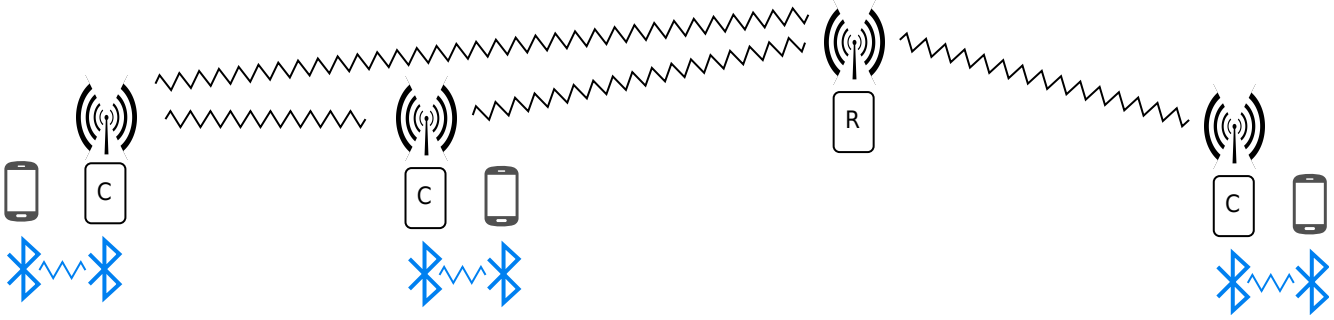
# Meshcore

## Introduction

From Wikipedia:

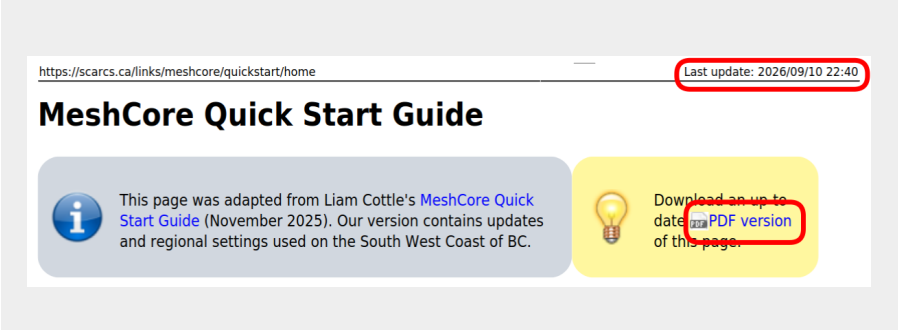
> MeshCore is an open-source mesh networking protocol and software platform designed for off-grid, low-power text communication using LoRa (Long Range) radio technology. The system enables decentralized, multi-hop wireless messaging without reliance on cellular networks or internet infrastructure.
>
> Use cases include emergency and disaster communications, outdoor and remote activities, [...] and experimental and educational deployments of low-power mesh networking.
>
> [It] is designed to [...] operate in unlicensed ISM frequency bands such as 868 MHz and 915 MHz, depending on regional regulations.

The basic idea is that each person has a small *companion* device (C) paired to their cell phone via bluetooth, and via that device, they can text each other or post public messages using the 915 MHz band, all without a special license. The signal can travel directly between companion devices if they are close enough, or via repeaters to extend coverage.




## Getting Started: Companions

See the new MeshCore Quick Start Guide. At the top of the page, you'll notice a link to download a PDF version of that page. The PDF will show the date when the web page was last updated. That way you can judge how recent the information is.



# Next Step: Repeaters

- Install a repeater like the *SenseCAP Solar Node P1-Pro* from seeed studio or RobotShop
- Use an antenna like this one, this one or one of these.

If you already have Meshcore installed (but not the bootloader), download your current settings:

- Go to https://config.meshcore.io/
- Connect your device to your computer with a USB cable.
- Click on `Connect`
- Click on `Export`
- Click on `Disconnect`
- Locate the `.json` file (probably in your Downloads folder).

Download the bootloader:

- Go to https://meshcore.io/flasher
- Select your device
- Select `Repeater` (or `Room Server`)
- Click on `Download`
- Select the `*bootloader-x.x.x-OTAFIXx.x.uf2` file
- Locate the `.uf2` file (probably in your Downloads folder).

Copy the bootloader over to your device:

- Connect your device to your computer with a USB cable.
- Double click on the reset button.
- Open the drive that just mounted on your computer
- Copy the `.uf2` file to the drive.
- The drive may close on its own right away. This is normal.

Flash the Meshcore Firmware:

- Go to https://meshcore.io/flasher
- Select your device
- Select `Repeater` (or `Room Server`)
- Select `Enter DFU Mode`
- Select `Erase Flash`
- Select `Flash`

Re-upload your settings:

- Select `Configure via USB` from the previous page, or navigate to https://config.meshcore.io/
- Select `Connect`
- Select `Import`

- Select your `.json` file
- Scroll down to the `Access` section and retype your `New Admin password` (it doesn't remember it)
- Scroll down and select `Save settings`
- Select `Disconnect`

Setup the Over the Air (OTA) update app (first time only):

- Download the “nRF Device Firmware Update” app by “Nordic Semiconductor ASA” (Android, Apple)
- Open the DFU app
- In the settings, check `Packet receipt notification`

Perform an OTA update:

- Using your phone's browser, navigate to https://meshcore.io/flasher
  - Select your device
  - Select `Repeater` (or `Room Server`)
  - Select `Download`
  - Select the firmware `zip` file (**not** the bootloader file)
- Using the Meshcore app, login to your repeater (or room server) using the admin password.
  - For Room Servers: go to `Remote Management`
  - Go to the `Command Line`
  - Type `start ota`, you should get a message that says: `OK - mac: xx:xx:xx:xx:xx:xx`
- Open the DFU app
  - Under `File` click `Select` to chose the firmware `.zip` file
  - Under `Device` click `Select` and chose the device that has DFU in the name. If there are no device with DFU in the name select the device with OTA in the name.
  - Under `Progress` click `Start`
  - If you selected a device with OTA, the process will fail at `DFU initialization`. Not to worry, go back to the previous step and now you should be able to select a device with DFU in the name.

See Scott Baker's article for more information.

## More Advanced: Sensors

- Install sensors.

## Maps

- Official MeshCore Node map
- Community generated map
- SWBC Map with links by VE7KOD

Here's how to use MeshCore's Antenna Coverage tool to model line of sight coverage:

- Navigate to the web version of the MeshCore App
- You don't need to connect to an actual Meshcore device.
- Click on \$\quad \vdots \quad \$ on the top right corner and then select `Tools`
- Enter the `Antenna Coverage` tool
- Where it says `0 Coverage Layers` click on \$\quad \vdots \quad \$ and select `Import JSON`
- Import

this file

## Tools

- MeshCore Analyser
- Path Profiler

## Resources

- Official MeshCore Website and Github
- Youtube Presentation by Liam Cottle
- Scott Baker's Website
- Vancouver Island Amateur Radio Discord Meshcore tips & Tricks NEW
- Salish Mesh Website
- Forum
- MeshCore vs Meshtastic
- Channels vs Rooms vs DMs