MESHTASTIC

A Mesh Radio Network

"Blind" Repeater

Gateway

"Active" Router

Gateway

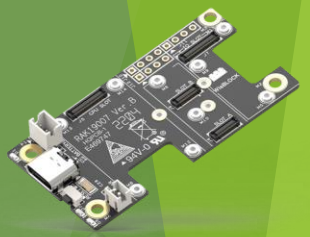
All trademarks are the property of their respective owners. See Meshtastic.org for additional information.

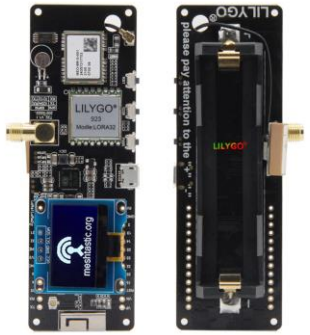
BIRMINGHAM MESH

BirminghamMesh.org

MESHTASTIC

A Radio Mesh Network





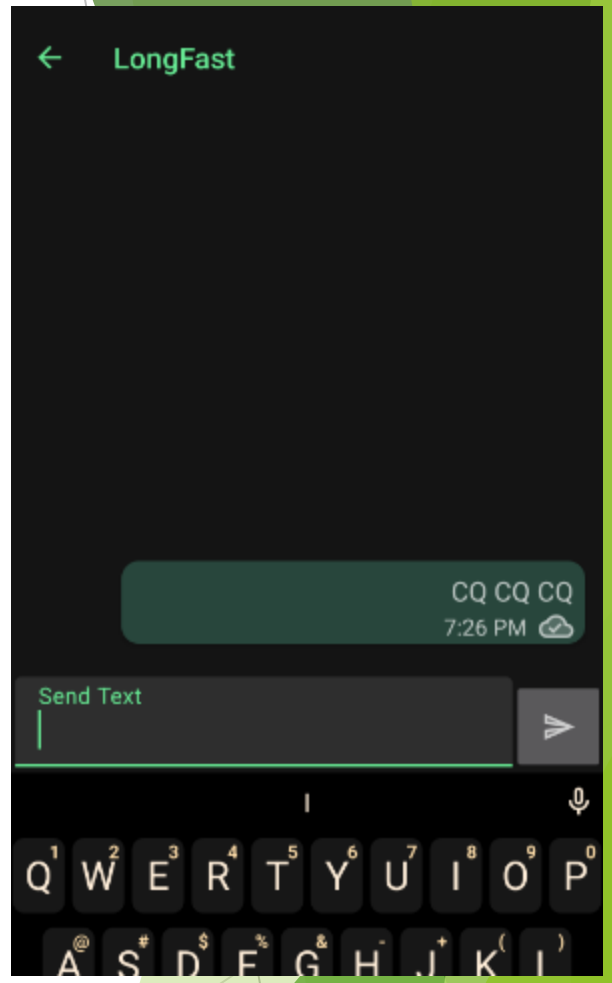
Several device types are available, from all-in-one devices, to barebones components, and modular platforms with multiple sensors and sub-components.

BIRMINGHAM MESH

BirminghamMesh.org

MESHTASTIC

A Mesh Radio Network



WHAT IS MESHTASTIC?

MT is a **FREE APP** for sending texts when cellular networks are not available.

MT implements a MESH ROUTING network* on the 915 MHz band in the USA, where the radios automatically link with each other to find the best path through the network.

MT technology is still very new, and infrastructure is not completely built-out yet, so **MT should not be considered a consumer-level application**.

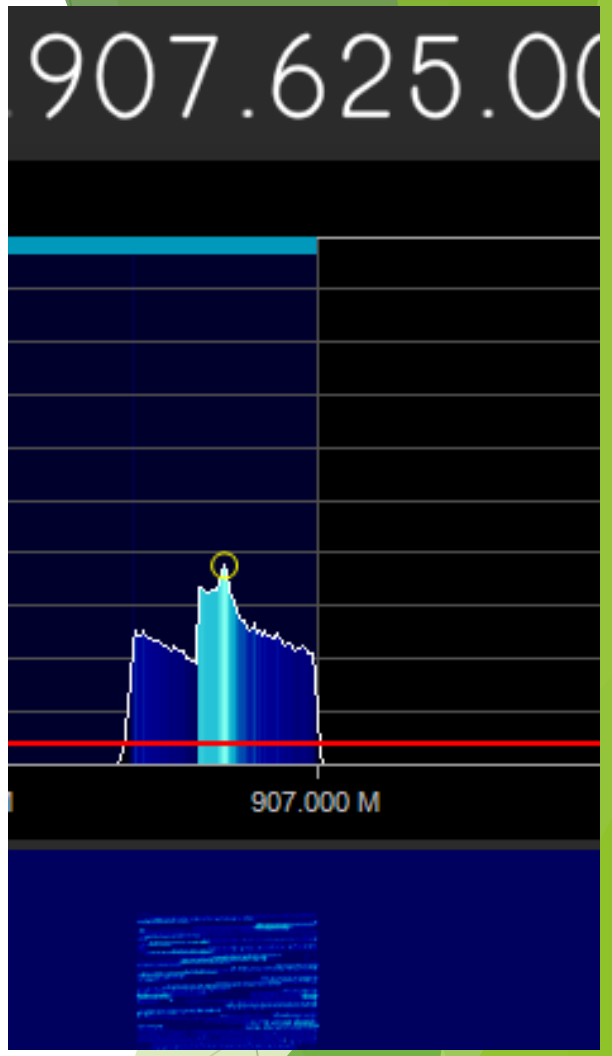
*Mesh routing sends a text packet that is potentially heard by several other devices. All radios hearing the packet, **EXCEPT CLIENT_MUTE** devices, repeat it (with or without call sign), then decrement the hop count by one.

BIRMINGHAM MESH

BirminghamMesh.org

MESHTASTIC

A Mesh Radio Network



WHAT IS MESHTASTIC MODULATION AND PROTOCOL?

LoRa means Long Range! Current ‘ground’ record is 203 miles using 250 mW with 2.8dB antennas from mountaintop to distant mountaintop.*

Utilizes the LoRa Peer-to-Peer ‘CHIRP' modulation technique [NOT LORAWAN] on the 915 MHz band in USA / 868 MHz band in Europe.

Meshtastic can use several different bandwidths and spreading factors, but our local deployment will utilize the default “LongFast” modem settings at 250 KHz bandwidth (spread spectrum) for repeaters and gateway nodes.

UNLICENSED MODE IS PROHIBITED ON 433 MHz IN USA!!

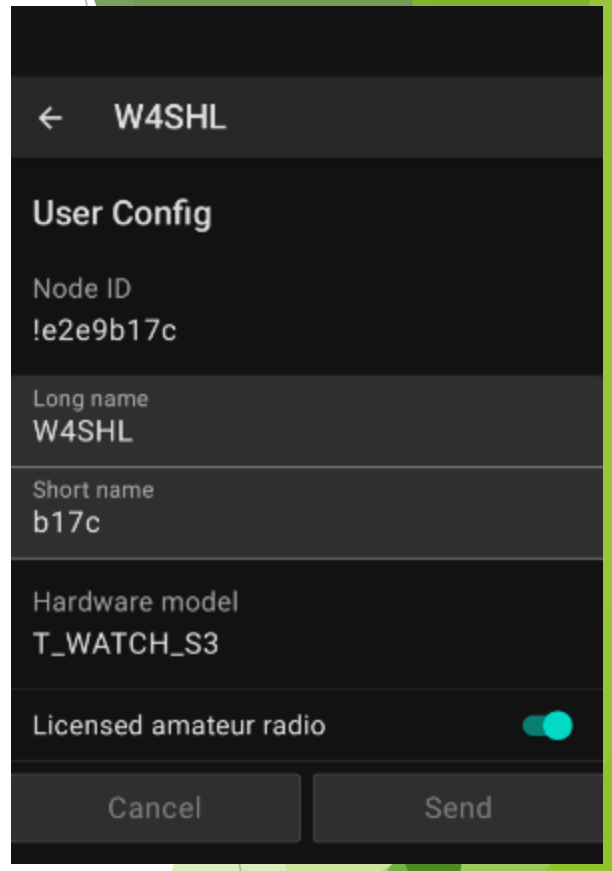
*https://meshtastic.org/docs/overview/range-tests/

BIRMINGHAM MESH

BirminghamMesh.org

MESHTASTIC

A Mesh Radio Network



WHAT IS MESHTASTIC UNLICENSED MODE vs. LICENSED MODE?

MT can be used in low power UNLICENSED MODE (< 4W EIRP) as FCC Part 15 “IOT“ devices under Industrial, Scientific and Medical [ISM] rules.

MT can utilize AES256 ENCRYPTION LEGALLY in UNLICENSED ISM mode.

MT can also be used in LICENSED AMATEUR RADIO MODE under FCC Part 97 by setting a device’s “Long Name” as its station callsign.*

Enabling Licensed amateur radio mode disables encryption.

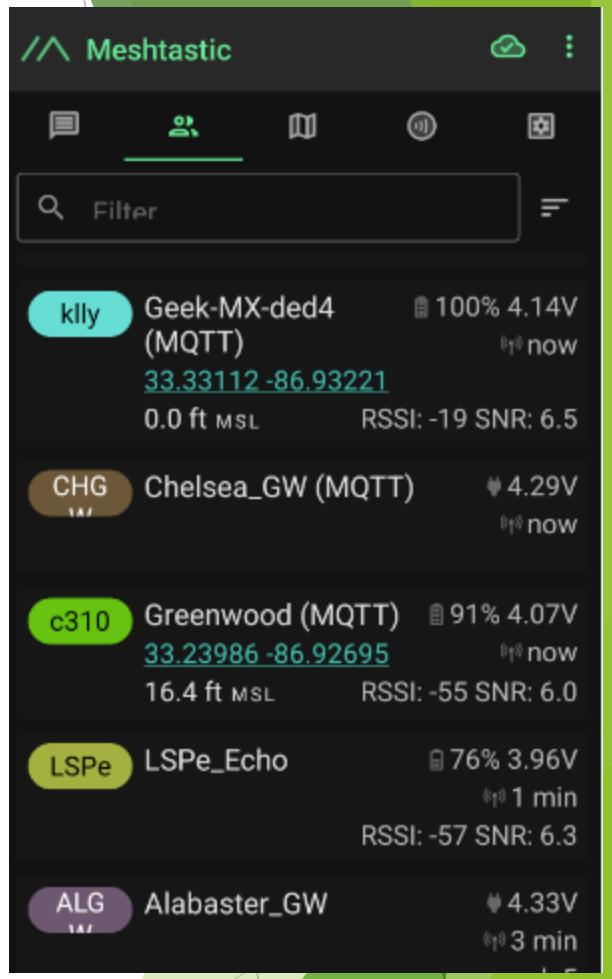
*Best practice may be to remove any/all encryption keys when operating a device in Licensed amateur radio mode to remove all doubt.

BIRMINGHAM MESH

BirminghamMesh.org

MESHTASTIC

A Mesh Radio Network



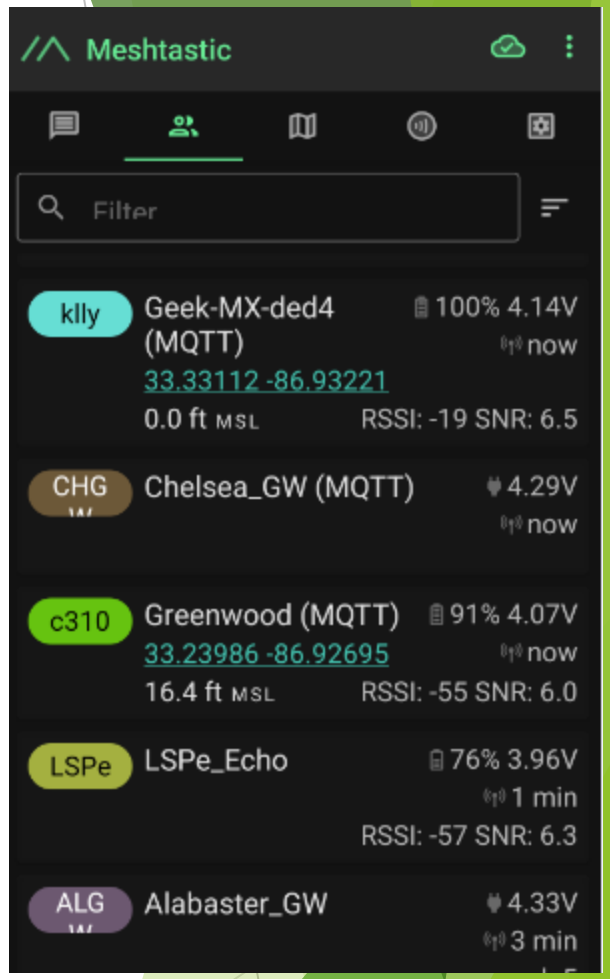
WHAT DOES MESHTASTIC DO BESIDES TEXTING?
MT devices that are heard by a user's radio show up in the app's "Node" list.
GPS coordinates can be published via the network or GPS CAN BE DISABLED.*
MT can be utilized by ATAK as a platform to facilitate situational awareness to coordinate teams for RF Fox Hunting events or for search-and-rescue.
MT CAN UTILIZE THE INTERNET BUT DOES NOT RELY UPON THE INTERNET.**
*Not all MT devices contain GPS receivers; however, GPS coordinates may be provided by a phone that is connected via Bluetooth/BLE, if desired.
**If Internet service becomes unavailable for a Gateway device, it continues functioning as a Repeater, repeating the packets it receives.

BIRMINGHAM MESH

BirminghamMesh.org

MESHTASTIC

A Mesh Radio Network



WHAT ARE THE BENEFITS OF MESHTASTIC UNLICENSED MODE?
MT Routers and Repeaters in unlicensed mode blindly repeat both licensed and unlicensed traffic such that the call sign of a packet originally sent in licensed mode always rides along with the traffic being repeated.
MT can be utilized by family members who may never become licensed amateur radio operators.
MT may spark an interest in getting licensed for the amateur radio hobby.
MT devices, and the application itself, are easy to use, building on the familiar texting paradigm.
MT, in unlicensed mode, may potentially be allowed as IOT traffic, in the event radio silence is imposed on amateur radio operators, as was done during World War II ←
Personal device configuration is easy, with no need to understand routing.

BIRMINGHAM MESH

BirminghamMesh.org

MESHTASTIC

A Mesh Radio Network

W. JeffCo
GW

W. JeffCo
4W RTR

Fairfield
RTR

Pelham
RTR (TBA)

S. Shades Crest
RPT

Bluff Park
RPT

Bluff Park
4W RTR

N. ShelbyCo
GW

Double Oak Mountain
RTR

Red Mountain
RTR (TBA)

Bald Rock Mountain
4W RTR

Signal Mountain
4W RTR (TBA)

Helena
RTR

Columbiana
GW

Columbiana Mountain
4W RTR (TBA)

Pinnacle Point
4W RTR

Chelsea
GW

Wilsonville
RTR (TBA)

PROPOSED
PHASE I
DEPLOYMENT

BIRMINGHAM MESH

BirminghamMesh.org

MESHTASTIC

A Radio Mesh Network

MESHTASTIC-RELATED SITES OF INTEREST
https://Meshtastic.org/docs/hardware/devices/
https://YouTube.com/Meshtastic/
http://AustinMesh.org/similar-networks/
https://docs.rakwireless.com/Product-Categories/WisBlock/
https://store.rokland.com/pages/meshtastic-hardware-rak-lilygo

BIRMINGHAM MESH

BirminghamMesh.org

MESHTASTIC

A Radio Mesh Network

Q & A

We would like to thank the fine folks at AustinMesh.org for their guidance, support and inspiration for our deployment!

BIRMINGHAM MESH

BirminghamMesh.org