
Setting Cellular Wireless Parameters in the EN-2000

SIM Management, APN, and Others

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.

A mobile device must have an access point name (APN) so that carriers of GSM, GPRS, 3G, and 4G LTE networks can identify the device and its connection protocols. Before setting the APN, you may wish to consult the document [Configuring the EN-2000 for its Network Functions](#).

To review the radiofrequency channels available in your EN-2000, see the following:

- [Section 5.1, Radiofrequency Channels in the EN-2000](#), on page 1

APN configuration is part of common configuration for a cellular wireless interface. See one of the following:

- [Section 5.2, APN Configuration in the USA and North America](#), on page 4
- [Section 5.3, APN Configuration in the UK and Europe](#), on page 6

After you have configured the APN setting and other values in the General Setup tab for the EN-2000's Common Configuration, see the following sections for further configuration:

- [Section 5.4, Advanced Settings](#), on page 12
- [Section 5.5, Physical Settings](#), on page 13
- [Section 5.6, SIM Management](#), on page 14

5.1 Radiofrequency Channels in the EN-2000

- 1 Log into the EN-2000 management system. (For details, see [Logging In](#), in the document [Using the EN-2000's Management System](#).)
 - ❖ The EN-2000 Status Overview Screen ([Figure 5-1](#)) is the first screen displayed after you have logged onto the EN-2000 management system.

The status overview includes summaries of the LAN, WAN, cellular wireless ports, and 802.11 wireless (WiFi) ports.

Figure 5-1. EN-2000 Status Overview Screen

The screenshot displays the EN-2000 Status Overview Screen. At the top left is the Encore Networks logo. To the right, it shows 'EN 2000 Phone/MTN#: [redacted]', 'Device Mode: Cell Fallover', and 'Auto Refresh: on'. A 'Changes: 0' indicator is in the top right corner. Below the logo is a navigation bar with tabs for 'Status', 'System', 'Network', 'Logout', and 'Quickstart'. Underneath, there are sub-tabs for 'Overview', 'Routes', 'System Log', 'Realtime Graphs', and 'EnCloud'. The main content area is titled 'Status' and shows 'Uptime: 4d 14h 50m 44s'.

System

Device Name	EN_Router
Device Model	EN 2000
Firmware Version	17322 05 00
Build	246C
Local Time	Wed May 16 10:43:31 2018
Operation Status	Both Cell and WAN Offline

Cellular Information

RSSI	-125 dBm
RSRP	-125 dBm
RSRQ	-125 dB
SINR	0 dB
Connection Type	LTE
IMEI	359692051059211
SIM ID	Not Available
SIM STATUS	NA(CPIN SET: NA)
IMSI	Unknown
APN	VZWINTERNET
Carrier	Unknown
PCI	0
EARFCN	2300
Registration Status	Not Registered
Module Name	ALT3100(FW: ALT3100_04_05_06_00_97_TF)

Network

Network	Status
CELL eth2	Uptime: 0h 0m 0s MAC-Address: 94:B9:B4:18:E0:7E Protocol: dhcp RX: 208.0000 B (4 Pkts.) TX: 15.0508 KB (43 Pkts.) IP Data: 14.5977 KB
LAN br-lan	Uptime: 4d 14h 50m 56s MAC-Address: 00:A0:EB:03:04:FB Protocol: static RX: 83.9289 MB (677982 Pkts.) TX: 1.1049 GB (974295 Pkts.) IP Data: 1.1653 GB IPv4: 192.168.10.1/24 Link Status: UP, 100Mbps, Half-duplex
WAN eth1	Uptime: 0h 3m 58s MAC-Address: 00:A0:EB:03:04:FC Protocol: dhcp RX: 1.4261 GB (3951703 Pkts.) TX: 100.4354 MB (877227 Pkts.) IP Data: 1.4612 GB IPv4: 192.168.101.79/24 Link Status: UP, 100Mbps, Full-Duplex

DHCP Leases

Hostname	IPv4-Address	MAC-Address	Leasetime remaining
HP-p6-2016	192.168.10.198	38:60:77:82:55:1a	10h 17m 44s
?	192.168.10.247	00:a0:eb:02:4c:85	11h 40m 18s

The system management screen for an EN-1000 router or an EN-2000 router indicates the router's EARFCN value (surrounded by a red rectangle in [Figure 5-1](#)). That value indicates the cellular wireless radiofrequency (RF) that the router has locked onto.

The value for the parameter **EARFCN** (EUTRA Absolute Radio Frequency Channel Number) indicates the absolute radiofrequency channel number for EUTRA (Evolved UMTS Terrestrial Radio Access), where UMTS indicates the Universal Mobile Telecommunication System.

[Table 5-1](#) lists EARFCN radiofrequencies and corresponding Verizon Wireless radio-frequency bands for EN-1000 and EN-2000 routers in the U.S. and North America. [Table 5-2](#) lists EARFCN radiofrequencies and corresponding carrier radiofrequency bands for EN-1000 and EN-2000 routers in the U.K. and Europe.

Table 5-1. EARFCN Radiofrequency Bands in the U.S. and North America

Range of EARFCN Radiofrequencies	Verizon Wireless Radiofrequency Band
600 to 1199	Band 2
1950 to 2399	Band 4
2400 to 2699	Band 5
5180 to 5279	Band 13

Table 5-2. EARFCN Radiofrequency Bands in the U.K. and Europe

Range of EARFCN Radiofrequencies	Radiofrequency Band
_____ to _____	Band ____

After you have reviewed radiofrequency bands for the cellular wireless interface, continue with one of the following:

- [Section 5.2, APN Configuration in the USA and North America](#), on page 4
- [Section 5.3, APN Configuration in the UK and Europe](#), on page 6

5.2 APN Configuration in the USA and North America

Some cellular wireless carriers provide over-the-air (OTA) assignment of the APN string. Other carriers may provide an APN to configure manually.

- 1 Connect the EN-2000's wireless antennas, insert the SIM into the EN-2000, position the EN-2000 for good coverage in the wireless network, and power up the EN-2000.
- 2 Wait for the provider to download the EN-2000's APN. After about 15 minutes:
 - ❖ If the EN-2000's Net Status LED is flashing, the cellular connection is good and the APN has been downloaded. (That is the most likely outcome.) You do not need to follow the rest of this procedure.
 - ❖ If the Net Status LED is still off, perform the following steps to set the APN for the cellular wireless interface.
- 3 Log into the EN-2000 management system. (See [Logging In](#), in the document [Using the EN-2000's Management System](#), for a detailed procedure.)
 - ❖ The EN-2000 Status Overview Screen is displayed ([Figure 5-2](#)).

Figure 5-2. EN-2000 Status Overview Screen

The screenshot shows the EN-2000 Status Overview Screen. At the top, it displays the device name (EN2000), device model (EN 2000), firmware version (17229 01 10), and local time (Mon Sep 22 23:36:56 2014). The cellular information section shows a cell signal of -125 dBm and an IMEI of 359692051010438. The network status section shows three interfaces: CELL (eth2), LAN (eth0), and WAN (eth1). The CELL interface is active, showing an uptime of 0h 0m 0s, MAC address 94:B9:B4:09:B2:4A, protocol dhcp, RX 9.57 KB (184 Pkts.), and TX 1.50 MB (3019 Pkts.). The LAN interface is inactive, showing an uptime of 3h 10m 43s, MAC address 04:F0:21:11:86:44, protocol static, RX 9.56 MB (24517 Pkts.), and TX 34.78 MB (37421 Pkts.). The WAN interface is inactive, showing an uptime of 3h 8m 23s, MAC address 04:F0:21:11:86:45, protocol dhcp, RX 35.34 MB (49551 Pkts.), and TX 5.72 MB (34362 Pkts.). The DHCP Leases table at the bottom shows a lease for HP-p6-2016 with IP address 192.168.10.198, MAC address 38:60:77:82:55:1a, and a lease time remaining of 11h 28m 6s.

System	Value
Device Name	EN2000
Device Model	EN 2000
Firmware Version	17229 01 10
Local Time	Mon Sep 22 23:36:56 2014

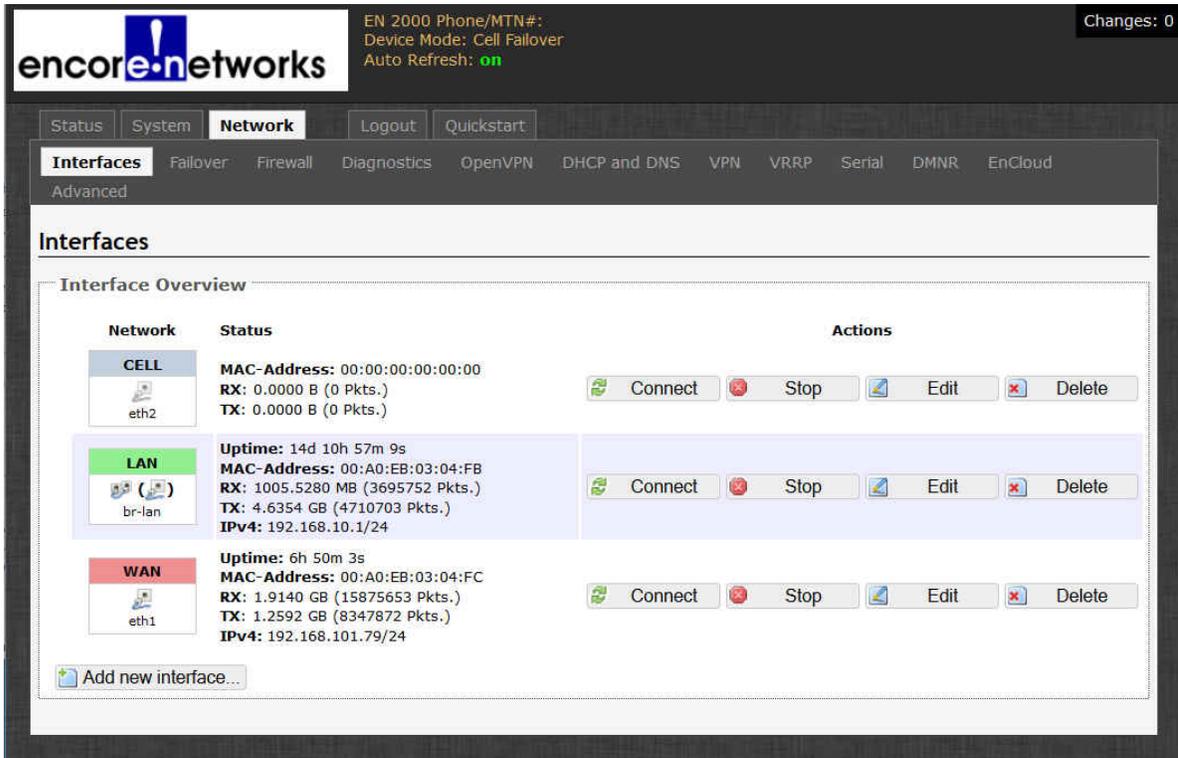
Cellular Information	Value
Cell Signal	-125 dBm
IMEI	359692051010438
SIM ID	

Network	Status
CELL eth2	Uptime: 0h 0m 0s MAC-Address: 94:B9:B4:09:B2:4A Protocol: dhcp RX: 9.57 KB (184 Pkts.) TX: 1.50 MB (3019 Pkts.)
LAN eth0	Uptime: 3h 10m 43s MAC-Address: 04:F0:21:11:86:44 Protocol: static RX: 9.56 MB (24517 Pkts.) TX: 34.78 MB (37421 Pkts.) IPv4: 192.168.10.1/24
WAN eth1	Uptime: 3h 8m 23s MAC-Address: 04:F0:21:11:86:45 Protocol: dhcp RX: 35.34 MB (49551 Pkts.) TX: 5.72 MB (34362 Pkts.) IPv4: 192.168.1.151/24

DHCP Leases	Hostname	IPv4-Address	MAC-Address	Leasetime remaining
	HP-p6-2016	192.168.10.198	38:60:77:82:55:1a	11h 28m 6s

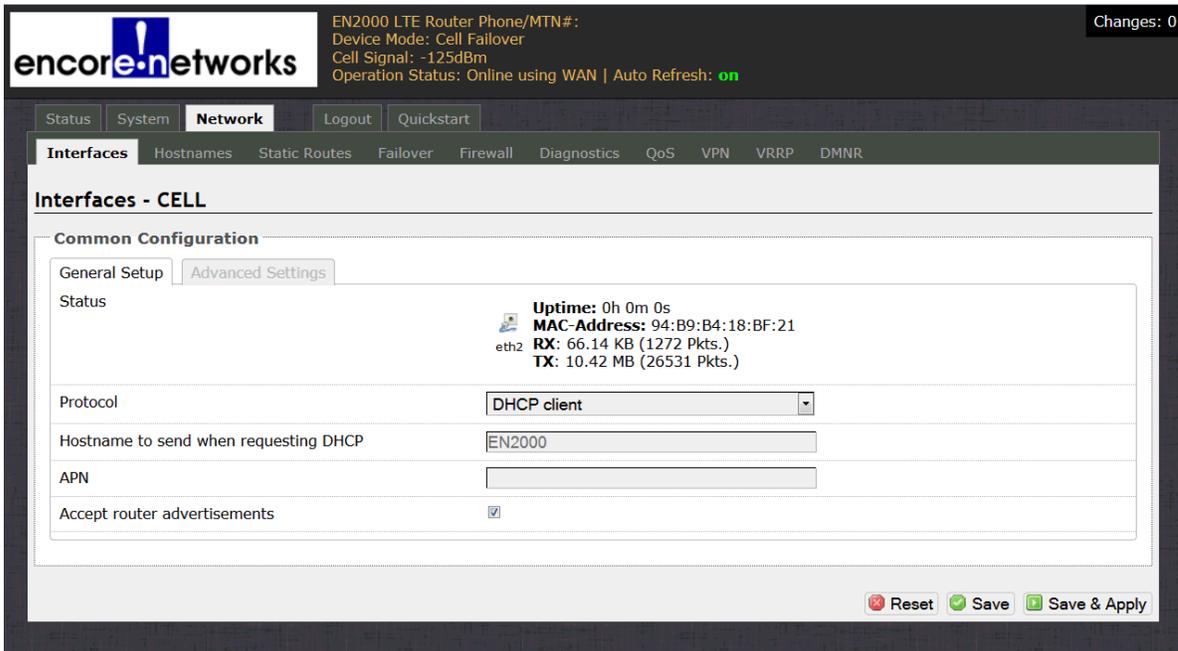
- 4 On the EN-2000 management system, select the **Network** tab.
- 5 Then select the **Interfaces** tab.
 - ❖ The Network Interface Screen is displayed, listing the EN-2000's cellular wireless, LAN, and WAN interfaces (similar to [Figure 5-3](#)).

Figure 5-3. Network Interface Screen



- 6 On the Network Interface Screen, select the **Edit** button in the row for the **CELL** interface.
 - ❖ The Cellular Wireless Common Configuration Screen, General Set-Up for a Chassis with One SIM, is displayed. [Figure 5-4](#) lists the DHCP client protocol.

Figure 5-4. Cellular Wireless Common Configuration Screen, General Set-Up for a Chassis with One SIM



One of the following might occur:

- The APN might be displayed automatically. If so, and if your network administrator has not designated use of a different APN, you do not need to follow the rest of this procedure. In that case, go to [step 9](#).
- If your network administrator has designated a different APN to use, continue to [step 7](#).
- If no APN is displayed, indicating a connection problem, continue to [step 7](#).

- 7 The network administrator might confer with the wireless carrier's network administrator to obtain the APN. In the **APN** field, type that APN value.

Note: The Telit LE910 series of LTE modules might not show the APN that the user configures for the module. That is, if the carrier detects that the configured APN is incorrect for that module, the carrier may assign a default APN to that module.

However, the default APN might not provide the full functionality of the module.

If the user sees that the module's APN has changed—that is, if the carrier-dependent default APN (instead of the configured APN) is displayed for the module, for a significant amount of time—then it is possible that:

- the APN is not configured at all,
or
- the configured APN is not accepted by the module, and the carrier may have enforced its default APN.

In either case, the user may wish to contact the carrier to determine the correct APN to assign to the module.

- 8 Then select the **Save & Apply** button at the lower right of the screen.
 - ❖ The new APN is assigned to the EN-2000.
- 9 You have completed APN configuration for the cellular wireless interface. Go to [Section 5.4, *Advanced Settings*](#), on page 12.

5.3 APN Configuration in the UK and Europe

- 1 Connect the EN-2000's wireless antennas, insert each SIM into the EN-2000, position the EN-2000 for good coverage in the wireless network, and power up the EN-2000.
- 2 Log into the EN-2000 management system. (See [Logging In](#), in the document [Using the EN-2000's Management System](#), for a detailed procedure.)
 - ❖ One of the following is displayed:
 - The Status Overview Screen for a Chassis with One SIM ([Figure 5-5](#))
 - The Status Overview Screen for a Chassis with Two SIMs ([Figure 5-6](#))

Note: The extended [Note](#) on page 2 and page 3 of the document [Configuring the EN-2000 for its Network Functions](#) discusses the subtle differences in display of SIM information on a screen for a chassis with two SIMs, a screen for a chassis with one SIM, and a screen for a chassis with no SIM.

Figure 5-5. Status Overview Screen for a Chassis with One SIM



EN 2000 Phone/MTN#: _____
 Device Mode: Cell Failover
 Auto Refresh: on

Changes: 0

Status
System
Network
Logout
Quickstart

Overview
Routes
System Log
Realtime Graphs
EnCloud

Status Uptime: 4h 0m 59s

System

Device Name	EN_Router
Device Model	EN 2000
Firmware Version	17322 05 00
Build	246_sk1
Local Time	Tue Feb 27 18:53:22 2018
Operation Status	Online using WAN

Cellular Information

RSSI	-80 dBm
RSRP	-106 dBm
RSRQ	-14 dB
Connection Type	E-UTRAN(LTE)
IMEI	351622071198259
SIM ID	89441000300331919708
SIM STATUS	READY(CPIN SET: NA)
IMSI	234159505512784
APN	wiapn4.com
Carrier	vodafone UK
PCI	0
EARFCN	6300
Registration Status	Denied
Module Name	LE910-EU V2(FW: 20.00.402)

Network

Network	Status
<div style="background-color: #f00; color: white; padding: 2px; font-weight: bold;">CELL</div> <div style="text-align: center; font-size: small; margin-top: 5px;">usb0</div>	MAC-Address: 00:00:00:00:00:00 Protocol: ncm RX: 0.0000 B (0 Pkts.) TX: 0.0000 B (0 Pkts.) IP Data: 0.0000 B
<div style="background-color: #00ff00; color: white; padding: 2px; font-weight: bold;">LAN</div> <div style="text-align: center; font-size: small; margin-top: 5px;">br-lan</div>	Uptime: 4h 1m 23s MAC-Address: 00:A0:EB:80:A8:60 Protocol: static RX: 397.7412 KB (3922 Pkts.) TX: 835.0420 KB (2782 Pkts.) IP Data: 1.1144 MB IPv4: 192.168.10.1/24 Link Status: UP, 100Mbps, Full-Duplex
<div style="background-color: #00ff00; color: white; padding: 2px; font-weight: bold;">WAN</div> <div style="text-align: center; font-size: small; margin-top: 5px;">eth1</div>	Uptime: 4h 1m 19s MAC-Address: 00:A0:EB:80:A8:61 Protocol: dhcp RX: 6.5545 MB (34148 Pkts.) TX: 2.3480 MB (15586 Pkts.) IP Data: 8.2385 MB IPv4: 172.17.1.51/24 Link Status: UP, 100Mbps, Full-Duplex

Wireless

<div style="background-color: #00ff00; color: white; padding: 2px; font-weight: bold;">AR9342 802.11an Radio</div> <div style="text-align: center; font-size: small; margin-top: 5px;">AP</div>	SSID: encore_wifig0_5GHz Mode: Master Channel: 136 (5.680 GHz) Bitrate: 300 Mbit/s BSSID: 00:A0:EB:80:A8:62	Encryption: WPA2 PSK (AUTO) ACK Timeout: 25 DFS Status: Disabled
<div style="background-color: #00ff00; color: white; padding: 2px; font-weight: bold;">AR9280 802.11abgn Radio</div> <div style="text-align: center; font-size: small; margin-top: 5px;">AP</div>	SSID: encore_wifig0_2.4GHz Mode: Master Channel: 11 (2.462 GHz) Bitrate: 300 Mbit/s BSSID: 00:A0:EB:80:A8:63	Encryption: WPA2 PSK (AUTO) 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.			

Figure 5-6. Status Overview Screen for a Chassis with Two SIMs

encore networks EN 2000 Phone/MTN#: Device Mode: Cell Failover Auto Refresh: **on** Changes: 0

Status Uptime: 1h 4m 34s

System

- Device Name: EN2000
- Device Model: EN 2000
- Firmware Version: 17322 05 00
- Build: 247Y3w
- Local Time: Wed Feb 28 12:50:47 2018
- Operation Status: Online using WAN

Cellular Information

- RSSI: -80 dBm
- RSRP: -107 dBm
- RSRQ: -15 dB
- Connection Type: E-UTRAN(LTE)
- IMEI: 351622071198259
- SIM ID: 89441000300331919708
- SIM STATUS: READY(CPIN SET: NA)
- IMSI: 24159905512784
- APN: wapn4.com
- Carrier: vodafone UK
- PCI: 134072606
- EARFCN: 6300
- Registration Status: Registered
- Module Name: 332(FW: 20.00.402)
- SIM Slot: 1
- SIM Switch Reason: Primary is Active
- SIM Failback Status: Wed Feb 28 12:55:32 EST 2018: Started Dualsim application

Network

Network	Status
CELL usb0	MAC-Address: 00:00:00:00:00:00 Protocol: ncm RX: 0.0000 B (0 Pkts.) TX: 0.0000 B (0 Pkts.) IP Data: 0.0000 B
LAN br-lan	Uptime: 1h 5m 10s MAC-Address: 00:A0:EB:80:A8:60 Protocol: static RX: 1.9553 MB (16276 Pkts.) TX: 3.8522 MB (16798 Pkts.) IP Data: 5.5708 MB IPv4: 192.168.10.1/24 Link Status: UP, 100Mbps, Full-Duplex
WAN eth1	Uptime: 1h 5m 7s MAC-Address: 00:A0:EB:80:A8:61 Protocol: dhcp RX: 774.0205 KB (6437 Pkts.) TX: 76.4824 KB (1633 Pkts.) IP Data: 821.8906 KB IPv4: 172.17.1.51/24 Link Status: UP, 100Mbps, Full-Duplex

Wireless

AR9342 802.11an Radio AP	SSID: encore_wifi60_5GHz Mode: Master Channel: 157 (5.785 GHz) Bitrate: 300 Mbit/s BSSID: 00:A0:EB:80:A8:62	Encryption: WPA2 PSK (AUTO) ACK Timeout: 25 DFS Status: Disabled
AR9280 802.11abgn Radio AP	SSID: encore_wifi60_2.4GHz Mode: Master Channel: 11 (2.462 GHz) Bitrate: 300 Mbit/s BSSID: 00:A0:EB:80:A8:63	Encryption: WPA2 PSK (AUTO) 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.			

- 3 On the EN-2000 management system, select the **Network** tab.
- 4 Then select the **Interfaces** tab.
 - ❖ The Network Interface Screen is displayed, listing the EN-2000's cellular wireless, LAN, and WAN interfaces (similar to [Figure 5-7](#)).

Figure 5-7. Network Interface Screen

The screenshot displays the 'Network' tab of the EN-2000 management system. The 'Interfaces' section is active, showing an 'Interface Overview' table with three rows: CELL, LAN, and WAN. Each row includes a network icon, a status bar with details (MAC-Address, RX/TX bytes, Uptime, IPv4), and a set of action buttons (Connect, Stop, Edit, Delete). The CELL interface is highlighted in blue, indicating it is selected. The LAN interface is highlighted in green, and the WAN interface is highlighted in red. At the bottom left, there is a button labeled 'Add new interface...'. The top right corner shows 'Changes: 0'.

Network	Status	Actions
CELL eth2	MAC-Address: 00:00:00:00:00:00 RX: 0.0000 B (0 Pkts.) TX: 0.0000 B (0 Pkts.)	Connect Stop Edit Delete
LAN br-lan	Uptime: 14d 10h 57m 9s MAC-Address: 00:A0:EB:03:04:FB RX: 1005.5280 MB (3695752 Pkts.) TX: 4.6354 GB (4710703 Pkts.) IPv4: 192.168.10.1/24	Connect Stop Edit Delete
WAN eth1	Uptime: 6h 50m 3s MAC-Address: 00:A0:EB:03:04:FC RX: 1.9140 GB (15875653 Pkts.) TX: 1.2592 GB (8347872 Pkts.) IPv4: 192.168.101.79/24	Connect Stop Edit Delete

- 5 On the Network Interface Screen, select the **Edit** button in the row for the **Cell** interface.
 - ❖ One of the following screens is displayed:
 - The Cellular Wireless Common Configuration Screen, General Set-Up for a Chassis with One SIM. [Figure 5-8](#) lists the NCM protocol. Go to [step 6](#), on page 10.
 - The Cellular Wireless Common Configuration Screen, General Set-Up for a Chassis with Two SIMs. [Figure 5-9](#) also lists the NCM protocol. Go to [step 9](#), on page 11.

Figure 5-8. Cellular Wireless Common Configuration Screen, General Set-Up for a Chassis with One SIM

The screenshot shows the 'Interfaces - CELL' configuration page. At the top, there's a status bar with 'EN 2000 Phone/MTN#: Device Mode: Cell Failover Auto Refresh: on' and 'Changes: 0'. The navigation menu includes 'Status', 'System', 'Network', 'Logout', and 'Quickstart'. Under 'Network', there are sub-menus for 'Interfaces', 'Wifi', 'Hotspot', 'Failover', 'Diagnostics', 'Firewall', 'OpenVPN', 'DHCP and DNS', 'VPN', 'VRRP', 'DDNS', 'DMNR', 'EnCloud', and 'Advanced'. The main content area is titled 'Interfaces - CELL' and has a 'Common Configuration' section with three tabs: 'General Setup', 'Advanced Settings', and 'Physical Settings'. The 'General Setup' tab is active, showing a 'Status' section with a 'usb0' icon and 'MAC-Address: 00:00:00:00:00:00', 'RX: 0.0000 B (0 Pkts.)', and 'TX: 0.0000 B (0 Pkts.)'. Below this are several configuration fields: 'Protocol' (set to NCM), 'Modem device' (set to /dev/ttyACM3), 'Service mode' (set to Automatic / Any), 'APN Index' (set to 1), 'APN' (empty), 'APN Protocol' (set to IP), 'PIN' (empty), 'Authentication type' (set to None), 'PAP/CHAP username' (empty), and 'PAP/CHAP password' (empty with a lock icon). At the bottom right, there are three buttons: 'Reset', 'Save', and 'Save & Apply'.

- 6 Confer with your network administrator for parameter values to establish the APN. (Your network administrator might confer with an administrator of the carrier network to obtain values to establish the APN.)
- 7 On a screen for a chassis with one SIM, do all of the following:
 - a Enter values for the following parameters for the APN:
 - **APN Index**
 - **APN**
 - **APN Protocol**
 - **PIN** (Personal Identification Number)
 - **Authentication Type**
 - **PAP/CHAP Username**
 - **PAP/CHAP Password**
 - b Then select the **Save & Apply** button at the lower right of the screen.
 - ❖ The APN is assigned to the EN-2000.

- 8 You have completed APN configuration for the cellular wireless interface. Go to [Section 5.4, Advanced Settings](#), on page 12.

Figure 5-9. Cellular Wireless Common Configuration Screen, General Set-Up for a Chassis with Two SIMs

The screenshot shows the Encore Networks web interface for configuring a cellular wireless interface. The main menu includes Status, System, Network, Logout, and Quickstart. The Network menu is expanded to show various interface types: Wifi, Hotspot, Fallover, Diagnostics, Firewall, OpenVPN, DHCP and DNS, VPN, VRRP, Serial, DMNR, EnCloud, and Advanced. The current view is 'Interfaces - CELL' under the 'Common Configuration' section. The 'General Setup' tab is selected, showing the following configuration parameters:

Parameter	Value
Status	EN 2000 Phone/MTN#: Device Mode: Cell Fallover Auto Refresh: on
MAC-Address	00:00:00:00:00:00
RX (usb0)	0.0000 B (0 Pkts.)
TX (usb0)	0.0000 B (0 Pkts.)
Protocol	NCM
Modem device	/dev/ttyACM3
Service mode	Automatic / Any
APN Index	1
APN	wlapn4.com
Authentication type	PAP
Username	user
Password	****
CPIN	****
Second APN Index	1
Second APN	wlapn4.com
Authentication type	PAP
Second APN Username	user
Second APN Password	****
Second CPIN	****

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

- 9 Confer with your network administrator for parameter values to establish the APN for each cellular wireless carrier. (Your network administrator might confer with administrators of the carrier networks to obtain values to establish each APN.)
- 10 On a screen for a chassis with two SIMs, do all of the following:
- Enter values for the following parameters for the APN of one carrier:
 - **APN Index**
 - **APN**
 - **Authentication Type**
 - **[APN] Username**
 - **[APN] Password**
 - **CPIN**
 - Enter values for the following parameters for the APN of the other carrier:
 - **Second APN Index**
 - **Second APN**

- **Authentication Type**
 - **Second APN Username**
 - **Second APN Password**
 - **Second CPIN**
- c Then select the **Save & Apply** button at the lower right of the screen.
- ❖ The APN for each carrier is assigned to the EN-2000.
- 11 You have completed APN configuration for the cellular wireless interface. Go to [Section 5.4, Advanced Settings](#), on page 12.

5.4 Advanced Settings

- 1 On the Cellular Wireless Common Configuration Screen, select the tab for **Advanced Settings**.
- ❖ One of the following screens is displayed:
 - Cellular Wireless Common Configuration Screen, Advanced Settings for a Chassis with One SIM (similar to [Figure 5-10](#))
 - Cellular Wireless Common Configuration Screen, Advanced Settings for a Chassis with Two SIMs (similar to [Figure 5-11](#))

Figure 5-10. Cellular Wireless Common Configuration Screen, Advanced Settings for a Chassis with One SIM

The screenshot displays the Encore Networks web interface. At the top left is the logo. The top right shows 'EN 2000 Phone/MTN#: Device Mode: Cell Failover Auto Refresh: on' and 'Changes: 0'. The main navigation bar includes 'Status', 'System', 'Network' (selected), 'Logout', and 'Quickstart'. Below this is a sub-menu with 'Interfaces' (selected), 'Wifi', 'Hotspot', 'Failover', 'Diagnostics', 'Firewall', 'OpenVPN', 'DHCP and DNS', 'VPN', 'VRRP', and 'DDNS'. Under 'Interfaces', there are sub-tabs for 'DMNR', 'EnCloud', and 'Advanced' (selected). The main content area is titled 'Interfaces - CELL' and contains a 'Common Configuration' section with three tabs: 'General Setup', 'Advanced Settings' (selected), and 'Physical Settings'. The 'Advanced Settings' tab contains the following configuration items:

Enable Toll Saver	<input checked="" type="checkbox"/>	If Toll Saver is enabled and cell is lower priority then bring it down, if any higher priority interface is up
Use broadcast flag	<input type="checkbox"/>	Required for certain ISPs, e.g. Charter with DOCSIS 3
Use default gateway	<input checked="" type="checkbox"/>	If unchecked, no default route is configured
Use DNS servers advertised by peer	<input checked="" type="checkbox"/>	If unchecked, the advertised DNS server addresses are ignored
Dongle connection delay	<input type="text" value="20"/>	
Use gateway metric	<input type="text" value="20"/>	
Client ID to send when requesting DHCP	<input type="text"/>	
Vendor Class to send when requesting DHCP	<input type="text"/>	
Override MAC address	<input type="text"/>	
Override MTU	<input type="text" value="1360"/>	

At the bottom right of the configuration area are three buttons: 'Reset', 'Save', and 'Save & Apply'.

Figure 5-11. Cellular Wireless Common Configuration Screen, Advanced Settings for a Chassis with Two SIMs

The screenshot shows the Encore Networks web interface. At the top left is the logo. At the top right, it displays 'EN 2000 Phone/MTN#: Device Mode: Cell Failover Auto Refresh: on' and 'Changes: 0'. Below the logo is a navigation bar with tabs: Status, System, Network (selected), Logout, and Quickstart. Under 'Network', there are sub-tabs: Interfaces (selected), Wifi, Hotspot, Failover, Diagnostics, Firewall, OpenVPN, DHCP and DNS, VPN, VARP, Serial, DMNR, EnCloud, and Advanced. The main content area is titled 'Interfaces - CELL' and contains a 'Common Configuration' section with four tabs: General Setup, Advanced Settings (selected), Physical Settings, and SIM Management. The 'Advanced Settings' tab contains the following configuration items:

Enable Toll Saver	<input type="checkbox"/>	If Toll Saver is enabled and cell is lower priority then bring it down, if any higher priority interface is up
Use broadcast flag	<input type="checkbox"/>	Required for certain ISPs, e.g. Charter with DOCSIS 3
Use default gateway	<input checked="" type="checkbox"/>	If unchecked, no default route is configured
Use DNS servers advertised by peer	<input checked="" type="checkbox"/>	If unchecked, the advertised DNS server addresses are ignored
Dongle connection delay	<input type="text" value="20"/>	
Use gateway metric	<input type="text" value="20"/>	
Client ID to send when requesting DHCP	<input type="text"/>	
Vendor Class to send when requesting DHCP	<input type="text"/>	
Override MAC address	<input type="text"/>	
Override MTU	<input type="text" value="1492"/>	

At the bottom right of the configuration area are three buttons: Reset, Save, and Save & Apply.

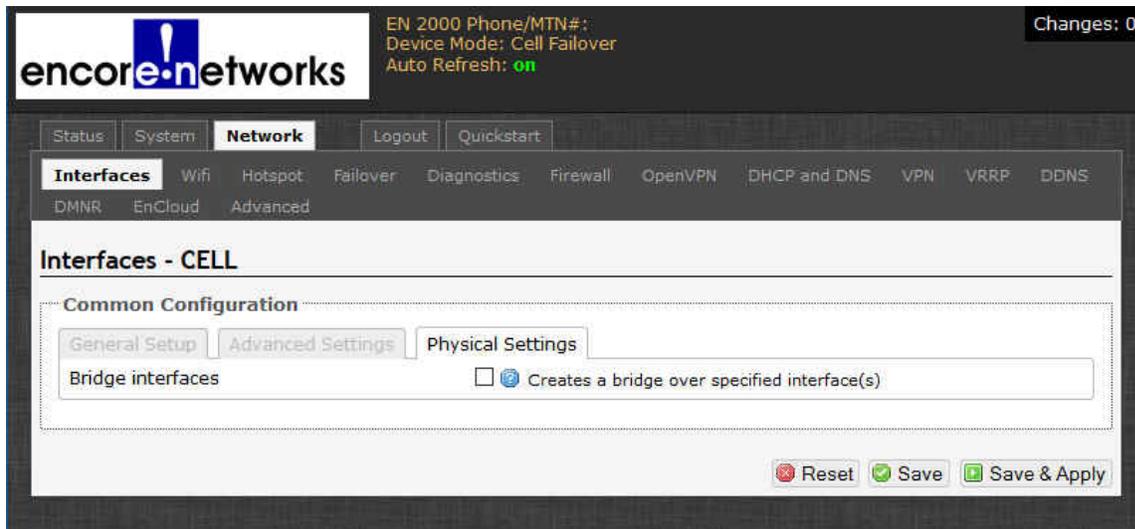
- 2 Confer with your network administrator to determine values for the parameters on the screen.
- 3 When you have finished entering parameter values, select the **Save & Apply** button (in the lower right corner of the screen).
 - ❖ The settings for the screen are saved, and are effective immediately.
- 4 You have completed Advanced Settings for the cellular wireless interface. Go to [Section 5.5, Physical Settings](#), on page 13.

5.5 Physical Settings

- 1 On the Cellular Wireless Common Configuration Screen, select the tab for **Physical Settings**.
 - ❖ The Cellular Wireless Common Configuration Screen, Physical Settings, is displayed (similar to [Figure 5-12](#))

Note: The screen is identical for a chassis with one SIM and a chassis with two SIMs. The only difference is that the screen for the chassis with two SIMs includes a tab for SIM Configuration.

Figure 5-12. Cellular Wireless Common Configuration Screen, Physical Settings



- 2 Confer with your network administrator to determine values for the parameters on the screen.
- 3 When you have finished entering parameter values, select the **Save & Apply** button (in the lower right corner of the screen).
 - ❖ The settings for the screen are saved, and are effective immediately.
- 4 You have completed Physical Settings for the cellular wireless interface. Go to [Section 5.6, SIM Management](#), on page 14.

5.6 SIM Management

- 1 On the Cellular Wireless Common Configuration Screen, select the tab for **SIM Management**.

Note: The **SIM Management** tab is available only if a chassis has two SIMs. (If there is no SIM Management tab, you have completed common configuration of the cellular wireless interface. Go to [step 8](#), on page 17.)

 - ❖ The Cellular Wireless Common Configuration Screen, SIM Management, is displayed ([Figure 5-13](#)).

Note: The SIM Management Screen is displayed only if a chassis has two SIMs.

Figure 5-13. Cellular Wireless Common Configuration Screen, SIM Management

The screenshot displays the 'SIM Management' configuration page within the 'Interfaced - CELL' section. The interface includes a top navigation bar with 'Status', 'System', 'Network', 'Logout', and 'Quickstart'. Below this is a sub-menu for 'Interfaced' with options like 'Wifi', 'Hotspot', 'Failover', 'Diagnostics', 'Firewall', 'OpenVPN', 'DHCP and DNS', 'VPN', 'VRRP', 'Serial', 'DMNR', 'EnCloud', and 'Advanced'. The main content area is titled 'Interfaced - CELL' and contains a 'Common Configuration' section with tabs for 'General Setup', 'Advanced Settings', 'Physical Settings', and 'SIM Management'. The 'SIM Management' tab is active, showing settings for both Primary and Backup SIMs. Key settings include enabling automatic switching, selecting the primary SIM slot (SLOT 1), setting failure retries (3) and intervals (60 seconds), defining error conditions (RSSI, weak signal, data connection fail), and configuring ping tests (IP addresses 8.8.8.8 and 4.2.2.2). Failback times are set to 120 minutes for the initial and 600 minutes for subsequent. A backup SIM test is also configured with a Thursday schedule at 3:00 PM, using IP address 192.168.10.100 and sending 5 pings.

Section	Parameter	Value
Primary SIM	Enable automatic switching	<input checked="" type="checkbox"/>
	Primary SIM Slot	SLOT 1
	Primary Failure Retries	3
	Primary Failure Interval	60 secs
	Error Conditions for Primary SIM	
	On weak signal	<input checked="" type="checkbox"/>
	RSSI	-97
	On data connection fail	<input type="checkbox"/>
	Ping1 IP Address	8.8.8.8
	Ping2 IP Address	4.2.2.2
Backup SIM	Check for SIM detection	<input checked="" type="checkbox"/>
	On roaming	<input type="checkbox"/>
	Secondary Failure Retries	3
	Secondary Failure Interval	60 secs
	Error Conditions for Backup SIM	
	On weak signal	<input checked="" type="checkbox"/>
	RSSI	-97
	On data connection fail	<input type="checkbox"/>
	Ping1 IP Address	8.8.8.8
	Ping2 IP Address	4.2.2.2
Failback & Test	Check for SIM detection	<input checked="" type="checkbox"/>
	On roaming	<input type="checkbox"/>
	Initial Failback Time	120 (Initial Scheduled Failback to Primary SIM (minutes))
	Subsequent Failback Time	600 (Subsequent Scheduled Failback to Primary SIM (minutes))
	Enable Backup SIM Test	<input type="checkbox"/>
	Day of Week	Thursday (Day of the Week to perform test)
	Hour of the Day (24 hours)	3 (24hr clock)
	Minute of the hour	0 (0-59)
	IP Address for Test	192.168.10.100 (IP address to ping for test)
	Number of Pings to Send	5

Buttons at the bottom:

- 2 In the top section of the SIM Management panel, check the box to **Enable automatic switching**.
- 3 Then enter information into the following fields:
 - **Primary SIM Slot:** Select which SIM will be the primary SIM (the SIM in **SLOT 1** or the SIM in **SLOT 2**). The primary SIM assumes default management of the cellular wireless connection.
 - **Primary Failure Retries:** Type the number of retries of the primary SIM's connection, when that connection has failed, before management shifts to the secondary SIM.
 - **Primary Failure Interval:** Type the number of seconds to wait after the retries have been exhausted. After that time has elapsed, management shifts to the secondary SIM.
 - **Error Conditions for Primary SIM:** Check the box if you want management to shift to the secondary SIM when the primary SIM has a **weak signal**.
 - **RSSI:** Enter a maximum value for the received signal strength indicator. If the signal strength surpasses that value, the primary SIM will switch connection of the cellular wireless interface to the secondary SIM.
 - Check the box if you want management to shift to the secondary SIM when the primary SIM experiences a **data connection failure**.
 - Enter the **Ping1 Address** (the principal IP address tested for connection).
 - Enter the **Ping2 Address** (the follow-up IP address tested for connection).
 - Indicate whether to **Check for SIM detection**.
 - Indicate whether SIM management shifts when **Roaming** to an area covered by another network.
- 4 In the next section of the SIM Management panel, enter information into the following fields (for the secondary SIM):
 - **Secondary Failure Retries:** Type the number of retries of the secondary SIM's connection, after that connection has failed, before management shifts to the primary SIM.
 - **Secondary Failure Interval:** Type the number of seconds to wait after the retries have been exhausted. After that time has elapsed, management shifts to the primary SIM.
 - **Error Conditions for Backup SIM:** Check the box if you want management to shift to the primary SIM when the secondary SIM has a **weak signal**.
 - **RSSI:** Enter the maximum value for the received signal strength indicator. If the signal strength surpasses that value, the secondary SIM will switch connection of the cellular wireless interface to the primary SIM.
 - Check the box if you want management to shift to the primary SIM when the secondary SIM experiences a **data connection failure**.
 - Enter the **Ping1 Address** (the principal IP address tested for connection).
 - Enter the **Ping2 Address** (the follow-up IP address tested for connection).

- Indicate whether to **Check for SIM detection**.
 - Indicate whether SIM management shifts when **Roaming** to an area covered by another network.
- 5** In the next section of the SIM Management panel, enter the following information:
- **Initial Failback Time:** Type the number of seconds that the cellular wireless interface remains under the secondary SIM's management before the secondary SIM attempts to shift management back to the primary SIM.
 - **Subsequent Failback Time:** Type the number of seconds to wait after an unsuccessful Initial Failback Time before the secondary SIM again attempts to shift management back to the primary SIM.
- 6** In the bottom section of the SIM Management panel, enter the following information:
- **Enable Backup SIM Test:** Check the box to enable testing of SIM management transfer.
 - Indicate the **Day of the Week** when testing will occur.
 - Indicate the **Hour** of that day when testing will occur.
 - Indicate the **Minute** of the hour when testing will begin.
 - Enter the **IP Address for Test**; that address will receive pings.
 - Enter the **Number of Pings to Send** to the test address.
- 7** When you have finished entering parameter values, select the **Save & Apply** button (in the lower right corner of the screen).
- ❖ The settings for the screen are saved, and are effective immediately.
- 8** You have completed configuration of SIM Management for the cellular wireless interface. You may log out of the EN-2000 management system, or you may configure other features.