How to use a DD-WRT router to provide wifi access to an Broadband Mesh Network

How to connect two different router (wired connected) to use a mesh net router as primary router with DHCP and DNS services and a DD-WRT router as a WiFi Access Point to bridge to the mesh network. All WiFi clients will use the same DHCP server and will have access to shared resources on the mesh network.

Our goal: connect one DD-WRT router and one Broadband Mesh Node to share the same DHCP server for all the clients, allowing every client access to shared resources on the Mesh network.

- Connection between routers is wired.
- The Mesh Router has DHCP enabled.
- Clients can be on the same subnet.
- All clients can see one another in the network.
- All clients can access to shared resource (like Printer, HD USB, NAS,…).
- Minimal changes to the Mesh Router configuration

Configure the Mesh Node Router

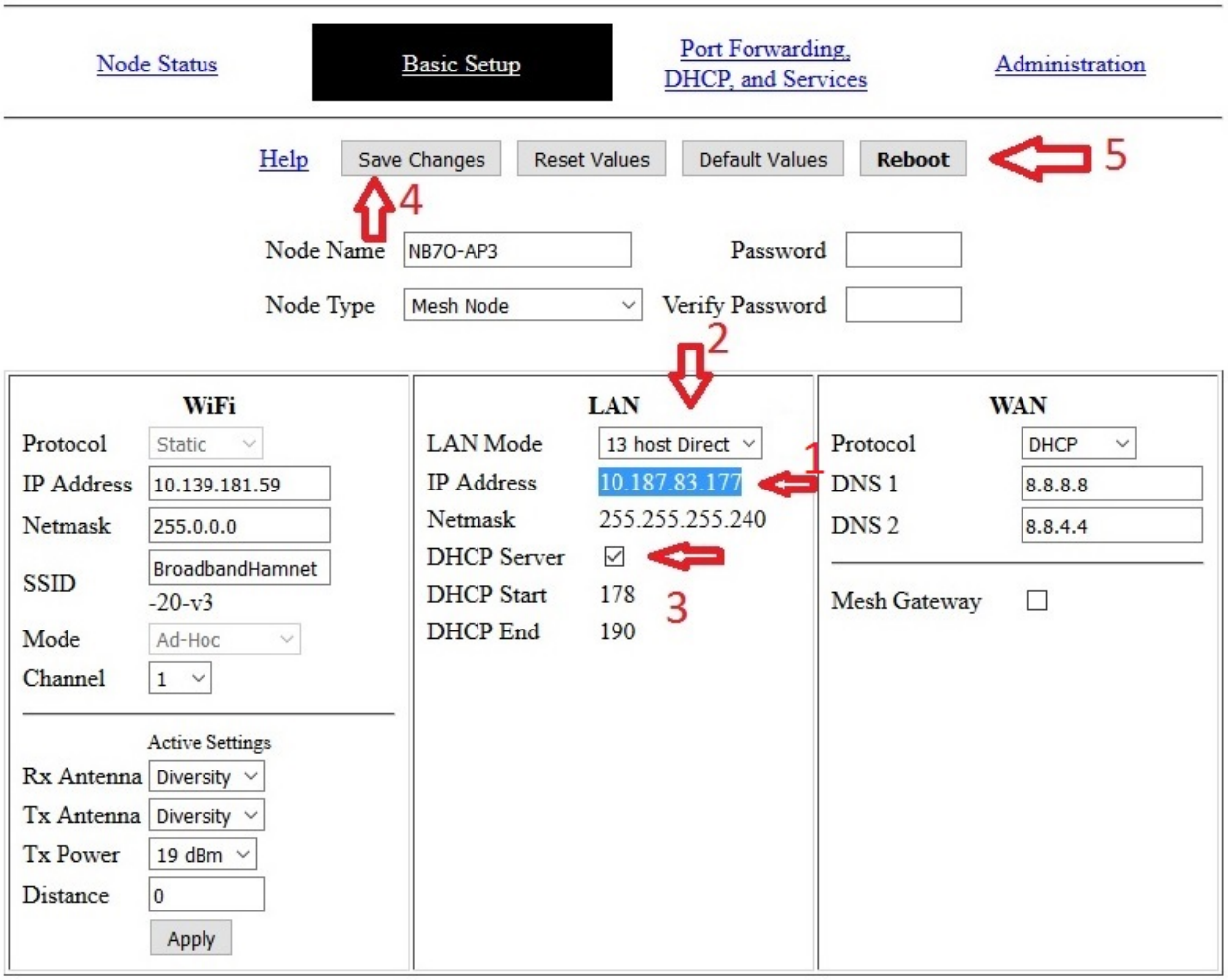

Figure 1

1. In the Main Router determine what the Lan IP address and Netmask are.
    a. #1 in Figure 1.
2. Change the Lan Mode to 13 host Direct
    a. #2 in Figure 1.
3. Make certain that DHCP Server is checked
    a. #3 in Figure 1.
4. Save these changes
    a. #4 in Figure 1
5. Reboot the Mesh Node Router
    a. #5 in Figure 1

Configure the DD-WRT Router

1. Restore DD-WRT factory defaults with a Hard Reset (30-30-30)
2. Connect the DD-WRT Router to a computer via LAN cable.
3. Access the router configuration using an internet browser (Default: http://192.168.1.1)
    - the default username is **root** and the default password is **admin**

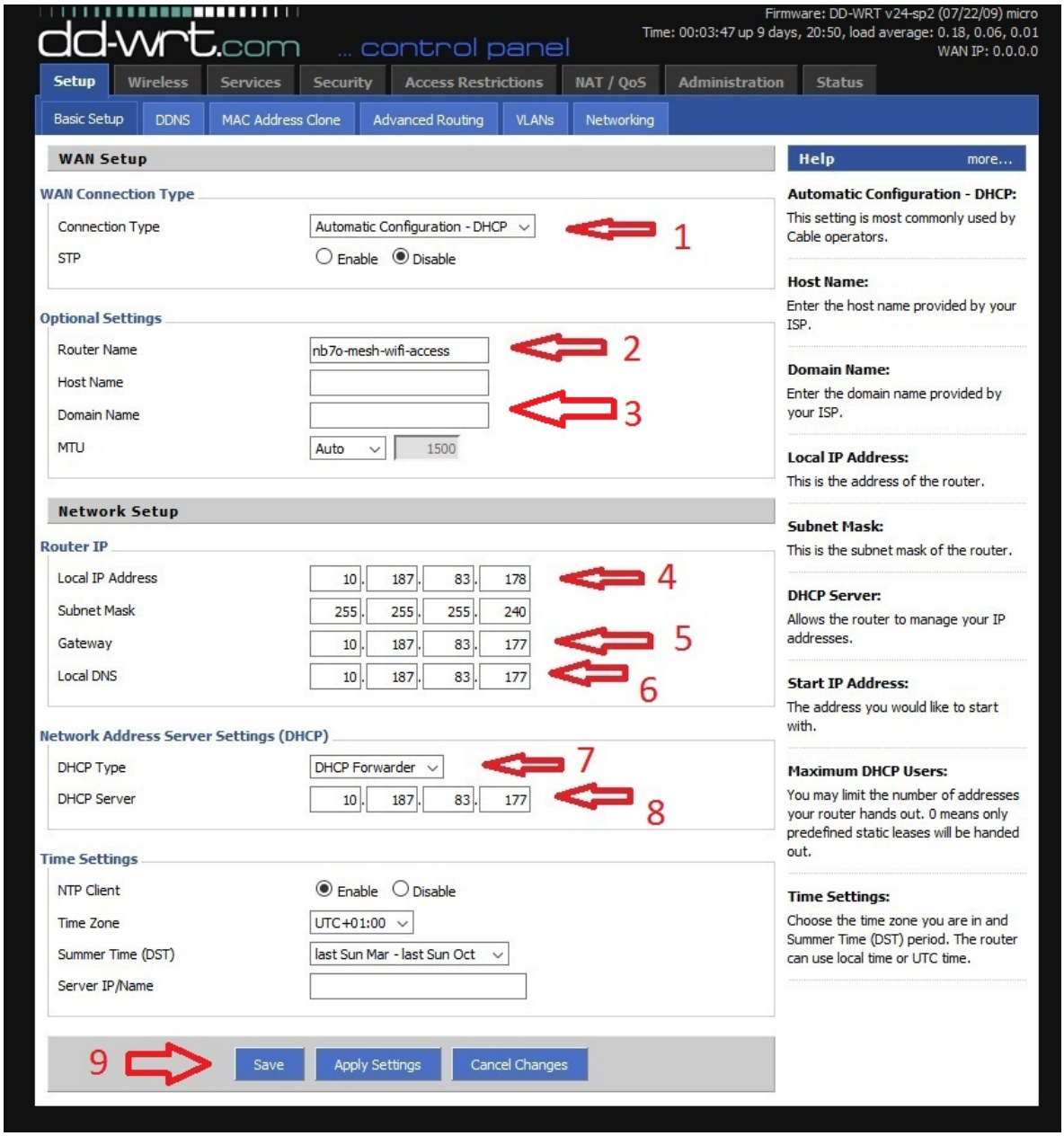

Figure 2

1. In Setup -> Basic Setup tab:
    a. Confirm Connection Type is Automatic Configuration – DHCP
        i. #1 in Figure 2

b. Enter a name for the Router
    i. #2 in Figure 2
c. Leave hostname and Domain Name Blank
    i. #3 in Figure 2
d. Set a static Router IP
    i. Local IP Address: xxx.xxx.xxx.xxx
        1. #4 in Figure 2
            a. *(Mesh Node's IP address plus 1)*
            b. *E.G. if Mesh Node router's IP is 10.187.83.177 then the DD-WRT router IP would be 10.187.83.178*
    ii. Subnet Mask: 255.255.255.240 *(same as netmask in Mesh Node)*
        1. *#4 in Figure 2*
    iii. Gateway: xxx.xxx.xxx.xxx (Mesh Node IP address)
        1. #5 in Figure 2
    iv. Local DNS: xxx.xxx.xxx.xxx (Mesh Node IP address)
        1. #6 in Figure 2
e. Network Address Server Settings (DHCP)
    i. DHCP type: DHCP forwarder
        1. #7 in Figure 2
    ii. DHCP Server: xxx.xxx.xxx.xxx (Mesh Node IP address)
        1. #8 in Figure 2
f. Save these changes
    i. #9 in Figure 2

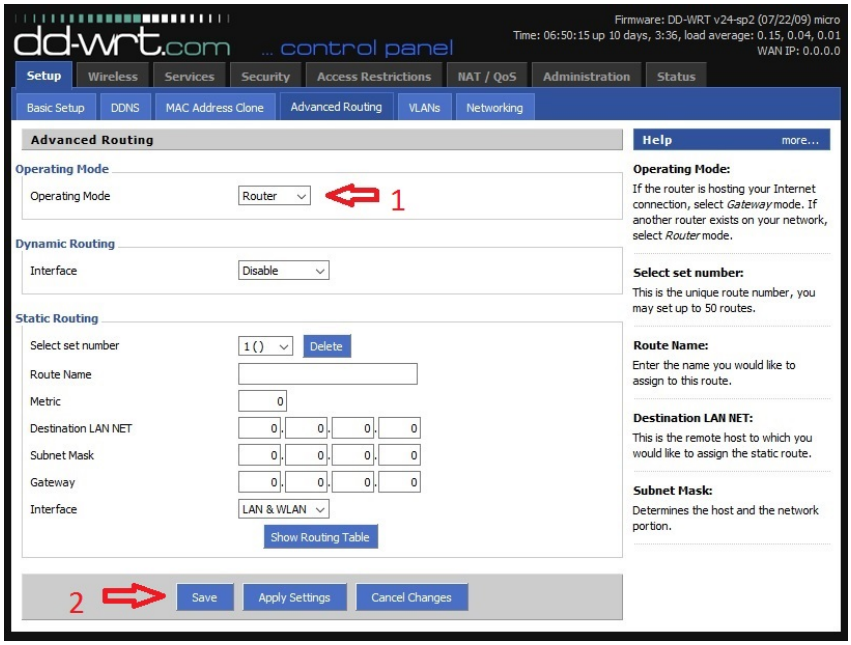

Figure 3

2. In Setup -> Advanced Routing tab:
    a. Operation Mode: Router
        i. #1 in Figure 3
    b. Save this change

i. #2 in Figure 3

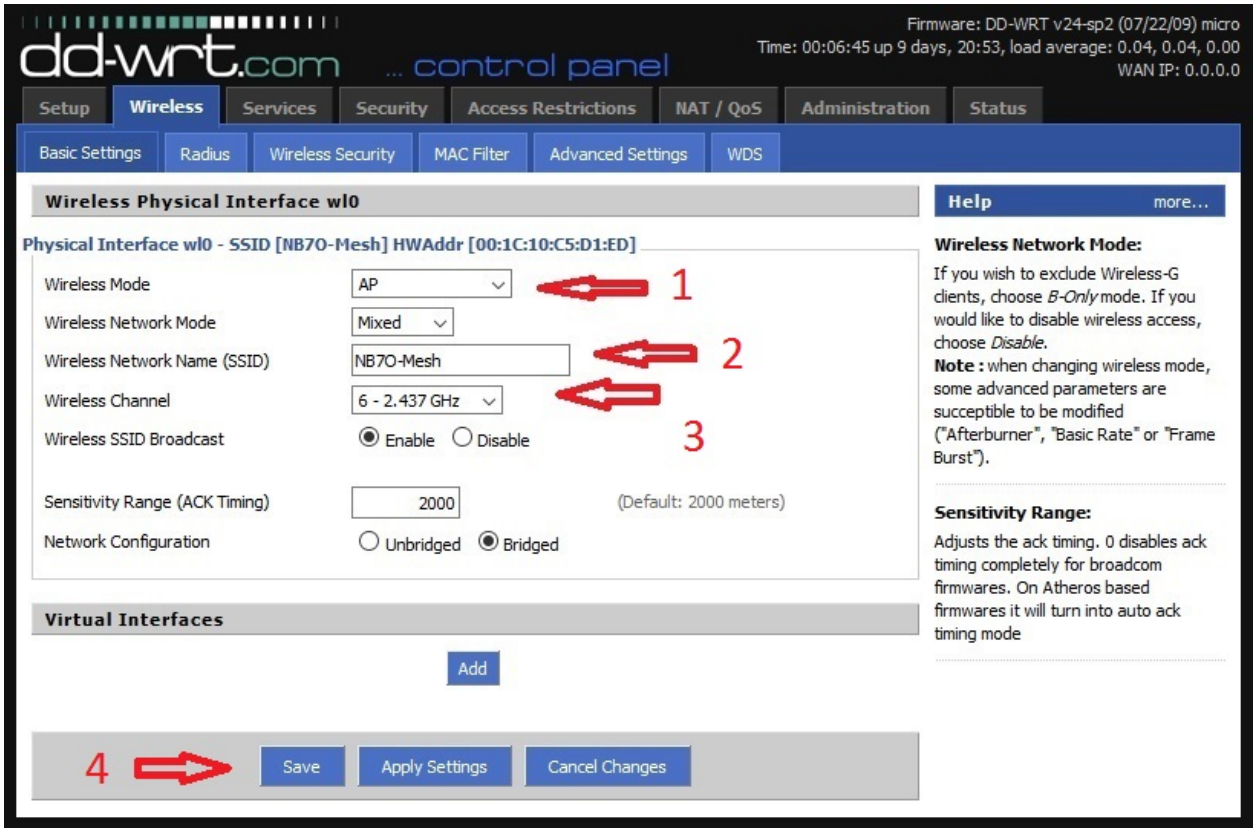

Figure 4

3. In Wireless -> Basic Settings tab:
    a. Wireless Mode: AP
        i. #1 in Figure 4
    b. Wireless Network Name (SSID): enter an SSID that will advertise the presence of the WiFi router to users
        i. #2 in Figure 4
    c. Wireless Channel: select an appropriate channel for the location of the router. Do not use Channel one or two as those channels will be busy with the Mesh Nodes talking to each other.
        i. #3 in Figure 4
    d. Save these changes
        i. #4 in Figure 4

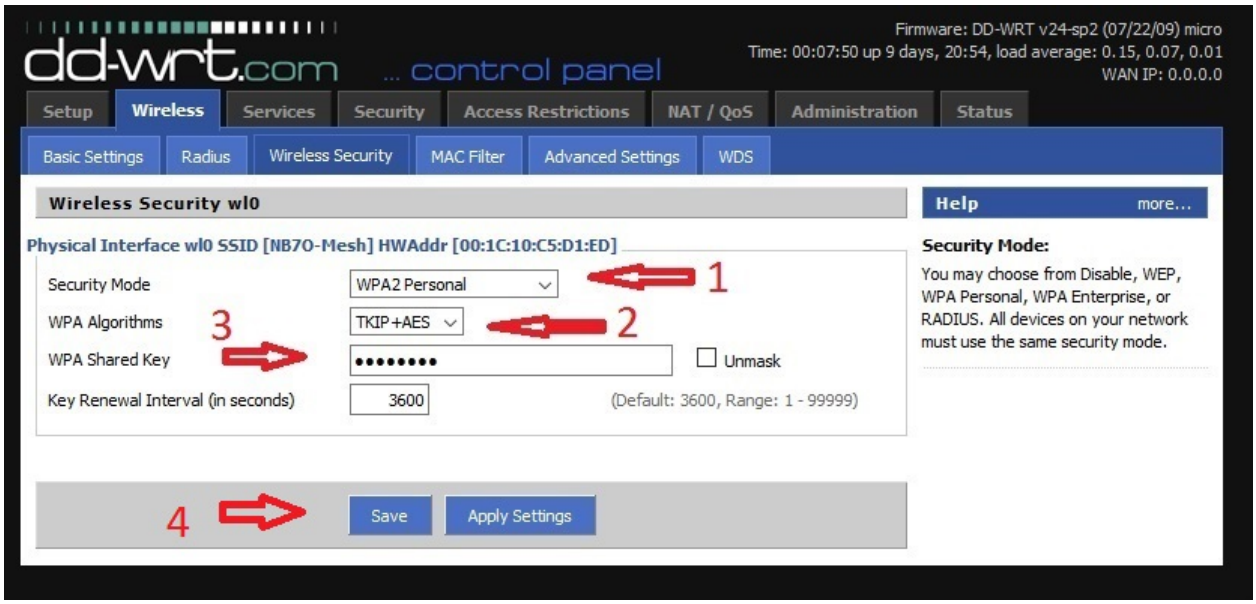

Figure 5

4. In Wireless -> Wireless Security tab:
    a. Security Mode: WPA2 Personal *(recommended)*
        i. *#1 in Figure 5*
    b. *WPA algorithms: TKIP+AES (recommended)*
        i. *#2 in Figure 5*
    c. *WPA Shared Key: enter a password that you can remember*
        i. *#3 in Figure 5*
    d. Save these changes
        i. #4 in Figure 5

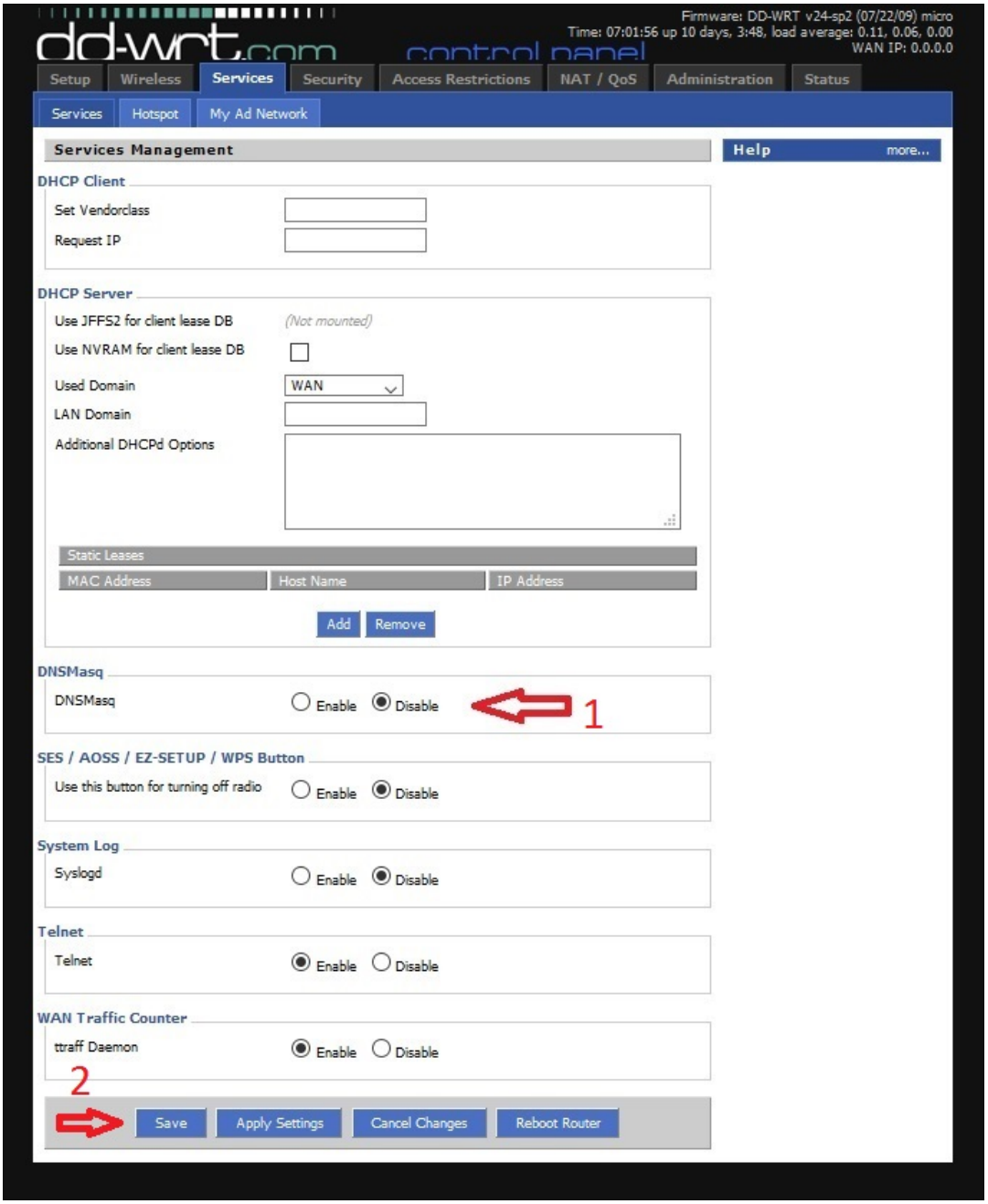

Figure 6

5. In Services -> Services tab:
    a. DNMasq: disabled
        i. # 1 in Figure 6
    b. Local DNS: disabled
        i. Not shown in Figure 6 – Not available in this version DD-WRT
    c. Save these changes
        i. #2 in Figure 6

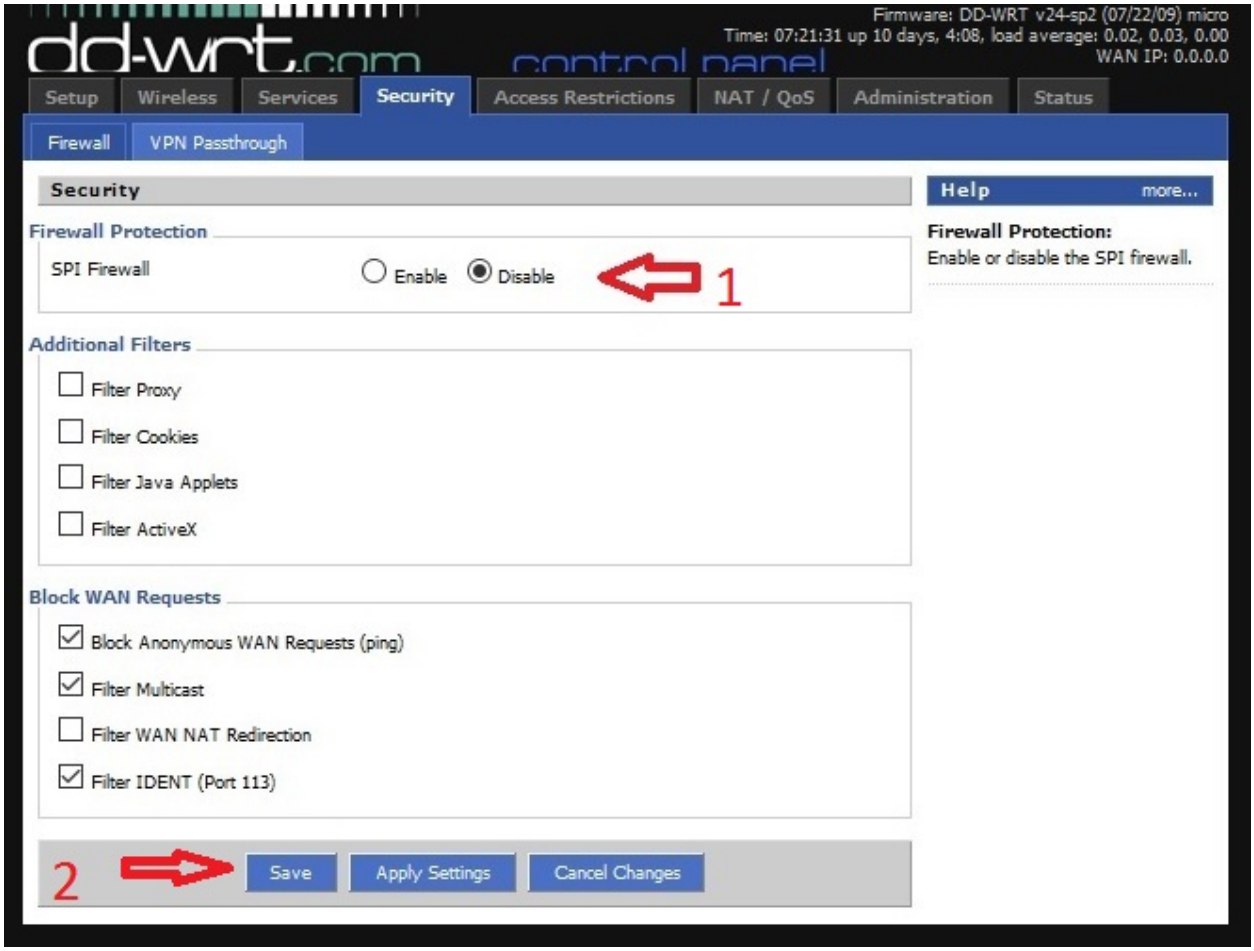

Figure 7

6. In Security -> Firewall tab:
    a. SPI Firewall: disabled
        i. # 1 in Figure 7
    b. Save this change
        i. #2 in Figure 7

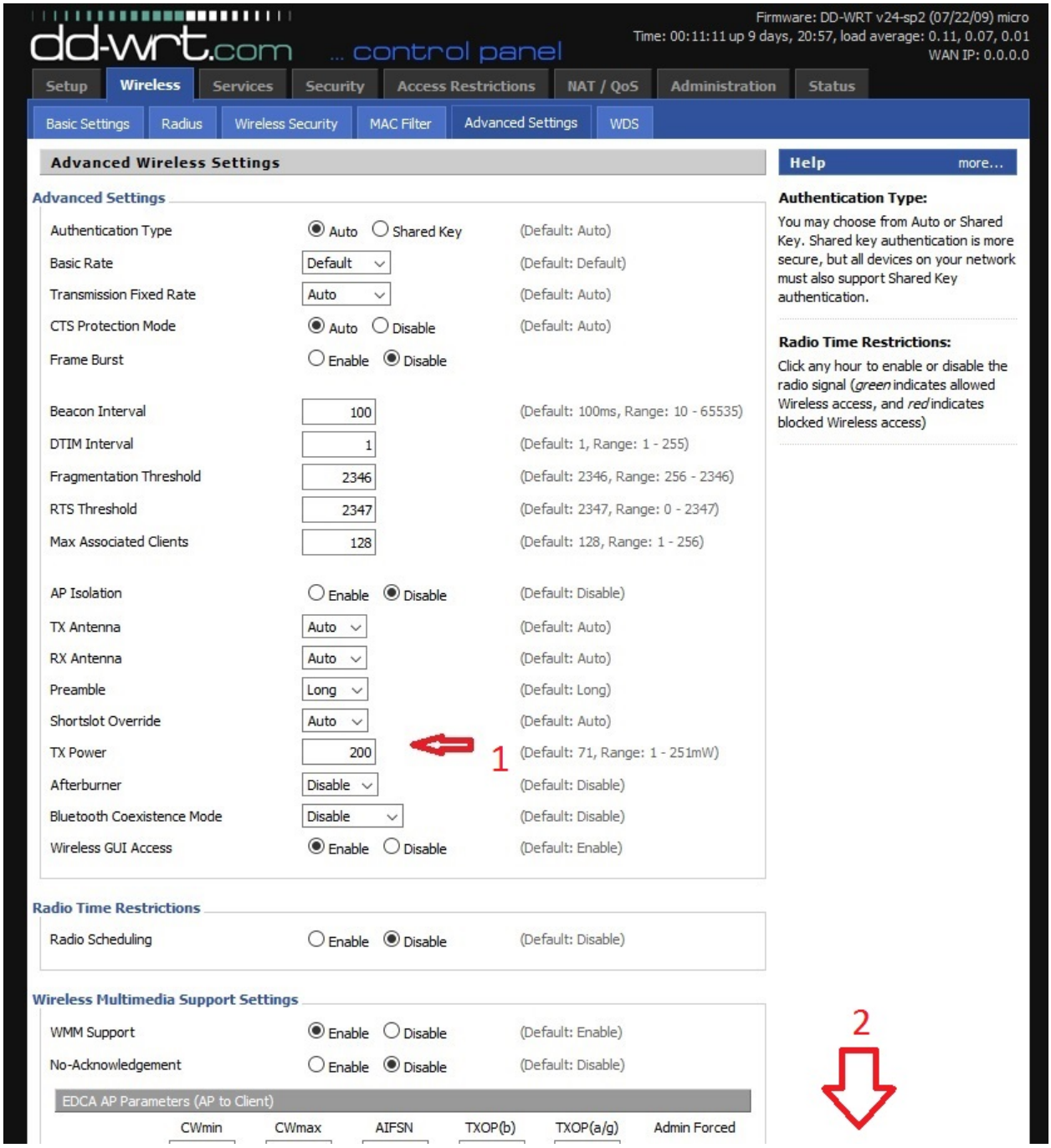

Figure 8

7. In Wireless – Advanced Settings
    a. Adjust the Tx Power to a level that will meet your needs.
        i. #1 in Figure 8
            1. I regularly run 200 mW's without any problems with the router overheating
    b. Save this change
        i. #2 in Figure 8

c. Close the Browser

8. Reboot the DD-WRT router by cycling the power.
9. Plug a computer network cable into one of the four DD-WRT router's "LAN" port on the back side of the DD-WRT Router
10. Plug the other end of the computer network cable into any of the four "LAN" ports on the back side of the "Mesh Node" Router.
11. Log into the DD-WRT Wifi connection using the advertised SSID and AP password.

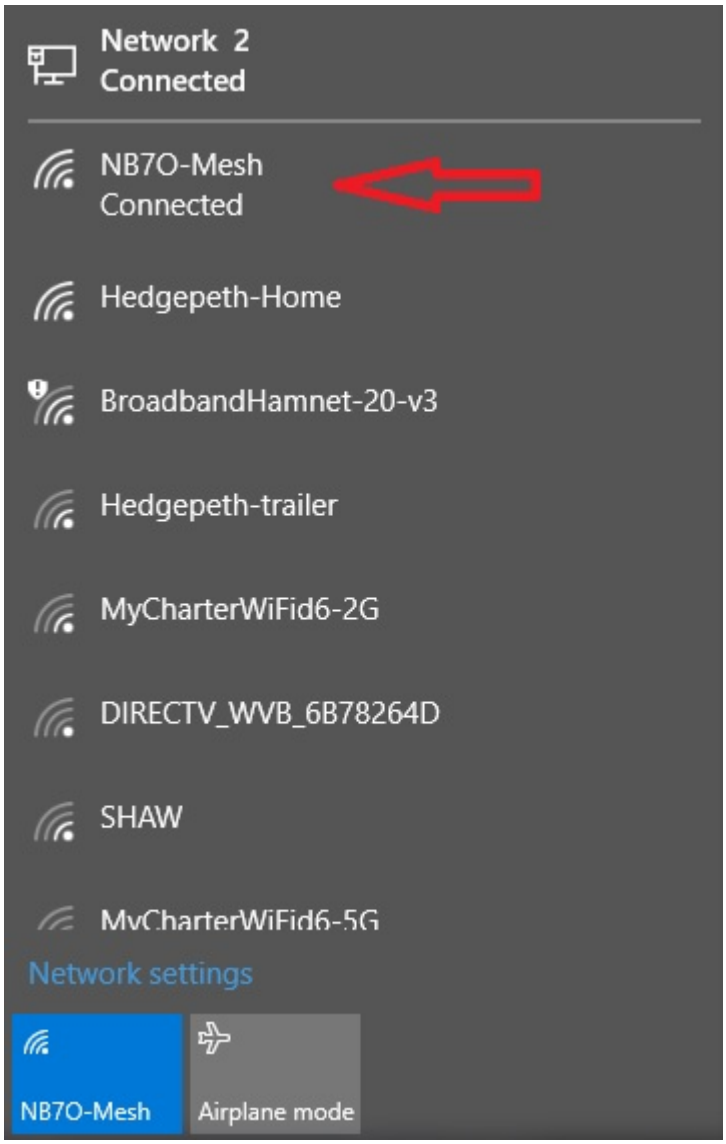

Figure 9

12. Figure 9 shows that my laptop is connected to the DD-WRT WIFI with an SSID of NB7O-Mesh (also refer to Figure 4)

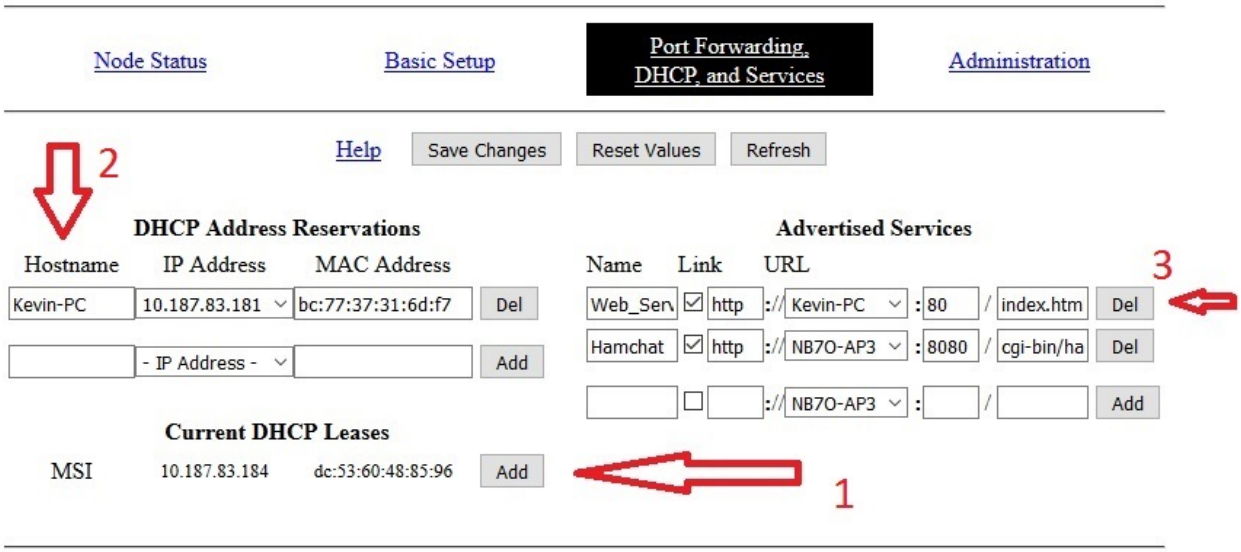

Figure 10

13. Figure 10 shows that my laptop has been assigned an IP address from the DHCP server that is in the Mesh Node
    a. #1 in Figure 10
14. Figure 10 also shows another PC, named Kevin-PC, that has a DHCP address reserved for it. Even though this second laptop is attached to the mesh node it is not listed in the DHCP lease list because it has an IP reserved for it.
    a. #2 in Figure 10
15. Kevin-PC is a web, and other facilities, server. The web server is an advertised Service under the Mesh Node
    a. #3 in Figure 10.

By using a DD-WRT router as a WiFi access point for a Broadband Mesh Network you will have the added power that will provide more range of coverage, better security, and an easier method to manage your wifi access point. Additionally, you do not need to use one of the few versions of WRT54G or Ubiquiti Routers as your access point. You can use one of the many routers that can be inexpensively purchased and flashed with the DD-WRT firmware.

Seven three and have fun with your Broadband Mesh Network

Kevin Hedgepeth/NB7O

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