
Configuring the EN-2000 for its Network Functions

The EN-2000 provides wireless and cabled connections to a local area network (LAN), to a wide area network (WAN), and to peripheral devices and remote devices.

Before configuring the EN-2000, you may wish to review the document [EN-2000 Hardware Description and Specifications](#). See the document [Using the EN-2000's Management System](#) for information on navigating the EN-2000 management screens. After configuring the EN-2000, you may wish to study the document [Monitoring the EN-2000](#).

See the following:

- [Section 3.1, Configuring Network Hosts](#), on page 3
- [Section 3.2, Setting the APN](#), on page 4
- [Section 3.3, Routing](#), on page 4
- [Section 3.4, Firewall Configuration](#), on page 6
- [Section 3.5, Configuring Traffic Priority](#), on page 8
- [Section 3.6, Port Forwarding](#), on page 8
- [Section 3.7, Configuring the EN-2000 for VRRP](#), on page 14

Note: If you prefer quick installation, see the following documents:

- [EN-2000™ Quick Installation Guide](#)
- [EN-2000™ Quick Configuration Guide](#)
- [Quick Guide to EN-2000™ LED Codes](#)

When you log onto the EN-2000 management system (for details, see [Logging In](#) in the document [Using the EN-2000's Management System](#)), the first management screen that displays is the EN-2000 Status Overview Screen ([Figure 3-1](#)).

Figure 3-1. EN-2000 Status Overview Screen

The screenshot displays the EN-2000 Status Overview Screen. At the top, the Encore Networks logo is on the left, and the device information 'EN 2000 Phone/MTN#', 'Device Model: Cell Failover', and 'Auto Refresh: on' is on the right. The 'Changes: 0' indicator is in the top right corner. Below the logo is a navigation bar with 'Status', 'System', 'Network', 'Logout', and 'Quickstart'. Underneath is another navigation bar with 'Overview', 'Routes', 'System Log', 'Realtime Graphs', and 'EnCloud'. The main content area is titled 'Status' and shows 'Uptime: 22h 44m 2s'.

System

Device Name	EN2000
Device Model	EN 2000
Firmware Version	17322 05 00
Build	247Wm
Local Time	Thu Feb 1 21:14:20 2018
Operation Status	Online using WAN

Cellular Information

RSSI	-81 dBm
RSRP	-108 dBm
RSRQ	-14 dB
Connection Type	E-UTRAN(LTE)
IMEI	351622071198259
SIM ID	8944100030031919708
SIM STATUS	READY(CPIN SET: NA)
IMSI	34199505512784
APN	wlgn4.com
Carrier	vodafone UK
PCI	707571E
FARFCN	6300
Registration Status	Registered
Module Name	LE910-EU V2(FW: 20.00.402)
SIM Slot	1
SIM Switch Reason	Not Applicable
SIM Failback Status	Not Applicable

Network

Network	Status
CELL	Uptime: 0h 47m 10s MAC-Address: 00:00:11:12:13:14 Protocol: ncm RX: 5.1836 KB (101 Pkts.) TX: 5.1260 KB (95 Pkts.) IP Data: 8.9121 KB IPv4: 10.76.103.146/24
LAN	Uptime: 22h 44m 30s MAC-Address: 00:A0:EB:80:A8:60 Protocol: static RX: 45.5823 MB (394433 Pkts.) TX: 159.0443 MB (344491 Pkts.) IP Data: 209.8571 MB Link Status: UP, 100Mbps, Full-Duplex
WAN	Uptime: 22h 44m 26s MAC-Address: 00:A0:EB:80:A8:61 Protocol: dhcp RX: 158.4550 MB (453815 Pkts.) TX: 95.7828 MB (753532 Pkts.) IP Data: 246.7442 MB IPv4: 172.17.1.51/24 Link Status: UP, 100Mbps, Full-Duplex

Wireless

AR9342 802.11an Radio	SSID: encore_wifi60_5GHz Mode: Master Channel: 124 (5.620 GHz) Bitrate: 300 Mbit/s BSSID: 00:A0:EB:80:A8:62	Encryption: WPA2 PSK (CCMP) ACK Timeout: 25 DFS Status: Enabled
AR9280 802.11abgn Radio	SSID: encore_wifi60_2.4GHz Mode: Master Channel: 6 (2.437 GHz) Bitrate: 300 Mbit/s BSSID: 00:A0:EB:80:A8:63	Encryption: WPA2 PSK (CCMP) ACK Timeout: 64 DFS Status: Disabled

Associated Stations (0)

MAC-Address	Network	Device Name	Last IP	Signal	Signal/Chains	Noise	Tx Rate	Rx Rate	Tx-CCQ
No information available									

DHCP Leases

Hostname	IPv4-Address	MAC-Address	Leasetime remaining
There are no active leases.			

The EN-2000 Status Overview Screen summarizes information for the firmware and for cellular wireless, LAN, WAN, and 802.11 wireless networks.

Note: In Figure 3-1, SIM information is displayed at the end of the list of specifications in the cellular wireless connection. In Figure 3-2, the information within the red rectangle indicates that SIM 1 is in use.

Figure 3-2. Information for Dual SIMs in the EN-2000

Cellular Information	
RSSI	-81 dBm
RSRP	-108 dBm
RSRQ	-14 dB
Connection Type	E-UTRAN(LTE)
IMEI	351622071198259
SIM ID	89441000300331919708
SIM STATUS	READY(CPIN SET: NA)
IMSI	34159505512784
APN	wlapn4.com
Carrier	vodafone UK
PCI	7D7671E
EARFCN	6300
Registration Status	Registered
Module Name	LE910-EU V2(FW: 20.00.402)
SIM Slot	1
SIM Switch Reason	Not Applicable
SIM Failback Status	Not Applicable

Specification of the SIM in use indicates that two SIMs are installed in the EN-2000. If only one SIM is installed in the EN-2000, information for the SIM will be similar to the display surrounded by red in [Figure 3-3](#).

Figure 3-3. Information for a Single SIM in the EN-2000

Module Name	LE910-EU V2(FW: 20.00.402)
SIM Slot	Not Applicable
SIM Switch Reason	Not Applicable
SIM Failback Status	Not Applicable

If no SIM is installed in the EN-2000, information for the SIM will be similar to the display surrounded by red in [Figure 3-4](#); that is, no SIM ID will be displayed.

Figure 3-4. Information if No SIM is in the EN-2000

IMEI	3C9692C01D1C43B
SIM ID	

3.1 Configuring Network Hosts

- To configure names for host devices (in the private network and in the public network), select **Network**, **Hostnames**.
 - ❖ The Network Host Names Screen is displayed ([Figure 3-5](#)).

Figure 3-5. Network Host Names Screen



- To add a host name, click on the **Add** button.
 - ❖ An entry row is added to the screen, as shown in the Network Host Names Add Screen ([Figure 3-6](#)).

Figure 3-6. Network Host Names Add Screen



- 3 In the **Hostname** field, type a name for the host device.
- 4 In the **IP Address** field, type the host device's IP address.
- 5 Then do one of the following:
 - a If you want to add another host device to the list, return to [step 2](#).
 - b If you wish to delete a host name, select the **Delete** button at the right end of that host name's row.
 - ❖ The host name is removed from the list.
 - c When you have finished configuring host devices, do one of the following:
 - i If you wish to save the configuration and use it immediately, select **Save and Apply**.
 - ii If you wish to save the configuration, but not to use it until the EN-2000 is restarted, select **Save**.
 - iii If you wish to discard the configuration, select **Reset**.

3.2 Setting the APN

A mobile device must have an access point number (APN) so that connecting devices can identify the device and its connection protocols.

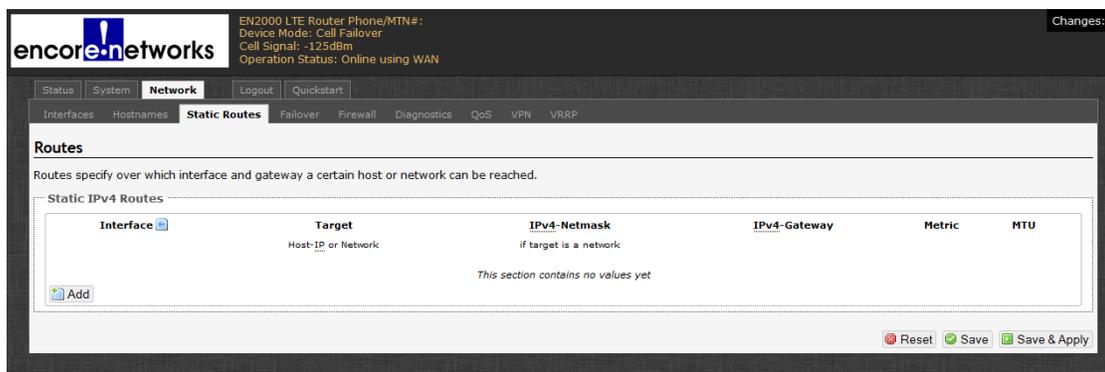
To set the APN for the cellular wireless interface, see the document [Setting Cellular Wireless Parameters in the EN-2000](#).

3.3 Routing

Configure the routing screens with settings determined by your network administrator.

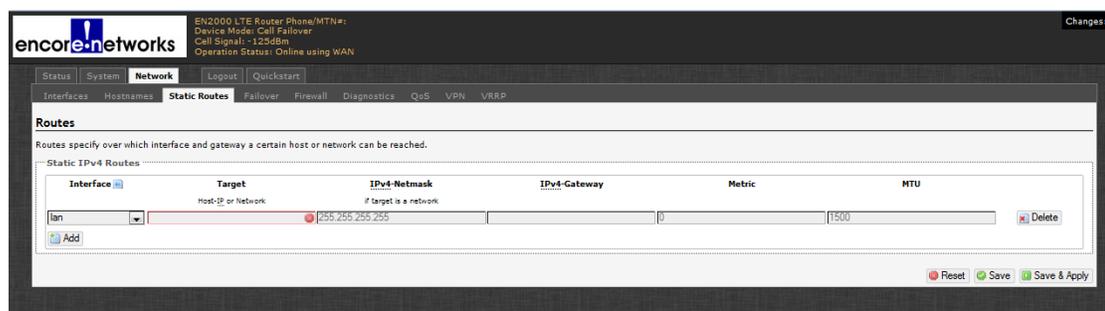
- 1 To create a static routing table, select **Network, Static Routes**.
 - ❖ The Static Routes Configuration Screen is displayed ([Figure 3-7](#)).

Figure 3-7. Static Routes Configuration Screen



- 2 Select the **Add** button under the Interface headings for IPv4 or for IPv6, as appropriate for your network. (The example uses IP version 4.)
 - ❖ The Static Routes Table is displayed ([Figure 3-8](#)).

Figure 3-8. Static Routes Table



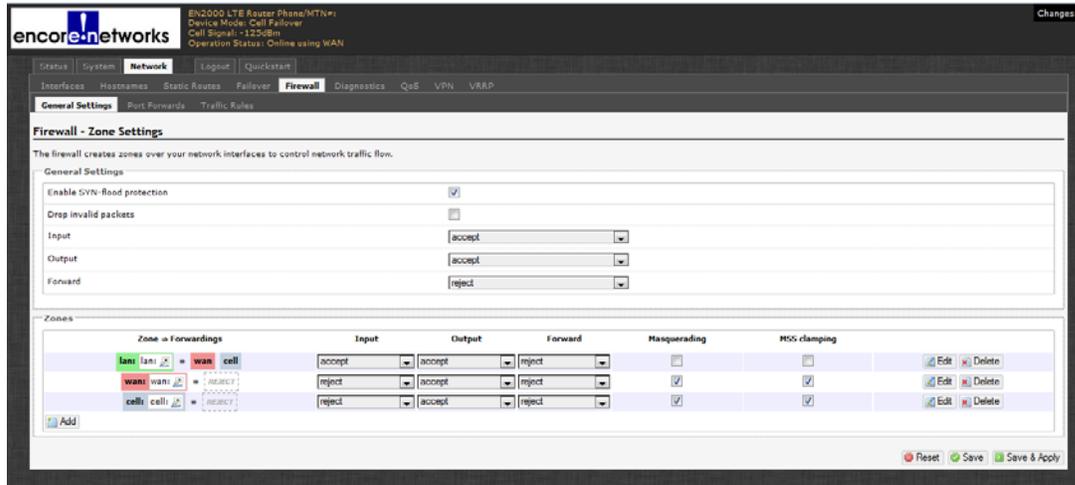
- 3 Add information for the new entry.
- 4 Do one of the following:
 - a If you wish to add another static route, return to [step 2](#).
 - b If you wish to delete a route from the table, select the **Delete** button at the right end of that row.
 - ❖ The row is deleted from the table.
 - c When you have finished configuring this screen, select the **Save & Apply** button.
 - ❖ The Static Routes Configuration Screen is redisplayed (recall [Figure 3-7](#)).
- 5 On the Static Routes Configuration Screen, do one of the following:
 - a If you wish to save the configuration and use it immediately, select **Save and Apply**.
 - b If you wish to save the configuration, but not to use it until the EN-2000 is restarted, select **Save**.
 - c If you wish to discard the configuration, select **Reset**.

3.4 Firewall Configuration

Get all firewall configuration settings from your network administrator.

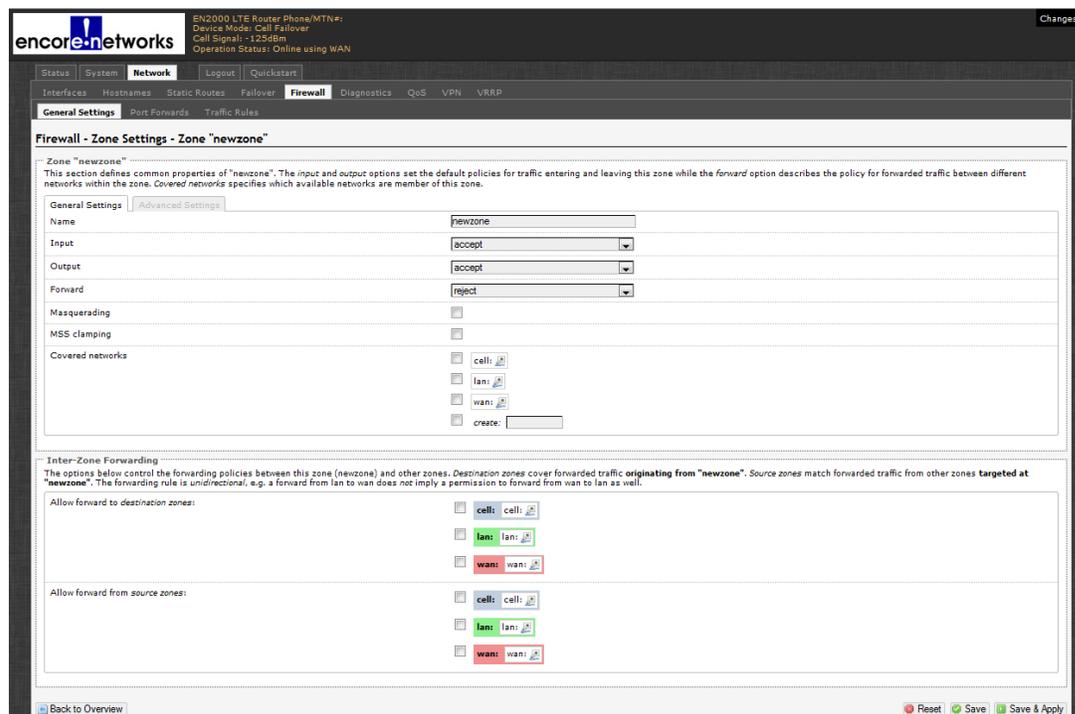
- 1 Select the **Network** tab. Then select the **Firewall** tab. If necessary, select the **General Settings** tab.
 - ❖ The Firewall General Settings Screen is displayed (Figure 3-9).

Figure 3-9. Firewall General Settings Screen



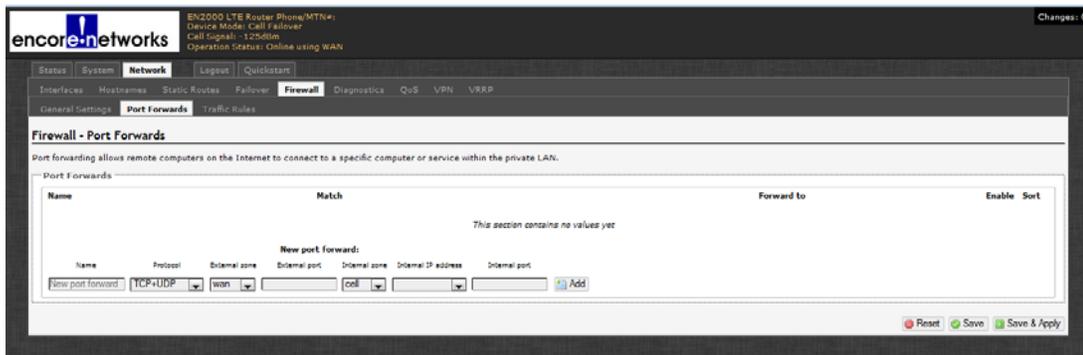
- 2 After configuring the fields on the screen, select the **Save & Apply** button. Then select the **Add** button.
 - ❖ The Firewall General Settings Screen to Add Record is displayed (Figure 3-10).

Figure 3-10. Firewall General Settings Screen to Add Record



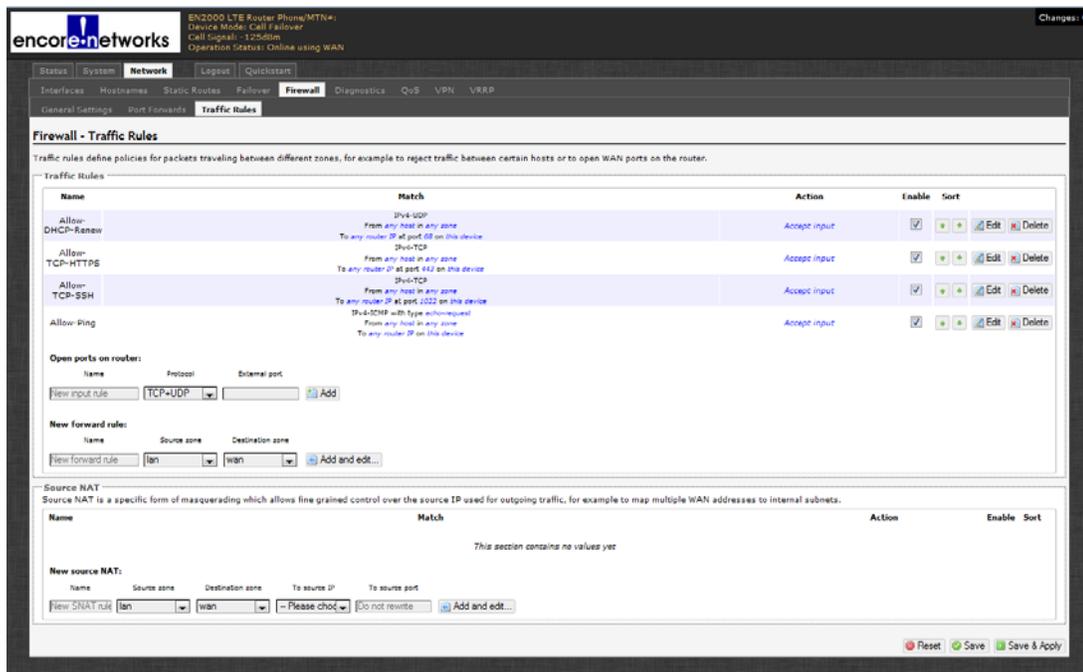
- 3 After configuring the fields on the screen, select the **Save & Apply** button. Then select the tab for **Port Forwards**.
 - ❖ The Firewall Port Forward Screen is displayed ([Figure 3-11](#)).

Figure 3-11. Firewall Port Forward Screen



- 4 See [Port Forwarding](#) on page 8. After configuring the fields on the screen, select the **Save & Apply** button. Then select the tab for **Traffic Rules**.
 - ❖ The Firewall Traffic Rules Screen is displayed ([Figure 3-12](#)).

Figure 3-12. Firewall Traffic Rules Screen



- 5 After configuring the fields for the firewall, do one of the following:
 - a If you wish to save the configuration and use it immediately, select **Save and Apply**.
 - b If you wish to save the configuration, but not to use it until the EN-2000 is restarted, select **Save**.
 - c If you wish to discard the configuration, select **Reset**.

3.5 Configuring Traffic Priority

See the document [Configuring Traffic Priority for the EN-2000](#).

3.6 Port Forwarding

See the following sections:

- [Configuring the Port](#)
- [Opening the Port for Use](#)

! **Caution:** Remember to select the **Save and Apply** button after configuring each screen. Otherwise, the configuration will be lost.

3.6.1 Configuring the Port

This procedure creates rules for port forwarding.

Note: This procedure discusses configuration of an EN-2000 whose device mode is as a cell router. Some differences in configuration might exist for other device modes. Consult your network administrator for configuration details.

- 1 Log into the EN-2000 management system. (For log-in details, see [Logging In](#), on page 2 of the document [Configuring the EN-2000 for its Network Functions](#).)
- 2 Make sure the device mode for this EN-2000 has been established. To see the device mode, select the **Quickstart** tab.

Note: For information on the device mode, see the [EN-2000™ Quick Configuration Guide](#).

❖ The Quickstart Screen is displayed ([Figure 3-13](#)).

Figure 3-13. Quickstart Screen
Device Mode as Cell Router

The screenshot shows the 'Quickstart' configuration page for an EN2000 LTE Router. The top navigation bar includes 'Status', 'System', 'Network', 'Logout', and 'Quickstart'. The main content area is titled 'Application Configuration' and contains two sections:

- Parameters:** A form with fields for 'Device Mode' (set to 'Cell Router'), 'Device Name' (set to 'NameOfThisDevice'), 'LAN IP' (set to '192.168.10.1'), 'LAN Netmask' (set to '255.255.255.0'), and 'LAN DHCP Server' (set to 'Enabled').
- Device Password:** Fields for 'Password' and 'Confirmation' with toggle icons for visibility.

At the bottom right, there are buttons for 'Reset', 'Save', and 'Save & Apply'.

- 3 Select the **Network** Tab.
- 4 Select the **Firewall** Tab; then select the **Port Forwards** Tab.
 - ❖ The Port Forwarding Table is displayed (Figure 3-14).

Figure 3-14. Port Forwarding Table

The screenshot shows the 'Firewall - Port Forwards' configuration page. It features a table with the following data:

Name	Match	Forward to	Enable	Sort
-	IPv4-TCP, UDP From any host in wan Via any router IP	any host in cell	<input checked="" type="checkbox"/>	

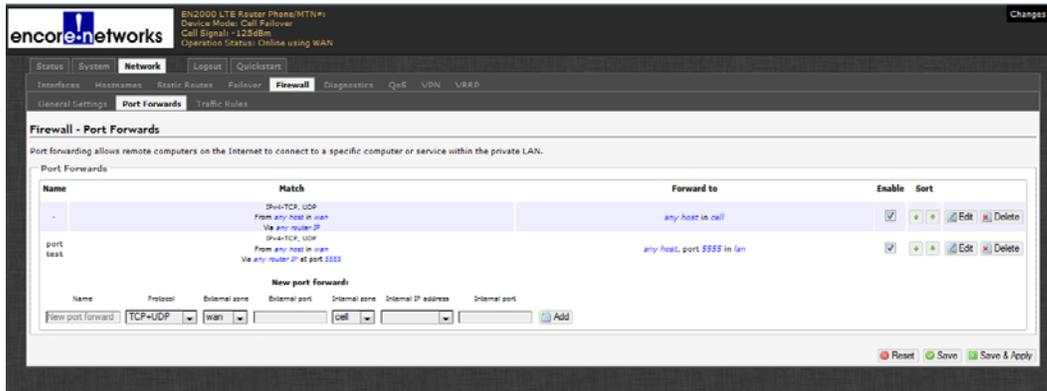
Below the table is a 'New port forwards' section with a form to add a new rule. The form includes fields for 'Name', 'Protocol' (set to 'TCP+UDP'), 'External zone' (set to 'wan'), 'External port', 'Internal zone' (set to 'cell'), 'Internal IP address', and 'Internal port'. An 'Add' button is located at the end of the form.

- 5 Under the heading **New Port Forwards**, add a **Name** for the forwarding rule. Then indicate the **Protocol** and the **External Port** number.

Note: The default value for the **External Zone** is **wan**. Confer with your network administrator about whether to change it to **cell**.
- 6 Change the **Internal Zone** from **cell** to **lan**.
- 7 Add the **Internal IP Address** of your EN-2000 router or of the device on the LAN you want to access.
- 8 If the internal port number the EN-2000 will use for this port forwarding rule is different from the external port number it will use, indicate the **Internal Port** number.
- 9 Select the **Add** button at the righthand end of the entry row.

- ❖ The new port forwarding rule is added to the Port Forwarding Table (Figure 3-15).

Figure 3-15. Port Forwarding Table
Configured with a New Rule

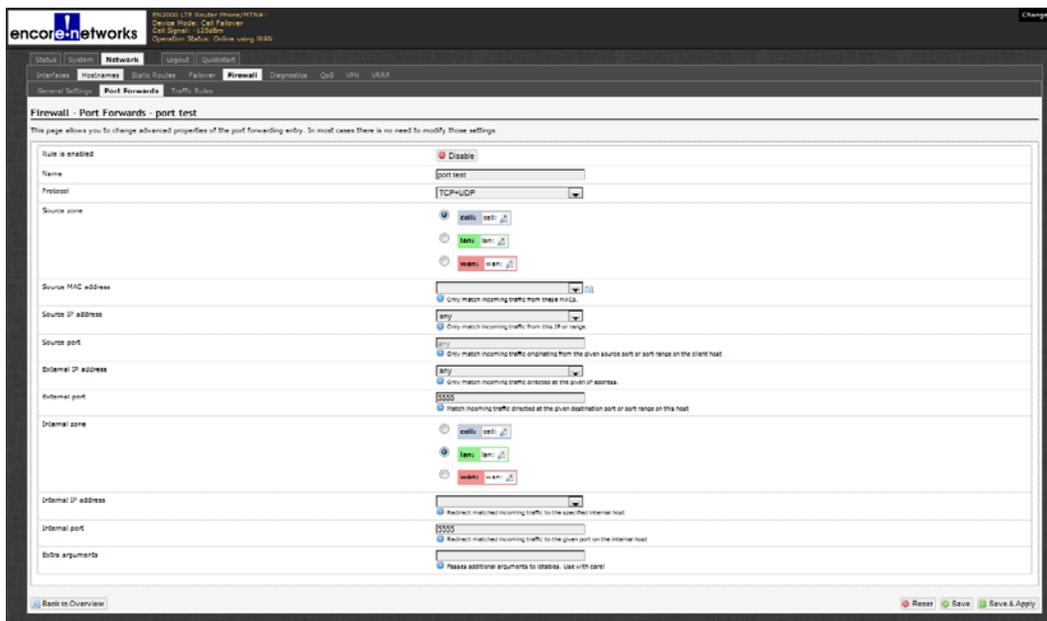


10 Select the **Save and Apply** button.

11 Select the **Edit** button for the port forwarding rule you just added.

- ❖ The Port Forwarding Rule Configuration Screen is displayed (Figure 3-16).

Figure 3-16. Port Forwarding Rule Configuration Screen



12 Make sure the following parameter values are set:

- **Source Zone** wan (to match the setting in [step 6](#) on page 9)
- **Source IP Address** any

Note: The source IP address is the IP address coming into the firewall.

- **External IP Address** any

Note: In this example, the external IP address is the WAN's IP address.

- **External Port** [number] Use the setting configured on the Port Forwarding Table (recall [Figure 3-14](#)).
- **Internal Zone** **lan**
- **Internal Port** [number] Use the setting configured on the Port Forwarding Table (recall [Figure 3-14](#)).

Note: For additional security, you can specify the **Source IP address** or the **External IP address** or both, instead of indicating **any**. (The source IP address is critical; typically, you would set it to allow connectivity only from a specific IP address or range of IP addresses.)

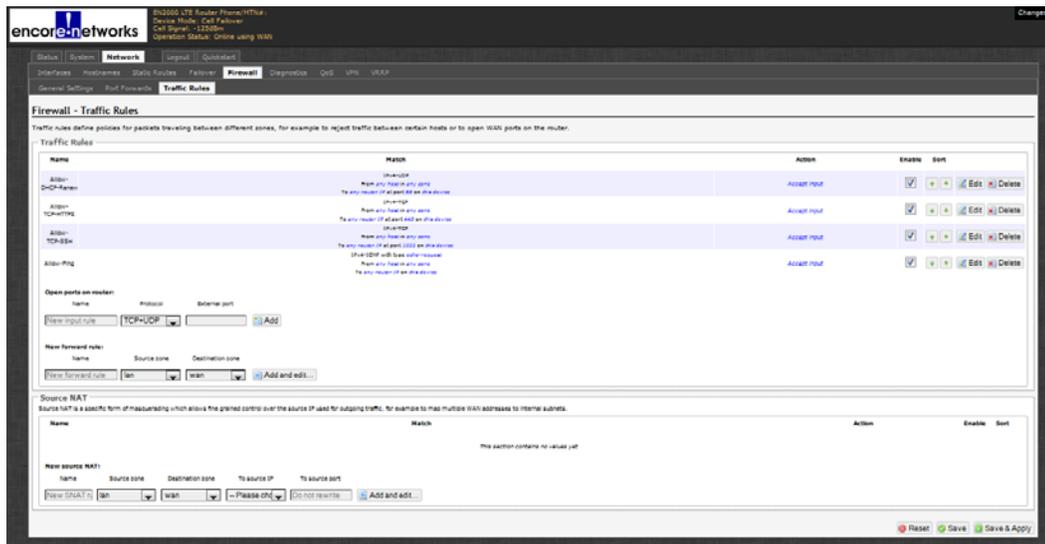
- 13 Select the **Save & Apply** button.
- 14 Then select the **Back to Overview** button.
 - ❖ The Port Forwarding Table is redisplayed (recall [Figure 3-15](#)).
- 15 On that screen, select the **Save & Apply** button.
 - ❖ Port forwarding has been configured.
- 16 Perform the procedure in [Opening the Port for Use](#), on page 11.

3.6.2 Opening the Port for Use

This procedure creates a firewall rule that allows port forwarding to occur.

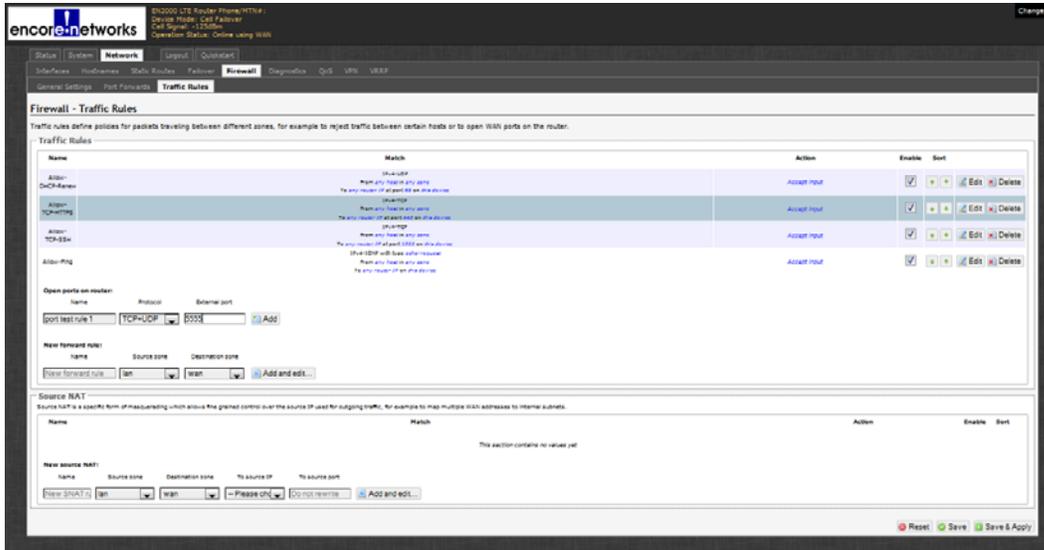
- 1 On the EN-2000 management system, select the **Firewall** tab; then select the **Traffic Rules** tab.
 - ❖ The Table of Firewall Traffic Rules is displayed ([Figure 3-17](#)).

Figure 3-17. Table of Firewall Traffic Rules



- 2 Under the heading **Open Ports on Router**, name the rule and add the port number, as shown in [Figure 3-18](#).

Figure 3-18. Table of Firewall Traffic Rules
Entering a Traffic Rule for a Port

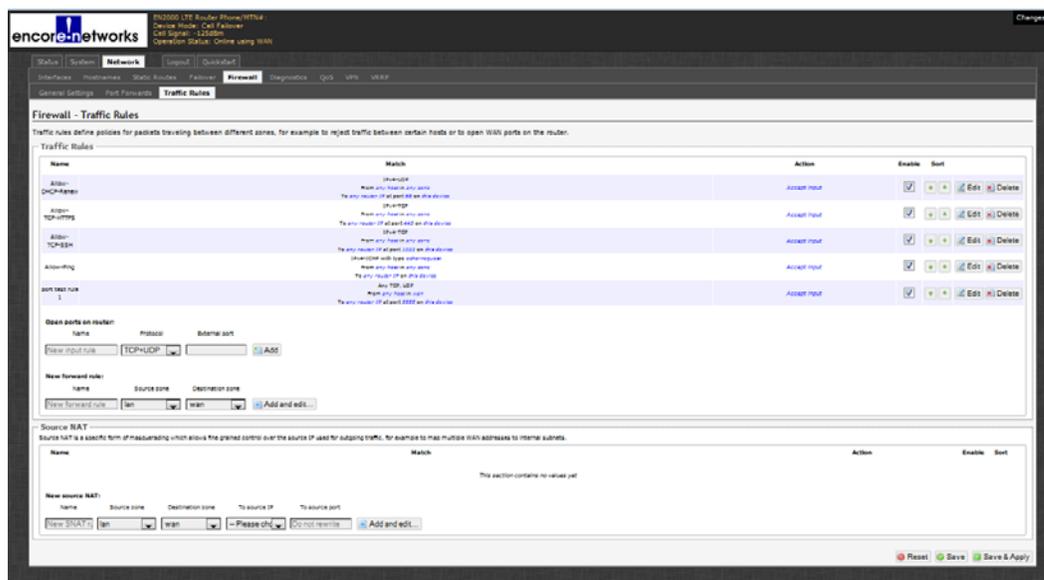


Note: In [Figure 3-18](#), the rule is named **port test rule 1**, and its port is the same as the port number entered in [step 5](#) on page 9. (Recall the Port Forwarding Table, [Figure 3-14](#).)

For good housekeeping, we recommend also using the same rule name as used in [step 5](#) on page 9 (or a name similar to that name).

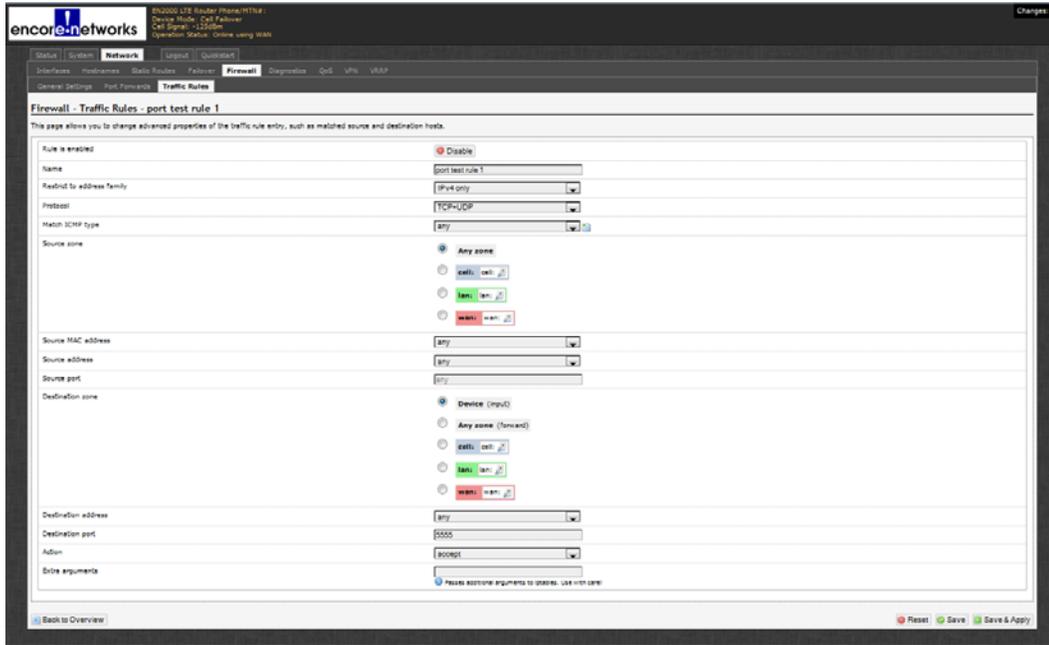
- 3 On the righthand side of the entry row, select the **Add** button.
 - ❖ The Table of Firewall Traffic Rules is redisplayed ([Figure 3-19](#)). It includes the new rule.

Figure 3-19. Table of Firewall Traffic Rules
Updated with New Rule



- 4 On the far right side of the new rule, select the **Edit** button.
 - ❖ The Screen to Edit a Traffic Rule is displayed ([Figure 3-20](#)).

Figure 3-20. Screen to Edit a Traffic Rule



5 On the Screen to Edit a Traffic Rule, make sure the following values are indicated:

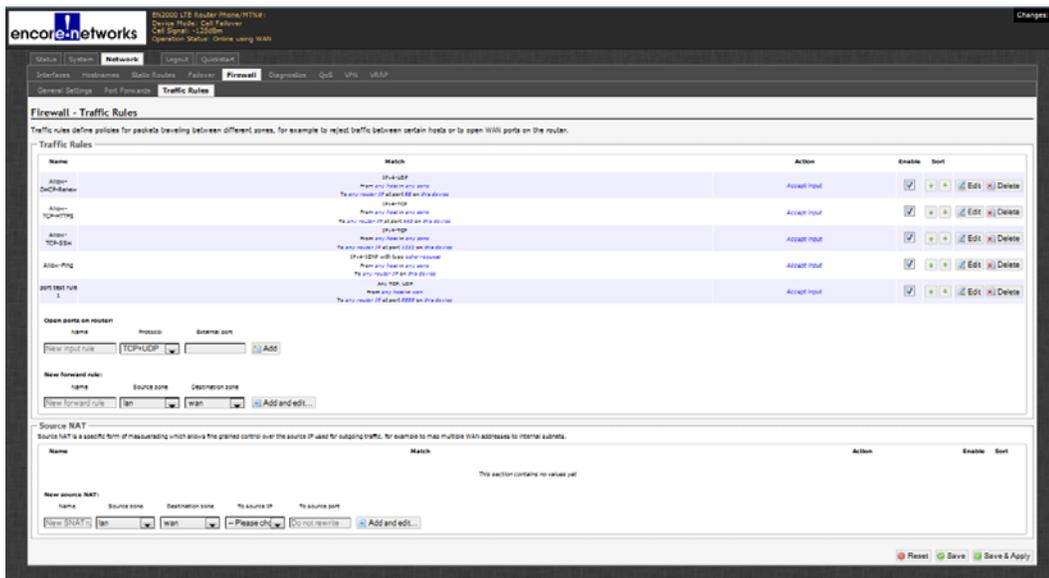
- **Source Zone** wan
 - **Destination Port** same as the port number entered in [step 5](#) on page 9
- Note:** Also recall the Port Forwarding Table, [Figure 3-14](#) on page 9.

6 Select the **Save & Apply** button.

7 Select the **Back to Overview** button.

❖ The Table of Firewall Traffic Rules is redisplayed ([Figure 3-21](#)).

Figure 3-21. Table of Firewall Traffic Rules



- 8 On the Table of Firewall Traffic Rules, select the **Save & Apply** button.
 - ❖ The firewall rule has been configured. The port has been opened.

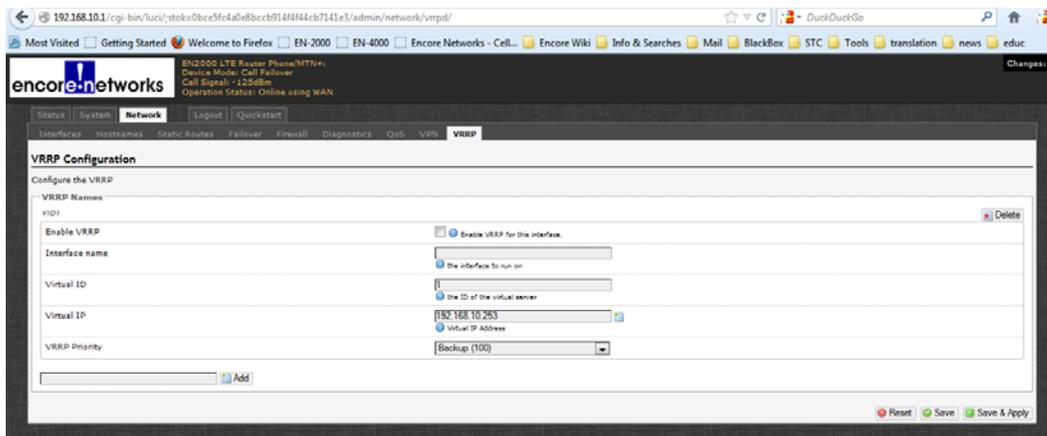
3.7 Configuring the EN-2000 for VRRP

When you install the EN-2000, you can configure VRRP back-up as the EN-2000's principal use. If you wish to do that, see the [EN-2000™ Quick Configuration Guide](#).

However, if you wish to use the EN-2000 for another principal purpose, yet support VRRP, follow the steps in this section.

- 1 On the EN-2000's management screen, select the **Network** tab; then select the **VRRP** tab.
 - ❖ The VRRP Configuration Screen is displayed ([Figure 3-22](#)).

Figure 3-22. VRRP Configuration Screen



- 2 On the VRRP Configuration Screen, do the following:
 - Select the box to **Enable VRRP**.
 - Type the **Interface Name**. Use the EN-2000's network interface (**Cell** or **WAN**) that your network administrator specifies.

Note: Your EN-2000's network interfaces are listed on the EN-2000 Status Overview Screen ([Figure 3-1](#), on page 2).
 - Type the **Virtual ID**. The default value is **01**.
 - Type the **Virtual IP** (the IP address) for the VRRP set. Get this address from your network administrator.
 - Indicate the **VRRP Priority** for this EN-2000. **Primary** (value 255) means that this EN-2000 is the principal router in the VRRP set. **Back-Up** (value 100) means that this router is a back-up in case the primary router fails.

When the primary VRRP router fails, a back-up router in the VRRP set assumes responsibility and control/priority. If there is more than one back-up VRRP router, the back-up router with the highest value assumes priority until the primary router recovers.

The EN-2000 uses asymmetric parameters for VRRP, so when the primary router recovers, it automatically resumes the primary role in the VRRP set.

