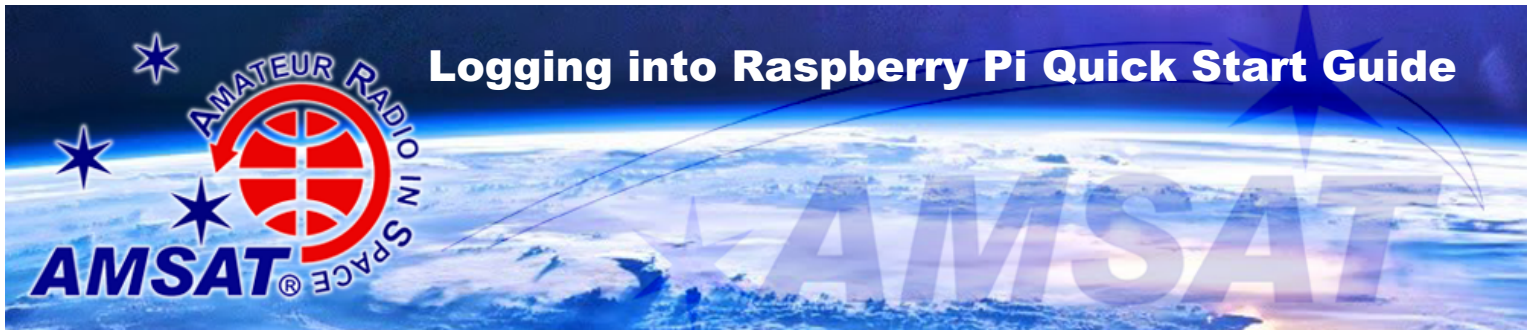




This guide provides a short description of how to log into your CubeSatSim Raspberry Pi Zero 2 using Wi-Fi.

Why Log into Your Pi:

You can control basic functions of your CubeSatSim using the pushbutton as described in the CubeSatSim Quick Start Guide, such as changing modes, turning command and control on and off, and shutting down. However, to customize your CubeSatSim (such as adding your ham radio callsign or your latitude and longitude) or to do advanced configuration (such as Simulated Doppler Shift Mode or Simulated Telemetry), you will need to log into the Raspberry Pi Zero 2 in your CubeSatSim.

What You Need:



- CubeSatSim or CubeSatSim Lite. To use the Hotspot or Raspberry Pi Connect methods, you will need to be running the latest version of the software
- A computer or phone that can connect to Wi-Fi and run a browser
- A Wi-Fi network connected to the internet is needed for Raspberry Pi Connect

Connect to your Pi Zero 2 over Wi-Fi:

You can connect to your Pi Zero 2 by turning it into a Wi-Fi hotspot, then connect to that hotspot with your computer or phone. Once you have logged in, you can then configure your Pi Zero 2 using your browser to connect to the CubeSatSim Dashboard. You can also configure your Pi Zero 2 to connect to your Wi-Fi network. Then you can connect to your Pi Zero 2 using:

- Your browser using the CubeSatSim Dashboard or Raspberry Pi Connect
- SSH or VNC application on your computer such as Putty or VNC Viewer

Connecting via a Wi-Fi Hotspot:

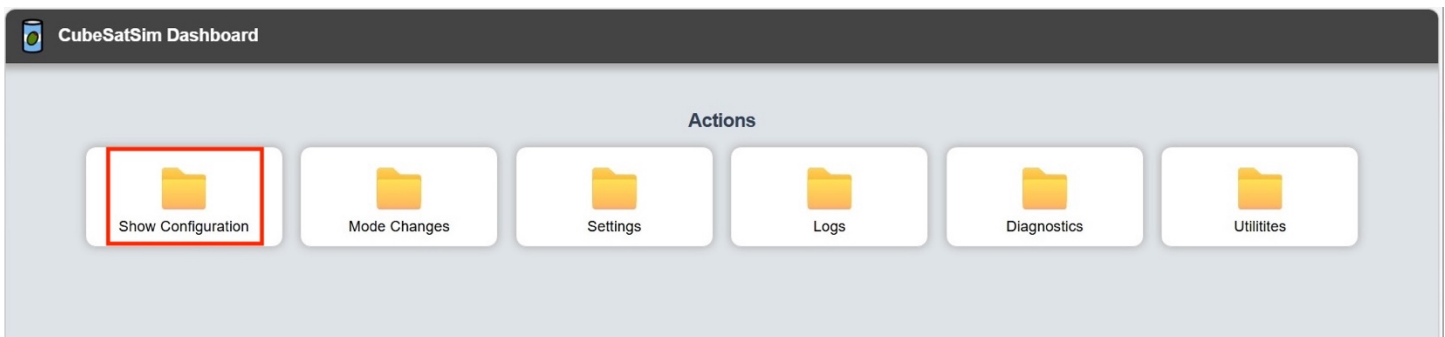
This method requires the latest version of the software. During a CubeSatSim startup or restart, press and hold the push button while the green LED is off. After about 15 seconds, the green LED should turn on and blink three times the Morse code for the letter “W”. You can then release the push button.

On your computer, look for a new Wi-Fi network called **CubeSat** which is the Wi-Fi hotspot on your CubeSatSim. You might need to turn your Wi-Fi on and off to refresh the list of available networks. Join with the password **amsatcubesat**

Once your computer is connected, open your browser and type this into the address bar of your browser and hit return:

cubesatsim.local

If you get a blank screen or an error you might need to hit the reload button but you should get the CubeSatSim Dashboard loading which shows six folders:



If you go under **Show Configuration** you can see the current settings and mode for your CubeSatSim.

You can now go under **Settings** and change configurations, such as setting your ham radio callsign, configuring your latitude and longitude, or turning simulated Doppler shift on or off. However, when connected using the hotspot, you can't update software or connect to anything else on your computer while you are on the **CubeSat** hotspot since you are not connected to the internet.

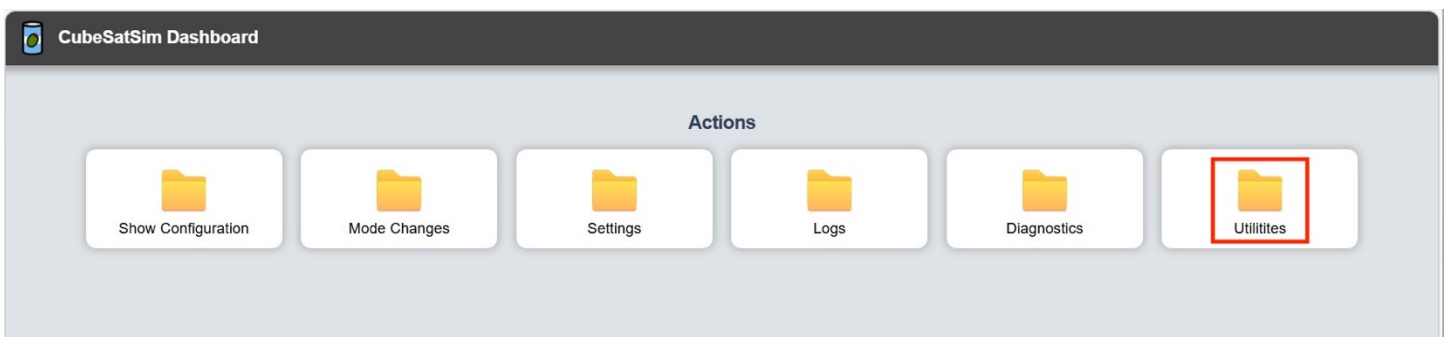
You can also configure the Raspberry Pi to connect to your Wi-Fi network by following the steps in the next section.

To turn off the Wi-Fi hotspot, just restart your CubeSatSim by pressing and releasing the push button, or go under **Utilities** and select the **Restart the CubeSatSim**

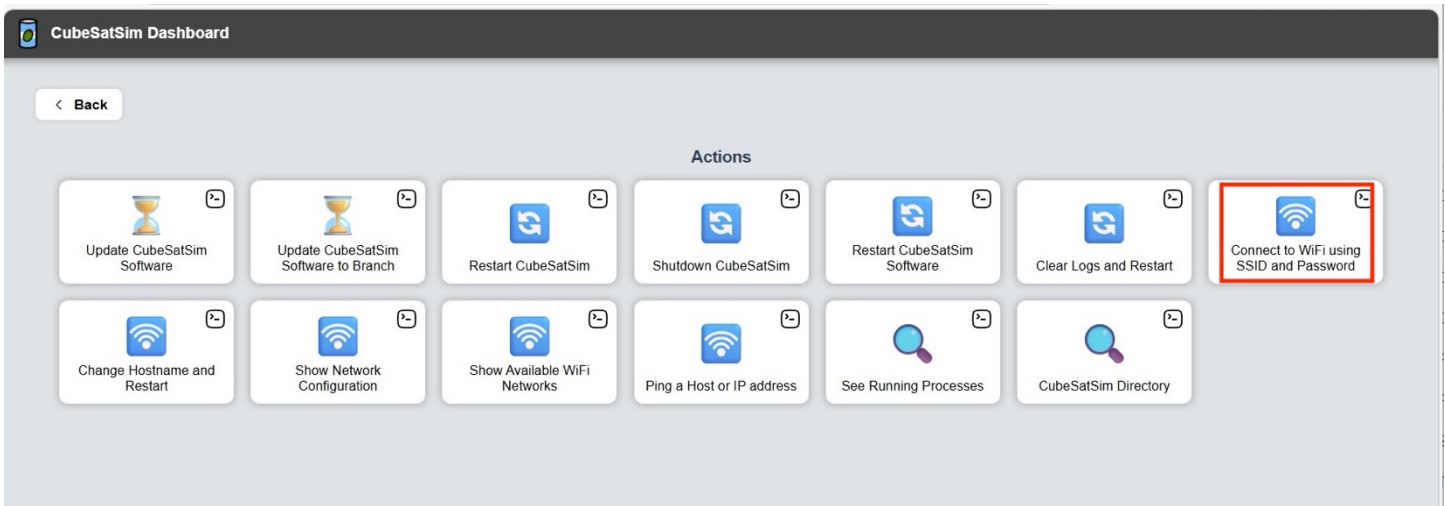
Configuring Your Wi-Fi Network:

When you have connected using the hotspot and have loaded the CubeSatSim Dashboard in your browser, you can configure your CubeSatSim to connect to your Wi-Fi in the future, so you won't need to use the hotspot. When the CubeSatSim connects to your Wi-Fi, you can use the CubeSatSim Dashboard in your browser to configure it.

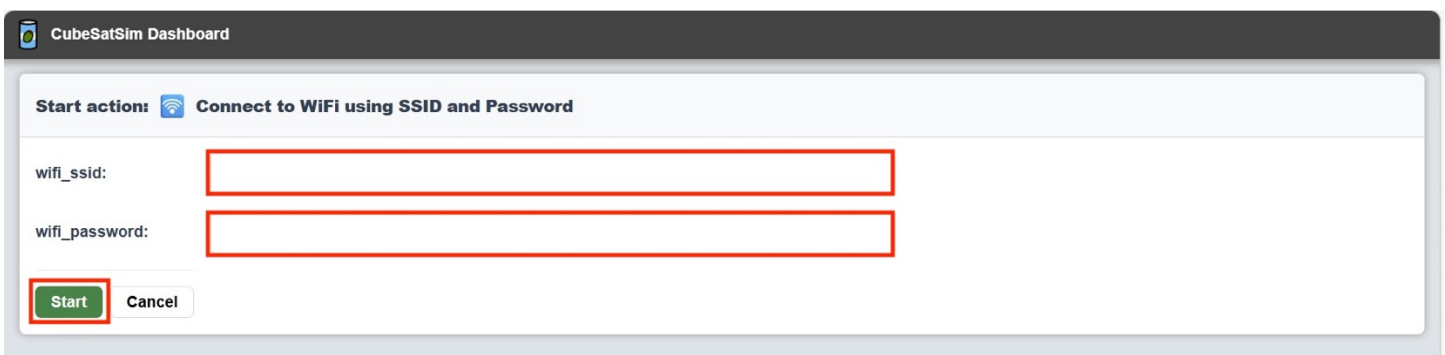
In the CubeSatSim Dashboard, select **Utilities**



Then select **Connect to Wi-Fi using SSID and Password**



Put in your Wi-Fi SSID and password then select **Start**.



The CubeSatSim will restart. The window might still say "Still Running" but that's because it has lost touch with the server.

Switch your computer to your Wi-Fi network and see if you can access the CubeSatSim Dashboard there. If so, your CubeSatSim is on your Wi-Fi.

Web Terminal:

Normally, to access the Raspberry Pi terminal (also known as command line), you need your CubeSatSim and computer to be on the same WiFi, then connect using SSH on your computer. In the latest CubeSatSim software, there is an option to connect using a Web Terminal, which is a command line access via your web browser without having to run an SSH application. To access the Web Terminal in hotspot mode, enter this in your browser:

cubesatsim.local:8081

Just like accessing the Dashboard, you may need to add a / to the end of the address or add a **http://** to the start of the address.

Setting up Raspberry Pi Connect:

Raspberry Pi Connect is a free service provided by the Raspberry Pi Ltd that makes it easy to access your internet connected Raspberry Pi from any web browser.

If you are using the latest software, you can use Raspberry Pi Connect in your browser to access your Pi. First, create an account at <https://connect.raspberrypi.com> You will need to login to your Pi Zero 2 using one of the methods described here <https://cubesatsim.org/download/cubesatsim-readme.pdf> Once logged into your Pi using SSH or VNC, type this command: **rpi-connect signin** It will display "Complete sign in by visiting" and then an authentication URL (web link). Copy this URL into any browser and log into your Raspberry Pi Connect account, and you will then be able to remotely log

into your Pi using the browser. Select your Pi at <https://connect.raspberrypi.com/devices> and select **Connect Via** then **Screen Share** for the Desktop GUI or **Remote Shell** to log into the command line. To troubleshoot issues, type this command: **rpi-connect doctor**

Customizing:

You can customize the way you log into your Raspberry Pi by editing the configuration file **hotspot.ini** in the CubeSatSim folder. You can use any text editor such as vi or nano. Here is what you can change:

- Wi-Fi hotspot name by editing the **hotspot_ssid=CubeSat** field
- Wi-Fi hotspot password by editing **hotspot_password=amsatcubesat** Note: this password is stored in the clear!
- Web terminal setting during hotspot by editing **web_term_hotspot=yes** Note, there is no authentication for this!
- Web terminal setting during Wi-Fi by editing **web_term_wifi=no** Note: there is no authentication for this!

Troubleshooting:

Here are some possible problems and resolutions:

1. You pressed and held the push button but you don't see or can't connect to the **CubeSat** hotspot Wi-Fi network.
 - a. When you powered up or restarted the CubeSatSim with the button pressed, did you see the green LED flash three times spelling the Morse Code for the letter "W"? If not, restart and try again.
 - b. If your computer doesn't see the **CubeSat** Wi-Fi network, you might need to turn on and off your Wi-Fi connection, or click "Show Other Networks" to see the new network. Or you might need to wait 30 seconds.
 - c. Did you enter the password **amsatcubesat** to connect to the **CubeSat** Wi-Fi? If you might have mistyped it, you can "forget" the network so you are prompted to enter the password again.
2. You successfully connected to the **CubeSat** Wi-Fi Hotspot but you can't load the CubeSatSim Dashboard.
 - a. Did you type **cubesatsim.local** then return into the browser address bar?
 - b. Did you try adding a **/** to the end of the hostname (typing **cubesatsim.local/** then return) into the browser address bar?
 - c. Did you try typing **http://cubesatsim.local** then return into the browser address bar?
 - d. Double check that your computer is connected to the **CubeSat** hotspot Wi-Fi network.
3. You have loaded the CubeSatSim Dashboard and opened **Utilities** and **Connect to Wi-Fi using SSID and Password** but your CubeSatSim hasn't connected to your Wi-Fi network.
 - a. Did you enter the right SSID and password for your Wi-Fi network?
 - b. Try pressing and releasing the pushbutton to restart the CubeSatSim
 - c. Check to see if perhaps the **CubeSat** hotspot Wi-Fi network is still available. If so, try using the CubeSatSim Dashboard again to configure your Wi-Fi network.
4. Raspberry Pi Connect isn't working to login to my Raspberry Pi
 - a. Did you try running the command **rpi-connect doctor** which will tell you what needs to be done?
 - b. Did you try generating a new authentication URL by using the command **rpi-connect signin**
 - c. When you log into your account at <https://connect.raspberrypi.com/devices> do you see your Raspberry Pi listed?
 - d. If you can't connect with **Screen Share** for the GUI, did you try connecting with **Remote Shell** for command line access.