Recreational Boating and Marina Networks

Open water offers clear line of sight, low horizon clutter, and the ability to elevate antennas on a mast - all of which favor long-range LoRa links. (Note: the water surface itself causes reflections/multipath rather than low attenuation.) As a best-case over-open-water line-of-sight figure, a modest 6 dBi antenna at 10m above waterline may reach 20-40 km to similarly-equipped vessels; typical results are often lower and depend on the antenna height at both ends, sea state, and transmit settings.

Marina-to-Vessel Communications

Mesh networking could be used for dock communications where VHF radio is too public and cellular is unreliable when boats are in covered slips or channels.

- **Slip status boards** - Sensor nodes on dock pedestals reporting power usage or water connections
- **Fuel dock coordination** - Fuel dock attendant to harbormaster messaging without shouting or VHF
- **Guest notification** - Message guests in slips about marina events or maintenance shutdowns
- **Pump-out requests** - Environmental dock coordination

Vessel-to-Vessel Applications

Cruising fleets, sailing clubs, and buddy-boat passages use mesh for fleet coordination:

- **Buddy boat position sharing** - Real-time GPS position of all fleet vessels on a shared map, without AIS equipment costs
- **Anchorage coordination** - Communicate with other vessels in an anchorage when cell service is absent
- **Race committee communications** - Start line to mark boats without dedicated radio infrastructure
- **Float plan check-ins** - Mesh position sharing can supplement a float plan only within mesh coverage, but must not be relied on as the safety mechanism: out-of-range and in-

distress look identical to a shore contact, and no rescue authority monitors the mesh. Mesh has no marine SOS function. For offshore safety use a registered EPIRB/PLB or a satellite messenger with true SOS, plus VHF Ch16/DSC.

Antenna Installation on Vessels

Marine mesh antenna installation differs from land installations:

- **Masthead mount** - Ideal for sailboats: 15-20m height, 360-degree view. As a best-case open-water figure requiring elevation at both ends, this may reach 30-50 km; typical results are lower. Use marine-grade stainless mounts and UV-stable cable ties. Route coax inside the mast where possible.
- **T-top or hard top** - Powerboats typically mount antennas on T-tops at 3-4m height; best-case calm-water line-of-sight range is around 10-15 km, though real range is often less.
- **Pushpit or stern rail** - Lower but easy to access; use vertical polarization and ensure clear view forward and aft.
- **Connector weatherproofing** - Marine environment is extremely corrosive. Use only marine-rated N-type or sealed SMA connectors; apply self-amalgamating tape over all outdoor connections; inspect annually.

Integration with Existing Marine Electronics

Using the serial module's NMEA mode, Meshtastic can output its own position (and other nodes' positions) as NMEA 0183 waypoints to a chartplotter, letting the boat's navigation display show mesh nodes alongside other targets. (Note: the node uses its own GPS module for its position; it does not source position from the boat's chartplotter GPS.)

Revision #3
Created 2026-05-03 05:37:54 UTC by Mesh America Admin
Updated 2026-06-10 01:38:25 UTC by Mesh America Admin