

JadeNode Build (~\$50)

The JadeNode is [CascadiaMesh](#)'s most cost-effective DIY repeater design, purpose-built for the Pacific Northwest's 910.525 MHz band. At roughly \$50 in parts, it's an accessible entry point for community members who want to extend network coverage without a large investment.

Parts List

Component	Approx. Cost	Source
Seed XIAO nRF52840 + Wio SX1262 module	\$14	Seed Studio
Linx ANT-916-CW-HW-SMA antenna	\$10	Digi-Key
RAKwireless 5.5×3.5" solar panel (3-pack)	\$11	Rokland
PeakMesh solar charging board	~\$7	Etsy (David's shop)
IP65 ABS enclosure 158×90×60 mm	\$7	Amazon
Total		~\$50

Key Design Choices

- **nRF52840 + Wio SX1262:** The nRF52840 microcontroller paired with the Wio SX1262 LoRa module provides excellent power efficiency. nRF52-based devices have significantly longer battery life than ESP32-based alternatives, making this design well-suited for solar-powered deployments with limited panel size.
- **PeakMesh charging board:** Sourced from David on Etsy, this charging board is recommended by the CascadiaMesh community for better winter solar performance compared to generic MPPT modules.
- **IP65 enclosure:** The 158×90×60 mm ABS box provides weather protection suitable for outdoor permanent deployment.
- **Linx ANT-916-CW-HW-SMA:** A tuned antenna at 916 MHz, close enough to 910.525 MHz for good performance. Available from Digi-Key with reliable stock.

Firmware

Flash with MeshCore Repeater firmware using the [MeshCore Web Flasher](#). After flashing, configure via the MeshCore Repeater USB Setup tool:

- Frequency: 910.525 MHz
- Bandwidth: 62.5 kHz
- Spreading Factor: SF7
- Coding Rate: 4/5
- Zero Hop Interval: 0
- Flood Advert Interval: 48 hours

Do not include "Repeater" in the node name - it wastes airtime on every advertisement.

Notes

- This build does not use a bandpass filter. For most residential and semi-rural locations, interference is not a significant issue with the nRF52/SX1262 combination.
- If deploying in a high-RF-noise urban environment, consider upgrading to the Raccoon Tree Node or Ikoka Box designs which include filter options.

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