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The Next Steps

RF Links

Once you're connected into AREDN over the internet, the next step is to add an RF link. For that, a second device can be placed outside and connected back to the hAP via CAT5e. For this, you can use:

- A [Ubiquiti Rocket M5 radio](#) with a [sector antenna](#), or a [dish antenna](#),
- An integrated [MikroTik dish and radio](#),
- A [MikroTik LDF](#) with a [repurposed dish](#),
- ...



- Only equipment listed on the [Supported Devices](#)' page will work with the AREDN firmware.
- See [here for more details](#).

Mapping

These sites are useful to model line of sight and the 📶 [Fresnel zone](#):

- [ISP Design Center](#) (formerly link.ui)
- [radiofresnel](#)

Nodes

See the [setups](#) page for a list of sector antennas currently online.

NPR

NPR (New Packet Radio) is a custom radio protocol, designed to transport bidirectional IP traffic over 430MHz radio links (ham radio frequencies 420-450MHz). This protocol is optimized for “point to multipoint” topology, with the help of managed-TDMA. Bitrate is 50 to 500kbps (net, effective bitrate), depending on the RF bandwidth

chosen. –[Hackaday Project Page](#)

See our [NPR page](#) for more details on how to integrate this with AREDN.

HaLow

HaLow (IEEE 802.11ah) is a Wi-Fi standard designed to operate in sub-GHz spectrum, including the 902–928 MHz ISM band (and amateur allocations near 900 MHz where permitted). It is optimized for long-range links and better penetration through foliage and terrain compared to 2.4/3.4/5.8 GHz microwave. Typical throughput is in the hundreds of kbps to a few Mbps depending on conditions, with a default 1 MHz channel width. HaLow supports standard IP networking, making it directly usable with AREDN mesh. Current support is available in the latest babel-only nightly builds.

See the [HaLow Page](#) for more information