

**Product Overview:**

VCL-MX-5040-R-ES is an integrated Router with Enhanced Security 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**  
**250 GBPS<sup>#</sup>**

**IPSEC VPN**  
**76.20 GBPS**

**Threat Protection**  
**43.12 GBPS**

**NGFW**  
**58.60 GBPS**

<sup>#</sup>At Maximum Configuration

**Interfaces:**

- 4/8/16 x 10 Gbps (SFP+) Fiber Optic ports
- 4/8/16 x 1 Gbps Ethernet ports.

**Additional features of GUI:**

- User controlled GUI
- Logs accessible anytime
- Live Threat and traffic monitoring tools
- View network usage
- Change credentials
- Smart quick search
- QoS, SNMP v2/v3.

**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.

**Router - Features and Capabilities:**

- OSPF v2 and OSPF v3
- RIP v1 and RIP v2, RIPng
- BGPv4, IS-IS
- ARP, IP Forwarding
- Static routing, VLAN based routing
- Supports 802.1q VLAN
- Single wire Inter-VLAN routing
- Supports NATL1
- Layer 2/3 Routing, Dynamic Discovery Routing
- TCP/IP, UDP, DHCP, QoS
- Remote access authentication via RADIUS
- IEEE 1613 compliance
- IEC 60068-2-27 compliance
- IEC 60068-2-6 compliance
- Detailed system logging
- Multiple IP address supported.

**Security Features:**

- High-reliability hardware
- Designed to be installed in sub-stations, SCADA networks and industrial / harsh environments
- Secure Boot
- 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.
- Brute Force attack mitigation
- Content filtering, JAVA & Active X Blocking
- 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.
- Resistance to Denial of Service (DoS) Attack
- Prevention of DDoS & Dos-added
- SSH (Secure Access Control) with encrypted password protection.
- SYN cookie protection
- Zone based IP spoofing
- Malformed packet protection
- DNS guard features
- Antivirus, Anti-worm, anti-spam and anti-spyware protection
- Anti-APT (or Anti BOT), Adv Persistent Threat

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.

**Security - Features and Capabilities:**

- Next Generation Firewall (NGFW)
- Allows firewall rule creation for each port, independently.
- May be installed in non-redundant 1+0 or redundant 1+1 in an automatic failover\* configuration. Supports active-active mode
- Deep Packet Inspection (DPI)
- Point-to-Point and Point-to-Multipoint applications, PPPoE
- IPv4 & IPv6 support
- 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
- Support NAT, PAT & Policy based NAT/PAT, Mapped IP (MIP), Virtual IP (VIP), VoIP protocols
- Authentication protocols: RADIUS, LDAP support
- Supports IKE, IKEv2, PKI (X.509), EAP
- Maximum Concurrent Sessions: 33,500,000
- New Concurrent Sessions per second: 540,000
- 801.1Q VLANs : 4,094
- Whitelist and blacklist options:
  - Allows traffic based on user configured rules
- Two-factor Authentication with time-based OTP for secure access
- Traffic Shaper
- Forward Caching Proxy (transparent) with Blacklist support
- Virtual Private Network (OpenVPN site to site and remote VPN client support)
- Supports CARP Redundancy Protocol
- Supports upto 500 IPsec Site-to-Site Tunnels
- High availability and hardware ethernet failover\*
- Intrusion Detection and Prevention
- Built-in reporting and monitoring tools including real-time graphs
- Network Flow Monitoring
- DNS Server, DNS Forwarder, Dynamic DNS
- DHCP Server and Relay
- Stateful inspection firewall
- Granular control over state table
- 802.1Q VLAN support
- MAC layer filtering
- VXLAN supported
- Infrastructure neutral
- Transparent to network and applications
- Easy installation and management
- LDAP user authentication support
- Export logs locally or on a server.

*\*Redundant Device Failover switching with VCL-Ethernet Failover Switch.*

**Ingress / Egress Firewall rules:**

- 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
- URL based
- 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
- 3 DES, CAST 128, DES.

**Hash Algorithms:**

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

**Typical VCL-MX-5040-F Deployments:**

- Utilities - Power, Oil and Gas Installations
- Industrial applications
- Campus IP Networks, for all types of data, voice and video over IP applications
- Meshed-networks
- Metro Ethernet and VPLS networks
- 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
	1 x System Alarm
Processor	12 Cores
RAM (DDR 3L)	32GB
Performance	Rugged System
MTBF (hours)	210240
IP Level Protection	IP20
Power Consumption @ 80~240, 50/60Hz VAC	450 Watts

**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

**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	Telcordia GR-1089 Surge and Power Contact	

**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
- Telcordia GR-1089 Surge and Power Contact.

**Physical Dimension:**

- 19 inch, 3U High Rack Mount
- D x W x H: 300mm x 484mm x 178mm
- Net Weight: 8.0 Kgs
- Gross Weight: 12 Kgs.

**Ordering Information:**

Part#	Description
VCL-MX-5040-R-ES	VCL-MX-5040-R-ES, Router with Enhanced Security 19 Inch 3U High Rack Mount Installation Kit: System Core Cables Add *Power supply options

**\* Power Supply Options:**

AC110~240R	2 x 110-240VAC, 50/60Hz. Power Supply Input [1+1 Redundant, Hot Swappable Power Supply]
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