Connecting a NetComm Wireless Router to an Eaton Network Card

Introduction

This document provides instructions for connecting a NetComm Wireless NTC-220 or NTC-140W Series wireless router to one of the following Eaton connectivity cards:

- Industrial Gateway Card (INDGW-M2)
- Gigabit Industrial Gateway X2 Card (INDGW-X2)
- Power Xpert Gateway UPS (PXGX-UPS)
- Power Xpert Gateway Minislot UPS (PXGMS)
- Gigabit Network (Network-M2)

NOTE The Network-M2 card has now reached end-of-life (EOL) status.

Prerequisites

- Eaton UPS with a INDGW-M2, INDGW-X2, PXGX-UPS, PXGMS, or Network-M2 card
- USB-to-USB (Type B) cable for PXGX-UPS
- USB-to-USB (MiniTypeB) for PXGMS
- USB-to-USB (MicroUSB B) for INDGW-M2, INDGW-X2, or Network-M2
- Serial COM port or USB-to-serial 9-pin male adapter
- An existing PredictPulse account (refer to the PredictPulse Quick Start Guide)
- Download the latest card firmware and RNDIS driver from the Eaton product site:
  - For the INDGW-M2 card, go to https://www.eaton.com/us/en-us/catalog/backup-power-ups-surge-it-power-distribution/eaton-industrial-gateway-card.resources.html
  - For the INDGW-X2 card, go to https://www.eaton.com/us/en-us/catalog/backup-power-ups-surge-it-power-distribution/eaton-gigabit-industrial-gateway-card.html.

  Go to the **Resources** page and scroll down to the **Software, firmware, and applications** section. Click the links to download the firmware and RNDIS driver files.

NOTE The Netcomm Wireless router must be powered by a 120V electrical outlet powered by the UPS. This ensures that the router is protected during a power outage. If no UPS-protected outlet is available, a Universal Accessory Power (UAP) kit is required. The UAP must be installed by an Eaton technician. Contact your Eaton service representative for a quote.

NetComm Wireless Router Installation Guidelines

Refer to the *Quick Start Guide* provided with the NetComm Wireless router for instructions on mounting the router and connecting power.

NOTE The router must be powered by a 120V electrical outlet powered by the UPS. This ensures that the router is protected during a power outage. If no UPS-protected outlet is available, a Universal Accessory Power (UAP) kit is required. The UAP must be installed by an Eaton technician. Contact your Eaton service representative for a quote.

INDGW-M2 or INDGW-X2 Card Installation

The hot-swappable INDGW-M2 and INDGW-X2 cards (see Figure 1 and Figure 2) can be installed without turning off the UPS or disconnecting the load. To install the card:

1. Ensure that the UPS has logic power.
2. Remove the two screws securing the Minislot or X-slot cover and remove the cover from the UPS. Retain the screws.
3. Remove the INDGW-M2 or INDGW-X2 card from its shipping package.
4. Slide the card into the open slot. Secure with the screws removed in Step 2.
5. Wait for the Warning LED (see Figure 1 or Figure 2) to flash only green to indicate that the card is operational. The **ON** LED also flashes green when the card is ready.
6. Connect a USB cable from the **SETTINGS** port of the INDGW-M2 or INDGW-X2 card to a USB port on the laptop.
   - Windows will automatically detect the INDGW-M2 or INDGW-X2 card connection
7. Open a web browser and enter **https://169.254.0.1**. You are prompted to log in.

Figure 1. INDGW-M2 Card

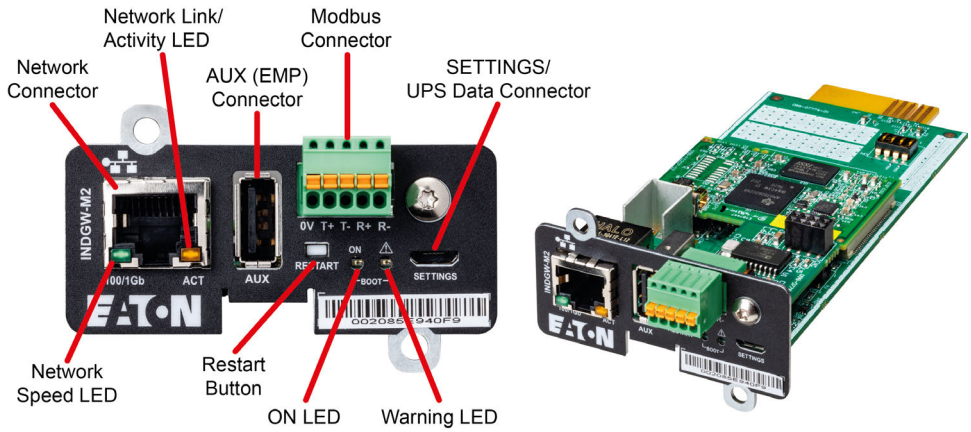


Figure 2. INDGW-X2 Card

8. Log in using the username **admin** and password **admin**.
9. You are prompted to change your password.

10. Enter the new password ***Eaton123!***, re-enter the new password, and press **Submit**.

NOTICE

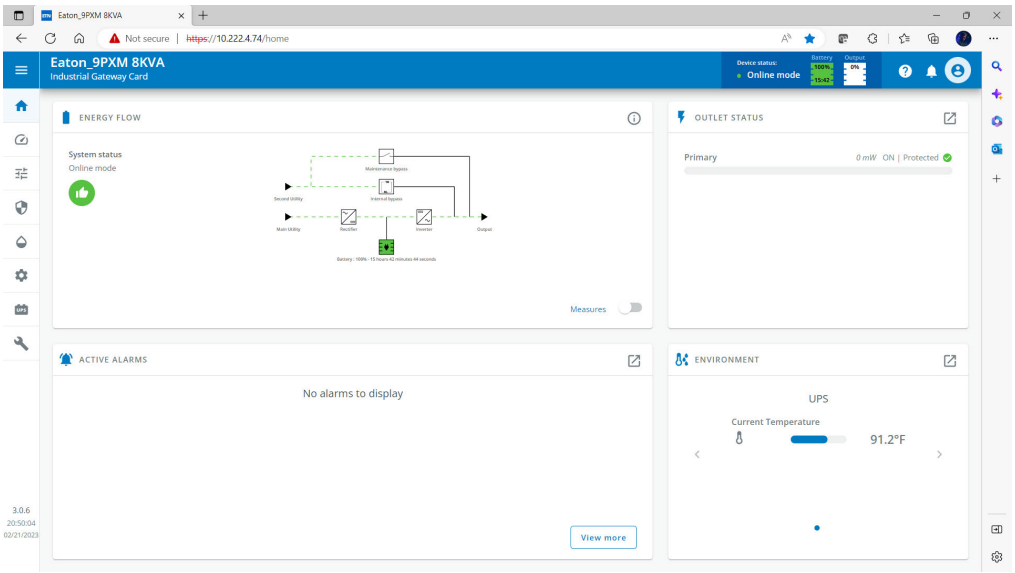
Entering a password other than *Eaton123!* will cause the PredictPulse activation to fail.

11. Read and accept the license agreement.
12. The INDGW-M2 or INDGW-X2 card home page displays (see Figure 3).
13. The green **ON** LED should be flashing to indicate that the card is operating normally (see Figure 1 or Figure 2).

NOTICE

If the green **ON** LED is not flashing, the INDGW-M2 card may need to be reset. Remove the card to reset it, wait 10 seconds, plug it back in, and wait 3 minutes. If the LED still does not flash, contact the Brightlayer Data Center at 800-356-5737, option 2, option 2 to troubleshoot.

Figure 3. INDGW-M2 or INDGW-X2 Home Page



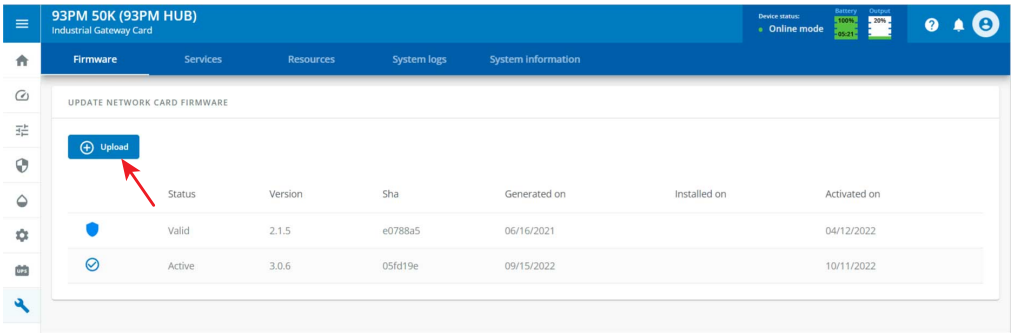
INDGW-M2 or INDGW-X2 Card Firmware Update

1. As noted in the *Prerequisites* section, the installation requires the latest card firmware. To view the firmware installed on the INDGW-M2 or INDGW-X2 card, click the **Maintenance** (wrench) icon on the card home page (see Figure 3). The **Firmware** tab shown in Figure 4 displays.
2. The *Version* column shows the firmware version of the card. To check the latest firmware for the network card:
   - For an INDGW-M2 card, go to https://www.eaton.com/us/en-us/catalog/backup-power-ups-surge-it-power-distribution/eaton-industrial-gateway-card.html

- For an INDGW-X2 card, go to https://www.eaton.com/us/en-us/catalog/backup-power-ups-surge-it-power-distribution/eaton-gigabit-industrial-gateway-card.html

3. Click **Resources**, then scroll down and expand the **Software, firmware, and applications** section.

Figure 4. INDGW-M2 or INDGW-X2 Card Firmware Tab



4. Note the latest available firmware version. If that version is later than the one on the network card, update the card firmware:
   a. Click the link to download and save that file to a known location.
   b. Remain connected to the card via the USB cable using the redirected IP address **http://169.254.0.1**.
   c. Select **Maintenance** from the left-hand menu and select **Firmware** at the top to display the **UPDATE FIRMWARE** page (see Figure 4).
   d. Click **Upload** to load the latest firmware to the card. Click **Choose File** to navigate to the firmware file saved in Step 4.b.
   e. Select the firmware file and click **Upload**.
   f. When the firmware update is completed, a prompt is displayed. Allow the card to reboot and wait 2–4 minutes for completion.
   g. Log in to the card, return to the **Firmware** tab, and confirm that the firmware updated was successful.

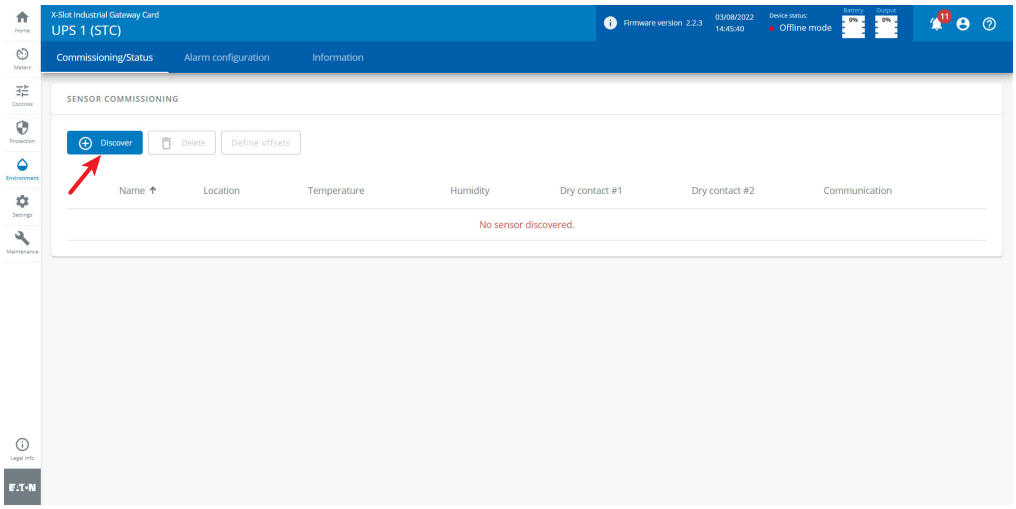
Environmental Monitoring Probe (EMP) Gen 2 Installation

1. Remove the EMP and cable from the packaging.
2. Install the EMP as directed in the Environmental Monitoring Probe Gen2 EMPDT1H1C2 Installation Instructions.
   - Set the **MODBUS ADDRESS** switches on each EMP as appropriate for your application (see Figure 5). For example, for an application with one EMP, set the switches as shown in Figure 5, with switch **1** and **TER** (termination) in the **1** position. For a multiple-EMP application, at least one switch must be set on each EMP in in the daisy-chain and the **TER** switch set on the last EMP in the daisy-chain.

Figure 5. EMP MODBUS ADDRESS Switches

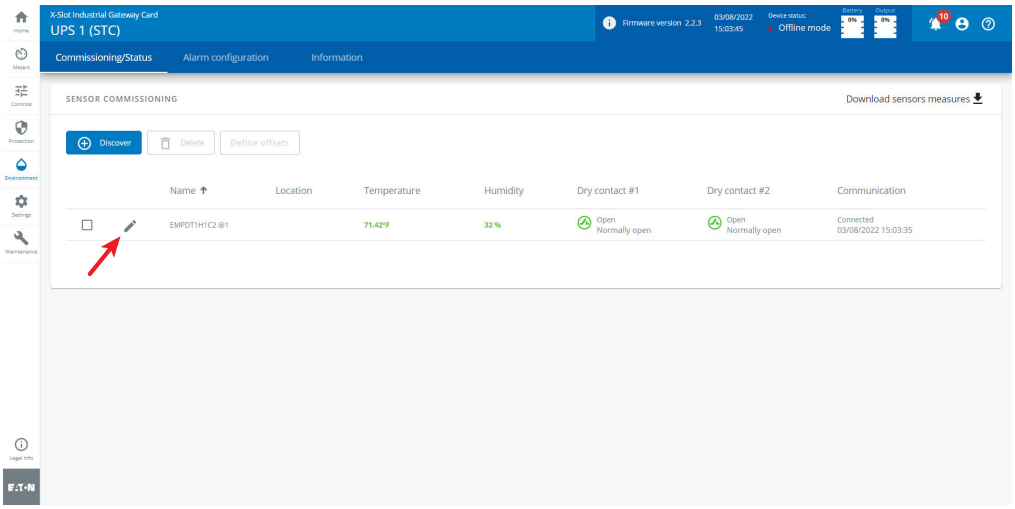
3. Connect the USB end of the cable to the **AUX** port on the INDGW-M2 or INDGW-X2 card and the RJ45 end to the **FROM DEVICE** port on the EMP. If possible, route the cable into the battery cabinet and place the EMP in the battery cabinet.
4. On the INDGW-M2 or INDGW-X2 home page (see Figure 3), select **Environment** from the left-hand menu to display the **SENSOR COMMISSIONING** page (see Figure 6).

Figure 6. Sensor Commissioning Page



5. As shown in Figure 6, no sensors have yet been discovered in the system. Click **Discover** to identify the EMP sensor(s). When discovered, the EMP is displayed as shown in Figure 7.
   - If no device is found, verify the EMP connections and settings and click **Discover** again.

Figure 7. EMP Sensor Discovered



Connecting the Router to an INDGW-M2 or INDGW-X2 Card

To connect the NTC-220 or NTC-140W Series router to an INDGW-M2 or INDGW-X2 card:

- Connect the Ethernet cable from the **LAN** port on the router to the Network connector on the INDGW-M2 or INDGW-X2 card (see Figure 1 or Figure 2).
- If the INDGW-M2 or INDGW-X2 card is located inside the UPS chassis, route the cable out of the chassis via a conduit hole that is protected by a rubber grommet

Once connected, the LEDs on the INDGW-M2 or INDGW-X2 card's Network port should light and the green LED at the top left of the **SETTINGS** port should blink.

Configuring an INDGW-M2 or INDGW-X2 Card

To troubleshoot or set up the INDGW-M2 or INDGW-X2 card, refer to the INDGW-M2 User's Guide or INDGW-X2 User's Guide.

The INDGW-M2 or INDGW-X2 card's default configuration includes a DHCP network configuration. To configure the INDGW-M2 or INDGW-X2 card, connect to the card's **SETTINGS** port with USB-to-USB (MicroUSB B) cable. Once connected, open an internet browser and navigate to *169.254.0.1* to display the Network M2 home page (see Figure 3).

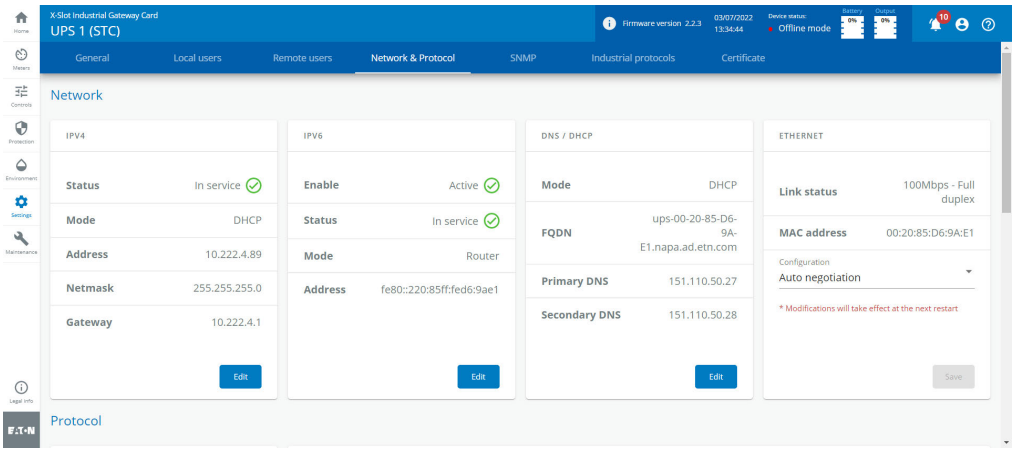
Log in using the default credentials:

Username: *admin*
Password: *admin*

You are prompted to change your password. Enter a new password of at least eight characters, including one lowercase letter, one uppercase letter, one numeric character, and one special character. Record the new password.

The INDGW-M2 or INDGW-X2 card will reboot and ask for the new password. Enter the web GUI and click **Settings** on the left sidebar menu. Click the **Network & Protocol** tab (see Figure 8). Verify the IPv4 Mode is set to DHCP and record the IP address to be used later when configuring the PredictPulse Wizard.

Figure 8. INDGW-M2 or INDGW-X2 Card Network & Protocol Tab

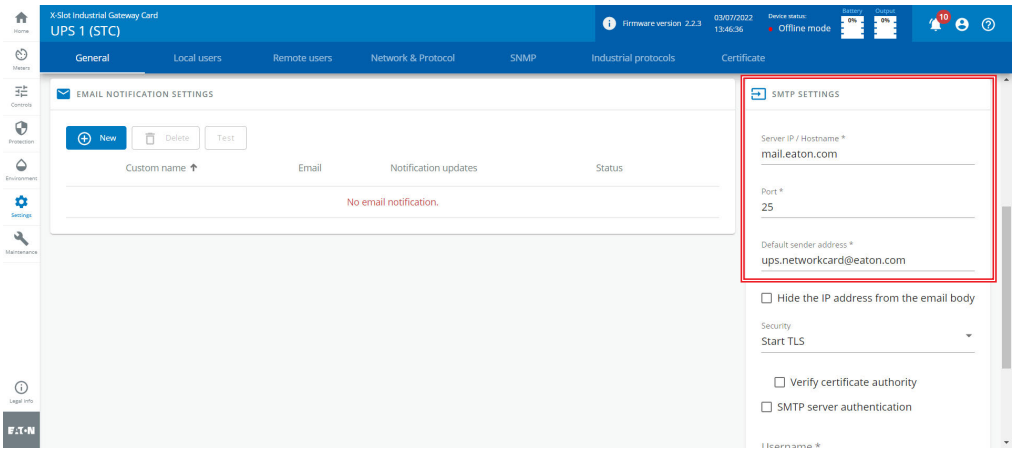


Click the **General** tab (see Figure 9). In the **SMTP SETTINGS** section:

- Enter *mail.eaton.com* in the **Server IP/Hostname** field
- To ensure that e-mails are not marked as spam, enter *ups.networkcard@eaton.com* in the **Default sender address** field

Scroll down and click **Save** in the bottom right.

Figure 9. INDGW-M2 or INDGW-X2 Card General Tab



In the **SYSTEM DETAILS** section, select the appropriate time zone and select the **Dynamic (NTP)** radio button. Enter *192.168.1.1* in the **NTP server** field. For instructions on configuring NTP in the modem, see the *Configuring a PXGX-UPS or PXGMS Card* section.

Also enter the **Location**, **Contact**, and **System Name**. Click **Save**.

Proceed to the *Run the PredictPulse Wizard* section.

PXGX-UPS or PXGMS Installation

Connecting the Router to a PXGX-UPS or PXGMS Card

Connect the NTC-220 or NTC-140W Series router and Eaton network card. Use the included Ethernet cable or equivalent.

- For a *PXGX-UPS* card, connect the Ethernet cable from the **LAN** port on the router to the **Upstream** port on the card (see Figure 10):
- For a *PXGMS* card, connect the Ethernet cable from the **LAN** part on the router to the **Ethernet 10/100** port on the card (see Figure 11)

Route the Ethernet cable into the UPS via the appropriate conduit holes. Once connected, the LEDs on the active Ethernet port, as well as the green Power LED and Status LEDs should light.

Figure 10. Power Xpert Gateway UPS (PXGX-UPS) Card

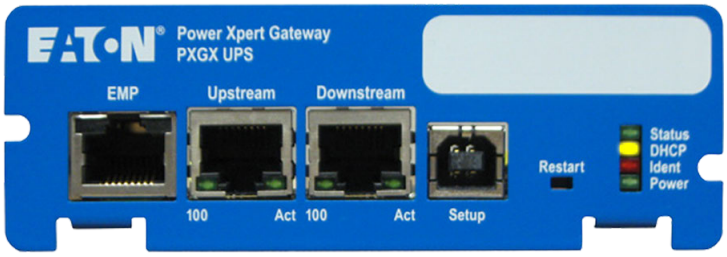
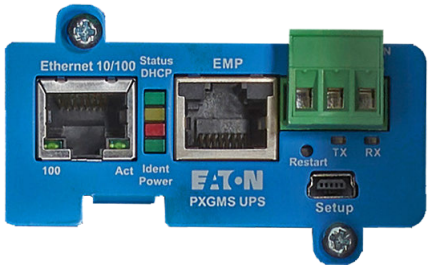


Figure 11. Power Xpert Gateway Minislot UPS (PXGMS) Card



Configuring a PXGX-UPS or PXGMS Card

To troubleshoot or set up the PXGX-UPS or PXGMS card, refer to Sections 3 – 5 of the PXGX-UPS Quick Start Instructions or PXGMS Quick Start Instructions for instructions on connecting a Windows-based computer to the card's **Setup** port using a USB cable.

To configure the PXGX-UPS or PXGMS card, connect to the card's **Setup** port using a USB cable. Once connected, open an internet browser and navigate to *169.254.0.101*. Log in using the default credentials:

Username: *admin*
Password: *admin*

NOTE The PXGX-UPS password may be the MAC address of the card. The PXGMS password may be the card serial number.

If installing on an existing PXGX-UPS or PXGMS card, reset the card to factory default settings as follows:

- Locate the onboard DIP switch and set switch 6 to ON

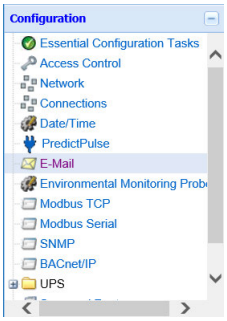
- Reboot the card to restore the factory defaults
- Return switch 6 to OFF and reboot the card

For more information on restoring the factory default settings, refer to the PXGX-UPS Card User's Guide or PXGMS Card User's Guide.

For a new installation, the PXGX-UPS or PXGMS card will use the factory default settings.

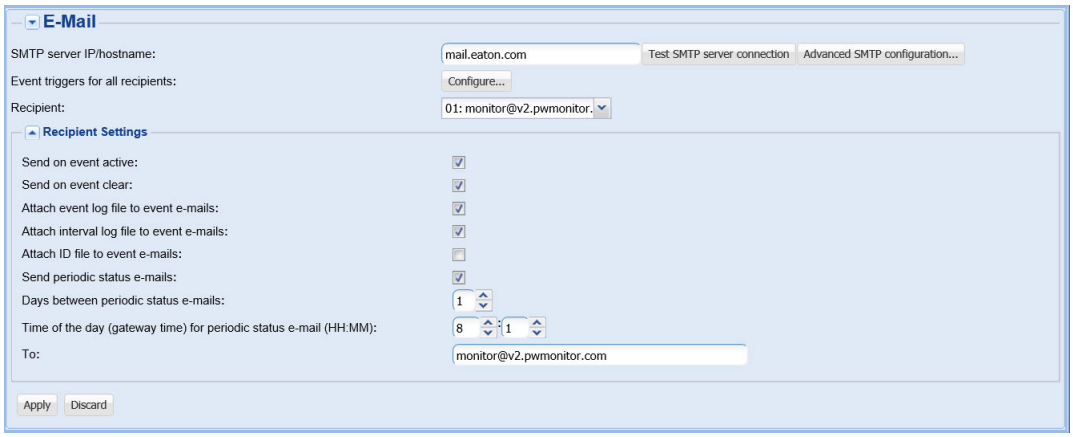
From the **Configuration** menu (see Figure 12), select **E-mail** to display the **E-mail** tab (see Figure 13).

Figure 12. Configuration Menu



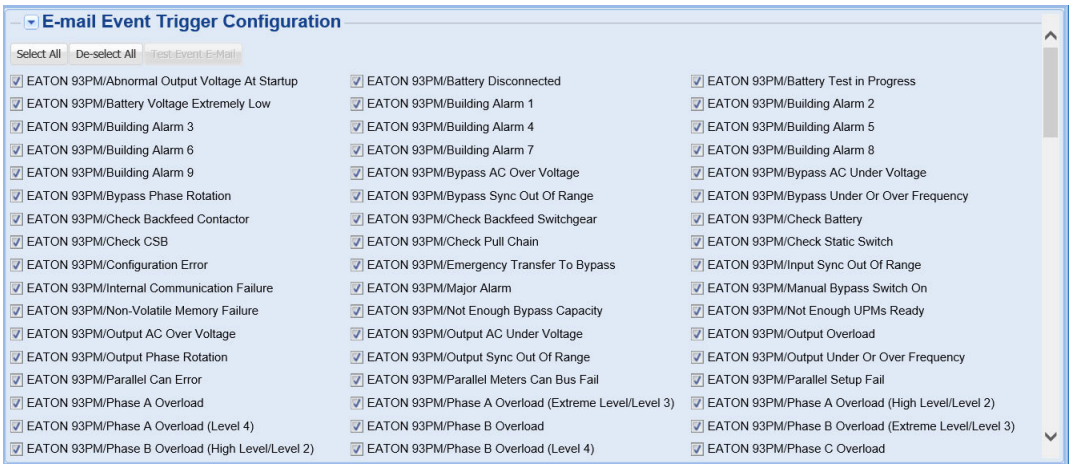
Ensure that the SMTP server/IP hostname is *mail.eaton.com* and the recipient checkboxes are setup as shown in Figure 13, with *monitor@v2.pwmonitor.com* as the only e-mail recipient.

Figure 13. E-mail Tab



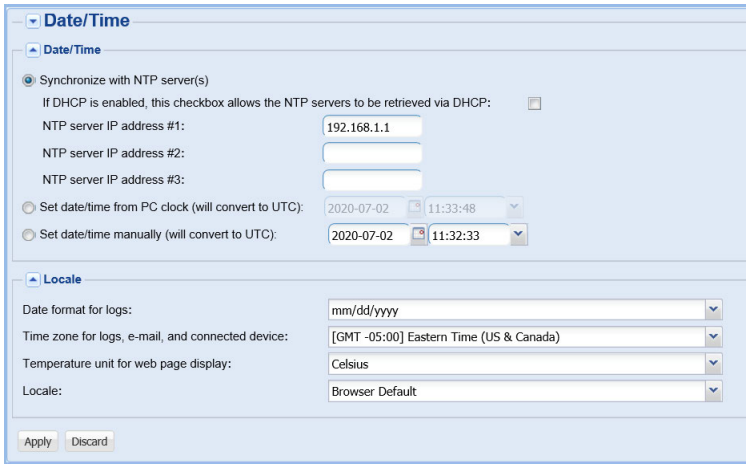
On the **E-mail** tab, click **Configure** to display the **E-mail Event Trigger Configuration** page (see Figure 14). Verify that all or some alarms are checked. Scroll to the bottom of the page and click **Apply** after making any changes.

Figure 14. E-Mail Event Trigger Configuration Page



From the **Configuration** menu (see Figure 12), select **Date/Time** to display the **Date/Time** tab (see Figure 15). Select the **Synchronize with NTP server(s)** radio button and enter *192.168.1.1* for the NTP server IP address. Ensure that the correct time zone is selected for the **Time zone for logs, e-mail, and connected device**. Click **Apply** after making any changes.

Figure 15. Date/Time Tab



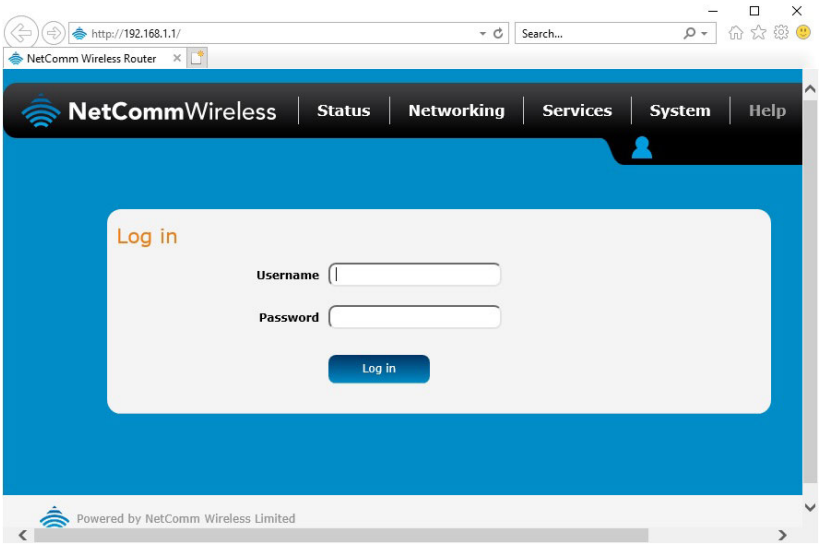
Login to the modem graphical user interface (GUI) by connecting to the modem Wi-Fi, *NetComm XXXX*, using the network key printed on the back of the modem. Once connected, open an internet browser:

- For an NTC-140W router, navigate to *192.168.1.1*
- For an NTC-220 router, navigate to *https://192.168.1.1*

Log in using the default credentials (see Figure 16):

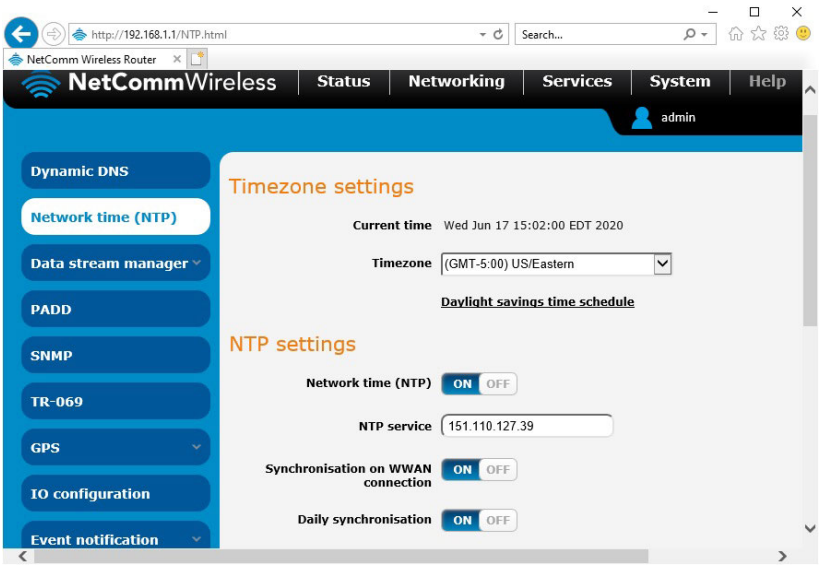
Username: *admin*
Password: *admin*

Figure 16. NetComm Wireless Log-In Page



Navigate to the **Services** tab and select **Network Time (NTP)**. Ensure the correct time zone is selected and the remaining settings are as shown in Figure 17, with *151.110.127.39* listed for NTP service. Click **Save** if any changes were made.

Figure 17. NetComm Wireless Services Tab



Proceed to the *Run the PredictPulse Wizard* section.

Network-M2 Card Installation

For instructions on installing a Network-M2 card, refer to the document Predict*Pulse*™ Setup for an Eaton® Gigabit Network (Network-M2) Card.

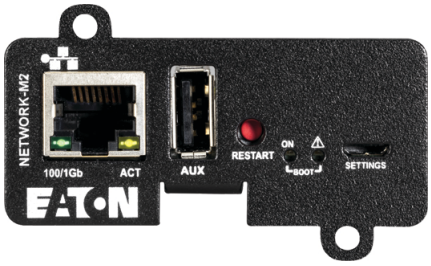
Connecting the Router to a Network-M2 Card

To connect the NTC-220 or NTC-140W Series router to a Network-M2 card:

- Connect the Ethernet cable from the **LAN** port on the router to the Ethernet port on the Network-M2 card (see Figure 18).
- If the Network-M2 card is located inside the UPS chassis, route the cable out of the chassis via a conduit hole that is protected by a rubber grommet

Once connected, the LEDs on the Network-M2 card's Ethernet port should light and the green LED at the top left of the **SETTINGS** port should blink.

Figure 18. Network-M2 Card



Configuring a Network-M2 Card

To troubleshoot or set up the Network-M2 card, refer to the Network-M2 User's Guide.

The Network-M2 default configuration includes a DHCP network configuration. To configure the Network-M2 card, connect to the card's **SETTINGS** port with USB-to-USB (MicroUSB B) cable. Once connected, open an internet browser and navigate to *169.254.0.1* to display the Network M2 home page (see Figure 19).

Log in using the default credentials:

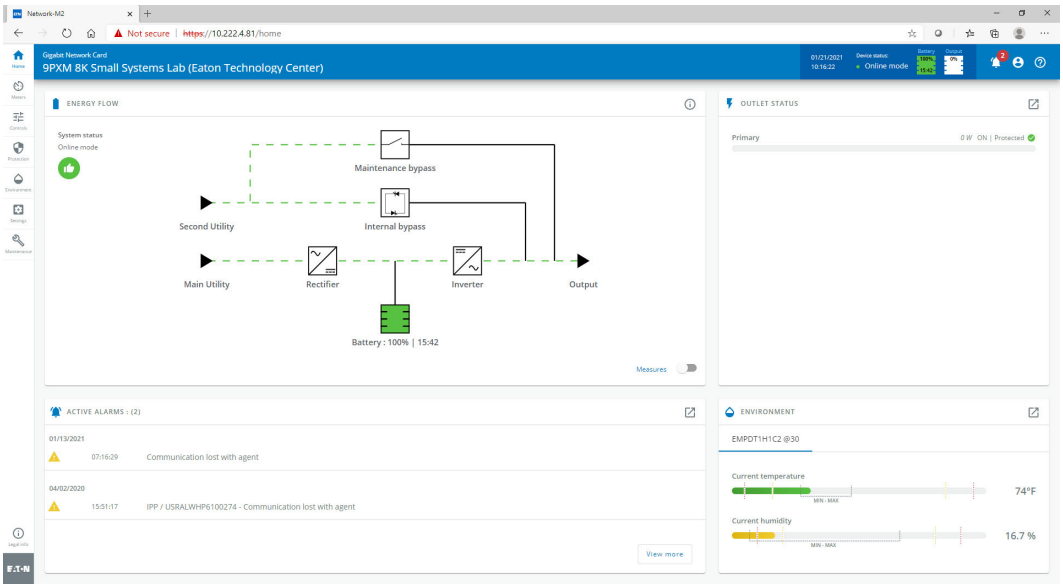
Username: *admin*
Password: *admin*

You are prompted to change your password. Enter the new password ***Eaton123!***, re-enter the new password, and press **Submit**.

NOTICE

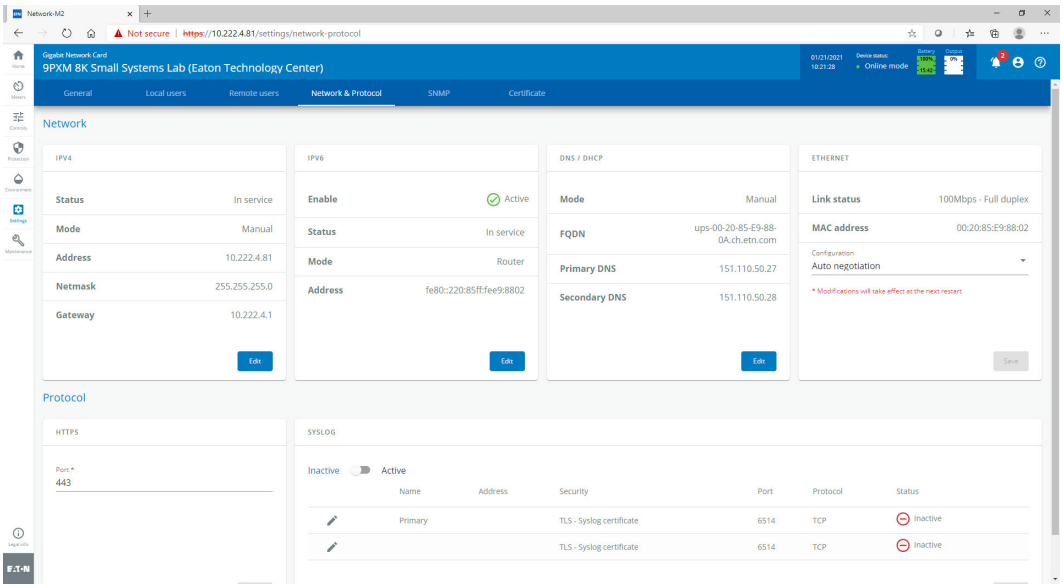
Entering a password other than *Eaton123!* will cause the PredictPulse activation to fail.

Figure 19. Network-M2 Card Home Page



The Network-M2 card will reboot and ask for the new password. Enter the web GUI and click **Settings** on the left sidebar menu. Click the **Network & Protocol** tab (see Figure 20). Verify the IPv4 Mode is set to DHCP and record the IP address to be used later when configuring the PredictPulse Wizard.

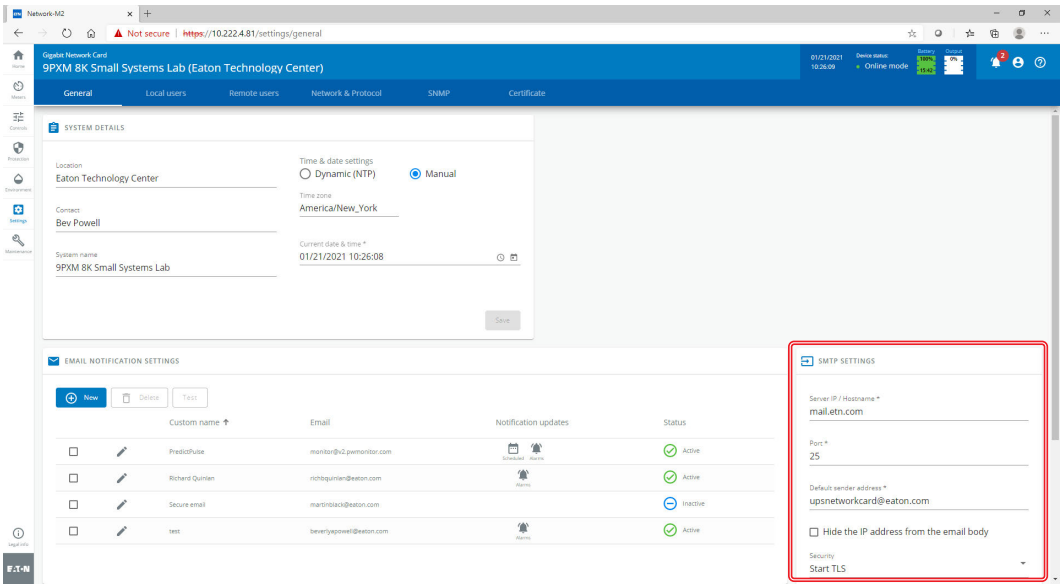
Figure 20. Network-M2 Card Network & Protocol Tab



Click the **General** tab (see Figure 21). In the **SMTP SETTINGS** section:

- Enter *mail.eaton.com* in the **Server IP/Hostname** field
- To ensure that e-mails are not marked as spam, enter *ups.networkcard@eaton.com* in the **Default sender address** field

Figure 21. Network-M2 Card General Tab



Scroll down and click **Save** in the bottom right.

In the **SYSTEM DETAILS** section, select the appropriate time zone and select the **Dynamic (NTP)** radio button. Enter *192.168.1.1* in the **NTP server** field. For instructions on configuring NTP in the modem, see the *Configuring a PXGX-UPS or PXGMS Card* section.

Also enter the **Location**, **Contact**, and **System Name**. Click **Save**.

Proceed to the *Run the PredictPulse Wizard* section.

Connecting a Power Xpert Ethernet Switch

Some installations have multiple UPSs with network cards that must be connected. In these cases, install a four- or six-port Power Xpert Ethernet Switch (see Figure 22). Install an Eaton Power Xpert Ethernet Switch to the DIN rail and apply power. Connect a straight-through Ethernet CAT5 cable between the **WAN** port on the wireless router and port 1 on the Power Xpert Ethernet Switch. Connect another straight-through Ethernet cable from the **Upstream** port on the PXGX-UPS or **Ethernet** port on the PXGMS or Network-M2 to any open port other than 1 on the Power Xpert Ethernet Switch.

Figure 22. Power Xpert Ethernet Switches

Run the PredictPulse Wizard

To run the PredictPulse Wizard (ActivatePredictPulse.exe), connect a laptop or personal computer as follows.

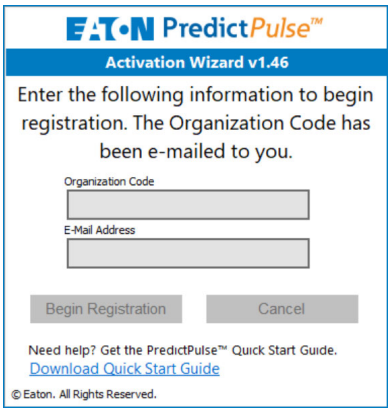
For a *PXGX-UPS* card, using an RJ-45 Ethernet cable, connect the laptop or personal computer to the card's **Downstream** port.

For a *PXGMS*, *Network-M2*, *INDGW-M2* or *INDGW-X2* card, using an RJ-45 Ethernet cable, connect the laptop or personal computer to the **LAN/WAN** port on the router.

You can also run the PredictPulse wizard while connected to the modem Wi-Fi. For instructions on connecting to the modem Wi-Fi, see the *Configuring an INDGW-M2 or INDGW-X2 Card*, *Configuring a PXGX-UPS or PXGMS Card*, or *Configuring a Network-M2 Card* section.

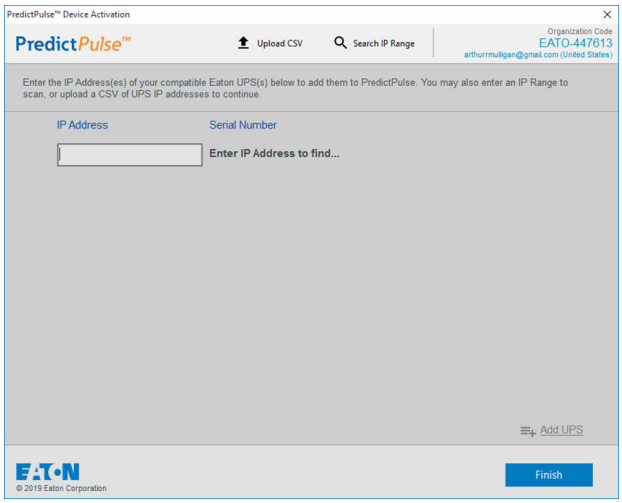
Run the PredictPulse Wizard (ActivatePredictPulse.exe). The Eaton PredictPulse window displays (see Figure 23).

Figure 23. PredictPulse Wizard Initial Display



Enter the Organization Code and customer E-Mail Address and click **Begin Registration**. The **PredictPulse Device Activation** window displays (see Figure 24).

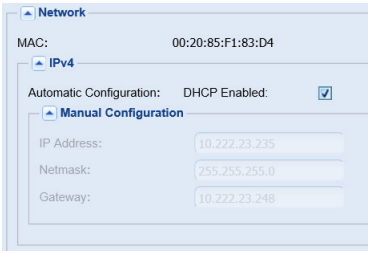
Figure 24. PredictPulse Device Activation Window



Enter the IP address or a range of IP addresses to continue. The wizard attempts to connect to a UPS at that address.

NOTE For a PXGX-UPS or PXGMS card, the IP address assigned by the modem can be found on the **Configuration** menu. Select **Network**, verify that **DHCP Enabled** is checked (see Figure 25), and the IP address is listed. If DHCP was not enabled initially, you may need to reboot the card to have the modem assign an IP address.

Figure 25. DHCP Enabled



The IP address can also be found from the modem GUI. Navigate to the **Networking** tab, select **LAN** on the sidebar and **DHCP** under the drop-down menu (see Figure 26). Scroll down to the **Dynamic DHCP client list** (see Figure 27) to find the connected devices. The web card IP will have an asterisk as the Computer name.

Figure 26. NetComm Wireless DHCP Tab

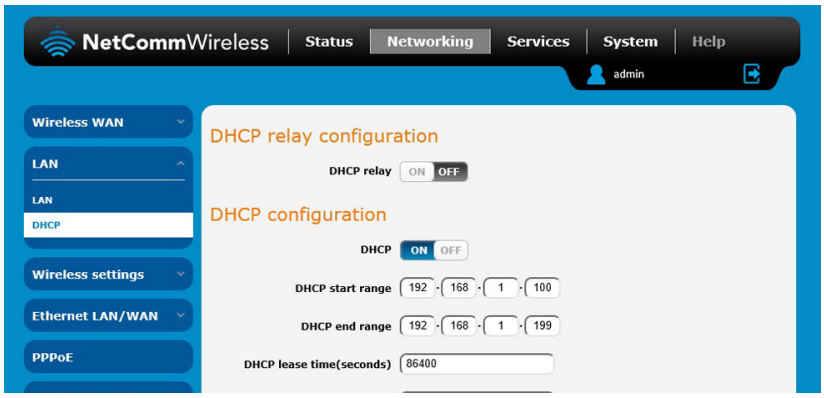
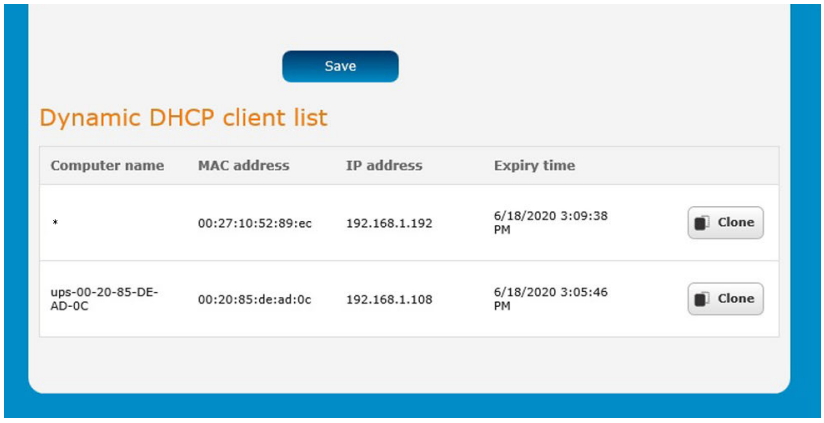
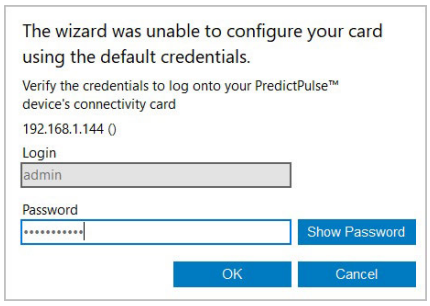


Figure 27. Dynamic DHCP Client List



NOTE If the wizard displays the configuration error message shown in Figure 28, enter the card's username and password and click **OK**.

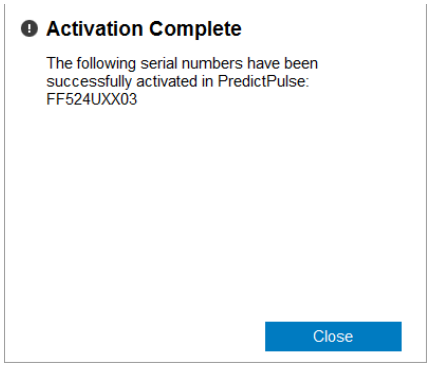
Figure 28. PredictPulse Wizard Card Configuration Error



The PredictPulse wizard activates each card. Upon completion, the wizard displays a confirmation message (see Figure 29).

NOTE If the user is running Microsoft Outlook and it is open, an activation e-mail is sent automatically to Eaton's PredictPulse servers. You may need to send the e-mail from your Drafts or Outbox folder once you've connected to a LAN if you were connected to the modem Wi-Fi while running the wizard. If the user does not have Outlook installed, the e-mail components are saved in the user's *My Documents* folder and instructions are provided for sending the activation e-mail manually.

Figure 29. Activation Complete Window



NOTE The registration process to activate the unit for PredictPulse may take 15 minutes or more. To ensure the PredictPulse activation was successful, call the Brightlayer Data Center at 800-356-5737, option 2, option 2 for assistance.

PredictPulse Remote Monitoring Activation Completion Checklist

- https://PredictPulseapp.eaton.com account enrollment complete
- Universal Accessory Power kit installed (if no UPS protected outlet is available for the modem and/or network switch to plug into. Must be installed by an Eaton technician, contact your Eaton service representative for a quote.)
- Network switch installed (if multiple UPS are connected to the same modem)
- PredictPulse-compatible network connectivity card installed
- Connectivity card upgraded to latest firmware
- Connectivity card configured for PredictPulse
- Modem NTP configured
- Environmental Monitoring Probe connected
- PredictPulse activation wizard run from modem connection
- Call placed to the Brightlayer Data Center at 800-356-5737, option 2, option 2 to confirm portal activation and communication receipt

Troubleshooting

Signal Strength

The biggest risk for the router is low signal quality. As an initial test, observe AT&T cell phone signal strength in the area of installation.

To quantify the signal, connect an Ethernet cable to the router. Once connected, open an internet browser and navigate to *192.168.1.1*.

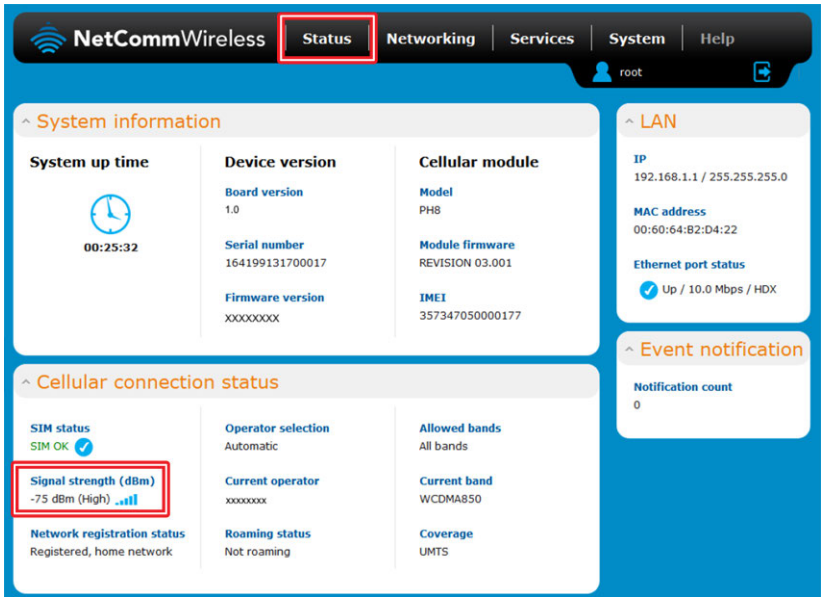
Log into the router's **Status** page (see Figure 30) using the credentials:

Username: *admin*
Password: *admin*

On the **Status** page, observe the *Signal strength (dBm)* and position the router to maximize the value.

If the signal is weak, an external antenna may be required. The external antenna replaces the 3G antennas provided with the router. Once connected, position the external antenna to maximize the signal strength.

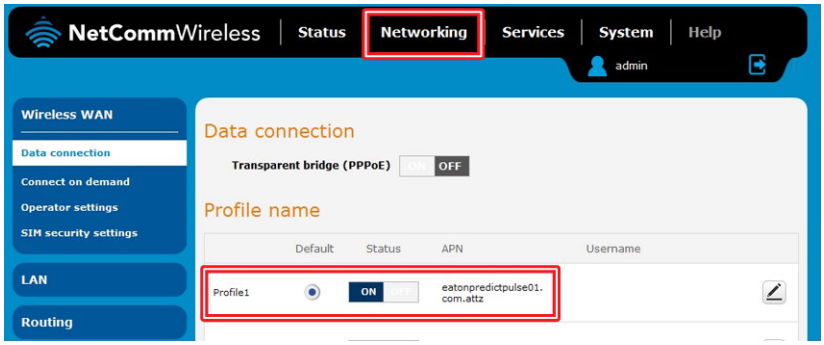
Figure 30. NetComm Wireless Status Page



Incorrect Profile

The wireless router can only use the profile stored on the SIM. On the router's **Networking** page (see Figure 31), verify that *Profile1* is selected and that the APN is *eatonpredictpulse01.com.attz*, as shown.

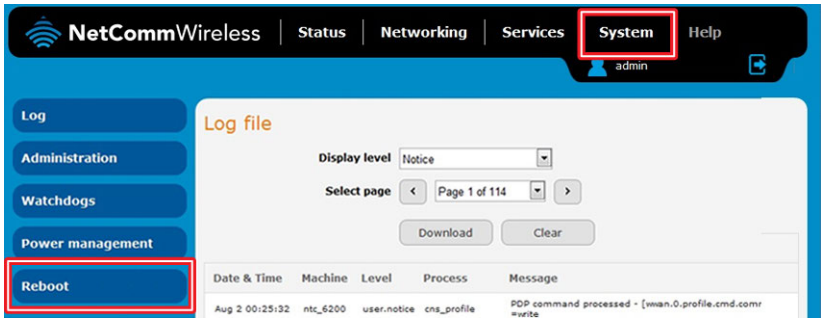
Figure 31. NetComm Wireless Networking Page



Rebooting the Router

If the wireless router loses connection to the connectivity card, the router can be rebooted from the router's **System** page (see Figure 32). The connection will be interrupted momentarily while the SIM data loads.

Figure 32. NetComm Wireless System Page



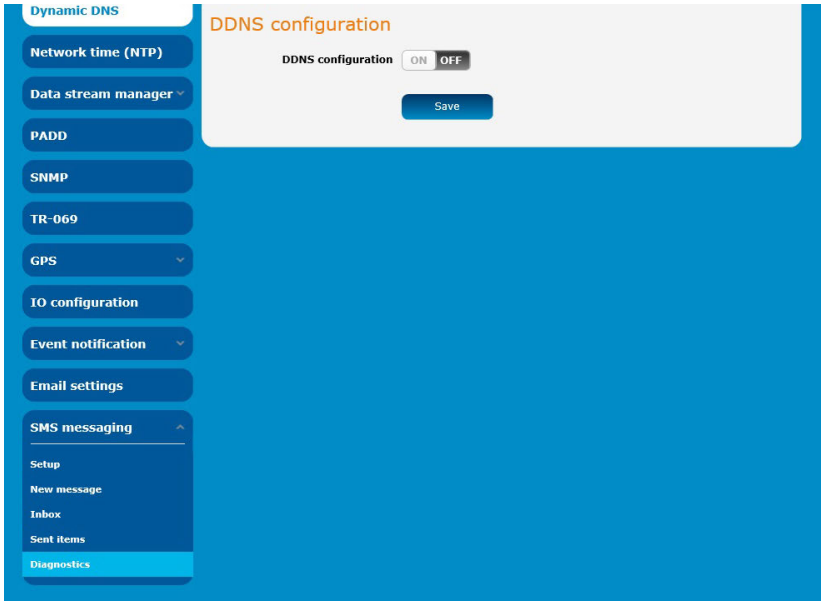
Remote Reboot Function

Although not required, Eaton recommends enabling the remote reboot function of your router to assist Eaton specialists in remotely troubleshooting. To do so, navigate to the router's **Services** page (see Figure 33).

Figure 33. NetComm Wireless Services Page

Scroll down and click **SMS Messaging**. From the **SMS Messaging** drop-down menu, select **Diagnostics** (see Figure 34).

Figure 34. NetComm Wireless SMS Messaging Drop-Down Menu

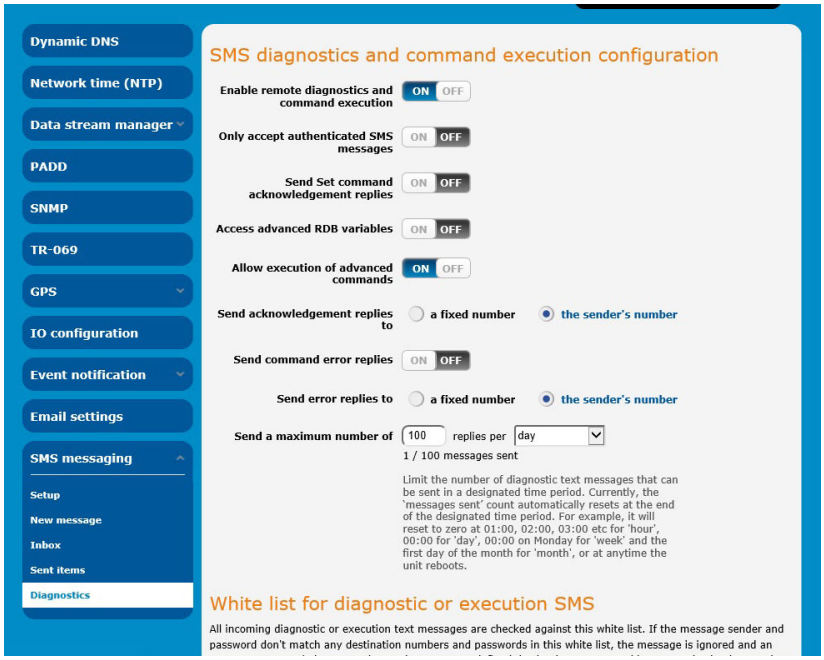


Ensure that the selections are set as shown in Figure 35, with:

- *Enable remote diagnostics and command execution* – **ON**
- *Only accept authenticated SMS messages* – **OFF**
- *Send Set command acknowledgement replies* – **OFF**
- *Access advanced RDB variables* – **OFF**
- *Allow execution of advanced commands* – **ON**
- *Send acknowledgement replies* – **the sender's number**
- *Send command error replies* – **OFF**
- *Send error replies to* – **the sender's number**
- *Send a maximum number of* – **100** – *replies per* – **day**
- *White list* – should be empty

Click **Save**.

Figure 35. NetComm Wireless SMS Diagnostics Settings



Additional Information and Support

For additional information about PredictPulse, visit Eaton.com/PredictPulse.

For specific questions, call the Brightlayer Data Center at 800-356-5737, option 2, option 2.

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