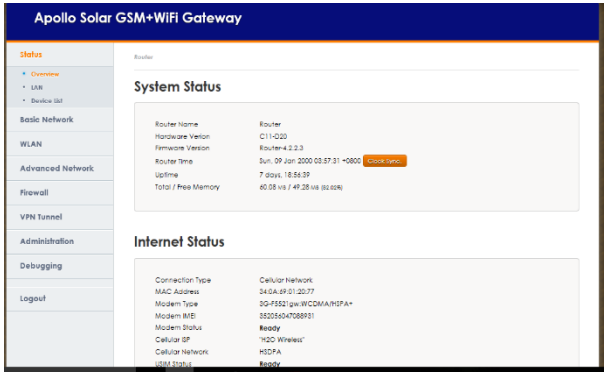
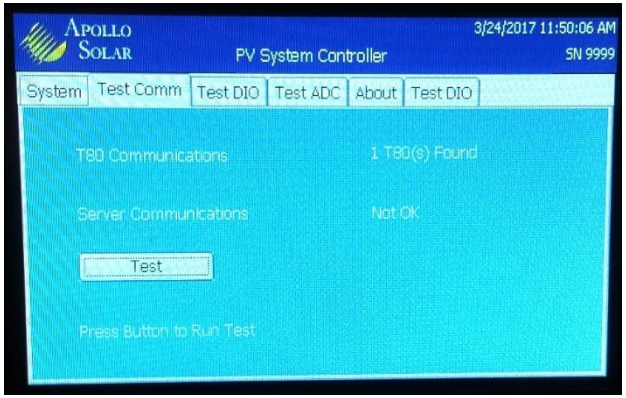
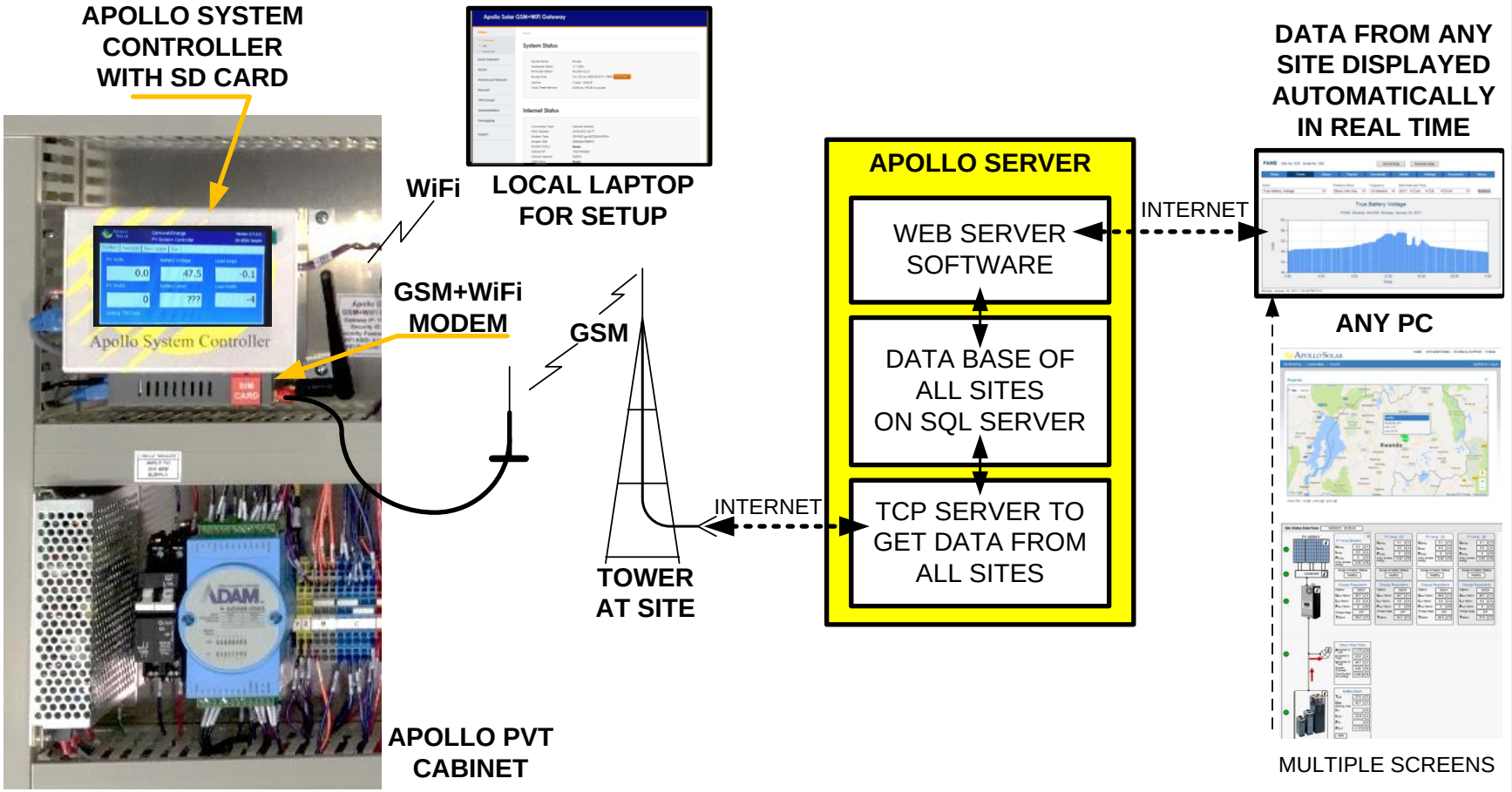
Setting up the Wireless Communication on the Apollo Solar Cabinets





Apollo Remote Monitoring

APOLLO PVT REMOTE MONITORING SOFTWARE - SYSTEM DIAGRAM



Apollo Solar designed and manufactures all the hardware and has developed the software for the ASC as well as the Server with our own people, so the hardware and software are well integrated and long term support is assured.

The GSM + WiFi Gateway

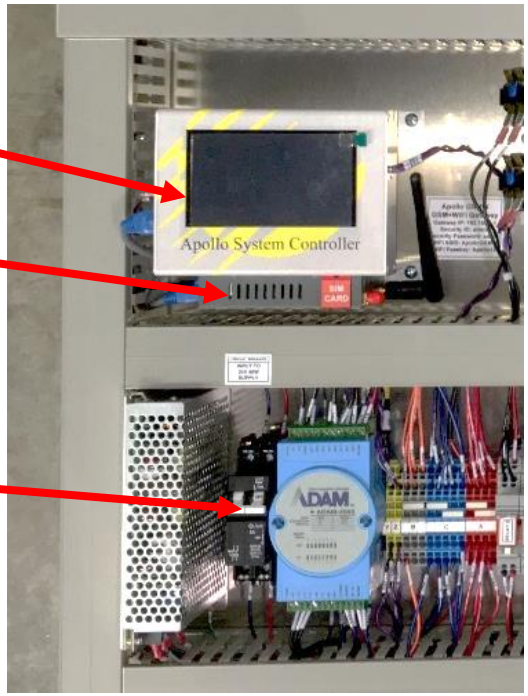
CONFIGURING THE MODEM TO WORK WITH YOUR MOBILE NETWORK

IMPORTANT INSTRUCTIONS

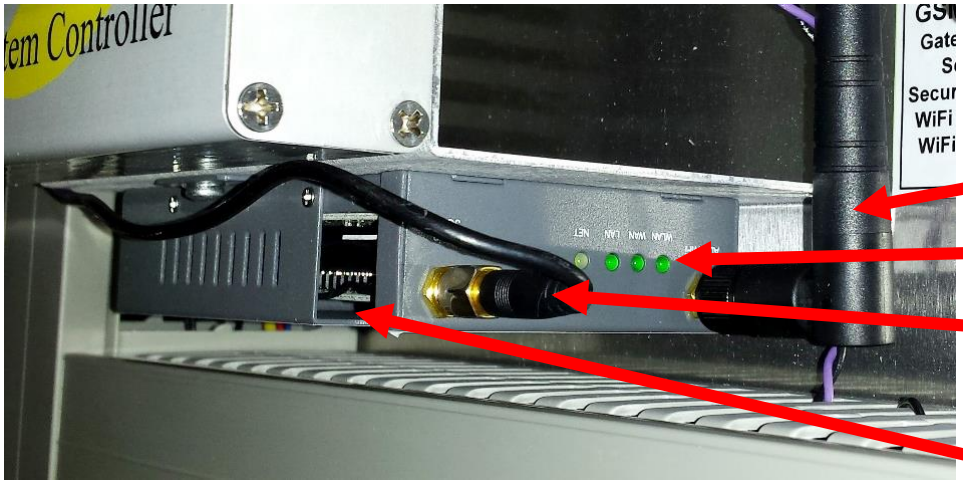
- You will need the proper **SIM card** and **APN number** from your Mobile Carrier.
- Apollo Solar sets up the Administration of the sites on our Server. As soon as you know the details for a site, please email the following to us:
  1. Site Name with exact Latitude and Longitude and time zone
  2. Serial Numbers of the Apollo PVT Cabinet and the T80HVs used at that site
  3. Make, model and size of the PV Array, Batteries and the Load at that site
- Before going into the field to set up the Apollo Remote Monitoring communications, it is wise to test one system from your office.
- Our experience is that each country and often each Carrier has different BTS equipment on their towers so the setup parameters may have to be specialized.
- After the parameters are correct for the first Modem for each Carrier and country, all the rest of the sites are usually the same as the first site.

The GSM + WiFi Gateway or MODEM

THE HARDWARE



- The Apollo System Controller (ASC) with LCD Touch Screen
- The GSM + WiFi Gateway (Modem) showing the WiFi Antenna. The GSM antenna must be mounted outside the cabinet.
- The Circuit Breaker (CB2) which controls 24v power to the ASC and Modem. This must be on for the setup and testing.



- This photo shows the base of the WiFi antenna.
- Status LEDs
- The connection for the external GSM antenna.
- The slot for the SIM CARD.

The GSM + WiFi Gateway

CONFIGURING THE MODEM TO WORK WITH YOUR MOBILE NETWORK (1 of 6)

The Apollo Solar GSM+WiFi Gateway comes with an embedded setup program so any Laptop, tablet or mobile phone with WiFi can be used for configuring.

The SIM Card must be registered with the mobile carrier and inserted behind the small red door in the Modem which is immediately below the Apollo System Controller.

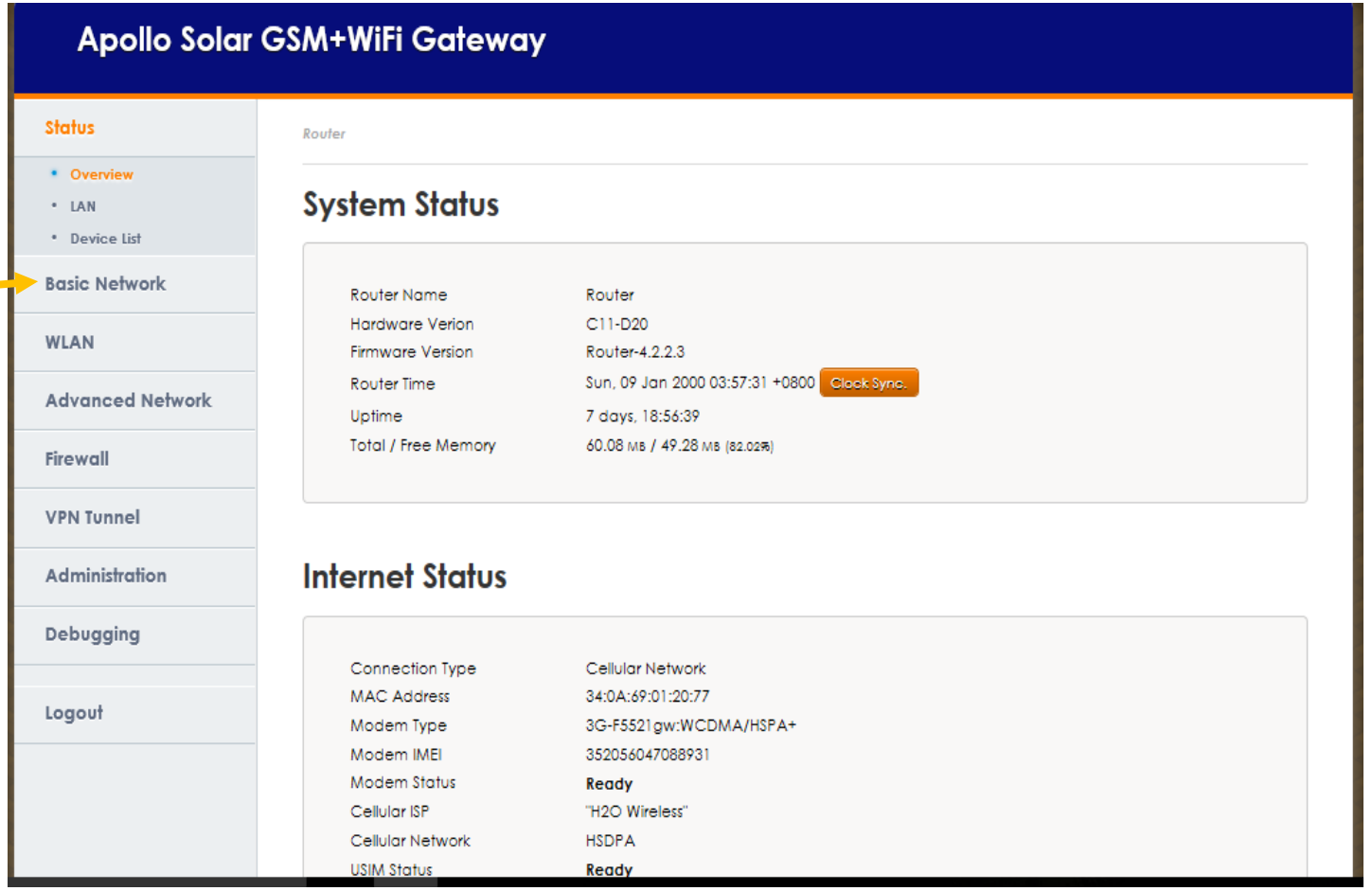
1. Apply power to the Apollo Cabinet and turn Circuit Breaker CB2 on to apply 24 volts to the modem and the ASC.
2. With your Laptop in WiFi range of the modem you will see “ApolloGSMW” show up in the list of available WiFi networks on your Laptop.
3. Connect to the **ApolloGSMW** WiFi network. The Password is **“Apollo13”.**
4. Use your web Browser on the laptop go to address **192.168.1.1**.
5. The username and password are both **“admin”.**
6. The screen shown on the next slide will appear:

*** For Example, Modem 192.168.1.1 and ASC 192.168.1.100 or Modem 192.168.2.1 and ASC 192.168.2.100**

The GSM + WiFi Gateway

CONFIGURING THE MODEM TO WORK WITH YOUR MOBILE NETWORK (2 of 6)

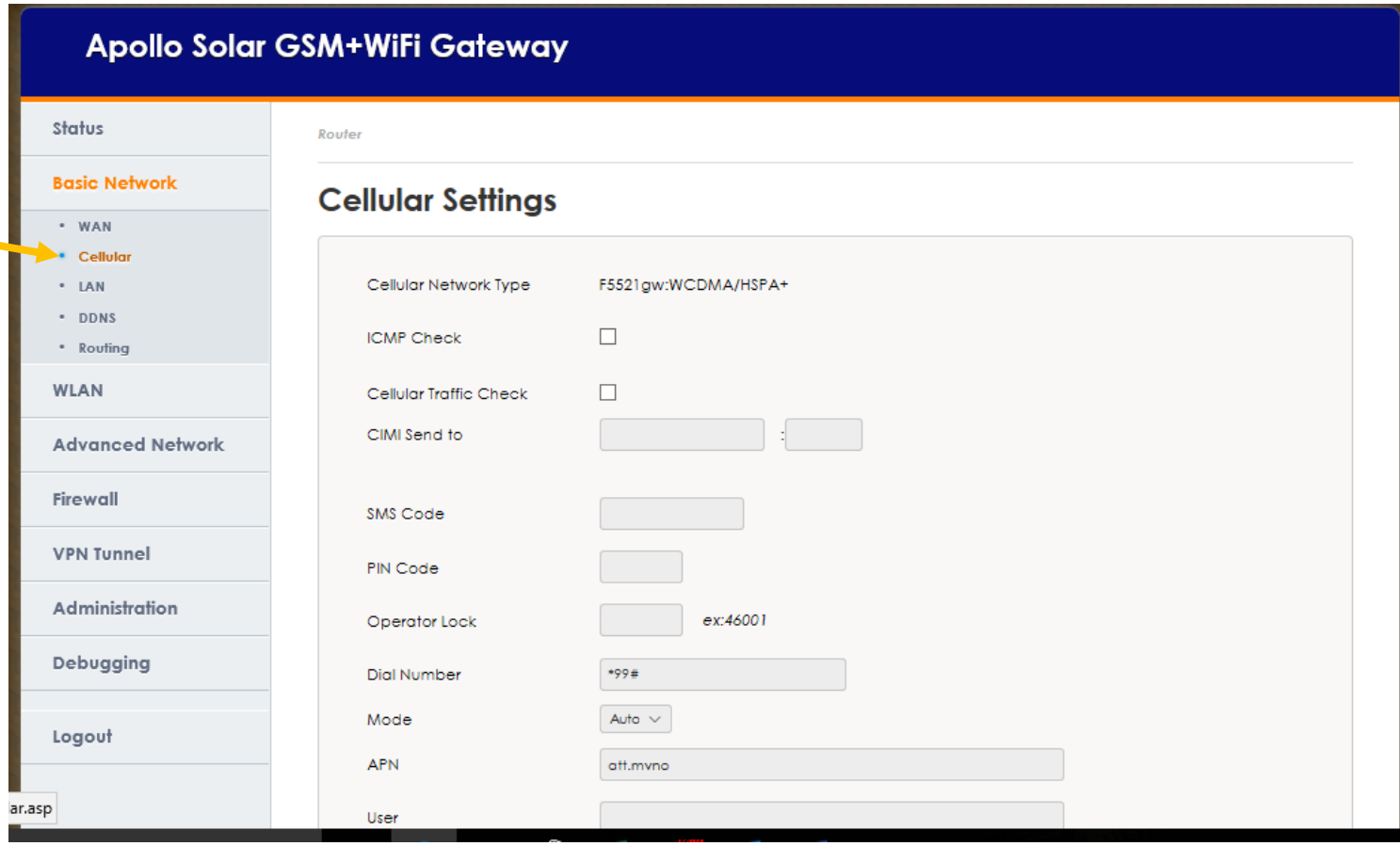
- The Screen shown at the right will appear on your Laptop.
- Click on **Basic Network.**



The GSM + WiFi Gateway

CONFIGURING THE MODEM TO WORK WITH YOUR MOBILE NETWORK (3 of 6)

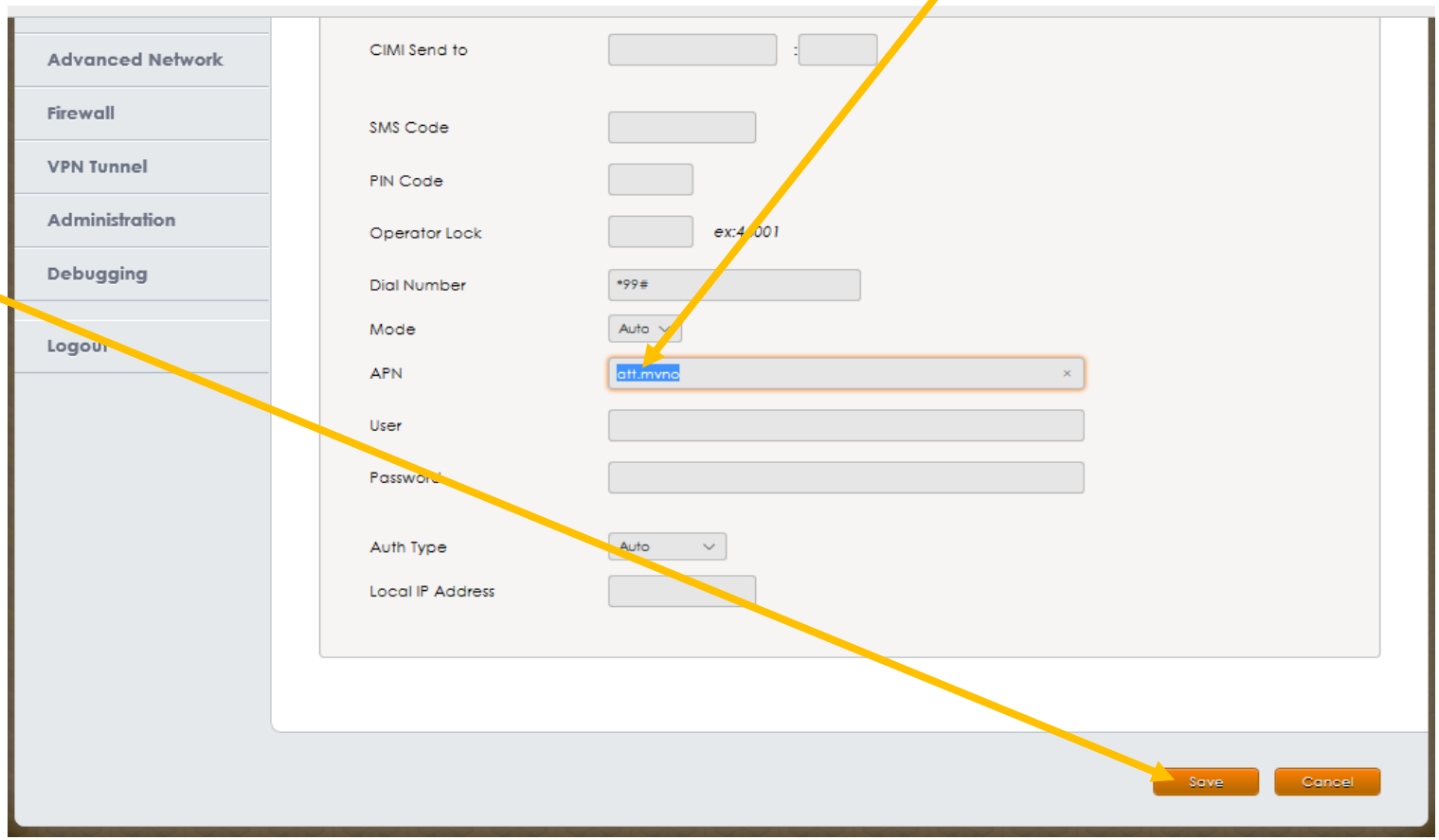
- Select the **“Cellular”** option.



The GSM + WiFi Gateway

CONFIGURING THE MODEM TO WORK WITH YOUR MOBILE NETWORK (4 of 6)

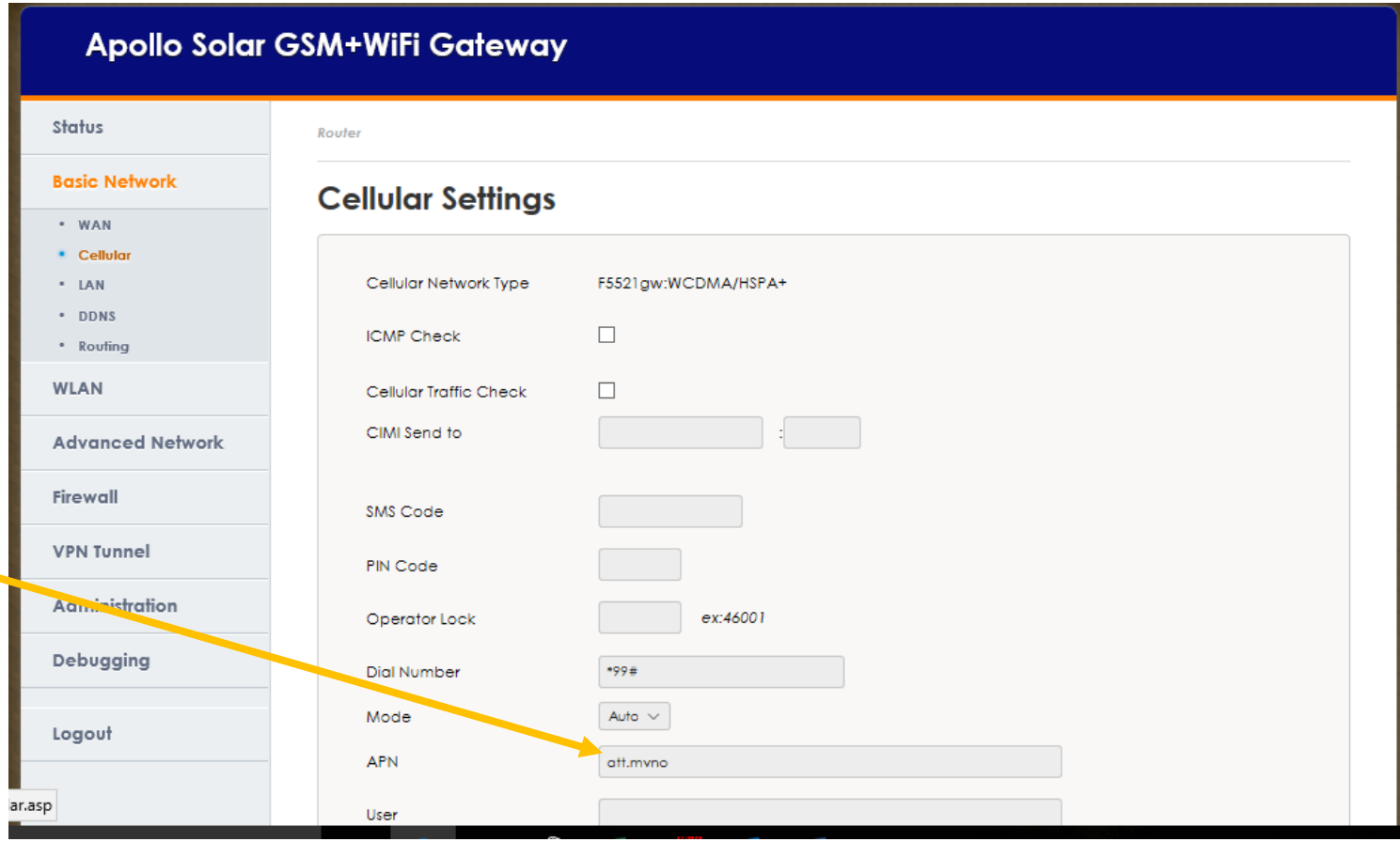
- Scroll to bottom of page and **enter the APN for your Carrier**. Note: this is all lower case.
- If you like, tell us the Carrier and we will find the recommended APN.
- After the APN is entered, hit the **SAVE** button.



The GSM + WiFi Gateway

CONFIGURING THE MODEM TO WORK WITH YOUR MOBILE NETWORK (5 of 6)

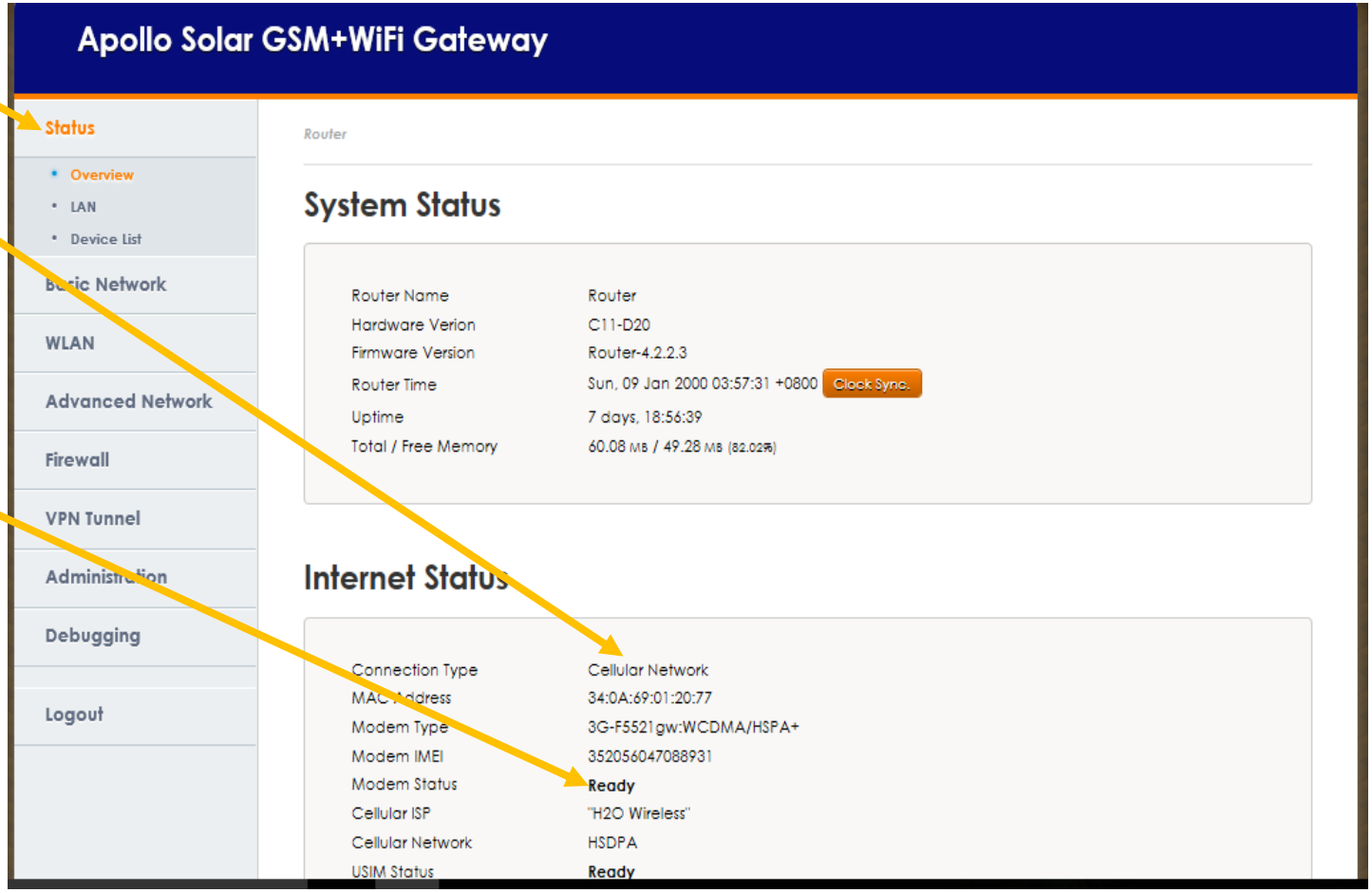
- Scroll back up to the top.
- **Check to see that your APN was saved.**



The GSM + WiFi Gateway

CONFIGURING THE MODEM TO WORK WITH YOUR MOBILE NETWORK (6 of 6)

- Go back to **Status**.
- If these items are filled in, the connection works.
- After a while the status message will say: **Connected**.
- The **NET LED** on the modem will change from red to flashing green and then to solid green.
- You are done. You can log out and close this program on your laptop.



The GSM + WiFi Gateway

TESTING THE MODEM WITH YOUR MOBILE NETWORK

You can test the system to make sure it is connecting to the Internet.

1. Make sure the Laptop is still connected to the ApolloGSMW WiFi network.
2. Use the Laptop search engine to connect to a known Internet site such as Google.
3. If you get to Google, you have proven that the Modem in the PVT Cabinet is connecting through the GSM BTS in the local tower to the Internet.
4. Refer to the Software System Diagram on slide 2 to see these components.
5. Next we will test the full connection into the Apollo Solar server.

The GSM + WiFi Gateway

TESTING THE MODEM WITH YOUR MOBILE NETWORK

Now we will test the full communications loop. The Apollo System Controller (ASC) has a test program which commands the Modem to connect to the local GSM tower. From there, the test data goes over the Internet to the Apollo Server. It will turn around and come all the way back by the same path to the ASC to confirm that the complete Server Communication path is working.

- With the Apollo cabinet powered up, Select **Test Comm** on the ASC screen.
- To start the process, touch the TEST button.
- It will take about 15 seconds to check the internal communications with the T80HVs.
- Then it will take another 15 to 30 seconds to come back with either an OK or NOT OK for the Server link.
- If it is Not OK, recheck the SIM Card and APN settings.