



LibreRouter v1.1 Datasheet

Description

The LibreRouter is an Open Source Hardware WiFi Router designed from the ground up for Community Networks.

Technical Specification

Based on the the AR9558 SoC and AR8327 Gigabit Switch, the router features:

- 128 MB DDR RAM, allowing all the required services to run with no burden
- 16 MB Flash, plenty for most router needs
- Hardware Watchdog based on PIC10F200, to handle failed flashes or hardware failures
- 1 on-chip 2.4Ghz 802.11bgn MIMO 3x3 Atheros radio optional GPS module
- 2 mPCIe slots, to connect WiFi radios or GSM cards, and allowing expandability
- 2 populated Gigabit Ethernet Sockets
- 1 USB 2.0 internal connector, where additional storage, webcams, bluetooth, sensors, etc. can be plugged in
- 1 Serial console pinout allowing external debugging
- POE and POE Passthrough up to 24W meaning one cable can power all the devices in an installation, no matter if there are 1 or more routers.
- Exposed GPIO pins, which will allow tinkerers to connect other electronics to the device

The standard LibreRouter setup will come with 2 mPCIe Power Amplified 5 Ghz 802.11an MIMO 2x2 Atheros radio based on the AR9582.

The full LibreRouter spec can be found at:

<https://www.librerouter.org/document/specifications-sheet-v6/>

The current prototype

The current prototype is the second iteration of the LibreRouter, where we had the chance to fix most of the bugs and experiment with a two board design that will allow communities to explore local manufacturing, leaving the more densely populated (and more complex) electronics on the small blue board in the center, and a second green board with all the peripherals.

This will also allow faster iterations for alternative board designs, because we will only have to design the bigger and less densely populated green board to be manufactured.

We are already exploring such collaborations in Argentina and Mexico, and maintaining conversations with communities in India who want to do this. This also means the device will be easier to repair.



Current tests

We have tested an initial batch to ensure that the device meets the expected performance and robustness required for Community Networks.

We have deployed 5 devices in existing networks in Argentina, where they have been operating non-stop for over three months as the main routers for 5 villages.

We have also tested the radios in Barcelona, Catalunya. The test results are here: <https://www.LibreRouter.org/article/first-outdoor-radio-and-antenna-test/>

The hardware has proven to be reliable and performant.



How it works

In a nutshell, the LibreRouter is a weatherproof 3-radio wireless router, but it is much more than that.

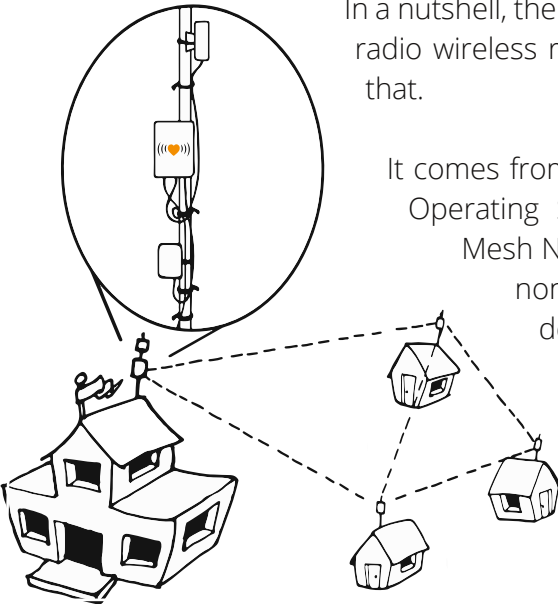
It comes from the factory with LibreMesh, an Operating System for Geek-Free Wireless Mesh Networks, that makes it easy for a non-technical community to do the deployment, maintenance and expansion of the network.

Using its two 5 GHz radios and sector antennas, the LibreRouter automatically forms a mesh network with other LibreRouters within

range. Using the 2.4 GHz radio, it creates a hotspot around it for clients to connect to the network, and the resulting mesh network enables communication between all the devices connected to it.

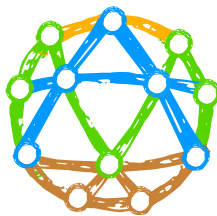
Moreover, if any router on the local network connects to other networks (such as Internet) all devices on the local network automatically have access to the external network through the mesh. It also allows a multi-mesh environment, where each mesh is an administrative boundary (like a neighbourhood, a community, a building). Each mesh can relate with the others easily, including peering (allowing users of each network to reach the other network) and transit (to get to other networks through one of your neighbours).

A built-in mobile app facilitates the management of your LibreRouter, such as set up and troubleshooting.



We are excited about all the interest expressed so far, and we are eager to see what the LibreRouter will help all of us do.

For any inquiry or consultation, use the emails or the contact form at www.LibreRouter.org



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