

# Multi-Repeater Network Coordination

When multiple MeshCore repeaters serve the same community, coordination between operators ensures the network behaves predictably and provides maximum benefit to users.

## Channel Key Consistency

All repeaters on a community network must share the same public channel key. When deploying a new repeater, obtain the community channel key from the network coordinator before commissioning. An incorrectly keyed repeater will be visible on the network but will silently drop all traffic it cannot decrypt.

Verify channel key consistency by attempting a test message from a client node that routes through the new repeater. A successful delivery confirms key alignment.

## Coverage Overlap Planning

Adjacent repeaters should overlap their coverage areas by 20-30%. This provides:

- **Redundancy** - if one repeater goes offline, adjacent repeaters still serve the overlap area
- **Reliable handoff** - mobile nodes traveling through the coverage area maintain connectivity as they move between repeater ranges
- **Route diversity** - multiple path options between distant network segments improve end-to-end reliability

Insufficient overlap creates coverage holes where users are out of range of all repeaters. Excessive overlap (under 1km spacing in urban areas) creates unnecessary traffic amplification without coverage benefit.

## Frequency and Preset Coordination

All community repeaters must use the same preset (USA/Canada recommended). Verify with:

The status output shows current preset, frequency, and other radio parameters. Confirm these match the community standard before committing a new repeater to service.

# Network Documentation

Maintain a community document with:

- Repeater name, operator callsign/contact
- Physical location (approximate - GPS coordinates if the operator consents to publishing)
- Power system type (mains, solar) and expected uptime
- Installation date and last maintenance date
- Known coverage limitations or issues

This documentation is invaluable when diagnosing network problems or planning expansion. Store it in a shared document that all operators can access and update.

# Repeater Retirement and Replacement

When a repeater is permanently taken offline, notify the community so they can update routing expectations and coverage maps. Removing a node that other nodes' cached routes depend on will cause temporary routing failures until routes are rediscovered. This is normal behavior; MeshCore re-discovers routes when existing paths fail.

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