

Using LEDE / OpenWRT Firmware with PPPoE and VLANs

Published by **Zack** on December 13, 2017

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Growing Pains

I wanted to share some thoughts I had on flashing **LEDE** (the **OpenWRT** successor) to my WRT1900AC, and share some guidance on configuring the WAN interfaces for PPPoE and setting up VLAN tagging. While I use Century Link, this guide should be pretty

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applicable to anyone who has an ISP which uses PPPoE and VLAN tagging to lock down their modems.

A few months ago I was presented with an opportunity to upgrade my homelab to Century Link's gigabit offerings – and while the service was immediately better than Comcast's, I noticed that my (now aging) Linksys WRT1900AC v1 router running OpenWRT 15.05.1 barely broke 300mbps, whereas my much older Netgear router was able to run at around 900mbps. After doing some digging I discovered the the OpenWRT firmware was the culprit and promptly returned back to stock. While I got my full speeds back, sacrificing the ability to make a litany of software changes was a pretty big trade off, and as someone who's more comfortable working with BIND over AD DNS it became kind of a pain in the ass to manage DNS in my lab.

Earlier this evening, I came across the LEDE project, which was effectively a continuation of OpenWRT, and better yet, they even had an updated system image for my router. Grabbing the image ([available here](#) for those of you with the same router as I), I flashed my router to LEDE and got up and running...

How-To

Prior Info

Please make sure you have the following:

- Your PPPoE credentials from your service provider, as well as the VLAN (Century Link uses 201, which I will be using in this guide). Most of them will give them to you if you call *technical* support.
- A router that is compatible with LEDE.

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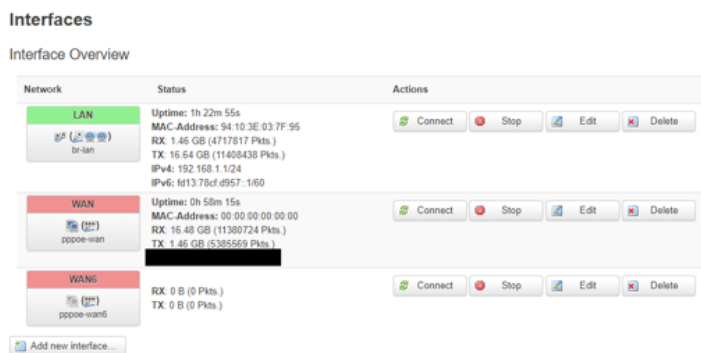
Hardware

Check https://lede-project.org/supported_devices to see if your router is on there.

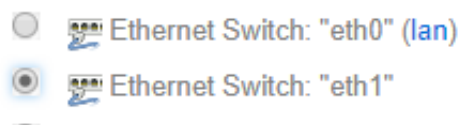
- A router that you have already flashed LEDE to. I won't be covering how to flash the firmware to your device, but this guide will assume you have already done so and done minor set up.

VLAN Config

1. Log in to your LuCI interface (normally <http://192.168.1.1>), and click **Network** -> **Interfaces**.
2. By default, you should see a bridged LAN interface called LAN, WAN, and WAN6.



3. Verify that you have a **WAN** entry, and click on **Edit**, and then the **Physical Settings** tab. This will reveal which physical **eth** port (*eth1 in my case*) your interface is using, and will look something like this:



4. Navigate to **Network** -> **Switch**. Here we will create a new **VLAN ID 201** and tag **CPU (eth1)** and **WAN**:

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Switch

The network ports on this device can be combined to several VLANs in which computers can communicate directly with each other. VLANs are often used to separate different network segments. Often there is by default one Uplink port for a connection to the next greater network like the internet and other ports for a local network.

Switch "switch0"

Enable VLAN functionality ☒

VLANs on "switch0"

VLAN ID	CPU (eth0)	CPU (eth1)	LAN 1	LAN 2	LAN 3	LAN 4	WAN
Port status:							
	1000baseT full-duplex	1000baseT full-duplex	no link	1000baseT full-duplex	1000baseT full-duplex	no link	1000baseT full-duplex
1	untagged	off	untagged	untagged	untagged	untagged	off
2	off	untagged	off	off	off	off	untagged
201	off	tagged	off	off	off	off	tagged
Add							
Save & Apply Save Reset							

5. Click **Save & Apply**.

Interface Config

1. Go back to **Network** -> **Interfaces**.
2. Click **Edit** on **WAN**.
3. Select **Protocol** and set it to **PPPoE**. Click **Switch Protocol** to confirm your changes:

Really switch protocol?

[Switch protocol](#)

4. At this point, enter your **PPPoE Credentials** into the **PAP/CHAP Username** and **PAP/CHAP Password** fields. Leave the other fields empty:

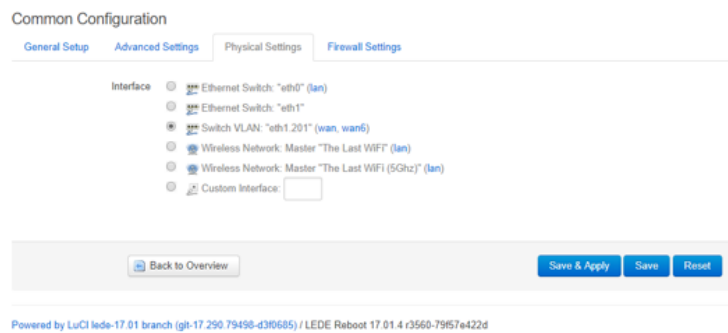
Interfaces - WAN

On this page you can configure the network interfaces. You can bridge several interfaces by ticking the "bridge interfaces" field and enter the names of several network interfaces separated by spaces. You can also use VLAN notation INTERFACE.VLANID (e.g., eth0.1).

Common Configuration

General Setup	Advanced Settings	Physical Settings	Firewall Settings
Status			
pppoe-wan			
Uptime: 1h 12m 55s MAC Address: 00:00:00:00:00:00 RX: 19.62 GB (13578484 Pkts.) TX: 1.55 GB (6472384 Pkts.)			
Protocol PPPoE			
PAP/CHAP username 			
PAP/CHAP password 			
Access Concentrator auto Leave empty to autodetect			
Service Name auto Leave empty to autodetect			
Back to Overview Save & Apply Save Reset			

5. Click the **Physical Settings** tab, and select the VLAN we just created:



6. As you can see, the new physical interface name for our new VLAN is **eth1.201**! Click **Save & Apply** and go back to the **Interface Overview**.
7. Click **Connect** to bring the interface online. You should see an IPv4 address at this point! If you have an ISP which supports IPv6 repeat the same steps on that interface.

I hope this post helps someone. I did a lot of running around trying to figure this out on my last go at this, and didn't have this info on-hand.

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Tags: **gigabit** **lede**

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3 Comments

N · March 28, 2018 at 11:25 am



This has helped me today when VDSL ISP asked me to tag the traffic with VLAN.

Thanks a lot.

Cheers!

 [REPLY](#)



Dave · July 20, 2018 at 4:58 am

Thanks for this info! I believe I am close to figuring this out. I am in Portland also and have setup exactly but still no go. A couple things 1) did you have to reboot ONT? Is it possible? From my perspective in a wheelchair the ONT looks like it is only accessible to service technicians. 2) Did you include @quest.net on your pppoe username? 3) Does CenturyLink need to authorize the MAC of the router?

 [REPLY](#)



Zack · July 30, 2018 at 8:16 pm

Hi Dave, thanks for reading! To answer your questions...

I did not have to reboot the ONT, however, there's a small panel at the bottom of the one that I received that can be popped off that reveals a power connector. I've only had to reboot it once (unrelated), but that did the trick.

For the username, I did have to include @qwest.net. If you give them a call and let them know that you are trying to configure a router manually and need a username, they should be able to provide that for you.

Lastly, they did not need the MAC address, but I provided it to them anyways. To my knowledge, the authentication is done on the PPPoE user lookup.

Hope this helps, best of luck!

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