

Why Deploy a Repeater?

The case for community repeater infrastructure

A LoRa mesh network is only as strong as its infrastructure. Personal nodes carried in pockets or sitting in homes have limited range and go offline when their owners do. A well-placed repeater is always on, always forwarding, and serves every person in its coverage area simultaneously.

Key benefits

Extended range

A repeater at elevation can relay messages much farther than two ground-level handhelds could reach each other directly. With clear line of sight in favorable terrain, an elevated node can reach roughly 10 - 20 km (about 6 - 12 miles); a link between two elevated stations in ideal open terrain can stretch toward 20 - 25 miles, but expect substantially less with terrain obstruction or a handheld client. Without repeaters, two people a mile apart in a city might not be able to reach each other directly. Through a rooftop repeater, they can.

Network resilience

The more relay paths exist between any two points, the harder the network is to disrupt. If a node on a path goes offline, MeshCore can re-route — but only after the existing path fails and a new path is discovered, which introduces delay and can lose messages in the interim. Genuine redundancy requires a real alternate physical path, so build at least two independent routes for any critical link.

Always-on coverage

Unlike personal nodes that go offline when their owner's phone battery dies, a solar repeater operates indefinitely. Coverage is consistent regardless of whether individual users are active.

Multi-hop reach

MeshCore's firmware allows a high flood hop maximum (up to 64), but reliability falls off well before that. In practice, 3 - 5 hops through well-placed repeaters is the usable range and is enough to span considerable distances. A chain of rooftop or hilltop repeaters can cover an entire metro area or rural county.

Who should deploy a repeater?

Anyone with access to a good high location - a rooftop, a tall tree, a balcony with a clear view - can meaningfully contribute to local coverage. You do not need professional antenna installation experience for a basic install. However, outdoor and elevated mounts require proper weatherproofing, grounding and lightning protection (bond/ground per NEC 810 for fixed outdoor antennas), and care with any work at height. A simple pole mount and a weatherproof enclosure are often sufficient.

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