Node Maintenance Schedule

A simple maintenance schedule keeps your node reliable and avoids the surprise of a failed battery or corroded antenna during an emergency. Regular checks take 10-15 minutes per node and catch most common failure modes early.

Safety note - work at height: Rooftop and mast work involves fall hazards. Use a properly footed ladder (maintain 3-point contact), avoid wet/icy roofs, never work at height alone, and consider binoculars or a camera pole for visual checks that do not require touching the node. If the node is on a tower, leave climbing to trained/certified climbers.

Monthly Checks (5 minutes)

- **App connection:** Connect to your node and verify it responds. Check firmware version.
- **Battery level:** For solar nodes, verify battery is charging (should be near full by midday). For USB-powered nodes, verify power is stable.
- **Neighbor count:** Are you seeing the same neighbors as before? A suddenly empty neighbor list may indicate an antenna failure or a major change in the local network.
- **Channel utilization:** Keep utilization under 25% - this is the action threshold. Treat sustained readings above 15% as an early warning to investigate before they climb toward 25%.

Quarterly Checks (15 minutes)

- **Visual inspection:** For outdoor nodes - inspect the enclosure for water ingress, cracks, UV damage. Inspect antenna mount for rust or loosening. Check cable entry points for sealant integrity.
- **Firmware update:** Check meshtastic.org for new stable releases. Update if more than 2 versions behind. Back up config before updating.
- **Configuration backup:** Export config to file. Store in a cloud backup location.
- **Range check:** Verify RSSI to 2-3 reference nodes. Compare to your baseline. A 5+ dB drop indicates antenna or cable degradation.

Annual Checks (30-60 minutes)

- **Battery capacity test:** For solar systems, run a controlled capacity test: discharge at a known load to the manufacturer's cutoff voltage (for example, about 10.5 V for a 12 V lead-acid battery), then recharge promptly. Avoid full discharges on lead-acid chemistry, as deep discharges measurably shorten its life. Capacity fades with age, temperature, and cycling - expect noticeable fade after roughly 2-3 years on lead-acid and 3-5+ years on lithium, faster in heat or with deep cycling. Plan replacement when measured capacity drops to about 80% of rated - the standard end-of-life threshold - especially for nodes that must survive long winter nights.
- **Connector re-torque:** Check all SMA/N connector connections and re-torque to specification. Use a calibrated torque wrench: ~5 in-lb (0.56 Nm) for brass SMA, ~8 in-lb (0.9 Nm) for stainless SMA; follow the manufacturer's spec for N connectors (typically ~15-20 in-lb / 1.7-2.3 Nm). Never use pliers; finger-tight is acceptable only for temporary bench setups.
- **Lightning protection inspection:** Verify the coax surge arrestor is intact and the mast and arrestor ground/bond connections are tight and corrosion-free (NEC Article 810 requires a listed antenna discharge unit and mast grounding for outdoor antennas). If the install has no grounding at all, add it before the next storm season.
- **Re-weatherproof connectors:** Remove old self-amalgamating tape, inspect connector for corrosion, reapply fresh tape.
- **Solar panel cleaning:** Wipe panels with damp cloth. Bird droppings and dust accumulation can reduce output 5-15%.

Maintenance Log Template

Keep a simple maintenance log for each node:

```
Node: WH01-WestHillsRepeater
Node ID: !ab12cd34
Location: 3214 Hill Ave rooftop
Last firmware: 2.6.1 (updated 2026-03-15)
Battery: LiFePO4 20Ah (installed 2025-06)

Maintenance Log:
2026-05-01: Quarterly check. RSSI to Summit -87dBm (baseline -85), within normal.
 Enclosure dry. Antenna secure. FW up to date.
2026-02-01: Quarterly check. Updated FW from 2.5.9 to 2.6.1.
 Backed up config. Checked solar: 13.8V at noon, good.
2025-11-01: Annual check. Replaced self-amalgamating tape on N connector.
 Cleaned solar panel (bird droppings). Battery 98% capacity.
```

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