

## Hardware used for verifying setup:

- Router: Linksys WRT3200ACM
- OpenWrt version tested: 21.02.3 r16554-1d4dea6d4f

More comprehensive version from a more advanced OpenWrt user point of view:

<https://gist.github.com/jamesmacwhite/5ae05c57fd4a3639f469e6092575a49c>

The following packages must be installed on OpenWrt to have the PPPoE protocol available for network interfaces before continuing:

- ppp
- kmod-pppoe
- ppp-mod-pppoe

OpenWrt overall has good IPv6 support, the packages for IPv6 should be included in any official build. Custom builds will vary.

**Caution:** Since OpenWrt 21.02 most routers that support OpenWrt will use a different switch architecture compared to older versions (19.07 and below). Guides or example configuration from other sources that provide network configuration examples that relate to `/etc/config/network` may be using the older swconfig syntax compared to the distributed switch architecture (DSA) syntax and this should be converted if you are using an OpenWrt build using DSA:

<https://openwrt.org/docs/guide-user/network/dsa/converting-to-dsa>

Further information around this change can be found on the OpenWrt wiki:

<https://openwrt.org/docs/guide-user/network/dsa/dsa-mini-tutorial>.

The screenshots show a router which is using DSA.

## General notes

The general setup for Aquiss FTTP is PPPoE and DHCPv6 for IPv6 connectivity which are quite common and well supported under OpenWrt. Other than having the appropriate PPPoE/IPv6 packages installed (which are likely to be installed already) it is a fairly simple configuration.

## PPPoE setup

Modify the default WAN interface or create a new network interface and select the protocol type "PPPoE".

**Protocol type:** PPPoE

**Device:** wan (change this if using another port other than WAN)

**General settings:**

- PAP/CHAP username: abb-xxxxxxxx@aquiss.com
- PAP/CHAP password: \*\*\*\*\*

Your broadband password will have been sent by email, alternatively you can find it within the Circuit Information area, using the “Show password” button in the Aquiss eBilling system.

**Interfaces » WANB**

General Settings | Advanced Settings | Firewall Settings | DHCP Server

Status  Device: pppoe-wanb  
 Uptime: 1h 10m 31s  
 RX: 2.36 MB (25100 Pkts.)  
 TX: 33.23 MB (35800 Pkts.)  
 IPv4:   
 IPv6: 

Protocol

Device

Bring up on boot

PAP/CHAP username  

PAP/CHAP password   \*

Access Concentrator   
 Leave empty to autodetect

Service Name   
 Leave empty to autodetect

### Firewall Settings:

For simplicity, assign the interface to the existing WAN zone.

**Interfaces » WANB**

General Settings | Advanced Settings | Firewall Settings | DHCP Server

Create / Assign firewall-zone                

 Choose the firewall zone you want to assign to this interface. Select *unspecified* to remove the interface from the associated zone or fill out the *custom* field to define a new zone and attach the interface to it.

All other settings can be left as the default. Apply the changes.

You should now see the connection statistics with your IPv4 address showing. If IPv6 is also enabled on your broadband line, you may also see a link-local IPv6 address.



If not, check your username and password is correct and your ONT (modem) is showing Power, PON and LAN all lit. If there is an error with the PPPoE connection, this will be shown on the interface status and more specific error logging can be found in the syslog.

## IPv6

IPv6 must be enabled on your broadband line within the Aquiss ebilling system and an IPv6 prefix be delegated to you which will be visible on the IP assignments page. Make sure these are present before continuing.

If you are enabling IPv6, you can use the automatic or manual configuration method.

### Automatic setup

On the PPPoE WAN interface, the default setting for Obtain IPv6 address on the General Settings tab is “automatic”. For PPPoE this creates a virtual interface called “wan\_6” (assuming the WAN interface is called “wan”) for you. This automatically provisions all IPv6 configuration and obtains and delegates your IPv6 prefix to the LAN for you.

Alternatively, if you want to have more flexibility over the configuration i.e. naming convention of the interface or for another advanced networking purpose, you can set this to manual to prevent its creation. By using the manual setting this will then require a new network interface to configure the IPv6 side manually. This will be an alias interface which will be linked to the main PPPoE interface.

### Manually creating an alias network interface for IPv6

**Protocol:** DHCPv6 client

**Device:** @wan (Change to the interface name used in the previous step if different)

Start by adding a new interface with the protocol DHCPv6 client. For the device type select “Alias interface: @xxxx”. Assuming the interface created earlier is wan, it would be @wan but it may be different based on the name used previously. Leave everything else as default.

**Interfaces » WANB6**

General Settings | Advanced Settings | Firewall Settings | DHCP Server

Status  Device: pppoe-wanb  
Uptime: 1h 18m 27s  
IPv6-PD: [REDACTED]

Protocol DHCPv6 client

Device  @wanb

Bring up on boot

Request IPv6-address try

Request IPv6-prefix of length Automatic

Dismiss Save

### Firewall Settings:

Assign to the WAN zone like the previous network interface.

All other settings can be left as default. Apply the changes.

The IPv6 configuration works as follows:

1. The main PPPoE interface should receive a link local IPv6 address beginning with fe80.
2. The virtual interface (whether automatically created or manually with a DHCPv6 client as the protocol, will obtain the prefix and delegate this, the interface should show a IPv6-PD value, this will be a /56.
3. Under the default configuration this prefix will then be delegated to the LAN interface and any other interfaces i.e. VLANs that allow this.

**WANB6**  Alias of "wanb"

Protocol: Alias Interface (DHCPv6 client)  
Uptime: 2h 52m 12s  
IPv6-PD: [REDACTED]

Restart Stop Edit Delete

### Further information:

The OpenWrt wiki provides lots of technical information regarding configuration and networking: <https://openwrt.org/docs/start>

Specific information related to PPPoE and IPv6 for further reading.

- **PPPoE** - [https://openwrt.org/docs/guide-user/network/wan/wan\\_interface\\_protocols#protocol\\_pppoe\\_ppp\\_over\\_ethernet](https://openwrt.org/docs/guide-user/network/wan/wan_interface_protocols#protocol_pppoe_ppp_over_ethernet)
- **IPv6** - <https://openwrt.org/docs/guide-user/network/ipv6/configuration>

