MikroTik LHG XL 5 AC to AREDN Network Node Installation Guide

Phase 1: Prep the Stock Router in WinBox

*Connect your laptop directly to the stock MikroTik router via Ethernet, launch **WinBox**, click **Connect**, and execute the following steps:*

1. **Verify the Factory Firmware Base (v6 vs v7):**
    - Navigate to **System ➔ Resources** on the left-side menu.
    - Locate the **Factory Software** data line entry.
    - 📝 *Note: If it displays 6.xx, you will apply the standard AREDN sysupgrade.bin file later in Phase 4. If it displays 7.xx, you must apply the sysupgrade-v7.bin file instead.*
2. **Open the Terminal & Clear the First Prompts:**
    - Click **New Terminal** in the left-side menu.
    - If a system software license agreement prompt appears, press **n** on your keyboard to clear it.
    - When the mandatory password modification prompt appears, press **Ctrl + C** to skip it and reveal the active command prompt line.
3. **Unlock Hardware Configuration Restrictions (Device Mode):**
    - Input the following command text into the terminal console and hit **Enter**:

routeros

/system device-mode update routerboard=yes

Use code with caution.

    - *The terminal interface will initialize a 5-minute security validation window.*
    - Walk over to the device hardware, **disconnect the power cable from the MikroTik router, and reconnect it** to satisfy the physical ownership verification protocol.
4. **Configure the Network Boot Target Allocation:**
    - Allow the router to finish its boot cycle, establish a connection via WinBox, and open a **New Terminal** window.

- Press **Ctrl + C** on your keyboard to clear the password modification prompt and drop straight to the active input line.
- Input this final command line and hit **Enter**:

routeros

/system routerboard settings set boot-device=try-ethernet-once-then-nand

Use code with caution.

5. **Close WinBox and unplug the power cable from the MikroTik router.**

Phase 2: Prep Your Laptop & Tiny PXE Server

1. **Disable your laptop's wireless adapter (Wi-Fi) completely.**
2. Connect your laptop's Ethernet port directly into **Port 1** of your **Netgear FS108 Switch**.
3. **Assign Your Laptop a Static IP Array:** Open your Windows Network Adapter Properties ➔ IPv4 Properties, and lock the parameters to:
   - **IP Address:** 192.168.1.10 | **Subnet Mask:** 255.255.255.0
4. **Verify Tiny PXE Server Directives:** Open your Tiny PXE folder configuration file (config.ini) using a text editor, and confirm this string entry is saved under the [dhcp] section block: rfc951=1
5. **Stage the AREDN Kernel Target:** Locate the AREDN factory.bin (or kernel.bin) matching your specific device hardware model. Rename that file exactly to **rb.elf** and drop it inside your Tiny PXE server **files** directory path.
6. **Initialize the Server Daemon:** Launch pxesrv.exe, select your active 192.168.1.10 network card interface from the dropdown window, check the **Bind IP** parameter box, type rb.elf in the filename box, and click **Online**.

Phase 3: The 20-Second Network Boot Sequence

1. Route an Ethernet network patch cable from **Port 1 (Internet/WAN)** of your unpowered MikroTik router directly into **Port 3** of your Netgear switch hardware.

2. Using a paperclip or a flat tool, **press and hold down the physical Reset Button on the casing firmly.**
3. **Maintain continuous downward pressure on the button, and insert the power cable into the MikroTik router.**
4. Monitor the Tiny PXE Server log window on your computer screen. **Keep the reset button depressed for 15–20 seconds** until the green router USR/LED indicators turn completely off, and the log prints:
   TFTPd:DoReadFile:rb.elf
5. **Release the hardware reset button immediately** and click **Offline** on your Tiny PXE Server window interface.

Phase 4: Port Alternation, Firmware Flash, & Firstboot Setup

1. **Alternate the Router Interface Port:** Disconnect the Ethernet cable from **Port 1** of the MikroTik router and plug it into **Port 5** (or Port 2, 3, 4 depending on model layout).
   - ⚠ *CRITICAL SAFETY NOTICE: Do not disturb the power adapter connections running to the MikroTik router. Disruption to the power source will flush the volatile RAM cache, requiring a complete repetition of Phase 3.*
2. **Restore Automatic Network Protocol (DHCP):** Return to your Windows IPv4 settings interface panel and switch the adapter state back to **Obtain an IP address automatically (DHCP)**. Click OK to save.
3. **The 3-Second Cable Reset:** Unplug the Ethernet patch cable linking your laptop to the Netgear switch for **3 seconds**, then plug it back in. This forces Windows to execute an instantaneous network cache flush.
4. **Open the Installation Wizard:** Open a fresh **Incognito Browser Window** *(required to bypass cached stock device layouts)* and navigate directly to: **http://192.168.1.1**
5. **Commit the Flash Storage Upgrade:** Click the **Choose File** selection box, select your target AREDN sysupgrade.bin deployment file (the standard version or the -v7.bin variant as determined in Phase 1), and click the green **Upload & Reboot** button. Wait for the 4-minute countdown wheel to complete.
6. **Complete the Node Firstboot Setup Wizard:**
   - When the screen refreshes, the AREDN setup form will appear.

- **Node Name:** Enter your customized callsign identification (e.g., KF0EHZ-NODE-3).
- **Password Configuration:** Type in your secure management password.
- ⚠️ *CRITICAL PASSWORD RESTRICTION: The AREDN Linux framework will reject special symbols or punctuation (e.g., $, !, #). You must use **only standard numbers and letters** or the "Save & Reboot" confirmation button will remain completely broken/disabled.*
- Click the green **Save & Reboot** button at the base of the form.

7. **Cycle the Hardware Network Environment:**
   - **Wait 5 minutes (or 1 minute after the counter ends)** for the MikroTik router case lights to finish flashing and for internal file configurations to write completely.
   - **Unplug the power cord from the Netgear FS108 switch for 5 seconds**, then plug it back in. This clears the switch mapping database and lets the laptop instantly talk to the router over its brand new automated 10.x.x.x network IP band.
   - In your browser, navigate directly to your finished, live node network hub: **http://localnode.local.mesh**

Phase 5: Browser Chrome Security Exception (Optional Patch)

If active tracking maps, network signal charts, or layout monitoring matrices fail to stream onto your browser screen over the node link:

1. In Chrome, go to **Settings ➔ Privacy and Security ➔ Site Settings**.
2. Scroll to the base layout area, click **Additional permissions**, and choose **Insecure content**.
3. Under the "Allowed to show insecure content" block header profile, click **Add** and type in your node's explicit link target: http://localnode.local.mesh

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