

Table of Contents

for the EN-4000™ Reference Manual

List of Headings

Document 1	EN-4000 Hardware Description and Specifications	1-1
Section 1.1	Hardware Overview	1-1
Section 1.1.1	EN-4000 Front Panel	1-2
Section 1.1.2	EN-4000 Back Panel	1-3
Section 1.1.3	RJ45 Serial Port	1-4
Section 1.1.4	RJ45 10-Base-T/100-Base-T Ethernet Port	1-5
Section 1.1.5	Power Supply Ports	1-6
Section 1.1.6	Modules for Expansion Slots	1-6
Section 1.1.7	LEDs	1-7
Section 1.2	EN-4000 Technical Specifications	1-8
Section 1.2.1	General Features	1-9
Section 1.2.1.1	IP	1-9
Section 1.2.1.2	Legacy Protocol Support	1-9
Section 1.2.2	Security Features	1-9
Section 1.2.3	Transport Protocols	1-10
Section 1.2.3.1	WAN and LAN	1-10
Section 1.2.3.2	Serial	1-10
Section 1.2.4	EN-4000 Physical Specifications	1-10
Section 1.2.4.1	Chassis Dimensions	1-10
Section 1.2.4.2	Power Supply Options	1-11
Section 1.2.4.3	Alarm Port	1-11
Section 1.2.5	Environmental Specifications	1-11
Section 1.2.6	GigE Specifications	1-11
Section 1.2.7	Standards Compliance	1-12
Section 1.2.8	SIMs	1-12
Document 2	Installing the EN-4000	2-1
Section 2.1	Collecting the Items Needed for Installation	2-1
Section 2.2	Viewing the Ports on the EN-4000 Chassis	2-2
Section 2.3	Replacing the Subscriber Identity Module	2-3

Section 2.4	Connecting and Starting the EN-4000 Chassis	2-12
Section 2.5	The Next Step	2-13
Document 3	Connecting the EN-4000 to DC Power	3-1
Document 4	Configuring General Settings for the EN-4000	4-1
Section 4.1	Using the EN-4000's Management System	4-1
Section 4.1.1	Connecting to the EN-4000	4-1
Section 4.1.2	Logging In	4-2
Section 4.1.3	Managing the Browser Display	4-5
Section 4.2	Navigating the EN-4000's Management System	4-6
Section 4.2.1	Saving or Discarding Changes	4-6
Section 4.2.2	Restarting (Rebooting) the EN-4000	4-7
Section 4.2.3	Ending the Session	4-8
Section 4.3	Basic Configuration	4-8
Section 4.3.1	Revising Lists in the EN-4000's Management System	4-8
Section 4.3.2	Configuring the Management System Language	4-9
Section 4.3.3	Configuring the Device Name and Time of Day	4-9
Section 4.3.4	Configuring System Logging	4-11
Section 4.3.5	Synchronizing the EN-4000's Time of Day	4-12
Section 4.3.5.1	Configuring Time-of-Day Synchronization	4-12
Section 4.3.5.2	Selecting Time-of-Day Synchronization	4-14
Section 4.3.6	Overriding the MAC Information	4-15
Section 4.4	Configuration for the Network	4-16
Section 4.4.1	Setting the APN	4-17
Section 4.4.2	DHCP and DNS	4-17
Section 4.4.3	Network Hosts	4-20
Section 4.4.4	Routing	4-21
Section 4.4.5	Firewall Configuration	4-23
Section 4.4.6	Configuring Traffic Priority	4-27
Document 5	Configuring Chassis Ports in the EN-4000	5-1
Section 5.1	Port Interfaces	5-1
Section 5.2	Configuring a LAN Port	5-2
Section 5.3	Configuring the WAN Port	5-6
Document 6	Configuring a MultiWAN for the EN-4000	6-1
Section 6.1	Use of a MultiWAN	6-1
Section 6.2	Configuring a MultiWAN	6-2
Document 7	Configuring the EN-4000's Serial Ports	7-1
Section 7.1	Connecting to the EN-4000	7-1
Section 7.2	Configuring a Serial Port	7-1

Document 8	The EN-4000's Solid-State Input/Output Card	8-1
Section 8.1	Solid-State I/O Card Hardware	8-1
Section 8.1.1	Pin Configuration	8-2
Section 8.1.2	Connecting the Solid-State I/O Card to Local Devices	8-2
Section 8.1.3	Input Wiring	8-4
Section 8.1.4	Output Wiring	8-5
Section 8.2	Management of the Solid-State I/O Card	8-6
Section 8.2.1	Configuring the Solid-State I/O Card	8-6
Section 8.2.2	Reviewing the EN-4000's Solid-State Input/Output Settings	8-11
Section 8.2.3	Enabling the EN-4000 in the enCloud™ or enSite™ Management System	8-11
Section 8.2.4	Using enCloud™ or enSite™ to Monitor I/O Card Settings	8-12
Document 9	The EN-4000™ in IPsec Virtual Private Networks	9-1
Section 9.1	IPsec VPN Configuration in the EN-4000	9-2
Section 9.1.1	Configuring IPsec VPNs on the EN-4000	9-2
Section 9.1.2	Starting the Tunnel	9-6
Section 9.2	Testing and Tracking VPN Connections	9-7
Section 9.2.1	Testing VPN Connections	9-7
Section 9.2.2	Tracking VPN Connections	9-9
Section 9.2.2.1	Tracking Specific Information	9-9
Section 9.2.2.2	Tracking General VPN Activity	9-12
Section 9.3	Basics of Virtual Private Networks	9-13
Section 9.3.1	A Simple Virtual Private Network	9-14
Section 9.3.2	Tunnel Modes	9-15
Section 9.3.2.1	Tunnel Initiation	9-15
Section 9.3.2.2	Tunnel Termination	9-16
Section 9.3.2.3	Tunnel Passthrough	9-17
Section 9.3.3	Tunnel Support	9-17
Section 9.3.3.1	Tunnel Sharing	9-17
Section 9.3.3.2	Tunnel Switching	9-18
Section 9.3.3.3	Split Tunneling	9-18
Section 9.3.4	Internet Key Exchange	9-19
Section 9.3.4.1	Perfect Forward Secrecy	9-19
Section 9.3.4.2	IKE Version 1	9-19
Section 9.3.4.2.1	Details of IKE Version 1	9-20
Section 9.3.4.3	IKE Version 2	9-20
Section 9.3.4.3.1	Extensible Authentication Protocol	9-21
Section 9.3.4.3.1.1	EAP Authentication	9-21
Section 9.3.4.3.1.2	EAP Exchanges	9-21
Section 9.3.4.3.2	MOBIKE	9-22
Section 9.3.4.3.3	Sample IKEv2 Exchanges	9-22
Section 9.3.4.3.3.1	Overview of IKEv2 Exchanges	9-22
Section 9.3.4.3.3.2	Details of IKEv2 Exchanges	9-23

Section 9.4	Developing a Virtual Private Network	9-26
Section 9.4.1	VPN Configuration Plan	9-27
Section 9.4.1.1	The IP Policy Table	9-27
Section 9.4.1.2	The VPN Profile Table	9-28
Section 9.4.2	Automatic Keying	9-29
Section 9.4.3	Sample Configuration for a Remote User	9-31
Document 10	SLE™ in Virtual Private Networks	10-1
Section 10.1	Setting Up SLE on an IPsec VPN Tunnel	10-1
Section 10.1.1	Configuring an EN-4000 as a VPN Tunnel Initiator, Incorporating SLE	10-2
Section 10.1.2	Configuring an EN-4000 as a VPN Tunnel Responder, Incorporating SLE	10-5
Section 10.1.3	Configuring the Firewall for an IPsec VPN Tunnel That Uses SLE	10-8
Section 10.1.3.1	Firewall Zones	10-8
Section 10.1.3.2	Disabling Masquerading on the VPN Tunnel Initiator	10-12
Section 10.1.3.3	Firewall Traffic Rules	10-15
Section 10.1.4	Configuring the Source NAT	10-20
Section 10.2	Verifying that SLE is Running	10-21
Document 11	DMNR in the EN-4000	11-1
Section 11.1	Setting Up DMNR	11-1
Section 11.2	Notes on Network Mobility	11-5
Document 12	Monitoring the EN-4000	12-1
Section 12.1	Monitoring	12-2
Section 12.1.1	Collection of Statistics	12-2
Section 12.1.2	Graphs	12-6
Section 12.1.2.1	Displaying Graphs Ending at the Current Time	12-6
Section 12.1.2.2	Displaying Graphs Beginning at the Current Time	12-8
Section 12.1.3	Routing Information	12-12
Section 12.1.4	Pings and Other Network Diagnostics	12-13
Section 12.1.5	Firewall Statistics	12-15
Section 12.1.6	System Processes	12-17
Section 12.1.7	Logs	12-18
Document 13	Configuring the EN-4000's 802.11 Wireless Card	13-1
Section 13.1	Configuring the 802.11 Wireless Card for the Network	13-1
Section 13.1.1	Configuring the 802.11 Wireless Card as an Access Point	13-2
Section 13.1.2	Configuring the 802.11 Wireless Card as a Wireless Client	13-10
Section 13.2	Checking the Status of the Wireless Card	13-18
Document A	Basic Safety Guidelines	A-1
Section A.1	Safety Practices	A-1
Section A.2	Electrostatic Discharge	A-1

Document B	System Administration Screens in the EN-4000	B-1
Document C	Cloud Management for the EN-4000™	C-1
Section C.1	Setting Up an EN™ Router to Send Data to enCloud™	C-1
Document D	Setting the EN-4000's Modem to Use AT Commands	D-1
Section D.1	Opening a Modem Port	D-1
Section D.2	Loading Factory Defaults on PVS8 for Sprint	D-2
Section D.3	Troubleshooting	D-3
Section D.4	Using AT Commands to Set the EN-4000's APN	D-4
Document E	EN-4000 LEDs	E-1
Section E.1	EN-4000 Front Panel	E-1
Section E.2	LED Codes	E-2
Document F	Reference Sheet for the EN-4000's RJ45 Serial Port	F-1
Section F.1	RJ45 Serial Port	F-1
Section F.2	RJ45 10-Base-T/100-Base-T Ethernet Port	F-2
Document G	VPNC Scenario for IPsec Interoperability	G-1
Section G.1	Scenario 1: Gateway-to-Gateway VPN with Preshared Secret	G-1
Section G.2	Configuring the EN-4000 for VPNC Scenario 1	G-2
Section G.2.1	Setting Up, Starting Up, and Logging In	G-3
Section G.2.2	Configuring an IPsec VPN Tunnel on the EN-4000	G-4
Section G.3	Starting the Tunnel for VPNC Scenario 1	G-9
Section G.4	Checking the Connection	G-9
Section G.5	Troubleshooting	G-10
Document H	EN-4000™ Quick Configuration Guide	H-1
Section H.1	Connecting the EN-4000	H-1
Section H.2	Selecting the EN-4000's Device Mode	H-5
Section H.3	Using the EN-4000's Configuration	H-5
Section H.4	Returning to the Default Configuration	H-6

List of Tables

Document 1	EN-4000 Hardware Description and Specifications	
Table 1-1	RJ45 Serial Port Pin Configuration	1-4
Table 1-2	10-Base-T/100-Base-T Ethernet Port Pin Configuration	1-5
Table 1-3	Factory Installation Options	1-6
Table 1-4	Field-Installable Modules	1-7
Table 1-5	General Status LED Definitions	1-7
Table 1-6	LED Definitions for the GigE Module	1-8
Table 1-7	Physical Specifications for the EN-4000 Chassis	1-10

Table 1-8	EN-4000 Environmental Specifications	1-11
Table 1-9	EN-4000 Standards Compliance	1-12
Table 1-10	Recommended Specifications for SIMs in the EN-4000	1-12
Document 8	The EN-4000's Solid-State Input/Output Card	
Table 8-1	Pin Configuration for the I/O Connector Port	8-2
Table 8-2	Solid-State I/O Card Electrical Information	8-5
Document 9	The EN-4000™ in IPsec Virtual Private Networks	
Table 9-1	IPsec Components Used in the EN-4000	9-13
Table 9-2	Sample Remote User Record	9-17
Table 9-3	Standard EAP Combinations for IKEv2 Authentication	9-21
Table 9-4	Information Required to Configure the EN-4000 for VPNs	9-26
Table 9-5	Sample IP Policy Table	9-27
Table 9-6	Sample VPN Profile Table	9-28
Table 9-7	Sample VPN Profile, Automatic Keying	9-29
Table 9-8	Sample IKEv1 Phase 1 Proposal	9-30
Table 9-9	Sample IKEv1 Phase 2 Proposal	9-30
Table 9-10	Sample Tunnel User Table	9-31
Document E	EN-4000 LEDs	
Table E-1	General Status LED Definitions	E-2
Document F	Reference Sheet for the EN-4000's RJ45 Serial Port	
Table F-1	RJ45 Serial Port Pin Configuration	F-2
Table F-2	10-Base-T/100-Base-T Ethernet Port Pin Configuration	F-2

List of Figures

Document 1	EN-4000 Hardware Description and Specifications	
Figure 1-1	EN-4000 Front Panel with a Dual Serial-Port Module in an Expansion Slot	1-3
Figure 1-2	EN-4000 Rear Panel	1-4
Figure 1-3	Dual Serial-Port Module for the EN-4000	1-4
Figure 1-4	Pin Locations for Female RJ45 Serial Port Connector	1-4
Figure 1-5	Pin Locations for Female RJ45 Ethernet Connector	1-5
Figure 1-6	EN-4000 Chassis	1-8
Document 2	Installing the EN-4000	
Figure 2-1	EN-4000 Chassis	2-2
Figure 2-2	SIMs on Bottom of EN-4000 Motherboard	2-4
Figure 2-3	Empty SIM Socket (Top View), with Latch in Locked Position	2-4
Figure 2-4	Unlocking the SIM Socket's Door	2-5
Figure 2-5	Unlocked SIM Socket	2-5

Figure 2-6	Opening the SIM Socket's Door (Side View)	2-5
Figure 2-7	Partially Opened Empty SIM Socket (Side View)	2-6
Figure 2-8	Partially Opened Empty SIM Socket (Top View)	2-6
Figure 2-9	Fully Opened Empty SIM Socket (Side View)	2-6
Figure 2-10	Fully Opened Empty SIM Socket (Top View)	2-6
Figure 2-11	Sliding an Old SIM out of the SIM Socket	2-7
Figure 2-12	Front of SIM (Sample Logo)	2-7
Figure 2-13	Contact Pad on Back of SIM	2-8
Figure 2-14	Inserting the New SIM into the SIM Socket's Door	2-8
Figure 2-15	SIM Partially Inserted into the SIM Socket's Door	2-8
Figure 2-16	SIM Fully Inserted into the SIM Socket's Door	2-9
Figure 2-17	Closing the SIM Socket, at about 45 Degrees of Rotation (Side View)	2-9
Figure 2-18	Closing the SIM Socket, at about 135 Degrees of Rotation (Top View)	2-9
Figure 2-19	Closed SIM Socket with New SIM (Side View, Door Not Yet Locked)	2-9
Figure 2-20	SIM in Incorrect Position (Top View)	2-10
Figure 2-21	SIM in Incorrect Position (Side View)	2-10
Figure 2-22	SIM in the Correct Position (Top View)	2-10
Figure 2-23	Locking the SIM Socket's Door (Top View)	2-11
Figure 2-24	Locked SIM Socket with New SIM (Top View)	2-11
Figure 2-25	Front of EN-4000 Chassis, with Antennas	2-12
Figure 2-26	Back of EN-4000 Chassis, with Antennas	2-12
Figure 2-27	Approved Installation	2-13

Document 3 Connecting the EN-4000 to DC Power

Figure 3-1	Top Section of Connector Shell	3-1
Figure 3-2	DC Power Connector	3-1
Figure 3-3	Bottom Section of Connector Shell	3-2
Figure 3-4	DC Power Connector, on Side	3-2
Figure 3-5	DC Power Connector with Wires	3-3
Figure 3-6	Cabled DC Power Connector and Bottom Section of Shell	3-3
Figure 3-7	Cable-Tie through Bottom of DC Power Connector Shell	3-4
Figure 3-8	Top Section of Shell above Cabled DC Power Connector in Bottom Section of Shell	3-4
Figure 3-9	Closed Shell Assembly	3-5
Figure 3-10	EN-4000 DC Power Input Port	3-5
Figure 3-11	DC Shell Assembly Connector Flanges	3-5
Figure 3-12	Rotate DC Shell Assembly 180 Degrees around Axis of Power Cable	3-6
Figure 3-13	DC Shell Assembly Rotated 180 Degrees	3-6

Document 4 Configuring General Settings for the EN-4000

Figure 4-1	EN-4000 Rear Panel	4-2
Figure 4-2	Browser Address Field	4-2
Figure 4-3	EN-4000 Log-In Screen	4-3
Figure 4-4	Message to Enable JavaScript	4-3

Figure 4-5	EN-4000 Status Overview Screen	4-4
Figure 4-6	Browser Display Bleeding off Screen	4-5
Figure 4-7	Browser Display Contained on Screen	4-5
Figure 4-8	Message about Unsaved Changes	4-6
Figure 4-9	Message to Save Configuration before Rebooting	4-6
Figure 4-10	EN-4000 System Reboot	4-7
Figure 4-11	Message while Rebooting	4-7
Figure 4-12	EN-4000 Log-In Screen	4-8
Figure 4-13	Screen to Set the Management System Language	4-9
Figure 4-14	System Screen for General Settings	4-10
Figure 4-15	Message about Invalid Entry	4-10
Figure 4-16	Screen to Set System Logging	4-11
Figure 4-17	Time Synchronization Screen	4-13
Figure 4-18	System Screen for General Settings	4-14
Figure 4-19	MAC Device Overrides Initial Screen	4-15
Figure 4-20	MAC Device Overrides Entry Screen	4-16
Figure 4-21	Custom Commands Screen	4-17
Figure 4-22	DHCP and DNS General Settings Screen	4-18
Figure 4-23	Screen for DHCP and DNS Resolv and Hosts Files	4-19
Figure 4-24	DHCP and DNS TFTP Settings Screen	4-19
Figure 4-25	DHCP and DNS Advanced Settings Screen	4-20
Figure 4-26	Network Host Names Screen	4-21
Figure 4-27	Network Host Names Add Screen	4-21
Figure 4-28	Static Routes Configuration Screen	4-22
Figure 4-29	Static Routes Table	4-22
Figure 4-30	Firewall General Settings Screen	4-23
Figure 4-31	Firewall General Settings Screen to Add Record	4-24
Figure 4-32	Firewall Port Forwards Screen	4-24
Figure 4-33	Firewall Traffic Rules Screen	4-25
Figure 4-34	Firewall Custom Rules Screen	4-26
Figure 4-35	Quality of Service Configuration Screen	4-27

Document 5 **Configuring Chassis Ports in the EN-4000**

Figure 5-1	EN-4000 Interface Overview Screen	5-1
Figure 5-2	Screen to Create an Interface	5-2
Figure 5-3	EN-4000 Interface Overview Screen	5-2
Figure 5-4	LAN Interface General Setup Screen	5-3
Figure 5-5	LAN Interface DHCP Server Advanced Settings Screen	5-4
Figure 5-6	LAN Interface Common Configuration Advanced Settings Screen	5-5
Figure 5-7	LAN Interface Physical Settings Screen	5-5
Figure 5-8	LAN Interface Firewall Settings Screen	5-6
Figure 5-9	EN-4000 Interface Overview Screen	5-6
Figure 5-10	WAN Interface General Setup Screen	5-7
Figure 5-11	WAN Interface Advanced Settings Screen	5-7
Figure 5-12	WAN Interface Physical Settings Screen	5-8
Figure 5-13	WAN Interface Firewall Settings Screen	5-8

Document 6	Configuring a MultiWAN for the EN-4000	
Figure 6-1	EN-4000 MultiWAN to Two Wireless Carriers	6-2
Figure 6-2	MultiWAN Overview Screen	6-2
Figure 6-3	MultiWAN Interface Configuration Summary Screen	6-3
Figure 6-4	MultiWAN Interface Configuration Detail Screen	6-4
Figure 6-5	MultiWAN Interface Configuration Summary Screen	6-5
Figure 6-6	MultiWAN Member Configuration Summary Screen	6-6
Figure 6-7	MultiWAN Member Configuration Detail Screen	6-7
Figure 6-8	MultiWAN Policy Configuration Summary Screen	6-8
Figure 6-9	MultiWAN Policy Configuration Detail Screen	6-9
Figure 6-10	MultiWAN Rule Configuration Summary Screen	6-10
Figure 6-11	MultiWAN Rule Configuration Detail Screen	6-11
Figure 6-12	MultiWAN Rule Configuration Summary Screen	6-12
Figure 6-13	MultiWAN Overview Screen	6-13
Document 7	Configuring the EN-4000's Serial Ports	
Figure 7-1	Network Interfaces Screen	7-1
Figure 7-2	Serial Port Configuration Screen	7-2
Figure 7-3	Serial Port Configuration Detail	7-3
Figure 7-4	Serial Port Configuration Detail for Telnet Terminal	7-4
Figure 7-5	Serial Port Configuration Detail for Frame Relay (Synchronous Mode)	7-5
Figure 7-6	Serial Port Configuration Detail for Frame Relay (IP Mode)	7-6
Figure 7-7	Serial Port Configuration Detail for Asynchronous Encapsulation	7-7
Figure 7-8	Serial Port Configuration Screen with a Row for a New Protocol	7-8
Figure 7-9	Serial Port Configuration Detail Screen for a New Protocol	7-9
Document 8	The EN-4000's Solid-State Input/Output Card	
Figure 8-1	EN-4000 with Solid-State I/O Card	8-1
Figure 8-2	Pins on the I/O Connector Port (Phoenix Part Number 1778829)	8-2
Figure 8-3	Mating Connector (Phoenix Part Number 1778890)	8-2
Figure 8-4	Mating Connector, Back View	8-3
Figure 8-5	Mating Connector, with Cables, Back View	8-3
Figure 8-6	EN-4000 with Solid-State I/O Card and Cables	8-3
Figure 8-7	Wiring for Alarm Detection	8-4
Figure 8-8	SSR Connections for Power Loss or Alarm Condition	8-5
Figure 8-9	Network Interface Overview	8-6
Figure 8-10	Configuration Screen for the I/O Card	8-7
Figure 8-11	Detail: Checkbox Selected to Enable the I/O Card	8-7
Figure 8-12	Selecting the Value for Input Channel 1	8-8
Figure 8-13	Selecting the Value for Output Channel 1	8-9
Figure 8-14	Completed Configuration for Solid-State I/O Card	8-10
Figure 8-15	Status of the EN-4000's I/O Card	8-11
Figure 8-16	Communication Enabled between EN-4000 and enCloud	8-11
Figure 8-17	Table of Devices, Filtered to List the EN-4000 with Solid-State I/O Card	8-13

Figure 8-18	Detail from Figure 8-17 (Table of Devices, Filtered)	8-13
Figure 8-19	Information about Selected Device (EN-4000 with Solid-State I/O Card)	8-14
Figure 8-20	Detail: Statuses of I/O Channels in Selected EN-4000	8-14

Document 9 The EN-4000™ in IPsec Virtual Private Networks

Figure 9-1	List of Configured IPsec VPN Tunnels	9-2
Figure 9-2	Configuring an IPsec VPN Tunnel	9-3
Figure 9-3	List of Configured IPsec VPN Tunnels, Including the Tunnel Named Tunnel 01	9-4
Figure 9-4	Configuring IPsec Defaults	9-5
Figure 9-5	Diagnostics Screen	9-7
Figure 9-6	Ping Set-Up Area (Detail of Diagnostics Screen)	9-7
Figure 9-7	Messages Showing Successful Ping	9-8
Figure 9-8	Message Showing Unsuccessful Ping	9-8
Figure 9-9	List of VPN Tunnel Configuration Scripts	9-9
Figure 9-10	Status of IPsec VPN Tunnels	9-9
Figure 9-11	Screen for Link to Online Help	9-10
Figure 9-12	Web Page for StrongSwan Test Network	9-10
Figure 9-13	Web Page for StrongSwan General Connection Parameters	9-11
Figure 9-14	System Log	9-12
Figure 9-15	EN-4000s as VPN Gateways	9-14
Figure 9-16	Sample IPsec Encryption and Encapsulation	9-15
Figure 9-17	EN-4000 Terminating Tunnel from VPN Client	9-16
Figure 9-18	EN-4000 Tunnel Switching between VPN Client and VPN Host	9-18

Document 10 SLE™ in Virtual Private Networks

Figure 10-1	IPsec VPN Tunnel Screen for a VPN Tunnel Initiator	10-2
Figure 10-2	IPsec Tunnel Configuration Screen for a VPN Tunnel Initiator	10-3
Figure 10-3	IPsec Defaults Configuration Screen for a VPN Tunnel Initiator	10-4
Figure 10-4	IPsec VPN Tunnel Screen for a VPN Tunnel Responder	10-5
Figure 10-5	IPsec Tunnel Configuration Screen for a VPN Tunnel Responder	10-6
Figure 10-6	IPsec Defaults Configuration Screen for a VPN Tunnel Responder	10-7
Figure 10-7	Firewall Zone Settings Screen for the IPsec VPN Tunnel Responder	10-8
Figure 10-8	General Firewall Settings Screen for the WAN Zone of the VPN Tunnel Responder	10-9
Figure 10-9	Advanced Firewall Settings Screen for the WAN Zone of the VPN Tunnel Responder	10-10
Figure 10-10	Firewall Zone Settings Screen for the IPsec VPN Tunnel Responder	10-11
Figure 10-11	IPsec VPN Tunnel Screen for a VPN Tunnel Initiator	10-12
Figure 10-12	Firewall Zone Settings Screen for the IPsec VPN Tunnel Initiator	10-13
Figure 10-13	IPsec VPN Tunnel Screen for a VPN Tunnel Initiator	10-13
Figure 10-14	Firewall Zone Settings Screen for the IPsec VPN Tunnel Initiator	10-14
Figure 10-15	Advanced Firewall Settings Screen for the WAN Zone of the VPN Tunnel Initiator	10-14
Figure 10-16	Firewall Traffic Rules Screen for an IPsec VPN Tunnel Responder	10-16
Figure 10-17	Firewall Rule Configuration Screen for SLE in VPNs, TCP_10501	10-17
Figure 10-18	Firewall Rule Configuration Screen for VPNs, ESP protocol	10-18

Figure 10-19	Firewall Rule Configuration Screen for VPNs, AH protocol	10-18
Figure 10-20	Firewall Rule Configuration Screen for VPNs, IKE	10-19
Figure 10-21	Firewall Rule Configuration Screen for VPNs, IPsec_NAT_T	10-19
Figure 10-22	VPN Responder's Firewall Traffic Rules Screen for a Source NAT	10-20
Figure 10-23	Custom Command Configuration Screen, Empty	10-21
Figure 10-24	Custom Command Configuration Screen to Add a Record	10-21
Figure 10-25	Custom Command Configuration Screen with One Entry, Not Yet Saved as a Record	10-22
Figure 10-26	Custom Command Configuration Screen with One Record	10-22
Figure 10-27	Custom Command Dashboard	10-22
Figure 10-28	Report for Selected Custom Command, SLE Status	10-23

Document 11 DMNR in the EN-4000

Figure 11-1	DMNR Configuration Screen	11-2
Figure 11-2	Static Routes Screen	11-4
Figure 11-3	Network Interfaces Screen	11-5
Figure 11-4	Screen for Firewall Zone Settings (Including MSS Clamping)	11-6
Figure 11-5	Custom Rule for Firewall	11-7
Figure 11-6	DMNR GRE Interface	11-7

Document 12 Monitoring the EN-4000

Figure 12-1	Status Overview Screen	12-1
Figure 12-2	Initial Statistics Screen	12-3
Figure 12-3	Collectd Method of Statistics Collection	12-3
Figure 12-4	Statistics Collectd Settings Screen	12-4
Figure 12-5	Statistics Interface Plug-In Configuration Screen	12-4
Figure 12-6	Statistics Wireless Interface Plug-In Configuration Screen	12-5
Figure 12-7	Statistics Collectd Output Plug-In RRDTool Screen	12-5
Figure 12-8	Statistics Collectd System Load Plug-In Screen	12-5
Figure 12-9	Initial Statistics Screen	12-6
Figure 12-10	Initial Screen for Graphs of EN-4000 Statistics	12-6
Figure 12-11	Graph for EN-4000 LAN Interface Statistics	12-7
Figure 12-12	Graph for EN-4000 System Load Statistics	12-8
Figure 12-13	Realtime Load Performance Graph	12-9
Figure 12-14	Realtime Load Performance Graph at a Later Time	12-10
Figure 12-15	Realtime Performance Graph of LAN Bridge Traffic	12-10
Figure 12-16	Realtime Performance Graph of WAN Port Traffic	12-11
Figure 12-17	Realtime Performance Graph of LAN Port Traffic	12-11
Figure 12-18	Realtime Performance Graph of Network Connections	12-12
Figure 12-19	Status Routes Screen	12-12
Figure 12-20	Diagnostics Screen	12-13
Figure 12-21	Ping Set-Up Area (Detail of Diagnostics Screen)	12-13
Figure 12-22	Messages Showing Successful Ping	12-14
Figure 12-23	Message Showing Unsuccessful Ping	12-14
Figure 12-24	Firewall Status Screen (Part 1 of 2)	12-15
Figure 12-25	Firewall Status Screen (Part 2 of 2)	12-16

Figure 12-26	System Processes	12-17
Figure 12-27	Kernel Log (Part 1 of 3)	12-18
Figure 12-28	Kernel Log (Part 2 of 3)	12-19
Figure 12-29	Kernel Log (Part 3 of 3)	12-20
Figure 12-30	System Log (Part 1 of 2)	12-21
Figure 12-31	System Log (Part 2 of 2)	12-22

Document 13 Configuring the EN-4000's 802.11 Wireless Card

Figure 13-1	Overview Screen for Wireless Configuration	13-2
Figure 13-2	Wireless Access Point Initial Configuration Screen	13-3
Figure 13-3	Wireless Configuration Screen, Wireless Security	13-4
Figure 13-4	Wireless Configuration Screen, MAC Filter	13-4
Figure 13-5	Wireless Configuration Screen, Advanced Settings	13-5
Figure 13-6	EN-4000 Interfaces Screen	13-6
Figure 13-7	LAN Interfaces Screen	13-6
Figure 13-8	LAN Interfaces Physical Settings Screen	13-7
Figure 13-9	Wireless Overview Screen	13-7
Figure 13-10	Wireless Access Point Configuration Screen	13-8
Figure 13-11	EN-4000 as Wireless Access Point	13-9
Figure 13-12	Wireless Overview Screen	13-9
Figure 13-13	EN-4000 as Wireless Client	13-10
Figure 13-14	Overview Screen for Wireless Configuration	13-10
Figure 13-15	Available Wireless Networks	13-11
Figure 13-16	Log-In Screen for a Wireless Network	13-11
Figure 13-17	Wireless Network Configuration Screen	13-12
Figure 13-18	Wireless Network Configuration Screen, Advanced Settings	13-13
Figure 13-19	Wireless Network Configuration Screen, Wireless Security	13-13
Figure 13-20	Wireless Network Configuration Screen, General Device Settings	13-14
Figure 13-21	Completed Configuration as Wireless WAN Client	13-14
Figure 13-22	Firewall Zone Settings Screen	13-15
Figure 13-23	Firewall Zone Settings LAN Screen	13-15
Figure 13-24	Firewall Zone Settings LAN Screen, Advanced Settings	13-16
Figure 13-25	Firewall Zone Settings LAN Screen, General Settings	13-16
Figure 13-26	Interfaces on the EN-4000	13-17
Figure 13-27	Additional Devices on the LAN Using the EN-4000 Wireless Client's Connection to the Internet	13-17
Figure 13-28	EN-4000 Status	13-18

Document A Basic Safety Guidelines

Figure A-1	Wrist Strap Grounding	A-2
------------	-----------------------	-----

Document B System Administration Screens in the EN-4000

Figure B-1	System Screen to Schedule Tasks	B-1
Figure B-2	System Custom Commands Dashboard Screen	B-1
Figure B-3	System Custom Commands Configuration Screen	B-2
Figure B-4	System Administration	B-2

Figure B-5	System Start-Up Screen	B-3
Figure B-6	System Back-Up Actions	B-4
Figure B-7	System Back-Up Configuration	B-4
Document C	Cloud Management for the EN-4000™	
Figure C-1	Interface Overview Screen	C-2
Figure C-2	enCloud Configuration Menu	C-2
Document E	EN-4000 LEDs	
Figure E-1	EN-4000 Front Panel with a Dual Serial-Port Module in an Expansion Slot	E-1
Document F	Reference Sheet for the EN-4000's RJ45 Serial Port	
Figure F-1	Dual Serial-Port Module for the EN-4000	F-1
Figure F-2	Pin Locations for Female RJ45 Serial Port Connector	F-1
Figure F-3	Pin Locations for Female RJ45 Ethernet Connector	F-2
Document G	VPNC Scenario for IPsec Interoperability	
Figure G-1	Scenario 1: Gateway-to-Gateway VPN	G-1
Figure G-2	Status Overview Screen for EN-4000 Management System	G-4
Figure G-3	List of Configured IPsec VPN Tunnels	G-4
Figure G-4	Configuring an IPsec VPN Tunnel for VPNC Scenario 1	G-5
Figure G-5	List of Configured IPsec VPN Tunnels, Including the Tunnel Named Scen_1_VPNC	G-6
Figure G-6	Configuring IPsec Defaults for VPNC Scenario 1	G-7
Figure G-7	List of Configured IPsec VPN Tunnels, with IPsec Defaults for Testing the Tunnel Named Scen_1_VPNC	G-8
Figure G-8	Status of IPsec VPN Tunnels	G-9
Figure G-9	System Log	G-10
Document H	EN-4000™ Quick Configuration Guide	
Figure H-1	EN-4000 Log-In Screen	H-1
Figure H-2	EN-4000 Status Overview Screen	H-3
Figure H-3	EN-4000 Application Configuration Screen	H-4
Figure H-4	Dropdown Menu for EN-4000 Device Mode	H-5

