Nucleus Networks
Connected Hardware Solutions

EN-4000™

Key Features

- **Dual wireless carrier support for 4G LTE and HSPA+**

- Industrial-hardened, with optional redundant power sources: AC, DC, or Power over Ethernet (Standard AC PSU)

- Provides service over any port, any network at anytime IP/ MPLS, Cellular 3G, 4G LTE, 802.11 WiFi, Frame Relay, circuit switched, T-1, Serial, Ethernet, optical fiber, analog modem

- Business Continuity

- Automatic Failover with traffic load sharing between wireline and wireless links

- Embedded 802.11b,g,n Wi-Fi

- VPN IP Security (IPSec) AES 256 and 3DES,SSL/TLS and SSH

- Selective Layer Encryption (Patented) for satellite VPN optimization

- Operation, Administration, and Management (OA&M) with Web based GUI management

4G LTE/HSPA+ Broadband Router

The WL4000 router family adds speed, capacity, and flexibility to the Encore Networks' series of wireline/wireless routers. This compact IP + Legacy router is designed for commercial and industrial environments and a wide range of operating temperatures, the all-metal enclosure resists dust, moisture, and electromagnetic interference (EMI). The single-box solution provides Internet Protocol (IP), VPN, Firewall, Ethernet Switching, and Legacy Protocol to IP interworking.

The WL4000 supports a wide range of services and applications used for M2M, SCADA, Smart Grid, and Enterprise applications. The base configuration contains one or two cellular modules, an 802.11 Wi-Fi module, and five Ethernet ports. Three expansion slots, two in the front and one internal, accept optional hardware modules. Expansion slots enhance flexibility and let the WL4000 router adapt easily to specific user needs by adding additional Ethernet ports (up to nine total), dual 3G and 4G cellular modules, encryption hardware, DSP, T-1/E-1 CSU interfaces, fiber optical links, 802.11 Wi-Fi, a dial modem with an FXS analog telephone interface, and serial data ports.

The WL4000 router supports multiple ports and high-speed network connections, performing routing and switching of network packets, and Layer 4 Firewall with enhanced cyber and physical security measures. The internal Ethernet switch, in addition to routing features, allows the WL4000 router to assign ports to different networks (wired or wireless) and functions (SCADA vs. video for example). Multiple WAN connections load share or apply enhanced traffic grooming using QoS and CoS traffic types assigned to specific links. Upon a link failure, traffic moves automatically to a working link or to a new connection as programmed.
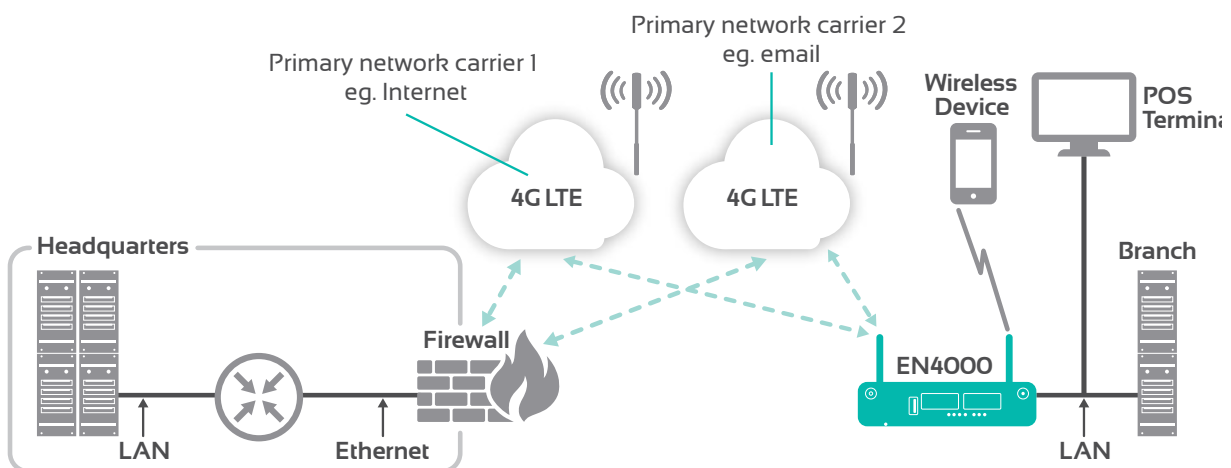
Load-balanced Rapid Deployment Internet
Dual module with dual concurrent 4G network connections (e.g. Vodafone and EE)

TECHNICAL SPECIFICATIONS

GENERAL FEATURES	Protocol management and translation of legacy industry serial protocols
	SNMPv3
	SSH, Telnet, and web access interface
	SNMPv3 manageability (monitor and configure)
	Access for control via SSH, Telnet, and web access interface
	Up to four antennas - 3G/4G LTE cellular, 802.11 Wi-Fi, and GPS services.
	Three slots for optional interface modules
	Configuration servers to manage and update routers centrally
	Disaster Recovery and Traffic Load Sharing over WAN connections
	QoS enforcement to prioritize critical traffic
	Redundant power sources
SECURITY APPLIANCEFEATURES	Stateful inspection firewall
	IEEE 802.11i (WPA2, RSN)
	DMZ LAN port
	NAT (Network Address Translation)
	SSL/TLS1
	SSH (Secure Shell)
	IP Sec (RFC 2401) with AES 256 and 3DES
	Generic Router Encapsulation GRE (RFC 1701)
	Internet Key Exchange--IKE (RFC-2409)
	RADIUS authentication
TRANSPORT PROTOCOLS	**WAN**
	IP over Ethernet (compatible with MPLS services)
	Frame Relay (RFC-1490, IP over FR)
	T-1 or E-1 CSU, full or fractional
	Asynchronous PPP
	Synchronous PPP
	X.25
	MLPPP
	PPPoE
	Selective Layer Encryption (SLE) for VPN Optimization (patented)
	IP
	IP Versions 4 and 6
	IP Routing (RIP v1/v2), OSPF, BGP, or static routing
	DHCP client/server/BootP/Relay
	IP QoS and traffic prioritization
	IP fragmentation/reassembly
	IP routing over VPN; TCP and UDP
	802.1q VLAN tagging
	Virtual Redundant Routing Protocol (VRRP) between two routers
	Dead Peer Detection
SERIAL DATA SUPPORT	Up to 4 serial ports supporting V.35, EIA/TIA RS-485, RS-232, RS-422
	Legacy Protocol support for DNP3, IEC 60870-5-101/103/104 MODBUS, CDC, S/NET, CONITEL, ABB, X.25, ALC, and most industry proprietary protocols. Inquire about additional protocols.

Specifications subject to change without notice