

# Introduction to Meshtastic Off-Grid Communications

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# ABOUT

For those who do NOT yet have a Meshtastic device

Add more Meshtastic nodes

There will be a Part 2 for current Meshtastic users and Hams

# Housekeeping



MUTE your MICROPHONES



Save your QUESTIONS for AFTER the presentation (or use chat)



The presentation will be recorded

# What



- Meshtastic is an off-grid, open- source mesh network, utilizing inexpensive LoRa radios for license free, text based and telemetry communication.

# Use Case



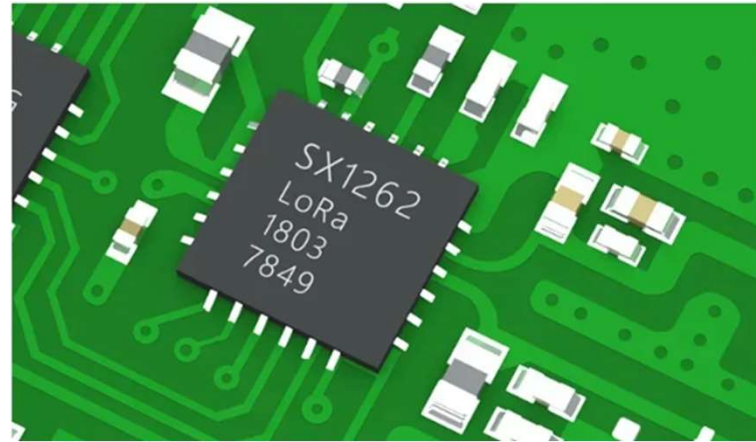
- Off-grid messaging when cell phone or internet goes down
- GPS location tracking
- Remote weather/telemetry
- Private encrypted communication

# Benefits



- License Free
- Low Cost
- Low Power
- Long Range
- Private

# LoRa



- Long Range radio
- Chirp spread spectrum modulation
- 915 MHz ISM band in North America
- +22 dBm (155mW) transmit power
- Line of sight up to 2 miles urban, 8 miles rural.

# Meshtastic Protocol

The Meshtastic logo features the word "MESHTASTIC" in a bold, black, sans-serif font. The letters 'M' and 'C' are stylized with diagonal slashes. The logo is set against a light green rectangular background.

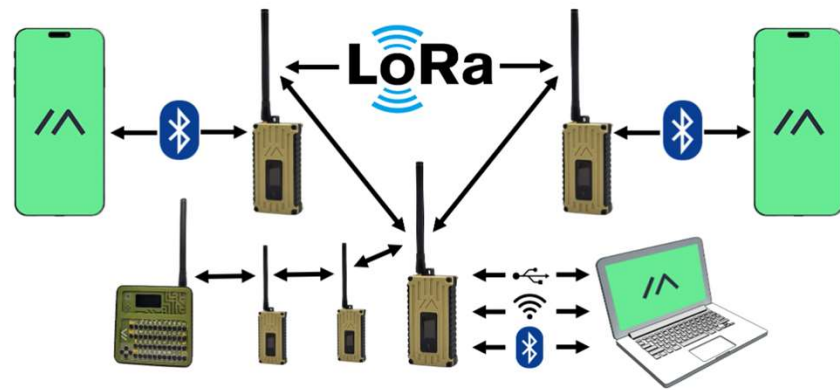
**MESHTASTIC**

An open source, off-grid, decentralized, mesh network built to run on affordable, low-power devices

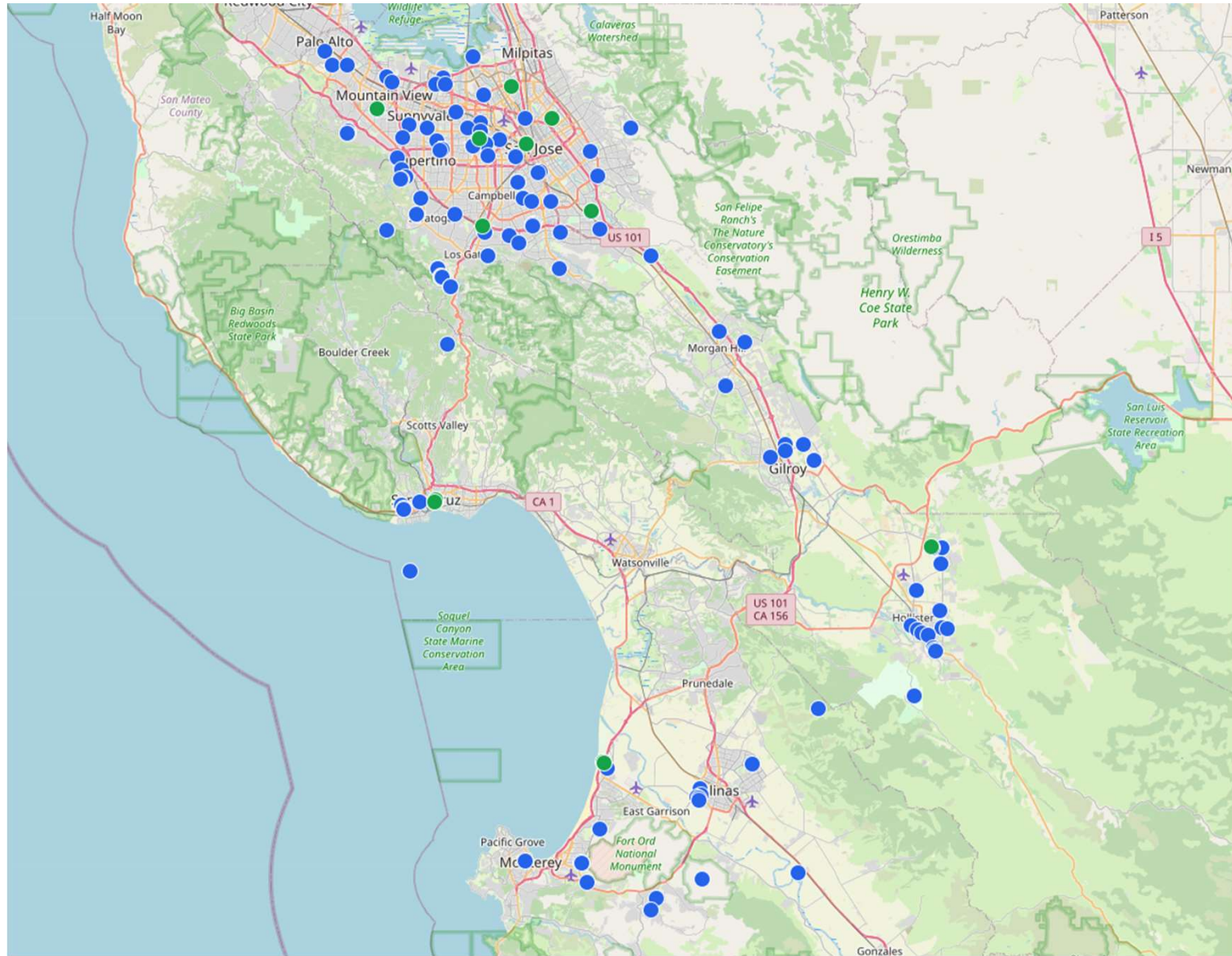
- Utilizes LoRa radio
- Different than LoraWAN, Helium or The ThingsNetwork
- Creates a Mesh Communications Network
- Web client, Android, iOS apps.
- Bluetooth, WiFi and serial connection
- Open-Source



# MESH Network



- Devices or “Nodes” are linked together
- Create Multiple Routes
- Resilient in case of node failure
- Increased range





# DEVICES

- Heltec V3
- Rak Wisblock
- T-Beam Supreme
- Station G2

# Heltec V3



- Inexpensive. \$15
- Very DIY friendly
- Good variety of GPS and sensors available
- Wide choice of 3D printed cases
- Amazon, Ali Express
- Need battery, case and antenna



# RAK Wisblock



- Low power –great for solar nodes
- Modular
- Custom modules for GPS and sensors
- \$37
- Amazon, Ali Express, Rak
- Need battery, case, antenna, cables

# T-Beam Supreme

- All in one
- GPS, Wi-fi, Bluetooth
- 1.3 in OLED Display
- 18650 battery holder
- \$76
- Amazon, Ali Express
- Need battery, case, antenna





## Station G2

- Best RF performance
- TX Power Amplifier – 4.46W
- Low Noise Amplifier receiver
- 9V-19V DC input power
- Or USB-C 15V PD



# Antennas

- Most Important Choice
- Portable or Base Station
- dBi gain spec questionable
- Use website reviews
- \$9 - \$17 Portable antennas
- \$17- \$75 Base Station antennas
- Amazon, Rokland, Ali Express



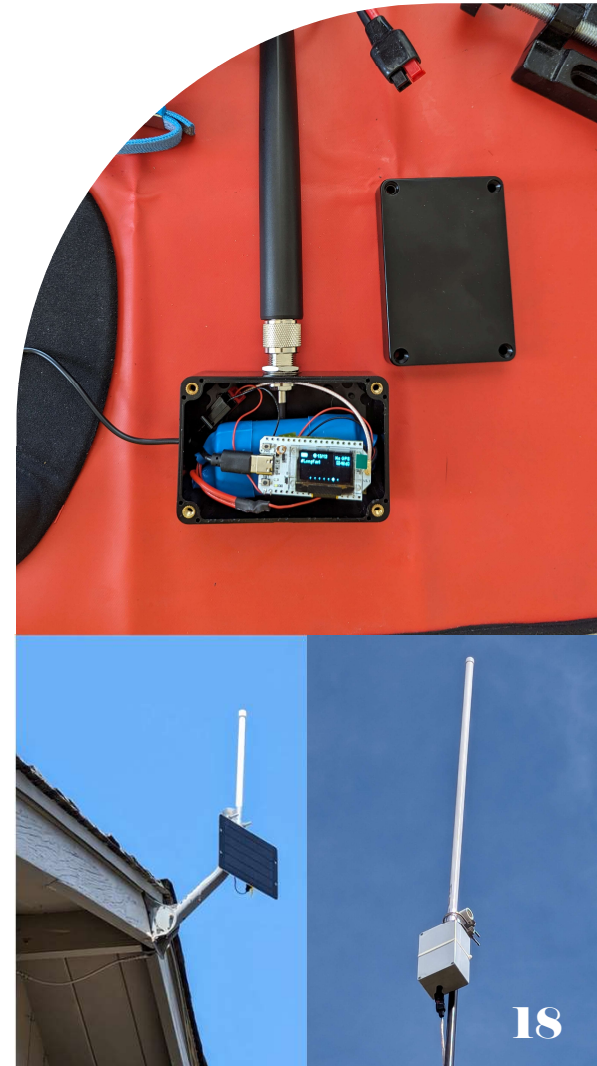
# RECOMMENDATION

- Get a Base Station AND a Portable node
- Base station goes up as high on your roof or mast as possible
- Portable node will receive signals inside your home from the Base Station

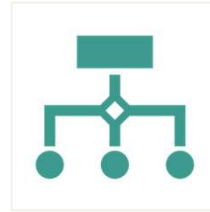


# WHERE TO BUY

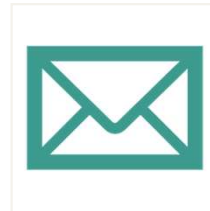
- Purchase all the parts and build it yourself
- Ebay and Etsy has pre-built, ready to go nodes
- Rokland, Yetiwurks, B&Q Consulting Shop
- Several local builders/makers (see CHAT)
- SBCARA July 13 Swap Meet!



# QUESTIONS?



1<sup>ST</sup> up -Those who do NOT yet own a Meshtastic node



Email [KK6MES@gmail.com](mailto:KK6MES@gmail.com) for pertinent links and BOMs.



# Thank you

