



HaLowLink 2 Software Release Notes

OpenWrt Software Package



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1 Overview

This document describes the software changes included in release 2.11.12 of the HaLowLink 2 OpenWrt software package.

HaLowLink 2 is Morse Micro's Wi-Fi HaLow (802.11ah) access point and extender platform, designed for long-range, low-power IoT connectivity. The software runs on OpenWrt and is managed through the device's web-based user interface.

Release 2.11.12 addresses security compliance improvements, documentation updates, stability fixes for high-density deployments, and an update to the MM8108 driver and firmware. There are no breaking changes in this release. Customers running v2.11.8 are encouraged to upgrade.

To upgrade your device, navigate to the **Upgrade** page in the web UI. An active internet connection is required.

2 Software Change Summary

2.1 Release 2.11.12

Release 2.11.12 is the first maintenance release for HaLowLink 2 following the production release v2.11.8. It includes security compliance improvements, stability fixes for high-density deployments, and an updated MM8108 driver and firmware package. There are no new end-user features in this release.

2.1.1 New Features

- There are no new features in this release. The MM8108 driver and firmware have been updated to version 1.17.8; however, all features introduced in that driver version were already available in the HaLowLink 2 production release v2.11.8.
 - For a full list of MM8108 driver features, refer to the MM8108 Linux Software Release Notes v2 (1.17.8).

2.1.2 Resolved Issues and Improvements

2.1.2.1 Security compliance improvements

- Updated OpenSSL configuration to meet current security standards, ensuring compatibility with stricter TLS requirements and audit criteria.
- Addressed a CWE-125 security weakness.

2.1.2.2 Multi-STA performance

- Multi-STA performance has been improved for up to 8 stations.
- Improved interference performance in AP mode: beacon transmission is now maintained under high levels of adjacent-channel interference.
- Enhanced stability in high-density deployments: resolved a firmware crash that could occur when operating with 32 or more connected STAs.

2.1.2.3 Documentation

- The user guide now lists all open network ports, with justification and usage context for each.

2.1.3 Known Issues

2.1.3.1 Unbalanced downlink distribution in multi-STA scenarios

- In multi-STA setups, an unbalanced downlink distribution may be observed when traffic is sent simultaneously to more than four stations, with the first two associated stations potentially monopolizing the medium.
 - Workaround: Enable airtime fairness on the HaLowLink 2 (enable_airtime_fairness=1).

2.1.3.2 Receive degradation at 2 MHz near -73 dBm RSSI

- Some degradation is observed at 2 MHz, with an RSSI of approximately -73 dBm.
 - Workaround: Increase or decrease the RSSI by 2 dB to resolve this issue.

2.1.3.3 Receive degradation at 1 MHz at strong signals

- Some degradation is seen at 1 MHz at strong signal levels.
 - Workaround: Move the devices farther apart to lower the signal strength.

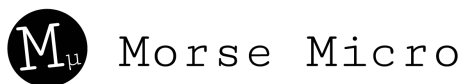
2.1.3.4 Intermittent STA association failure at very close range

- When pairing two devices at very close range, the STA may intermittently fail to join the HaLowLink 2 due to excessively strong received signal levels (greater than -10 dBm).
 - Workaround: Ensure a minimum separation of 2 meters between the HaLowLink 2 and STA before initiating the pairing sequence to maintain reliable association. An improvement is planned for the next firmware release.

3 Revision History

Release Number	Release Date	Release Notes
Version 1	24 Apr 2026	Release OpenWrt 2.11.12

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