

# EN-4000™

## 4G LTE/HSPA+ Broadband Router



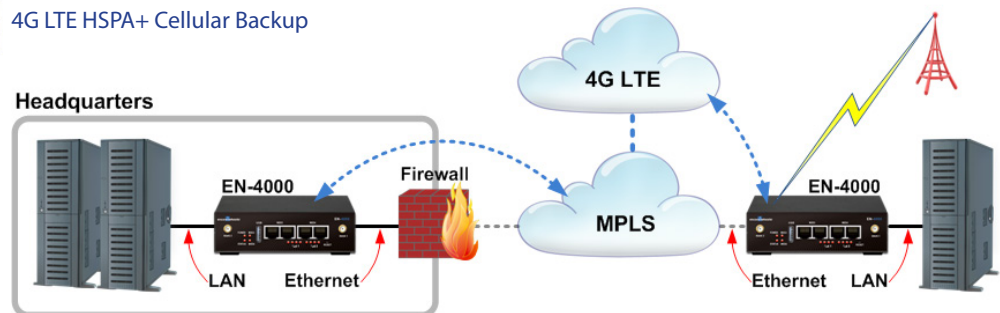
The EN-4000™ router family adds speed, capacity, and flexibility to the Encore Networks' series of wireline/wireless routers. This compact IP + Legacy router is designed for commercial and industrial environments and a wide range of operating temperatures, the all-metal enclosure resists dust, moisture, and electromagnetic interference (EMI). The single-box solution provides Internet Protocol (IP), VPN, Firewall, Ethernet Switching, and Legacy Protocol to IP interworking. The EN-4000™ 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 EN-4000™ 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.

### EN-4000™

- Industrial-hardened, with redundant power sources: AC, DC, or Power over Ethernet
- 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
- Dual wireless carrier support for 4G LTE and HSPA+
- Embedded 802.11b,g,n ac 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

The EN-4000™ 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 EN-4000™ 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.

4G LTE HSPA+ Cellular Backup



Automatic 4G LTE HSPA+ Failover

## TECHNICAL SPECIFICATIONS

<b>General Features</b>	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	
<b>Security Appliance Features</b>	Redundant power sources	
	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)	
<b>Transport Protocols</b>	<b>WAN</b>	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)
	<b>IP</b>	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
<b>Serial Data Support</b>	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.	

## EN-4000™

**Front Panel**



**Back Panel**



## TECHNICAL SPECIFICATIONS

<b>Physical Features Standard</b>	<b>EN-4000 Front Panel</b>	4 LEDs for module, system status, and power indication	
		One USB host port	
		Two antenna connectors for internal wireless modules	
		2 groups of 4 LEDs for wireless signal strength indication for two cellular modules	
		Reset switch	
	<b>EN-4000 Back Panel</b>	Two antenna connectors for factory-installed internal radios	Cellular: 3G, EVDO, 4G LTE
			802.11ac
			Bluetooth
		One 10/100 Mbit/s Ethernet RJ-45 (WAN); draws PoE with optional PSU	
		Four 10/100 Mbit/s switched Ethernet RJ-45 (LAN)	
5 V DC input (from AC line-power adapter)			
Additional power connector for optional factory-installed PSU, settable to other DC voltages			
<b>Optional Modules</b>	Single Optical Ethernet (SFP) interface for fiber, 1 Gig/s		
	Single T-1/E-1 CSU; channelized/unchannelized/fractional		
	10/100/1000 Mbit/s Switched Ethernet over copper		
	4-Wire E&M (Types 1, 5)		
	Dual high-speed serial ports (RS-232, RS-485, RS-422)		
	Single V.35 serial port		
	V.90/92 modem, FXS port, PPP support (PAP/CHAP)		
	One each of FXS and FXO analog ports		
	Dual FXS Port		
	Digital Signal Processor (DSP)		
	Cellular (3G or 4G LTE); CDMA (1xRTT), EVDO, GSM, GPRS, EDGE, UMTS		
	Wi-Fi		
	Commercial miniPCI modules such as the latest Wi-Fi		
	Hardware Encryption (over 1000 sessions, for central site VPN terminations)		
	Four alarm voltage sensor inputs plus three contact closure outputs		
<b>Management</b>	SNMP v3		
	Craft Interface		
	GUI Web Management		
	Telnet		
	SSH (secure shell)		
	Syslog		
<b>Power Supply Options</b>	Redundancy between AC input and any DC or PoE source		
	DC: 12, 24, 48, or 130 V DC; 13 Watts maximum		
	AC: 100-240 V AC Auto ranging adapter, 50-60 Hz		
	Power over Ethernet (Class 3 PoE)		
<b>Environmental (Temperature)</b>	Operating: -40 C to +85 C (Industrial Hardened) -20 C to +65 C (Extended Temperature Commercial)		
	Storage: -40 C to +85 C		
	Humidity: 5% to 95%, non-condensing		
<b>Mechanical</b>	Height: 1.6 inches/40 mm		
	Width: 5.7 inches/145 mm		
	Depth: 4 inches/100 mm		
	Weight: 1 lb. ( 0.45 kg)		
<b>Standards Compliance</b>	RoHS Compliant		
	EMC	FCC Part 15	
		EN 55011/CISPR II	
		IEC 61850-3	
		IEEE 1613	
	Product Safety	UL/CSA 60950-1	
CAN/CSA-C22.2 No. 60950-1-03			
EN 60950-1			
<b>Part Number</b>	EN 60950-1		

## Feature Module Locations and Installation Options

Field or Factory Installable modules in Option Slots			
Slot:	1	2	3
3G/4G/LTE radio	✓		✓
802.11b, g, n, ac Wi-Fi radio	✓		✓
One 10/100/1000T Mbit/s wired Ethernet		✓	✓
Single Gigabit Ethernet fiber port (SPF)		✓	✓
Two sync/async serial ports; RS-485, RS-232, RS-422		✓	✓
Single High Speed V.35 serial port, sync/async		✓	✓
One T-1/E-1 CSU/DSU, provides both channelized and unchannelized services		✓	✓
V.29 modem/FXS		✓	✓
4-Wire E&M port		✓	
Two FXS analog ports		✓	
FXS and FXO ports, one each		✓	
4 Voltage sensors in, 3 contact closures out		✓	✓
Hardware encryption for expanded tunnel count	✓	✓	✓

### Factory Installed Options Soldered onto Main Board

PoE receiver, DC input PSU	Requires Type 2 back panel for DC input connector.
3G/4G/LTE radio	Placed on main board; highest ambient temperature rating. May use two antennas.
802.11b/g/n/ac Wi-Fi radio	Occupies one or two antenna connectors on panel.
Power Failure Alert Module	Dedicated board position

Certified for use on the  
  
 3G and 4G LTE Networks

Consult your area sales representative for available features and optional modules.

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