# 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.



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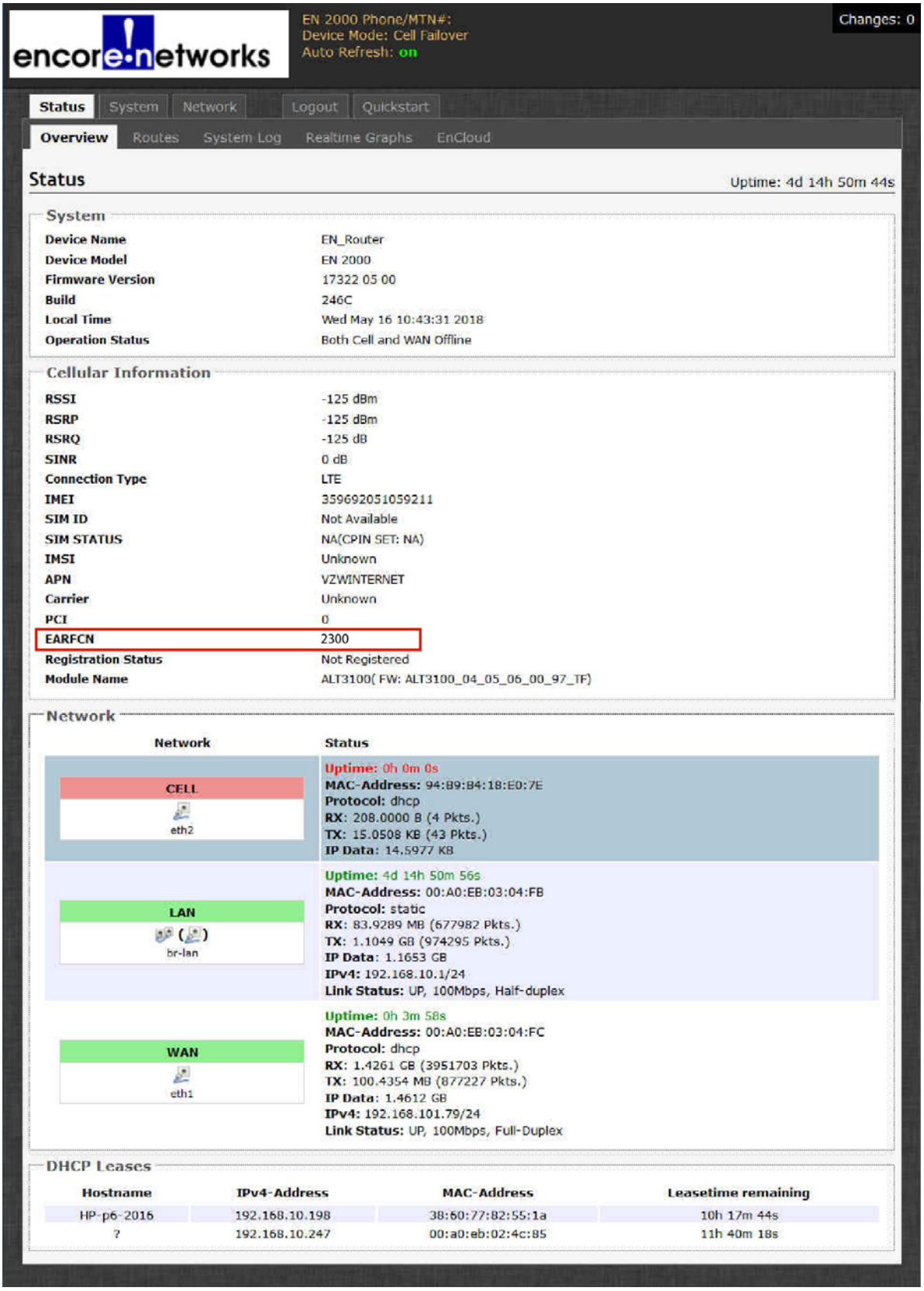
Figure 5-1. EN-2000 Status Overview Screen



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 __ |
| ____ to ____ | Band __ |
| ____ to ____ | Band __ |
| ____ to ____ | Band __ |

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

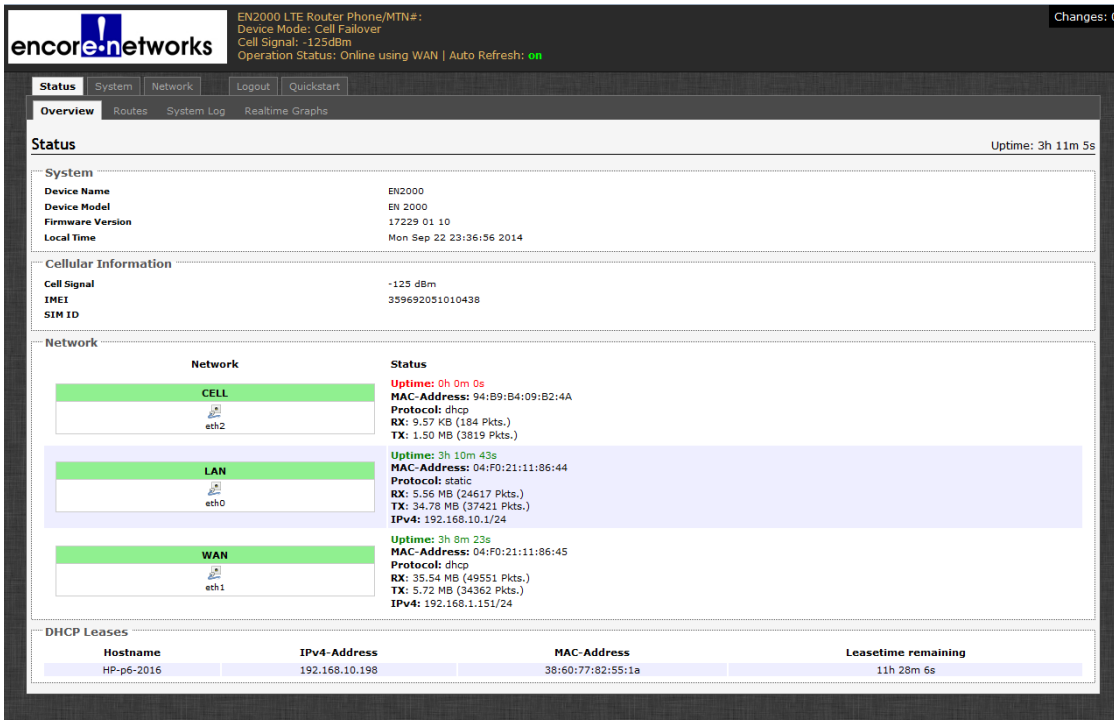
- Section 5.2, *APN Configuration in the USA and North America*, on page 4
- Section 5.3, *APN Configuration in the UK and Europe*, on page 6

# 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.

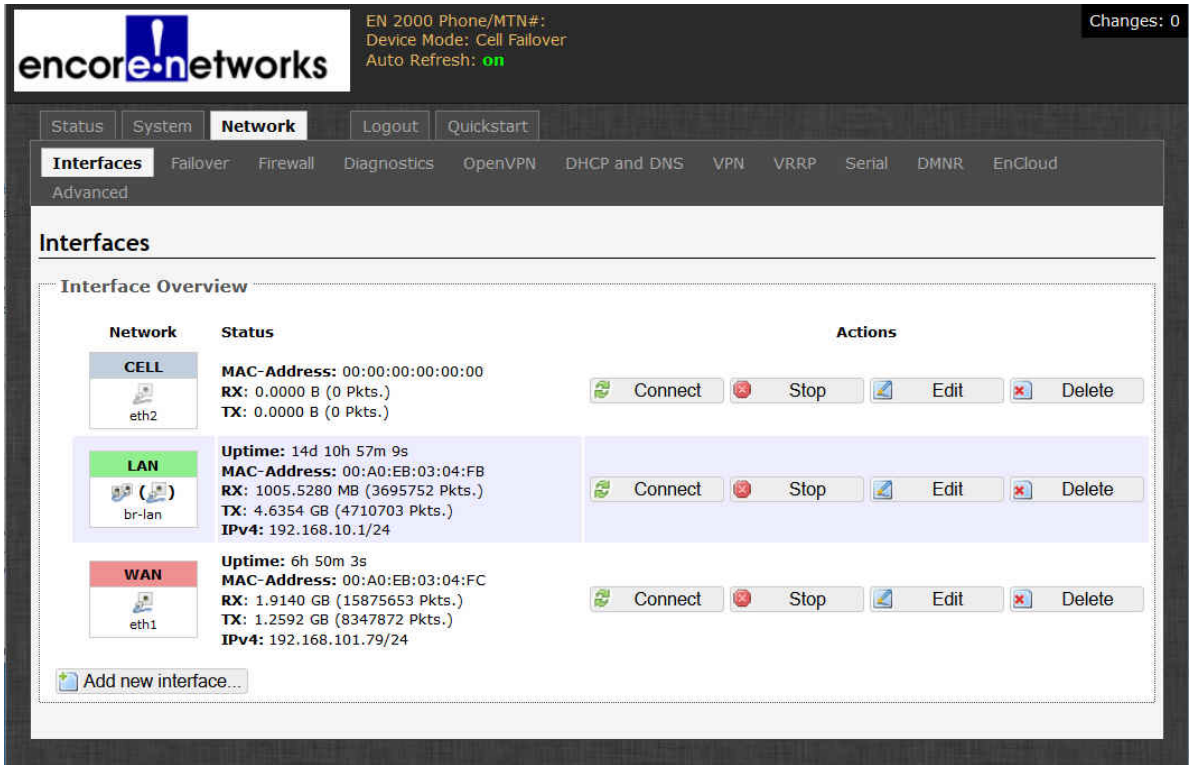
1. Connect the EN-2000's wireless antennas, insert the SIM into the EN-2000, position the EN-2000 for good coverage in the wireless network, and power up the EN-2000.
2. Wait for the provider to download the EN-2000's APN. After about 15 minutes:
   - ❖ If the EN-2000's Net Status LED is flashing, the 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




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).

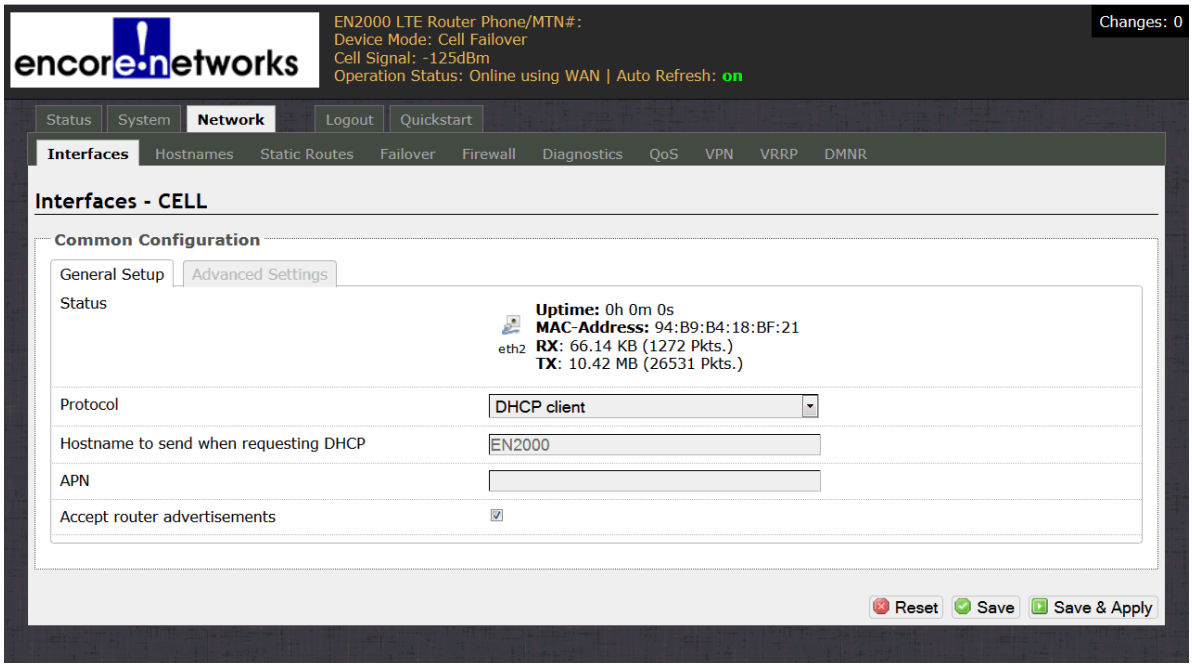
Figure 5-3. Network Interface Screen




**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

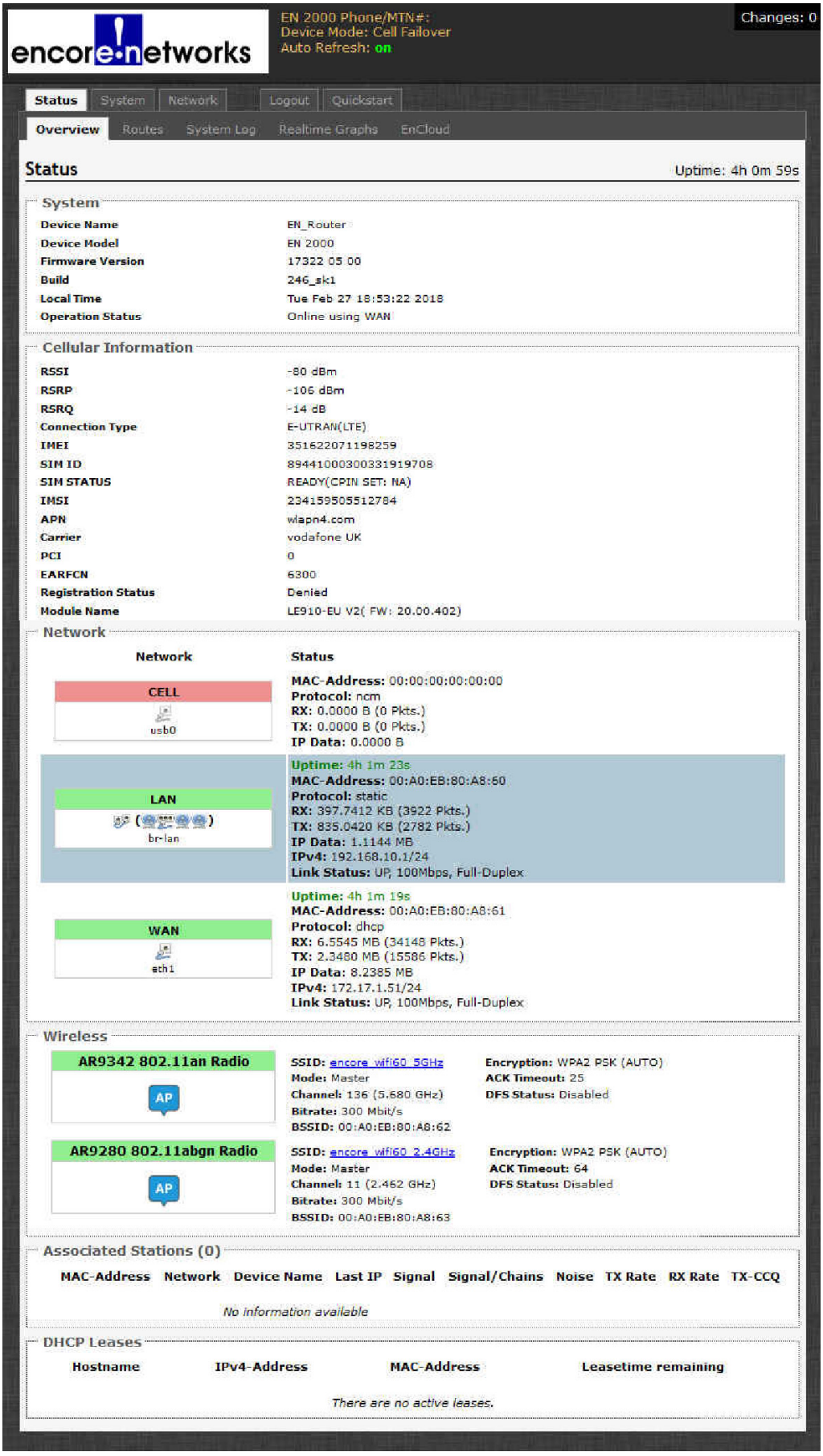


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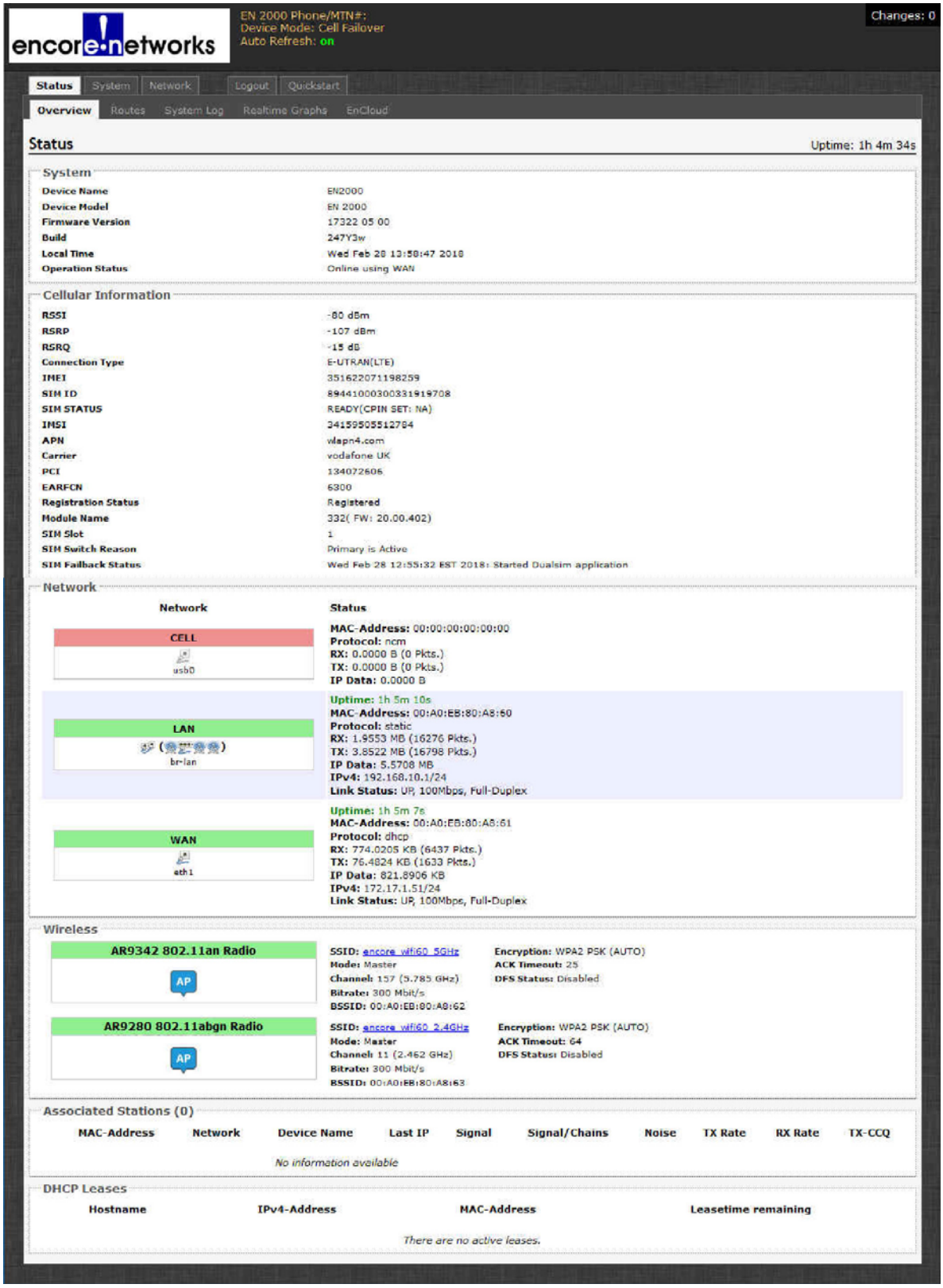
Figure 5-6. Status Overview Screen for a Chassis with Two SIMs

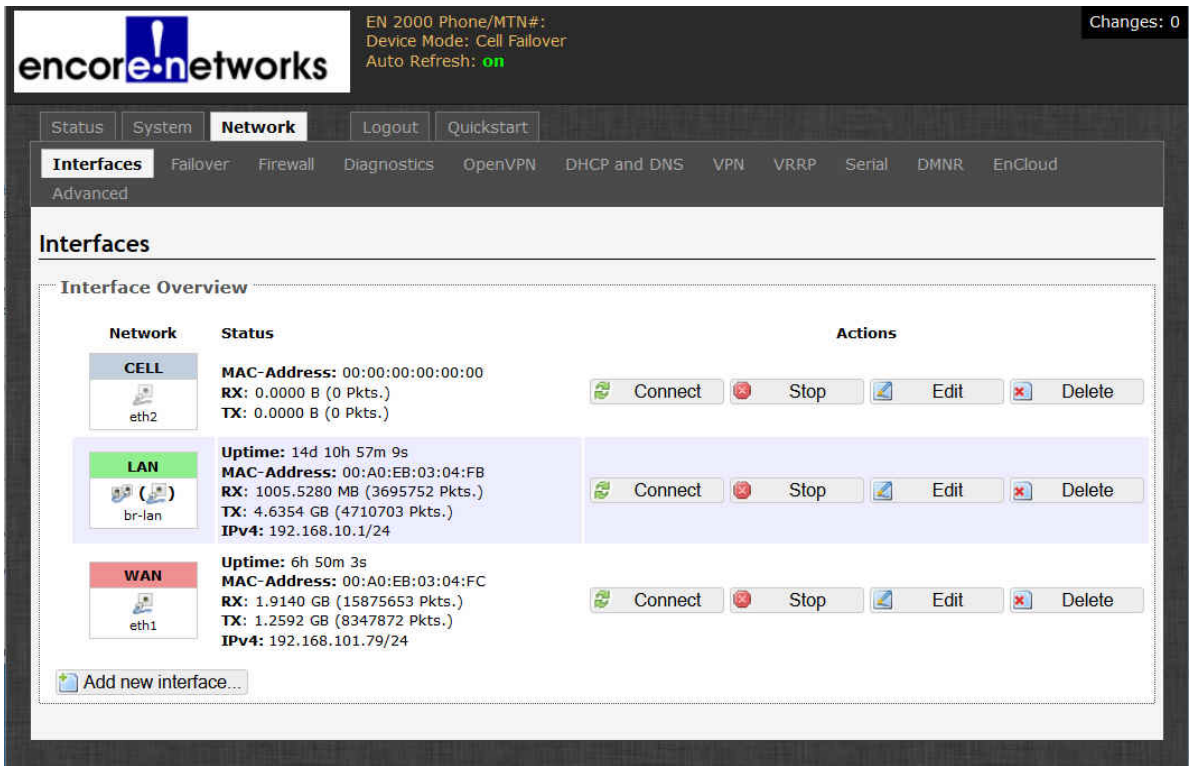


**3** On the EN-2000 management system, select the **Network** tab.

**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

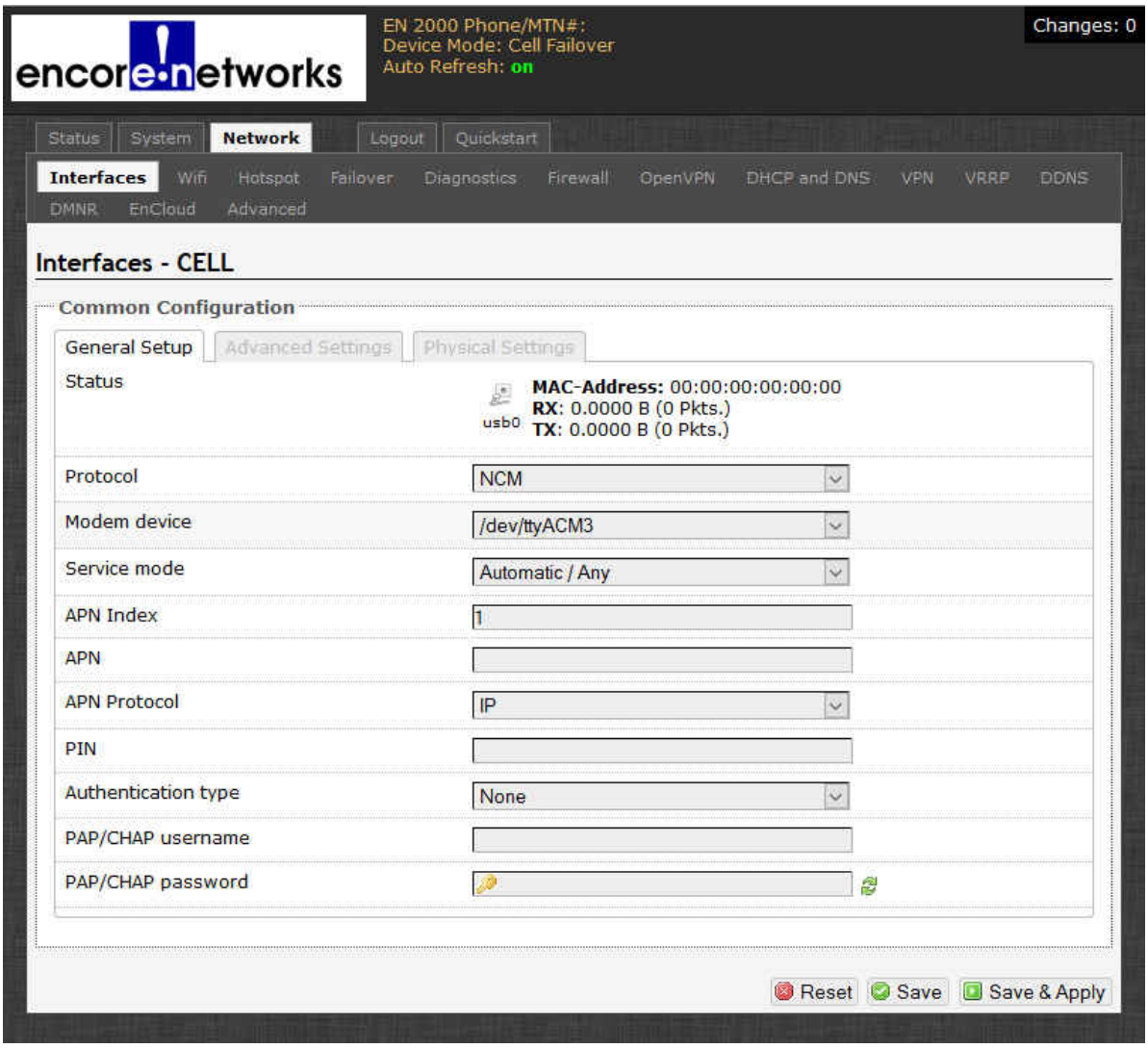



**5** On the Network Interface Screen, select the **Edit** button in the row for the **Cell** interface.

❖ 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




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:

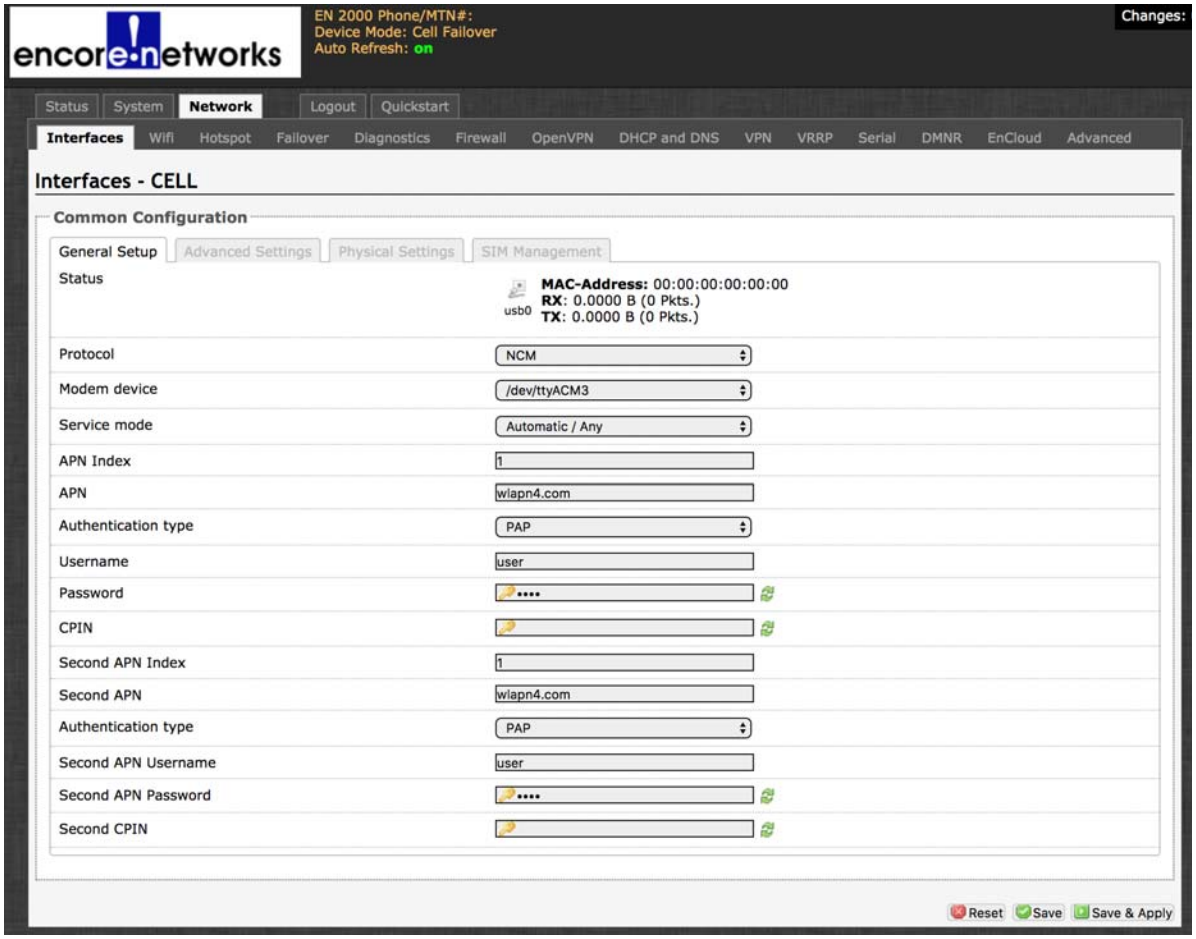
- **APN Index**
- **APN**
- **APN Protocol**
- **PIN** (Personal Identification Number)
- **Authentication Type**
- **PAP/CHAP Username**
- **PAP/CHAP Password**

**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




**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:

**a** Enter values for the following parameters for the APN of one carrier:

- **APN Index**
- **APN**
- **Authentication Type**
- **[APN] Username**
- **[APN] Password**
- **CPIN**

**b** 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

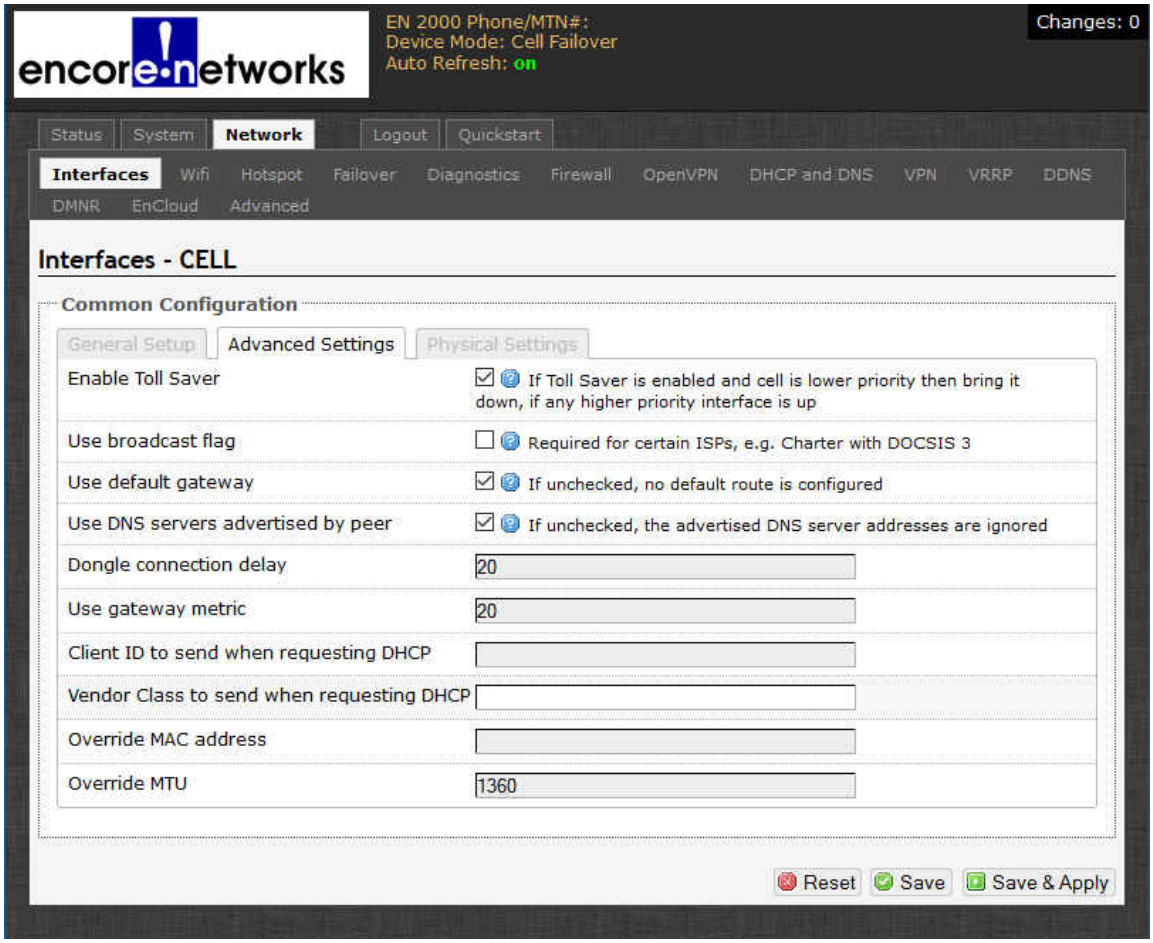
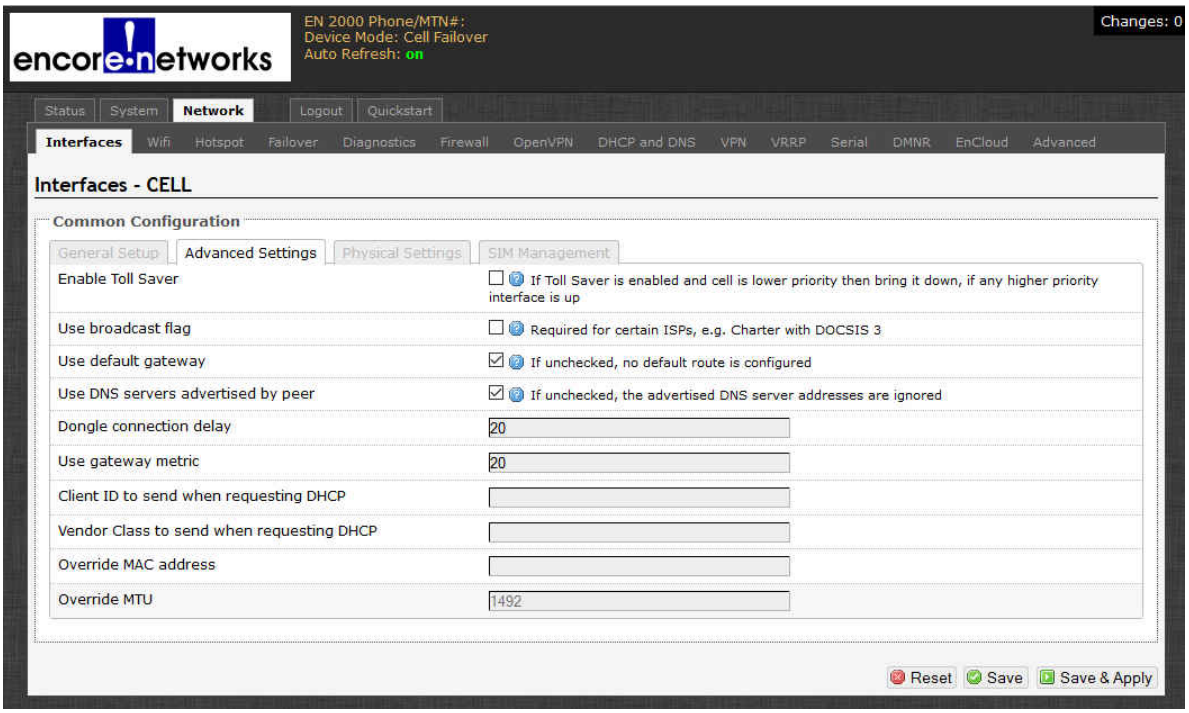


Figure 5-11. Cellular Wireless Common Configuration Screen, Advanced Settings for a Chassis with Two SIMs




**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.

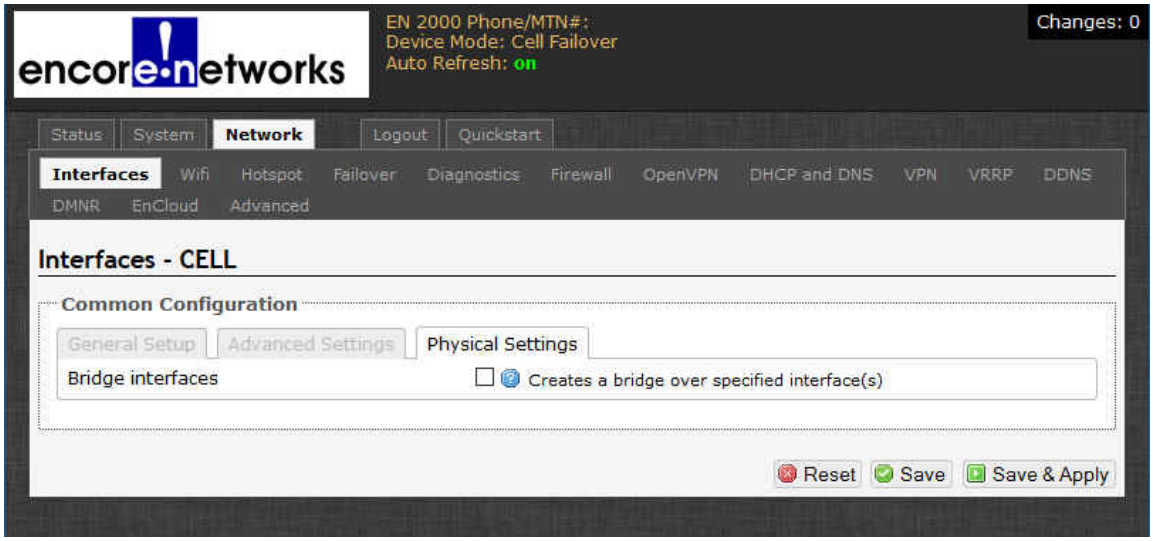
## 5.5 Physical Settings

**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

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.