VALIANT COMMUNICATIONS

VCL-MX-5040-R-ES

Router with Enhanced Security

Product Overview:

VCL-MX-5040-R-ES is an integrated IEC-61850 compliant industrial router with firewall equipment which has advanced features that may be installed to secure critical infrastructure such as utilities, sub-stations, smart-grid distribution systems, airports and railways as well as IT Networks of financial institutions such as banks and corporate networks.

VCL-MX-5040-R-ES is password protected with 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.

Router with E-SEC
up to 430 Gbit/s

Network Firewall
up to 420 Gbit/s

IPSEC Throughput / port
120 Mbit/s

Routing Features and Capabilities:

- GUI and CLI based
- Static and Dynamic IP addressing for physical and logical interfaces
- IPv4 and IPv6 IP addressing format supported
- Support for multiple IP address
- ARP, IP forwarding
- Static routing, Default routing, VLAN based routing, CARP redundancy
- Routing Protocols: RIPv1, RIPv2, OSPFv2 and OSPFv3, BGPv4 Layer 2, Layer 3 routing
- Link Aggregation, SPAN mirror port
- Supports frame size from 64 to 9216 bytes
- TCP/IP, UDP, DHCPv4, DHCPv6
- SNMPv2, SNMPv3
- ACL Layer 2, Layer 3 Security
- QoS, Traffic Shaper
- Supports 802.1Q VLAN
- System Authentication and remote access via RADIUS
- SSH (Secure Access Control) with encrypted password protection.

Interfaces:

- 6 x 100GE interfaces
  or
- 12 x 40GE interfaces
  or
- 24 x 10/1GE interfaces

Or: **Any combination of the interfaces mentioned here, not exceeding an aggregate of 600G**

Highlights:

- High-reliability hardware
- CPU based, Modular Architecture, Infrastructure Neutral
- Easy installation and management
- Suitable for installation in sub-stations, SCADA and industrial networks / harsh environments
- Support for USB, Fast Ethernet, Gigabit Ethernet, Optical Ports
- Detailed system logging, built-in reporting and monitoring tools including real-time graphs
- Export logs locally or on a Syslog server
- Network Flow Monitoring
- Suitable for 1+0 non-redundant and 1+1 redundant installation with automatic failover*. Support Active-Active mode.
- High availability functionality with Active-Active and Active-Passive features
- 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 Continuous monitoring of the TLS connection to nullify MitM attacks.
- Secure Boot
- Secure Web Gateway (SWG)
- Data Loss Prevention (DLP)
- Resistance to Denial of Service (DoS) Attack
- Prevention of DDoS & DoS-added
- Content filtering and Brute Force attack mitigation
- Non-volatile Access Log with capability to "fingerprint" all successful and failed log-in attempts and keep a log of the IP addresses of all successful and failed logins / login attempts.
- Integrated threat control includes prevention of network attacks
- Intelligent protection of endpoints includes authentication, authorization and control
- Support out of band management through management port / console
- In service / remote software upgrade
- SYN cookie protection
- Zone based IP spoofing
- Malformed packet protection
- Software and Hardware Token Supported (TOTP)
- IEEE 1613
- IEC 61850-3, IEC 60068-2-27, IEC 60068-2-6 compliance

VCL-MX-5040-R-ES offers a wide range of VPN technologies ranging from modern SSL VPN's to IPsec. Site-to-Site and road warrior setups are possible and with the integrated OpenVPN client exporter, the client can be configured within minutes.

*Redundant device Failover switching with VCL-Ethernet Failover Switch.

Additional features of GUI:

- Comprehensive Dashboard for centralized overview of diagnostics, monitoring, device health, system status, and key metrics
- Smart quick and efficient search functionality for streamlined user experience
- Detailed system information, Interface status and monitoring, and network overview
- Granular user management with role-based access control for secure system access
- Real-time surveillance for identifying and responding to live threat and network fluctuations.
- Comprehensive functionality for tracking and logging system, network and user activities and events.

Firewall - Features and Capabilities:

- Next Generation Firewall (NGFW)
- Allows firewall rule creation for each port, independently
- High availability functionality with Active-Active and Active-Passive features
- Stateful inspection firewall
- Deep Packet Inspection (DPI)
- Point-to-Point and Point-to-Multipoint applications
- Unified NMS – Up to 1000 devices may be configured and managed through unified NMS
- HTTP based smart GUI for individual nodes
- Per-frame/packet authentication
- Intrusion Detection System (IDS) and Intrusion Prevention System (IPS)
- Support NAT, PAT, Policy based NAT/PAT, Mapped IP (MIP), Virtual IP(VIP),VoIP protocols
- Authentication protocols: RADIUS, LDAP
- Supports IKE, IKEv2, PKI (X.509)
- 802.1Q VLANs : 4,094
- Virtual Private Network (OpenVPN site to site and remote VPN client support)
- Supports up to 500 IPSec Site to Site Tunnels
- Filtering of protocols like FTP, SMTP, HTTP, HTTPS, SNMP, UDP, ICMP, RPC, DNS,DHCP,ARP, TCP,POP3
- Security:
  - URL based, Port based, MAC based, IP Address based
  - IP Domain based
  - Protocol type
- Whitelist and blacklist options:
  - Allows traffic based on user configured rules
- MAC layer filtering
- Two-factor Authentication with time-based OTP for secure access
- Forward Caching Proxy (transparent) with Blacklist support
- Antivirus, Anti-worm, Anti-spam and Anti-Spyware protection, Anti-APT(or Anti-BOT), Advanced Persistent Threat
- DNS Server, DNS Forwarder, Dynamic DNS, DNS guard features
- DHCP Server and Relay
- Granular control over state table
- VXLAN supported
- Transparent to network and applications
- LDAP user authentication support

Captive Portal in VCL-MX-5040-R-ES

Captive Portal allows the customer to force authentication, or redirection to a click through page for network access. This is commonly used in hotspot networks and corporate networks for an additional layer of security on wireless or internet access.

Ingress / Egress Firewall rules:

- URL based, Port based, MAC based, IP Address based
- IP Domain based
- Protocol based filtering: FTP, SMTP, HTTP, HTTPS, SNMP, UDP, ICMP, RPC, DNS, DHCP, ARP, TCP, POP3
- Detect and protect based on geo location.

Encryption Algorithms:

- AES-128, AES-192, AES-256
- 128 bit AES-GCM with 128 bit ICV
- 192 bit AES-GCM with 192 bit ICV
- 256 bit AES-GCM with 256 bit ICV
- Camellia 128, 192, 256
- Blowfish 128, 192, 256
- RSA , ECDSA
- 3 DES, CAST 128, DES.

Hash Algorithms:

- MD5, AES-XCBC, SHA 1, SHA 256, SHA 384, SHA 512.

Typical VCL-MX-5040-R-ES Deployments:

- Utilities - Power, Oil and Gas Installations
- Industrial applications
- Campus IP Networks, for all types of data, voice and video over IP applications
- Metro Ethernet and VPLS networks
- Secure Web Gateway
- Cloud applications.

Technical Specifications:

Integrated Storage Drive	Internal, soldered 16GB High Performance SATA Drive
Additional Storage	M.2 SATA - 120GB, 240GB, 500GB and 1TB SSD Options
Power Supply	Dual (1+1) Redundant Power Inputs * (Power Supply Options)
Indicators and Alarms	2 x Power Supply Indicators
Processor	12 Cores
RAM (DDR 4)	32GB
Performance	Rugged System
MTBF (hours)	210240
IP Level Protection	IP20
Power Consumption @ 80~240, 50/60Hz VAC	450 Watts

EMI, EMC, Surge Withstand and other Compliances

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 32 / EN55032 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 61000-4-8
IEC 61000-4-3 (Radiated Immunity)	IEC 61000-4-2	IEC 61000-4-11
IEC 61000-4-4		

CE Compliance:

- Low Voltage Directive 2014/35/EU (48V DC Version)
- Electromagnetic Compatibility 2014/30/EU.

Other Regulatory Compliances:

- RoHS
- CE Marking
- Complies with FCC Part 68 and EMC FCC Part 15

Physical Dimension:

- 19 inch, 4U High Rack Mount
- D x W x H: 451mm x 480mm x 174mm
- Net Weight: 17 Kgs
- Gross Weight: 21 Kgs

Environmental:

Operating Temperature	-4°F ~ 131°F (-20°C ~ 55°C)
Storage Temperature	-22°F ~ 167°F (-30°C ~ 75°C)
Operating Humidity	10%~95% relative humidity, non-condensing
Storage Humidity	10%~95% @40°C; non-condensing

Ordering Information:

Part#	Description
VCL-MX-5040-R-ES-ACR	VCL-MX-5040-R-ES, Router with Enhanced Security Equipment 19-inch, Rack Mount version - 2 x 220V AC power supply [Redundant] - Management: Graphical User Interface (GUI) - Installation Kit: System Core Cables, Mounting Hardware, Documentation, User Manual *** Add Network Interface Options** *** Add SFP, SFP+, QSFP Options**

* Add Network Interface Option:

VCL-5004	VCL-5004 (4x1G Electrical Ports) (6 Cards (Max) per Chassis)
VCL-5005	VCL-5005 (4x1G Optical Ports) (SFP Based) (6 Cards (Max) per Chassis)
VCL-5007	VCL-5007 (4x10G Optical Ports) (SFP Based) (6 Cards (Max) per Chassis)
VCL-5008	VCL-5008 (2x40G Optical Ports) (SFP+ Based) (6 Cards (Max) per Chassis)
VCL-2015	VCL-5012 (2x100G Optical Ports) (SFP+ Based)

* Add SFP, SFP+, QSFP Options:

1G SFP Options

VCL-EMOD 0206	1.25Gbps SFP Transceiver, Duplex LC, 850nm, 550m, MM (Multi-Mode)
VCL-EMOD 0205	1.25Gbps SFP Transceiver, Duplex LC, 1310nm, 10Km, SM (Single-Mode)
VCL-EMOD 0231	1.25Gbps SFP Transceiver Duplex LC, 1310nm, 15Km, SM (Single-Mode)
VCL-EMOD 0508	SFP Transceiver, Gigabit Ethernet, RJ-45 (RJ45), 100m, +3.3V, MSA

10G SFP+ Options

VCL-EMOD 0456	10Gbps SFP+ transceiver, 10Km, SM, DDM
VCL-EMOD 0553	10Gbps SFP+ transceiver (Multirate 0.6-11.3Gbps) 40Km, 1310nm, 16dB, SM, DDM
VCL-EMOD 0554	10Gbps SFP+ transceiver (Multirate 0.6-11.3Gbps) 40Km, 1550nm, 11.1dB, SM, DDM
VCL-EMOD 0556	10Gbps SFP+ transceiver (Multirate 0.6-11.3Gbps) 100Km, 1550nm, 26dB, SM, DDM

100G QSFP Options

VCL-TQ2016	QSFP28 100GE-SR1.2 850/910nm MM 100m 2.4dB LC
VCL-TSD003	SFP-DD 100GE-LR SM 1311nm 10km 6.8dB
VCL-TQ2030	QSFP28 O-Band DWDM 100G Ethernet SM 40km 18.5dB LC
VCL-QSFP28	QSFP28 100GE/OTU4 4WDM-40 13xxnm 40km 18dB

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Technical specifications are subject to changes without notice.
Revision – 1.9, July 25 , 2025

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