Dairyman's 'How To' Client (WDS) using OpenWRT

I am using a TP-Link MR3420 as the Master router, AP (WDS) and a TP-Link WR703N as the Client (WDS). This procedure is posted on Whirlpool.

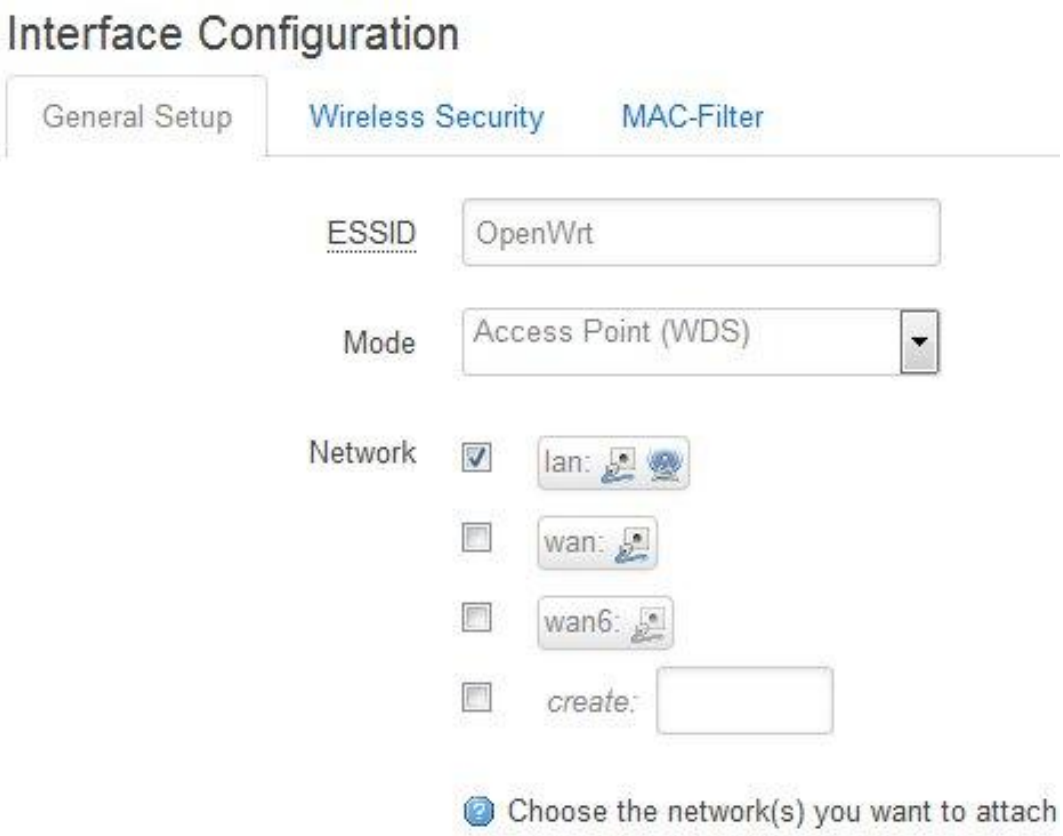
The MR3420 is running OpenWRT Rooter firmware and its IP is 192.168.1.1. In a normal circumstance it would be the router supplying internet to your network.

The WR703N was put into the 'as flashed' state by a 20 sec hold of the reset button. It is ROOt'd and using Huntsman 2013-09-15.

My normal method when doing this is to set the computer LAN to a static IP address e.g. 192.168.1.100; when doing the router set up and then setting it back to automatic when actually using the network. This procedure disables DHCP on the client router, so the computer static IP setting is very helpful, if things go awry.

The Master Router (AP WDS)

On the Master router, edit the WIFI and change the Mode to Access Point (WDS) and the Network to LAN.



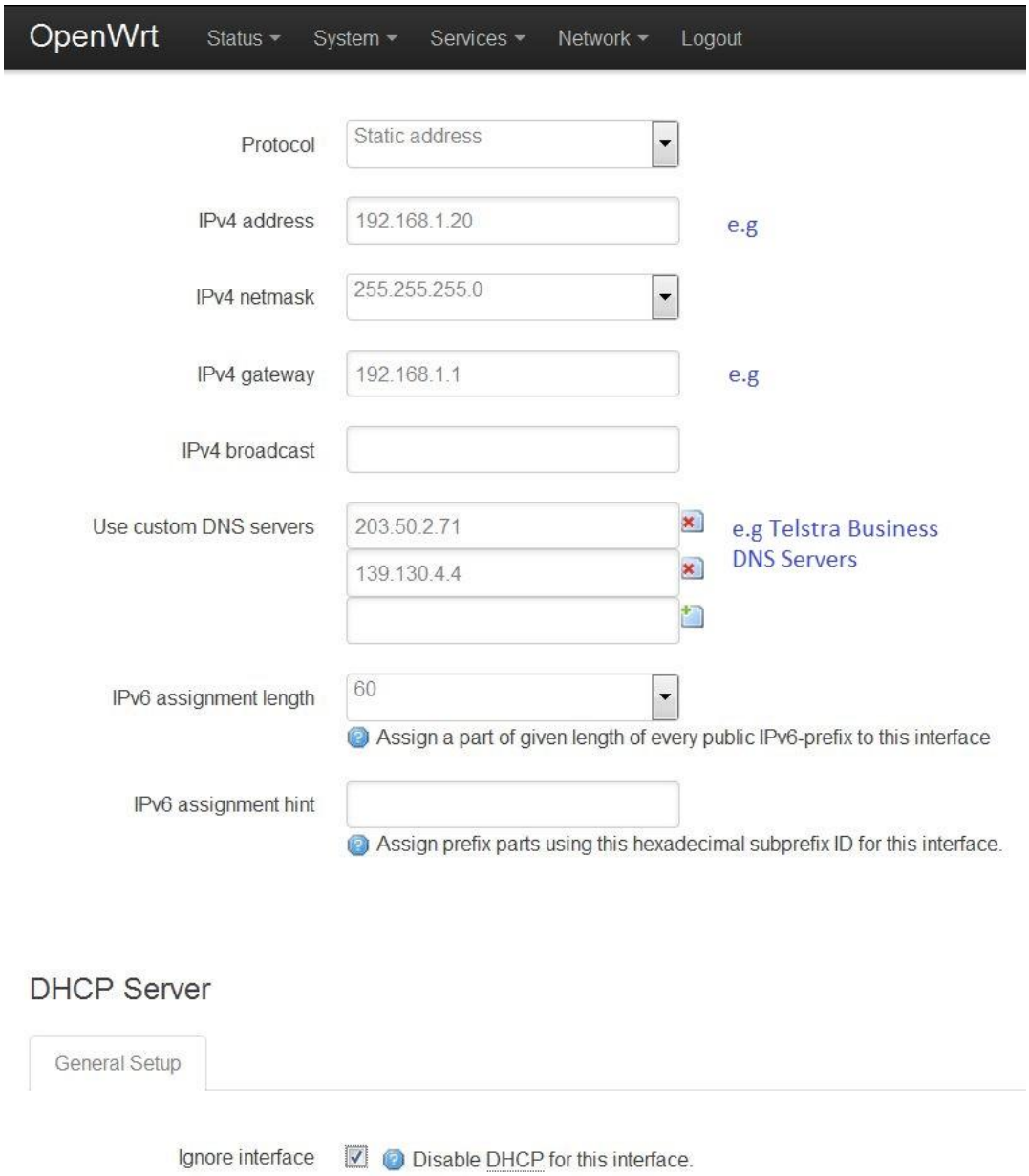
Click on **Save and Apply**

Note: The master router in Access Point (WDS) mode will work and appear completely normal to any other device which connects to it via WIFI or LAN. Connected devices do not need to run OpenWRT. It is a completely safe and painless step.

The Client Router

On the Client router, go to Network -> Interfaces and edit the LAN.

1. Change the IP address of the LAN and enter the gateway router's IP address. The gateway router is the router which supplies internet to the network. Normally this would be the Master router. I changed the Client IP address to 192.168.1.20 but any unused address within range can be used.
2. You must set Custom DNS server values. These are the DNS server addresses recommended by your ISP. If in doubt, the Google DNS of 8.8.8.8 should work.
3. Disable the DHCP Server by checking the box.



Click on **Save and Apply**.

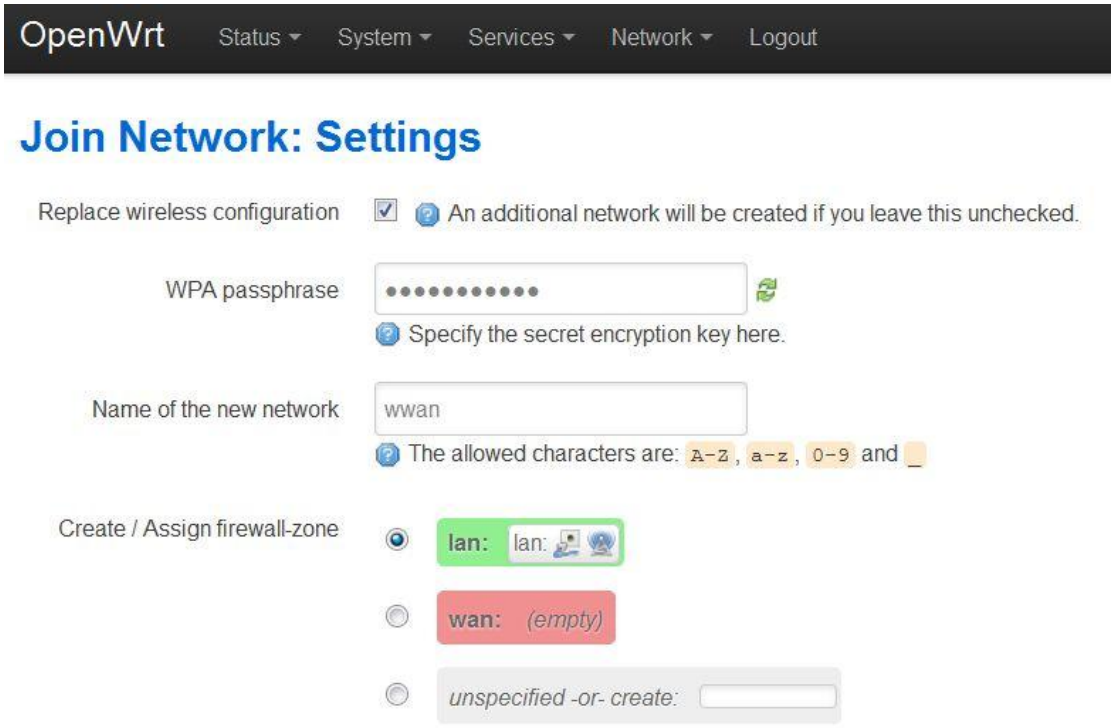
Important: After this change you must change to the new IP address in your browser to access the Client web interface e.g. 192.168.1.20.

Go to Network -> WIFI.

Click on **Scan** and after a short wait, click on **Join Network**.

Join your Master Router network.

Enter the WIFI encryption password if required. You may use an open WIFI on the master router. An an encrypted network works fine. The screen snap shows an encrypted network.



Click on **Submit** and change the WIFI mode to **Client (WDS)** and the network to **lan.** Un-tick **wwan**.

Click on **Save and Apply**.

Note: Ensure the WIFI is set your Country region. To get maximum speed out of the link, ensure that both master and client WIFI are set to 40 Mhz.

Turn off the Firewall for the LAN by editing the LAN and selecting the Firewall tab.

Click on **Save and Apply** and the configuration is complete.

Reboot the client router to get things re-connected and working properly.

Restore your computers LAN status to auto IP address.

The Master WIFI is accessible by other computers but the Client isn't, since it is devoted to the link.

The client is accessible via 192.168.1.20 or the value you set its IP address to.

The Master is accessible via 192.168.1.1.

Adding Repeater Mode to the Client (WDS)

On the Client (WDS), go to Network->WIFI and click on **Add**.

Set the Mode to Access Point (WDS) and the Network to 'lan'.

Save and Apply and you now have WIFI access from and to the Client.

This provides full WDS with WIFI from both the AP and the Client.

I monitored the set up with InSSIDer on another computer and both the Master and Client show up. They have the same SSID, but different Mac addresses.

The use of a common SSID allows transparent roaming of devices between the AP and the Client radios. The Client may be configured with a separate SSID, however this defeats the roaming feature.

The signal strength is as expected at 1m from the Client, 10m from the Master:

Master	-65
Client	-16

Throughput speed Link testing of a WDS network using a 150n link

So how well does it all work? Here is a test from the Whirlpool ROOter thread.

The Link test used 2 x TP-Link devices running OpenWRT ROOter software and 40 Mhz channels.

AP (WDS) – TP-Link 703n + 320U with external antenna mod, **LAN** connected to a Dell i7

WIFI bridge distance of **10m**

Client (WDS) – TP-Link 703n internal antenna, **LAN** connected to a wee Lenovo S10-3 Netbook running an Atom 1.67Ghz CPU; (but it does have a flash RAM hard drive).

Here is some theoretical and practical information for 150n speed:

WiFi has a system spectral efficiency of 2.44 bits/Hz, so 20MHz gives (at most) 48.8Mbps while 40MHz gives at most 97.6Mbps.

Coltect's practical results of 39.7Mbps (20MHz) and 79Mbps (40MHz) using iperf are pretty impressive.

DM's practical result of 48 to 49mbs on 20MHz is right on the theoretical boundary.

The WIFI link was tested using a simple 185Mb file transfer from the NetBook to the i7.

It ran at up to 10MB/s. ☺

10 MB/s = **80 Mb/s**

I suspect this is realistically the limit of these routers and 703n WIFI technology.

Networx captures the result graphically.