Terminal)
- ≤ 900Mbps (2U, 19-Inch Rack Mountable Central Data Encryption Server)

Firewall and Security:

- Secure Boot
- Firewall Security:
  - Inclusion Policy – Access Control based upon White List IP addresses, MAC address and IP Domain
  - Exclusion Policy – Access Control based on Black List
- Resistance to Denial of Service (DoS) Attack
- Continuous monitoring of the TLS connection to nullify MitM attacks
- Encrypted Firmware Updates
- Non-volatile Access Log with capability to "fingerprint" all successful and failed log-in attempts and keep a log of the IP and MAC addresses of all successful and failed logins / login attempts
- SNMP trap generation, along with LED and external alarm indication
- Password Protection with password strength monitor
- RADIUS Password Authentication
- SSH (Secure Access Control) with encrypted Password Protection

Maximum number of RTUs and Encrypted Data Throughput from RTUs:

- Compact, DIN-Rail Remote Data Encryption Terminal, Maximum Encrypted Data Rate, ≤ 12Mbps with AES256 Encryption Algorithm, Up to 6 RTUs @ 2Mbps pre RTU.
- 1U, 19-Inch Rack Mountable Remote Data Encryption Terminal, Maximum Encrypted Data Rate, ≤ 12Mbps with AES256 Encryption Algorithm, Up to 6 RTUs @ 2Mbps pre RTU.
- 2U, 19-Inch Rack Mountable Central Data Encryption Server, Maximum Encrypted Data Rate, ≤ 240Mbps with AES256 Encryption Algorithm, Up to 120 RTUs @ 2Mbps pre RTU.

Network Support:

- IPv4 and IPv6 Routing
- Ethernet
- VLAN tag preservation
- MPLS tag preservation
- IPv4

Monitoring and Access Control:

- Password Strength Monitor
- Device Management and Alarm Monitoring
- Command Line Interface – Telnet, SSH
- SNMPv2 Alarm Monitoring
- Alarm condition detection and reporting (traps and SNMP alarm table)
- Syslog
- Audit Log

Power:

- Power: 1+0 and 1+1 Redundant Power Supply Options (1+1 Redundant Power Supply Options available in the 19-Inch Chassis Only)
- 18VDC ~ 60VDC (Terminal)
- 85VDC ~ 250VDC (Terminal)
- 100~240VAC, 50/60Hz (Terminal and Server)
- Power Consumption: 9W at maximum load (Terminal)
- Power Consumption: 210W at maximum load (Server)

Environmental (Operational):

- Operating Temperature: -20C to +60C (-4F to 140F) – Terminal
- Cold Start Temperature: -10C (14F) - Terminal
- Operating Temperature: 0C to +50C (32F to 122F) – Server
- Cold Start Temperature: 10C (50F) – Server
- Maximum Operational Humidity 95% R.H. (Non-condensing)

Regulatory:

- Emissions: As per CISPR 22 Class A / EN55022 Class A
- FCC: Part 15 Subpart A
- Immunity: EN55024, EN61000

MTBF:

- **Compact DIN Rail Terminal:** MTBF ≥ 215,000 hours @ 24C ambient with single 48VDC power supply
- **1U, 19-Inch Rack-mountable Terminal:** MTBF ≥ 295,000 hours @ 24C ambient with dual, redundant 48VDC power supplies
- **2U, 19-Inch Rack-mountable Server:** MTBF ≥ 249,000 hours @ 24C ambient with dual, redundant AC power supplies.

Physical:

Compact DIN Rail Terminal - Height x Depth x Width: 71 mm x 172 mm x 191 mm, Weight: 1.4 Kgs

- **1U, Industrial Terminal – Height x Depth x Width:** 44 mm x 250 mm x 83 mm, Weight: 1.9 Kgs
- **2U, Industrial Server – Height x Depth x Width:** 88 mm x 661 mm x 482 mm, Weight: 12.7 Kgs

EMI, EMC, Surge Withstand and other Compliances: Terminal Equipment

EN 50081-2	EN 50082-2	IEC 60068-2-29
IEC 61000-4-6 (Conducted Immunity)	IEC 60068-2-6	IEC 60068-2-2
IEC 60068-2-78	IEC 60068-2-1	IEC 60068-2-14

CISPR 22 Class A / EN55022 Class A
(Conducted Emission and Radiated Emission)

IS 9000 (Part II Sec. 1-4, Part III Sec. 1-5, Part IV, Part 14 Sec. 1-3)

IEC 60870-2-1	IEC 61000-4-5	
IEC 61000-4-3 (Radiated Immunity)	IEC 61000-4-8	
IEC 61000-4-2	IEC 61000-4-10	Telcordia GR-1089 Surge and Power Contact
IEC 61000-4-4	IEC 61000-4-11	

Ordering Information:

Product	Order Code	Description	Power
VCL-Xcöde-DIN	VCL-2142-Xcöde-D	IEC 60870-5-104 and DNP Protocol Encryptor Compact DIN-Rail Terminal.	48 VDC
VCL-Xcöde-Chassis	VCL-2142-Xcöde-C (specify the required power supply option)	IEC 60870-5-104 and DNP Protocol Encryptor 1U, 19-Inch Rack-mountable Terminal.	48 VDC, 110-250 VDC, 110-240V, 50/60Hz AC, 1+0 or 1+1 Redundant Power Supply Options
VCL-Xcöde-Server	VCL-2142-Xcöde-S (specify the required power supply option)	IEC 60870-5-104 and DNP Protocol Encryption Equipment. 2U, 19-Inch Rack-mountable Server.	110-240V, 50/60Hz AC, 1+0 or 1+1 Redundant Power Supply Options

Technical specifications are subject to changes without notice.

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