

Experimental Meshtastic Settings

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Abstract

Settings for Meshtastic for Amateur and AREDN use.

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Chapter 1

Introduction

A short synopsis of settings for Meshtastic devices using the 3 different interfaces. The web interface provides a GUI for most, but not all, settings. This is a work in progress so these will change over time. Likewise, as we learn more about the system better settings may emerge.

Chapter 2

Web Interface

The web interface normally works through an IPV4 address though if you're willing to waste some time you can also supplement with Bluetooth or raw serial but only on specific web browsers.

You need to find the IP address (or have a static one set). In Linux, you can use the **nmap** utility. A typical home network will show a few devices and what ports are available. For example:

```
nmap 192.168.1.2-254
Starting Nmap 7.80 ( https://nmap.org ) at 2024-12-01 07:18 MST
Nmap scan report for 192.168.1.122
Host is up (0.00084s latency).
All 1000 scanned ports on 192.168.1.122 are closed

Nmap scan report for 192.168.1.195
Host is up (0.013s latency).
Not shown: 998 closed ports
PORT      STATE SERVICE
80/tcp    open  http
443/tcp   open  https
...

Nmap done: 253 IP addresses (7 hosts up) scanned in 15.90 seconds
```

You're looking for a device you don't recognize that has http and https services. In this case, 192.168.1.195 is our S3-Core T-Beam. Have your browser point to this device and make the connection.

2.1 Config

Settings from the **Config** selection. The options are in a bar across the top of the page as shown in Figure 2.1.

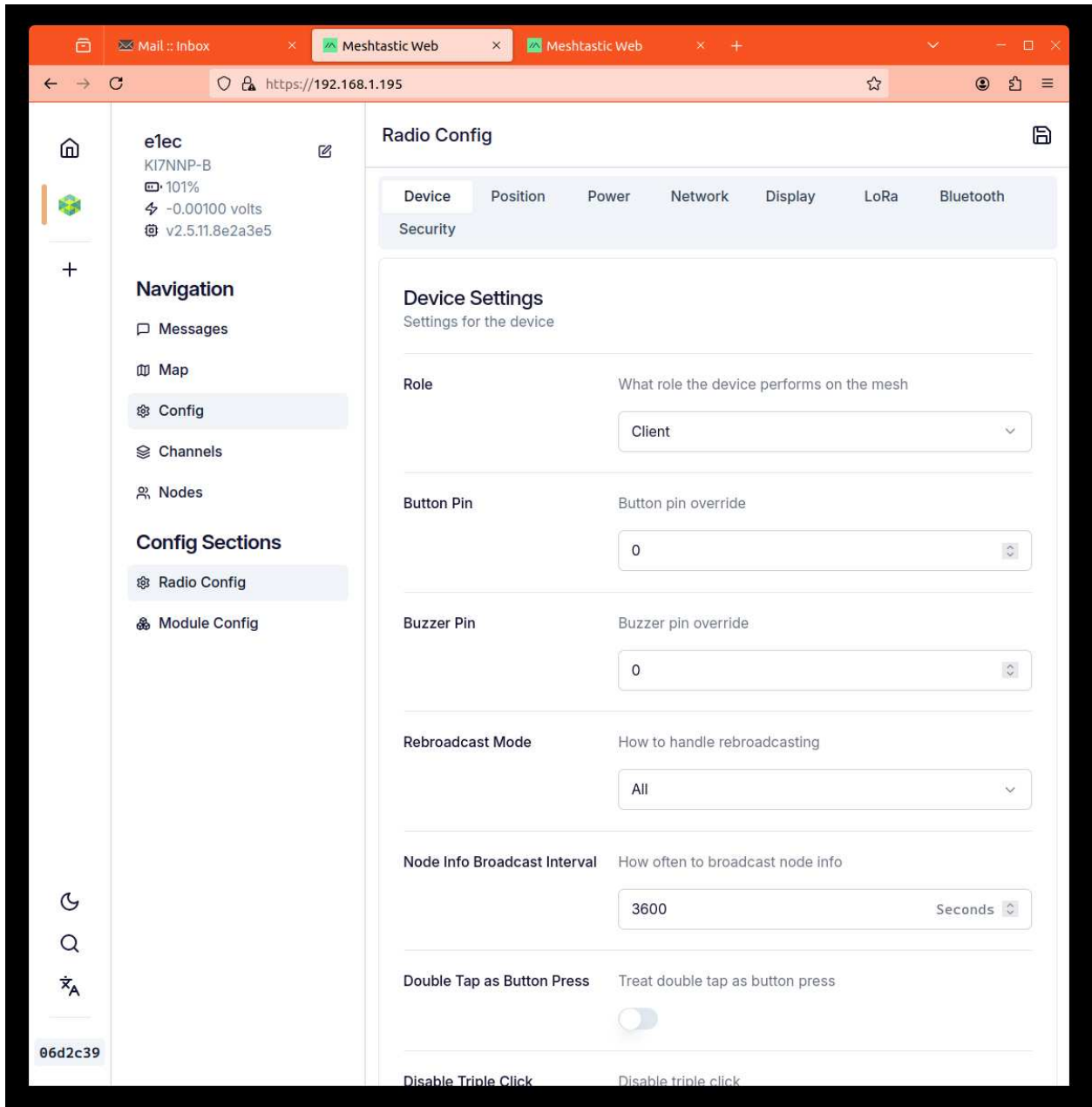


Figure 2.1: Radio Configuration Screen

After making changes, click the 3.5" floppy disk format icon in the upper right hand corner though some screens have their own submit button.

2.1.1 Device

Device Settings		
Label	Value	Description
Role	Client	Others not recommended except for special purposes.
Button Pin	0	Button pin override, must not be blank.
Buzzer Pin	0	Buzzer pin override, must not be blank.
Rebroadcast Mode	All	Do everybody.
Node Info Broadcast ...	3600	How often to broadcast - 3600 appears to be minimum.
Double Tap ...	off	Do what you want.
Disable Triple Click	on	For those of us shakey.

2.1.2 Position

Position Settings		
Label	Value	Description
Enable Smart ...	off	Won't broadcast often enough unless you're moving around.
GPS Mode	DISABLED	If you're screwed to the floor, set the position and disable it.
	ENABLED	If you are moving around and you have a GPS.
	NOT_PRESENT	If you don't have one (not all do).
Position Flags	tmp	Not clear what this does.
Receive Pin	0	Probably for UART but must be ignored?
Transmit Pin	0	Probably for UART but must be ignored?
Enable Pin	0	Turn on/off?
Intervals		
Broadcast Interval	600	Set higher once established.
GPS Update ...	120	How often to check (only if enabled). Uses power.
Smart ... Distance	100	Only if enabled, how far to move.
Smart ... Interval	30	Or send at least this often.

Table 2.1: Radio Config Position Settings

You cannot set the fixed position using the current web interface. This must be done by the CLI. You can't query the position you've set either - you can only see it on the map.

2.1.3 Power

Power Config		
Label	Value	Description
Enable power ...	off	Until we get situated.
Shutdown on batt ...	0	Means don't do this.
ADC Multiplier ...	0	You have to experiment with voltmeter.
No Connection Blue...	60	If you don't get a connection, shut the BLE radio off after this.
INA219 Address	0	I^2C current monitor address if you have one.
Sleep Settings		
Super Deep ...	4294967295	or some big number, not sure.
Light Sleep...	300	How long in light sleep.
Minimum Wake Time	10	How long to wait after packet.

Table 2.2: Power Configuration

2.1.4 Network

Network settings are important so your browser can talk to the device. Some of mine talk to the local WiFi network, one will have a fixed ethernet and CAT6 for AREDN work.

WiFi Config		
Label	Value	Description
Enabled	on	Turn on WiFi - power pig.
SSID	???	What's your WiFi network name.
PSK	*****	The password for this network.
Ethernet Config		
Enabled	Off	Only on if you have ethernet (Rockland).
IP Config		
Address Mode	DHCP	Even AREDN will do DHCP for you. But you can set if you want.
IP	0.0.0.0	The static IP address if you want.
Gateway	0.0.0.0	To the rest of the world.
Subnet	0.0.0.0	Mask off messages.
DNS	0.0.0.0	Dynamic name server address.
NTP Config		
NTP Server	meshtastic.pool.ntp.org	Only if you can get there.
Rsyslog Config		
Rsyslog Server	<i>blank</i>	Not sure.

Table 2.3: Network settings.

2.1.5 Display

Some systems will have a small LCD or OLED as an in the field interface, some even have keyboards and bigger displays.

Display Config		
Label	Value	Description
Screen Timeout	600	Stay on for 10 minutes, power pig.
GPS Display Units	DEC	This looks like Google Earth but UTM a better option for GIS.
Carousel Delay	0	Up to you.
Compass North Top	off/on	Up to you.
Flip Screen	on/off	Up to you.
Display Units	Metric	Get over it!
OLED_TYPE	OLED_AUTO	Type of controller. Evidently the systems can detect which one.
Bold Heading	Off	Who cares?
Wake on Tap or Motion	off	Up to you.

Table 2.4: Display Settings

2.1.6 LoRa

The **LoRa** settings are most important.

LoRa Config		
Label	Value	Description
Region	US	Must be set.
Hop Limit	3	A default, you can only save so many.
Frequency Slot	59	Amateur radio frequency here!!!
Ignore MQTT	off	Later
OK to MQTT	off	Later
Waveform Settings		
Use Preset	on	For now. Setting by hand dangerous.
Modem Preset	Long Fast	For now. Later we may switch.
Band Width	0	Part of preset, don't fiddle.
Spreading Factor	0	Part of preset, don't fiddle.
Coding Rate	0	Part of preset, don't fiddle.
Radio Settings		
Transmit Enabled	on	Black showing. Double negative here.
Transmit Power	30	Appears to be as high as you can go on mine. Setting to 0 is supposed to max out the transmitter.
Override Duty Cycle	off	???
Frequency Offset	0	Must be zero, not a blank!
Boosted RX Gain	on	Unless you're right next to the other device.
Override Frequency	916.625 MHz	This is channel 59 center.

Table 2.5: Radio settings.

2.1.7 Bluetooth

Bluetooth Settings		
Enabled	off/on	Some systems support both Bluetooth and WiFi but not at the same time.
Pairing Mode	Fixed PIN	So you can set the PIN.
Pin	123456	The default, but set your own if you're paranoid.

Table 2.6: BlueTooth

2.1.8 Security

A bit iffy here - it's not clear we can turn this off even with Ham settings at least from this interface.

Security Settings		
Private Key	???	256 bit appears to be the only option.
Public Key	???	A match for the above.
Admin Settings		
Allow Legacy Admin	off	Allow setting from some remote.
Managed	off	Managed by some big person.
Admin Key	<i>blank</i>	Public key for admin user.
Logging Settings		
Enable Debug ...	off	Fancy debugging stream.
Serial Output Enabled	on	Serial console (usually USB emulator).

Table 2.7: Security Settings

2.2 Channel Settings

The settings here are important. Get them wrong and you can't exchange messages though you may be able to see other devices by their serial number.

Across the top of the **Channels** page are listed Ch 0 - Ch 7 but may already have some names. Click the first and begin the settings.

Channel Settings		
Role	Primary	The default. Other channels should be disabled for now.
pre-Shared Key	AQ==	8 bit. To clear this, backspace to clear and ignore the red error message. Then click submit at the bottom. If you reload, you'll find it's gone. Setting Ham Mode does not automatically do this.
Name	LONGSLOW	Currently the channel must be named LONGSLOW. Eventually this should become more indicative our use, something like SLCOARES.
Uplink Enabled	off	For now.
Downlink Enabled	off	For now.
Allow Position Requests	on	So others can find us.
Precise Location	on	So we know exactly where you are.
Approximate Location	<i>blank</i>	Or if you're hiding one of the options.

Table 2.8: Channel settings

When you're done, you must click the black **Submit** button at the screen bottom. The remote will reboot.

All other channels should have their Role set to **DISABLED**.¹

2.3 Module Config

Lots of stuff in this section, most of which should be disabled for now. After Clicking **Module Config** you should see something like Figure 2.2.

¹Fixed nodes connected to the internet will be in a different chapter.

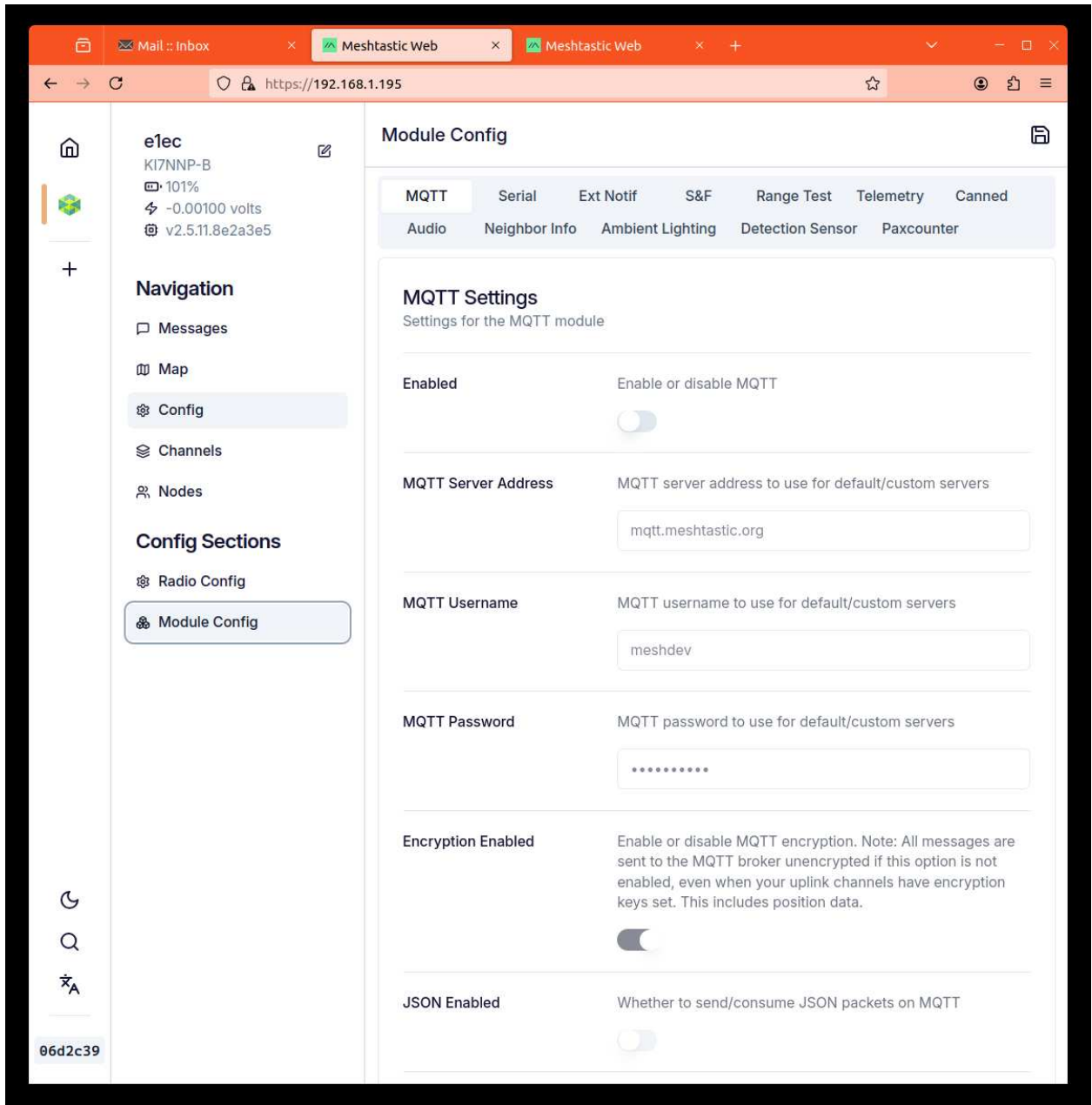


Figure 2.2: The Module settings page.

I have not changed any of the defaults. Make sure the Range Test is disabled or you'll annoy people and run your battery down.

2.4 Changing Device Name

The defaults aren't to hot. Click on the square box with pencil icon (who dreams up these things) to bring up a change screen in Figure 2.3.

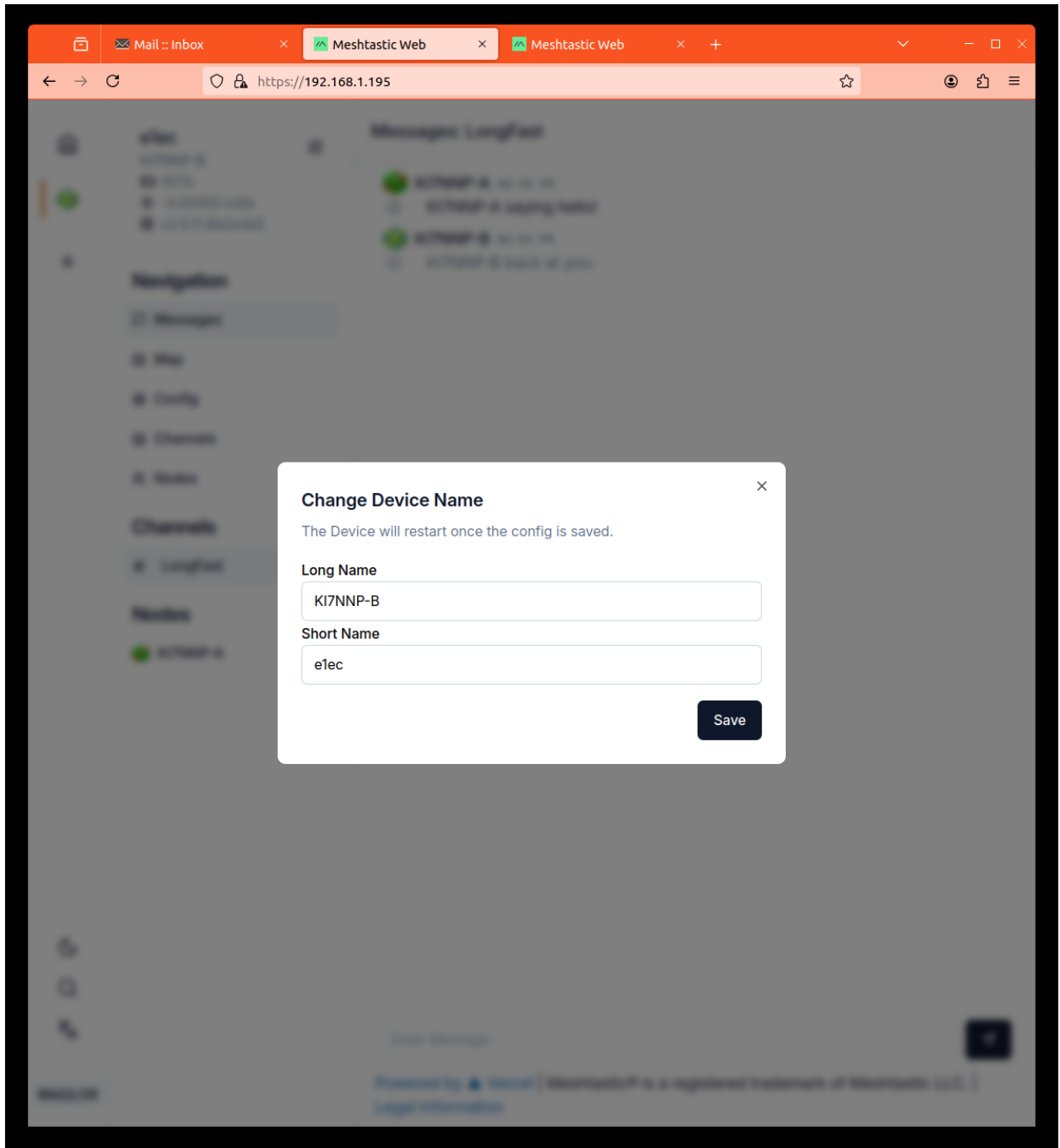


Figure 2.3: Changing your device name.

2.5 MQTT

MQTT allows you to pass Meshtastic messages to and from a local network.

1. Web interface: **Config** → **Channels**. You should get to LONGSLOW or channel 0.
2. Slide **Uplink Enabled** to the right.
3. Slide **Downlink Enabled** to the right..
4. Click **Submit**.
5. Click **Config** → **Module Config**. You should arrive at the **MQTT** page.
6. Slide **Enabled** top the right.
7. Enter the IPV4 address of your MQTT server in **MQTT Server Address**.
8. Make sure **Encryption Enabled** is off.
9. Make sure **JSON Enabled** is off.
10. Make sure **TLS Enabled** is off.
11. Click the floppy disk icon in the upper right corner.
12. You have to reboot for the changes to become effective.

Chapter 3

Command Line Interface

You would think this would be the ultimate do everything interface but it's not. Some of the omissions are annoying, others, this is the only way to change.

3.1 Download

You will need python and some packages. Follow the directions on the meshtastic website for the CLI interface. It requires a particular version, changes to the execution path. It is not plug and play!

3.2 Execution

The CLI will look for a serial port and attempt to connect to it unless you specify an IPV4 number. For example, the following will return a JSON list of all known stuff. This is the only way you can query what your fixed location (or GPS location) is except for a map display.

```
meshtastic -host 192.168.1.195 -info
```

3.3 Some Ham Settings

To set up ham mode you must give it your call sign and perhaps optional identifiers if you have more than one device. For example:

```
meshtastic -set-ham KI7NNP-x
```

Then you must turn the 8 bit public shared key default AQ== off.

```
meshtastic -ch-set psk none -ch-index 0
```

Though it says it did it, the web interface doesn't think so. You have to reboot a few times.