

Comprehensive guide to running OLSR over WPA2 on OpenWRT

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I strongly suggest using [GL-Inet Routers](#) for all your OpenWRT needs!

If you have any trouble or questions, please email me at justing@justingoetz.net, or message me on chat.tomesh.net, username "Justin", I should be available to help!

Start with a clean OpenWRT with only default packages installed. Make sure your router has a connection to the internet, as we'll need to install some packages.

Remove the default wpad-mini package.

```
opkg remove wpad-mini
```

Install the required packages. This may seem like alot, but most is for OLSR. wpad and authsae is for WPA2 over Ad-Hoc

```
opkg update

opkg install luci-app-olsr luci-app-olsr-services luci-app-olsr-viz olsrd olsrd-mod-arprefresh olsrd-mod-bmf
olsrd-mod-dot-draw olsrd-mod-dyn-gw olsrd-mod-dyn-gw-plain olsrd-mod-httpinfo olsrd-mod-mdns olsrd-mod-
nameservice olsrd-mod-p2pd olsrd-mod-pgraph olsrd-mod-secure olsrd-mod-txtinfo olsrd-mod-watchdog olsrd-mod-
quagga wireless-tools luci-lib-json kmod-ipip wpad authsae
```

Configure Wifi.

Login to your router's web GUI. In the top navigation bar, select "Network", then click the "WiFi" option.

The screenshot shows the OpenWRT web interface. At the top, there is a navigation bar with 'OpenWrt', 'Status', 'System', 'Services', 'Network', and 'Logout'. A green 'AUTO REFRESH ON' button is on the right. Below the navigation bar is a yellow warning box: 'No password set! There is no password set on this router. Please configure a root password to protect the web interface and enable SSH. Go to password configuration...'. Underneath, it says 'radio0: Master "OpenWrt"'. The main section is titled 'Wireless Overview' and shows a card for 'Generic MAC80211 802.11bgn (radio0)'. The card displays 'SSID: OpenWrt | Mode: Master' and '0% Wireless is disabled or not associated'. There are buttons for 'Scan', 'Add', 'Enable', 'Edit', and 'Remove'. The 'Enable' button is circled in red. Below this is the 'Associated Stations' section, which has a table with columns: SSID, MAC-Address, IPv4-Address, Signal, Noise, RX Rate, and TX Rate. The table is currently empty, with the text 'No information available' below it.

You'll see on clean installs that the wifi will show "Disabled". Click the "Enable" button. This enables the WiFi.

Now, go back to SSH, and open the file `/etc/config/wireless`.

You will see a section titled "config wifi-iface". Delete that entire configuration and replace it with the following:

```
config wifi-iface
    option device 'radio0'
    option encryption 'psk2/aes'
    option key 'goodlife'
    option ssid 'Sensor-Backhaul'
    option mode 'adhoc'
    option network 'mesh'
```

Change Option SSID to your desired Ad-Hoc SSID. Note, this **MUST** be identical on all devices attempting to join the network.

Change option key to your password. Again, this value **MUST** be the same on all the devices or they will not mesh.

Now in terminal run the "**wifi**" command. Refresh the Web GUI page to make sure it looks like this:

Wireless Overview

Generic MAC80211 802.11bgn (radio0)
Channel: 11 (2.462 GHz) | Bitrate: 1 Mbit/s

SSID: Sensor-Backhaul | Mode: Ad-Hoc
61% BSSID: 1A:CD:69:95:15:94 | Encryption: WPA2 PSK (CCMP)

Buttons: Scan, Add, Disable, Edit, Remove

Now we need to configure OLSR.

First we need to create an OLSR interface. Go back to **Network > Wifi**. Click the "**Edit**" button next to the SSID information.

Under "**Device Configuration**", click the "**Advanced**" tab.

Scroll down to "**Interface Configuration**".

Look for the "Network" options. Put a checkbox in the option next to "create", and enter a new interface name. For simplicity sake, I reccomed leaving it named "mesh".

Interface Configuration

General Setup | **Wireless Security**

ESSID:

Mode:

BSSID:

Network

- lan:
- wan:
- wan6:
- create:

Choose the network(s) you want to attach to this wireless interface or fill out the *create* field to define a new network.

Buttons: Back to Overview, Save & Apply, Save, Reset

Click **Save & Apply**.

Now we need to setup a static IP for the device. Go to the "Network" tab, and click "Interfaces". You'll now see a "MESH" Interface. Click the edit button next to it.

Interfaces

Interface Overview

Network	Status	Actions
MESH Ad-Hoc "Sensor-Backhaul"	Uptime: 0h 1m 18s MAC-Address: E4:95:6E:40:73:2C RX: 452.00 B (4 Pkts.) TX: 864.00 B (7 Pkts.)	Connect Stop Edit Delete

On the next page, change the "Protocol" dropdown menu from "Unmanaged" to "Static Address".

Now click the "Switch Protocol" button.

You'll be brought to a new page. Enter an IPv4 address. Note: this IP should be in the range that your other nodes will be on. For simplicity sake, I will be using 192.168.10.0/24. So in this field, I will put 192.168.10.2.

If using a /24 (standard), set the IPv4 netmask to 255.255.255.0.

Leave the IPv4 Gateway blank.
Leave all other options blank.
Click save and apply.

Now we need to configure OLSR to listen for other nodes on this interface.

Go to **Services > OLSR IPv4**.

The first thing we need to do is enable the "jsoninfo" plugin so we can manage OLSR via the web interface. Go to the "Plugins" tab, and click the checkmark next to "olsrd_jsoninfo.so.0.0"

Plugins

Enabled	Library	
<input checked="" type="checkbox"/>	olsrd_arprefresh.so.0.1	
<input checked="" type="checkbox"/>	olsrd_dyn_gw.so.0.5	
<input checked="" type="checkbox"/>	olsrd_httpinfo.so.0.1	
<input checked="" type="checkbox"/>	olsrd_nameservice.so.0.3	
<input checked="" type="checkbox"/>	olsrd_txtinfo.so.0.1	
<input type="checkbox"/>	olsrd_pgraph.so.1.1	
<input checked="" type="checkbox"/>	olsrd_jsoninfo.so.0.0	
<input type="checkbox"/>	olsrd_p2pd.so.0.1.0	

Click save and apply.

Return to Services > OLSR IPv4 from the navbar. Scroll to the bottom of the page.

You will see an "Interfaces" section. There will be one entry. Click the "Edit" button on this entry.

Interfaces

Enable	Network	Mode	Hello	TC	MID	HNA	
<input checked="" type="checkbox"/>		mesh	5.0s / 40.0s	2.0s / 256.0s	18.0s / 324.0s	18.0s / 108.0s	 Edit  Delete

 Add

  

You will be brought to a page. Locate the "Network" option. Click the "mesh" interface for the network option.

[Plugins](#) [HNA Announcements](#) [Display](#)

OLSR Daemon - Interface

The OLSR daemon is an implementation of the Optimized Link State Routing protocol. As such it allows mesh routing for any network equipment. It runs on any wifi card that supports ad-hoc mode and of course on any ethernet device. Visit olsrd.org for help and documentation.

Interface

General Settings

[IP Addresses](#)

[Timing and Validity](#)

Enable  Enable this interface.

Network lan: 

mesh: 

wan: 

wan6: 

 The interface OLSRd should serve.

Mode

 Interface Mode is used to prevent unnecessary packet forwarding on switched ethernet interfaces. valid Modes are "mesh" and "ether". Default is "mesh".

Weight

 When multiple links exist between hosts the weight of interface is used to determine the link to use. Normally the weight is

Leave all other options as is, and click save and apply.

Now we need to allow OLSR through the firewall. Go to The **Network option > Firewall**.

Under general settings, change Forward from "Reject" to "Accept".

The firewall creates zones over your network interfaces to control network traffic flow.

General settings

Enable SYN-flood protection

Drop invalid packets

Input

Output

Forward

Zones

Zone ⇒ Forwardings	Input	Output	Forward	Masquerading	MSS clamping	
lan: lan: → wan	<input type="text" value="accept"/>	<input type="text" value="accept"/>	<input type="text" value="accept"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="button" value="Edit"/> <input type="button" value="Delete"/>
wan: wan: wan6: → REJECT	<input type="text" value="reject"/>	<input type="text" value="accept"/>	<input type="text" value="reject"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="button" value="Edit"/> <input type="button" value="Delete"/>
<input type="button" value="Add"/>						

We should be done at this point. Go to the "Status" > "OLSR" Tab to view more info.

If all is done right, we should see a number next to "Neighbors".

[Neighbours](#)[Routes](#)[Topology](#)[HNA](#)[MID](#)[Interfaces](#)[OLSR-Viz](#)

OLSR Overview

Network

Interfaces	1
Neighbors	1
Nodes	2
HNA	0
Links total	2
Links per node (average)	1.00

NOTE: For routers with internet access, we need to change one other option to allow that router to broadcast to the network that it has internet access. Go back to "Services" > "OLSR IPv4".

Click the **HNA Announcements** tab.

GL-AR300VM Status System Services Network Logout

No password set!
There is no password set on this router. Please configure a root password to protect the web interface and enable SSH.
[Go to password configuration...](#)

Plugins **HNA Announcements** Display

OLSR Daemon

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You will be brought to a new page. Click the "Add" button.

In both boxes, put the value "0.0.0.0". Only do this on the router with internet access or the other routers will cease to route.

Click save and apply. Test on a different router that it can access the internet.

Plugins HNA Announcements Display

OLSR - HNA-Announcements

Hosts in a OLSR routed network can announce connectivity to external networks using HNA messages.

Hna4

Both values must use the dotted decimal notation.

Network address	Netmask	
<input type="text" value="0.0.0.0"/>	<input type="text" value="0.0.0.0"/>	<input type="button" value="Delete"/>
<input type="button" value="Add"/>		

First click add

Type 0.0.0.0 in both boxes.

Save & Apply Save Reset

Notes

I have only successfully configured this setup on Atheros/Qualcomm chips. I have been unsuccessful with any form of MediaTek chips regarding WPA2 and Ad-Hoc.

I recommend using [GL-net](#) routers for best performance with OpenWRT

Some of us have found that using a router that is currently connected as a client to another access point causes this configuration to fail. It is advised to not have the router connected as a WiFi client to another access point with this configuration.