My solar node keeps going offline

Systematic diagnosis in order of likelihood:

1. **Undersized battery or panel.** Goes offline at night or on cloudy days? Review the Solar System Sizing Guide and resize.
2. **Panel obstruction.** Bird droppings, snow, or vegetation growth. Verify the panel is clean with clear sky access.
3. **Charge controller LVD setting.** If the low-voltage disconnect threshold is too high, the controller cuts power while charge remains. For LiFePO4, 3.0V/cell (12.0V for a 12V system) is a conservative LVD; the typical BMS cutoff is lower (~2.5V/cell, ~10V). Set the LVD per your specific battery and charge-controller specification.
4. **Water ingress.** Goes offline after rain = water ingress. Inspect all cable glands, connector weatherproofing, and enclosure seals.
5. **Thermal shutdown.** Sealed enclosures in direct sun can exceed safe operating temperatures (often reported in the 70-80 degrees C range internally). Add venting, shading, or a radiation shield.
6. **Firmware hang.** Check for firmware updates. Enable hardware watchdog if supported.
7. **Remote monitoring.** Watch battery voltage trend via Meshtastic telemetry. Declining trend = insufficient harvest. Sudden drop to zero = hardware failure.

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