

# MeshCore and LoRaWAN 869.616 MHz UK & North West Narrow Band



## South Lincs Amateur Radio Club

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*Furthering The Interest Of All Aspects Of Amateur Radio*

# Applications



- Smart cities (street lighting, traffic monitoring).



- Agriculture (soil sensors, irrigation control).



- Industrial IoT (equipment monitoring, asset tracking).



- Utilities (smart meters, grid monitoring).



- Emergency response and disaster recovery networks.

# **MESHCORE<sup>TM</sup>**

## **What is Meshcore**

MeshCore is a multi platform system for enabling secure text based communications utilizing LoRa radio hardware. It can be used for Off-Grid Communication, Emergency Response & Disaster Recovery, Outdoor Activities, Tactical Security including law enforcement, private security and also IoT sensor networks.

# Key characteristics

## **LoRa Technology:**

Uses low-power, long-range radio to enable communication over large distances with minimal power consumption.

## **•Mesh Topology:**

Devices form a "web" of connections, where each node can relay messages to others, creating multiple paths for data to travel.

## **•Multi-Hop Communication:**

Data can hop from one device to another, extending the overall range of the network far beyond what any single device could achieve.

## **•Decentralized:**

Unlike star-based networks like [LoRaWAN](#), there's no central point (like a gateway) required for all communication.

## **•Self-Organizing & Self-Healing:**

The network can automatically adapt to changing conditions, rerouting data if a node fails or new devices are added.

## **•Advantages**

## **•Enhanced Range:**

Multi-hop communication significantly extends the potential communication distance.

## **•Improved Reliability & Resilience:**

Multiple routes ensure data can still reach its destination even if some nodes fail.

## **•Infrastructure Independence:**

Operates without relying on traditional cellular or internet infrastructure, making it excellent for off-grid or remote areas.

## **•Scalability:**

The network can easily grow as more devices (nodes) are added.

## **Applications**

**•Remote Monitoring:** For sensors in remote forests or nature reserves.

**•Disaster Management:** Providing communication in areas where conventional networks are down.

**•Community Networks:** Building independent, localized communication systems.

**•Smart Farming:** Connecting sensors and devices across large agricultural areas.



# Mesh Lora Simplified

A Mesh LoRa network is a type of decentralized communication network that combines the long-range, low-power capabilities of LoRa radio technology with a mesh topology. In a mesh configuration, devices (or "nodes") communicate directly with each other and can act as routers, relaying data for other nodes to extend the network's reach and provide redundancy. This multi-hop communication creates a resilient, self-organizing network that doesn't rely on traditional infrastructure like cell towers or Wi-Fi, making it ideal for remote areas, disaster zones, and off-grid applications



# What is LoRaWAN?



- LoRaWAN (Long Range Wide Area Network) is a low-power, long-range wireless protocol.



- Designed for IoT (Internet of Things) communication across large distances using mesh networks.



- Uses unlicensed frequency bands (ISM) Industrial, Scientific, and Medical band frequencies.



- Optimized for low data rate, energy efficiency, and scalability.

# Why MeshCore?



- MeshCore is a networking technology designed to create resilient off grid mesh networks.
- It enables devices to connect in decentralized topologies via rf and bluetooth.
- Provides reliability, scalability, and redundancy.
- Useful for IoT, smart cities, community and industrial applications.

Radio Settings		Choose Preset
Frequency (MHz)	869.618	
Bandwidth	62.5 kHz	▼
Spreading Factor	8	▼
Coding Rate	8	▼
Transmit Power (dBm)	22	

# The 869.618 MHz Narrow Frequency



- Part of the European ISM band.



- Provides reliable communication with minimal interference.



- Commonly used for LoRaWAN downlink transmissions.



- Supports higher duty cycles compared to other sub-bands.



# Meshcores Mission

At MeshCore, our passion is building reliable and secure decentralised mesh radio networks for text-based communication. We are driven by the need to empower users in off-grid and disaster-stricken regions with a communication tool that does not depend on the internet or cellular networks.

## Easy to use

- Use our web flasher to install MeshCore firmware on popular devices like the Lilygo T-Deck or Heltec V3 LoRa32, you can also use our web client to communicate securely over radio with other users just using a Chrome web browser - and yes of course it works without the internet!

## Key Features

- **Decentralised Network:** No reliance on traditional infrastructure.
- **Long-Range Communication:** Utilize LoRa radio technology for long-range connectivity without using the Internet.
- **Security First:** All communications are encrypted your privacy.
- **Flexible Integration:** Easily integrates with off the shelf IoT devices and sensors.

# MeshCore and LoRaWAN Integration

- Combining MeshCore with LoRaWAN improves resilience and coverage.

- MeshCore enhances connectivity where mobile phone signals & internet is limited whilst using only Bluetooth and radio frequencies with companion radios.

- LoRaWAN provides long-range, low-power communication.

- Ideal for smart infrastructure and critical IoT systems. But in this instance off grid communications.

# Conclusion

- • MeshCore strengthens network reliability through mesh connectivity.
- • LoRaWAN at 869.618 MHz ensures long-range, low-power communication.
- • Together, they provide a powerful foundation for IoT and smart applications.

