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Introduction

WDS between different chip vendors (atheros, broadcom, ralink) will not work most of the time since it's INCOMPATIBLE and no we will NOT fix it. WDS (Wireless Distribution Service) creates a wireless backbone link between multiple access points that are part of the same wireless network. This allows a wireless network to be expanded using multiple access points without the need for a wired backbone to link them, as is traditionally required. The WDS-enabled access points **can** accept wireless clients (e.g. wireless laptop users) just as traditional APs would.

Also take note of the fact that all repeaters, including this WDS Repeater mode, will sacrifice half of the bandwidth available from the primary router for clients *wirelessly* connected to the repeater. This is a result of the repeater taking turns talking to not just one partner, but to two, and having to relay the traffic between them. As long as your bandwidth requirements are within this halved bandwidth amount there will be little or no reduction in "speed".

Important Note:

Be aware that WDS is NOT a certified standard of the IEEE and that every vendor that provides WDS is doing so via its own implementation. In general, this results in incompatibility between different HW vendors devices e.g. Ralink, Atheros, Broadcom. In other words, this result in much trouble connecting units, even of the same OEM, when they use different HW. So, this is not a bug in DD-WRT. Its just a design problem and we're not responsible for it.

Please see List of confirmed working [Broadcom WDS devices](#)

Alternatives:

If your needs are not specifically tied to WDS, another way to wirelessly link two routers is by setting up the repeater in either [Client Mode](#) or as a [Client Bridge](#). You may even find that these set-ups increase speed compared to a WDS. You can read more about these in the sections [Wlan Repeater](#) and [Repeating Mode Comparisons](#).

Atheros SoC Based Devices and ATH WIFI card based Devices

There is not much to know. just a few facts to follow since it works different from other WDS stuff!

General FAQ

- WDS between different chip vendors (atheros, broadcom, ralink) will not work most of the time since it's **INCOMPATIBLE** and no we will **NOT** fix it . (However, if you are really desperate to give it a try, users in the forum have documented that this may work for certain hardware. Try at the peril of your sanity.)
- A WDS Station will not work as a wireless access point out of the box, i.e. won't allow clients to connect to the repeated signal. This is not possible with Atheros chips. A solution is to have clients connect either to the WDS station's wired RJ45 port, or to set up a **Virtual Access Point** (see more under [Multiple WLANs](#)).
- Don't set MACs to the WDS-Table. This always causes trouble so stay away from it. It won't work.
- Bing all devices to the latest build or at least all devices to the same build.

DD-WRT to DD-WRT WDS

- NO WDS support for connecting DD-WRT MadWIFI <-> DD-WRT ath9k/DD-WRT MadWIFI-N (legacy/old driver)
- Only set the ap to "**wds ap**" and the clients to "**wds station**". Put all on the same SSID and set your preferred wireless encryption.

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- **NO** WDS support for connecting current DD-WRT MadWIFI <-> DD-WRT MadWIFI-N <-> DD-WRT ath9k
- Under **Basic Setup** ---> **Network Setup** ----> **Local IP Address**, use an IP in the same subnet as the WDS AP router but outside the WDS AP router's DHCP range.
- Disable DHCP server on the WDS STATION.
- **Important** Write down the WDS AP's IP as the gateway and DNS on the WDS STATION.

Save and Apply Settings

DD-WRT MadWIFI to Ubiquiti WDS

- AirOS <=3.X <-> DD-WRT (madwifi): set AirOS to WDS-AP <-> DD-WRT v.24 (or higher) to WDS-Sta. Put all on the same SSID and set your preferred wireless encryption.
- **NO** WDS support for connecting current AirOS 3.x <-> DD-WRT ath9k and AirOS 5.X <-> DD-WRT MadWIFI/DD-WRT ath9k

DD-WRT MadWIFI to MTik WDS

- Connect as DD-WRT WDS-Sta to an MTik AP. Set DD-WRT MTik compability to on. The other way round should work, too. Put all on the same SSID and set your preferred wireless encryption.

Broadcom to Atheros WDS Configuration (Unsupported)

For the best WDS stability and performance, you *should* use the same wireless chipset on both sides, ie: Broadcom-to-Broadcom or Atheros-to-Atheros. That being said, multi-vendor WDS interoperability is possible but *not necessarily guaranteed to work*.

Note: there are configuration differences between DD-WRT builds & different platforms. If you don't see the exact configuration items below on your router, you may need to look for it on a different configuration page.

BOTH ROUTERS:

- Wireless / Basic Settings: Wireless Mode = **G-only**
- Wireless / Basic Settings: Network Name (SSID) = **dd-wrt** (modify to your liking)
- Wireless / Wireless Security: Security Mode = **WEP**
- Wireless / Wireless Security: Default Transmission Key = **1**
- Wireless / Wireless Security: Encryption = **64 or 128 bits** (either works)
- Wireless / Wireless Security: Passphrase = **(blank)**
- Wireless / Wireless Security: Key 1 = **10 or 26-digit encryption key** (modify to your liking)

BROADCOM-SPECIFIC SETTINGS:

- Wireless / Basic Settings: Wireless Mode = **AP**
- Wireless / Basic Settings: Wireless Channel = (pick something suitable for your environment)
- Wireless / Advanced Settings: Preamble = **Short**
- Wireless / WDS: Enter **MAC address of Atheros device** and select "**LAN**" in the drop-down box

ATHEROS-SPECIFIC SETTINGS:

- Wireless / Basic Settings: Wireless Mode = "**WDS Station**"
- Wireless / Basic Settings / Advanced Tickbox / Short Preamble = **Enable**
- Wireless / WDS: Enter **MAC address of Broadcom device** and select "**LAN**" in the drop-down
- Note: Wireless Channel will be automatically selected based on the Broadcom configuration

The above example was *minimally tested* using the following hardware / firmware on 1/12/2011:

- Broadcom BCM4704 (v9): Netgear WNDR3300
'(dd-wrt.v24-15508_NEWD-2_std-nokaid_nohotspot_nostor.bin)'
- Atheros AR2315: Engenius / Senao EOC-2610 '(v24 preSP2 [Beta] Build: 14896)'

Do NOT use this as a firmware recommendation for these devices! Please see the Atheros and Broadcom wiki's and forums for official firmware recommendations.

In this configuration, combinations of WPA/TKIP and WPA2/AES were unsuccessful. "AP" and "WDS AP" modes on the Atheros didn't work in this configuration either.

If you are having difficulty getting the WDS link up, disable security on both sides and try again:

- Wireless / Wireless Security: Security Mode = **Disabled**

Broadcom Based Devices

In regards to integration with DD-WRT, it is confirmed working with WEP, WPA, and WPA2.

Setup/Configuration for Broadcom Based Devices

Standard terminology for a two router setup:

- The **host router** is the router is connected to the internet. Its connection will be shared with clients.
- The **client router** is the router not connected to the internet. It will connect to the host router.

Setup for two or more of the aforementioned Broadcomcompatible Routers

1. (*Recommended*) On both routers, save the current configurations: **Administration -> Backup**. Click the **Backup** button and follow prompts so save NVRAM backup files, i.e. nvram_host.bin, and nvram_client.bin. These configurations can be restored if the new setup doesn't work and you need to quickly revert to the previous (working) configuration.
2. On the client router, reset to its factory default state to eliminate the potential of conflict from other settings. Either use the router's reset button or reset via the GUI: **Administration -> Factory Defaults -> Reset router settings -> Restore Factory Defaults** - select **Yes** (radio button), then click **Apply Settings** button and wait for the router to reboot. (*Optional*) On the host router, unless it is

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- impractical (e.g. the host is part of a working network) reset to its factory default state, too, to simplify debugging the new setup.
3. On the client router, change the WAN Connection Type to **Disabled**. **Setup -> Basic Setup -> WAN Setup -> WAN Connection Type** . Also enable STP.
 4. On the client router, set the **Local IP Address** to one in the same subnet as the host router (e.g. 192.168.1.1 (host/internet gateway) and 192.168.1.2 (client router)). If the host router has been reset, set its **Local IP Address** as well. On the client, set the **Gateway** and **Local DNS** IP addresses to the **Local IP Address** of the host. **Setup -> Basic Setup -> Network Setup -> Router IP**
 5. On the client, disable the DHCP server. This allows the host to perform DHCP services. There can only be one DHCP server on any subnet (network) for reliable operation. **Setup -> Basic Setup -> Network Address Server Settings (DHCP)** . Also Uncheck the **Three** boxes below the DHCP Server.
 6. On the *client router*, Navigate to **Setup > Advanced Routing**. In the dropdown box for Operating Mode, Select **Router**. Click Save
 7. Again, client router; Navigate to **Services**. Disable DNSMasq as well as **WAN Traffic Counter**. Click Save
 8. On the client, disable the firewall. **Security -> Firewall -> Firewall Protection -> SPI Firewall**. First Uncheck everything **BUT Filter Multicast**, click Save. Now Disable the SPI Firewall and click Save.
 9. On both the host and client, set the **Wireless Mode** to **AP** and make sure the **Wireless Channel** is the same. For **Wireless Network Mode**, you can select **Mixed** , **G-Only** , **NG-Mixed**, or **N-Only**. Set the **Wireless Network Name (SSID)** to your liking as long as it is exactly the same on both routers. If running *N or NG-Mixed* , **WPA2 + AES is the only form of encryption** that can be used.
 10. On both routers, disable wireless security (this should already be done if you reset both routers to factory defaults). Security can be re-enabled after all other steps are complete, but in order to minimize troubleshooting, it's best to get things set up with no security active. If this is impractical, e.g. the host is part of a working network, make certain that *all* security settings on the client match those of the host *exactly*. **Wireless -> Wireless Security -> Wireless Security w10**
 11. **Important:** On the host, disable MAC address filtering
 12. On both routers, open the **WDS** configuration page/Tab. For each router, you will see its wireless MAC address (**Wireless MAC**) at the top of the page. Note that this MAC address is different from the one that may be printed on the case. In the first open row of the table, select **LAN** from the dropdown list (The router will pause for a second) and enter each router's wireless MAC address into the table of the other router. It is not necessary to enable **Lazy WDS** or **WDS Subnet** on either router. If necessary, consult [WDS - configuration for more than two routers](#) for some helpful info. **Wireless -> WDS -> WDS Settings**
 13. (*Optional, but not recommended*) On the client router, configure static routing (**Setup -> Advanced Routing**) for **Destination LAN NET** and enter the IP address of the host router. Use the same settings for **Subnet Mask** and **Gateway** that are used by host router. For **Interface**, select **LAN & WLAN**. This step ensures that the bridge is given a static IP route. **Setup > Advanced Routing -> Static Routing**
 14. On both routers, check the wireless status page to see that the other is present in the **WDS Nodes** section. Make sure signal strength for each is not zero. **Status -> Wireless -> Wireless Nodes -> WDS Nodes**. If it is 0%, and there are no indication of the router transmitting or receiving packets, **Unplug** the client router for ~10 seconds , then re-insert power. Give it no more than 3 minutes to boot and obtain the WDS link from the host router.
 15. Test that you can ping the host from the client. Note that it may take a short amount of time for the WDS link to be established, and you may need to reboot either the client or host router (or both).
 16. If disabled, enable wireless security now (highly recommended). **First enable it on the Client router**, wait 5 seconds, then enable it on the Host router. Watch the Wireless LED's on the host router, if they are blinking, you're in business. If they're solid, power cycle the client router.

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17. If you set the SSID of the client router to be different from that of the host router, you need to make them the same in order to enable WPA/WPA2 encryption security. Using WPA/WPA2 encryption also requires STP to be enabled on all routers for a reliable link.

I decided that the amount of information can be intimidating for some novice users, therefore I have added screenshots of the process with examples of the respected configurations in the best order as outlined by the Wiki text.

The screenshot displays the dd-wrt.com control panel interface. The top navigation bar includes tabs for Setup, Wireless, Services, Security, Access Restrictions, NAT / QoS, Administration, and Status. Below this, a secondary navigation bar highlights 'Basic Setup', 'DDNS', 'MAC Address Clone', 'Advanced Routing', 'VLANs', 'Networking', and 'EnIP Tunnel'. The main content area is divided into several sections:

- WAN Setup:** Features a 'WAN Connection Type' dropdown set to 'Disabled', an 'STP' section with 'Enable' selected, and 'Optional Settings' for Router Name (WRT000N), Host Name (WRT000N), Domain Name, and MTU (Auto).
- Network Setup:** Includes 'Router IP' (192.168.1.2), 'Local IP Address' (192.168.1.2), 'Subnet Mask' (255.255.255.0), 'Gateway' (192.168.1.1), and 'Local DNS' (192.168.1.1).
- WAN Port:** An 'Assign WAN Port to Switch' checkbox is checked.
- Network Address Server Settings (DHCP):** Shows 'DHCP Type' as 'DHCP Server', 'DHCP Server' as 'Enable', 'Start IP Address' as 192.168.1.100, 'Maximum DHCP Users' as 50, and 'Client Lease Time' as 1440 minutes. It also includes fields for Static DNS 1-3 and WINS.
- Time Settings:** Includes 'NTP Client' (Enable), 'Time Zone' (UTC-05:00), 'Summer Time (DST)' (2nd Sun Mar - 1st Sun Nov), and 'Server IP/Name'.

At the bottom, there are three buttons: 'Save', 'Apply Settings', and 'Cancel Changes'.

WDS_Linked_router_network

The screenshot displays the DD-WRT control panel interface. At the top, the logo 'dd-wrt.com' and 'control panel' are visible. The top right corner shows system information: 'Firmware: DD-WRT v24-sp2 (10/25/10) mega', 'Time: 11:47:23 up 23:32, load average: 0.00, 0.00, 0.00', and 'WAN: Disabled'. The navigation menu includes 'Setup', 'Wireless', 'Services', 'Security', 'Access Restrictions', 'NAT / QoS', 'Administration', and 'Status'. The 'Advanced Routing' section is active, with sub-tabs for 'Basic Setup', 'DDNS', 'MAC Address Clone', 'Advanced Routing', 'VLANs', 'Networking', and 'EoIP Tunnel'. The 'Advanced Routing' page is divided into three main sections: 'Operating Mode', 'Dynamic Routing', and 'Static Routing'. The 'Operating Mode' section has a dropdown menu set to 'Router'. The 'Dynamic Routing' section has a dropdown menu set to 'LAN & WLAN'. The 'Static Routing' section contains a table with one entry: 'Select set number' is '1 ()', 'Route Name' is empty, 'Metric' is '0', 'Destination LAN NET' is '0.0.0.0', 'Subnet Mask' is '0.0.0.0', 'Gateway' is '0.0.0.0', and 'Interface' is 'LAN & WLAN'. A 'Delete' button is next to the set number. A 'Show Routing Table' button is at the bottom of the static routing section. The right sidebar contains a 'Help' section with a 'more...' link. The help text explains 'Operating Mode', 'Select set number', 'Route Name', 'Destination LAN NET', and 'Subnet Mask'. At the bottom of the page, there are three buttons: 'Save', 'Apply Settings', and 'Cancel Changes'.

dd-wrt.com ... control panel

Firmware: DD-WRT v24-sp2 (10/25/10) mega
Time: 11:47:23 up 23:32, load average: 0.00, 0.00, 0.00
WAN: Disabled

Setup | Wireless | Services | Security | Access Restrictions | NAT / QoS | Administration | Status

Basic Setup | DDNS | MAC Address Clone | **Advanced Routing** | VLANs | Networking | EoIP Tunnel

Advanced Routing | Help | more...

Operating Mode

Operating Mode: Router

Dynamic Routing

Interface: LAN & WLAN

Static Routing

Select set number	Route Name	Metric	Destination LAN NET	Subnet Mask	Gateway	Interface
1 () Delete		0	0.0.0.0	0.0.0.0	0.0.0.0	LAN & WLAN

[Show Routing Table](#)

[Save](#) | [Apply Settings](#) | [Cancel Changes](#)

Help

Operating Mode:
If the router is hosting your Internet connection, select *Gateway* mode. If another router exists on your network, select *Router* mode.

Select set number:
This is the unique route number, you may set up to 50 routes.

Route Name:
Enter the name you would like to assign to this route.

Destination LAN NET:
This is the remote host to which you would like to assign the static route.

Subnet Mask:
Determines the host and the network portion.

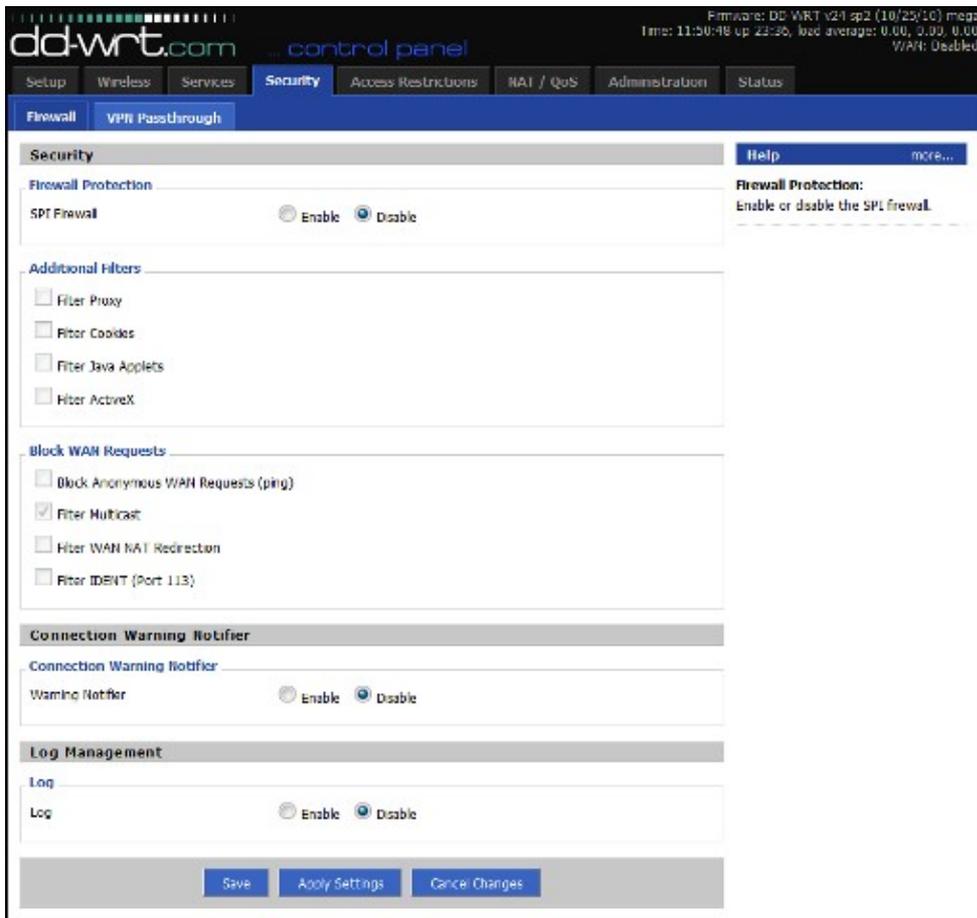
WDS_Linked_router_network

The screenshot shows the 'Services Management' page in the dd-wrt control panel. The page is titled 'Services Management' and includes a 'Help' link. The main content area is divided into several sections, each with a title and a set of configuration options:

- DHCP Client:** Includes fields for 'Set Vendorclass' and 'Request IP'.
- DHCP Server:** Includes options for 'Use DHCP for client lease DB' (set to 'Not mounted'), 'Use NVRAM for client lease DB' (checked), 'Used Domain' (set to 'LAN & WLAN'), and 'LAN Domain'. It also has a text area for 'Additional DHCP Options' and a table for 'Static Leases' with columns for 'MAC Address', 'Host Name', 'IP Address', and 'Client Lease Time'. There are 'Add' and 'Remove' buttons below the table.
- DNSMasq:** Includes a 'DNSMasq' option with 'Enable' and 'Disable' radio buttons.
- XiNX Kernel:** Includes a 'Start Kaid' option with 'Enable' and 'Disable' radio buttons.
- IP over DNS Tunneling:** Includes a 'nsd Daemon' option with 'Enable' and 'Disable' radio buttons.
- SES / AOS / EZ-SETUP / WPS Button:** Includes a 'Turning off radio' option with 'Enable' and 'Disable' radio buttons.
- RFlow / MACupd:** Includes 'RFlow' and 'MACupd' options with 'Enable' and 'Disable' radio buttons, an 'Interface' dropdown menu (set to 'LAN & WLAN'), and an 'Interval (in seconds)' field (set to '10').
- SNMP:** Includes a 'SNMP' option with 'Enable' and 'Disable' radio buttons.
- Secure Shell:** Includes a 'SSHd' option with 'Enable' and 'Disable' radio buttons.
- System Log:** Includes 'Syslogd' and 'Remote Server' options. 'Syslogd' has 'Enable' and 'Disable' radio buttons, and 'Remote Server' has a text field containing '192.168.1.1'.
- Telnet:** Includes a 'Telnet' option with 'Enable' and 'Disable' radio buttons.
- WAN Traffic Counter:** Includes a 'traffdaemon' option with 'Enable' and 'Disable' radio buttons.

At the bottom of the page, there are four buttons: 'Save', 'Apply Settings', 'Cancel Changes', and 'Reboot Router'.

WDS_Linked_router_network



Firmware: DD-WRT v24-sp2 (10/25/10) mega
Time: 11:50:48 up 23:36, load average: 0.00, 0.00, 0.00
WAN: Disabled

dd-wrt.com control panel

Setup Wireless Services **Security** Access Restrictions NAT / QoS Administration Status

Firewall VPN Passthrough

Security

Help more...

Firewall Protection

SPI Firewall Enable Disable

Additional Filters

Filter Proxy
 Filter Cookies
 Filter Java Applets
 Filter ActiveX

Block WAN Requests

Block Anonymous WAN Requests (ping)
 Filter Multicast
 Filter WAN NAT Redirection
 Filter IDONT (Port 113)

Connection Warning Notifier

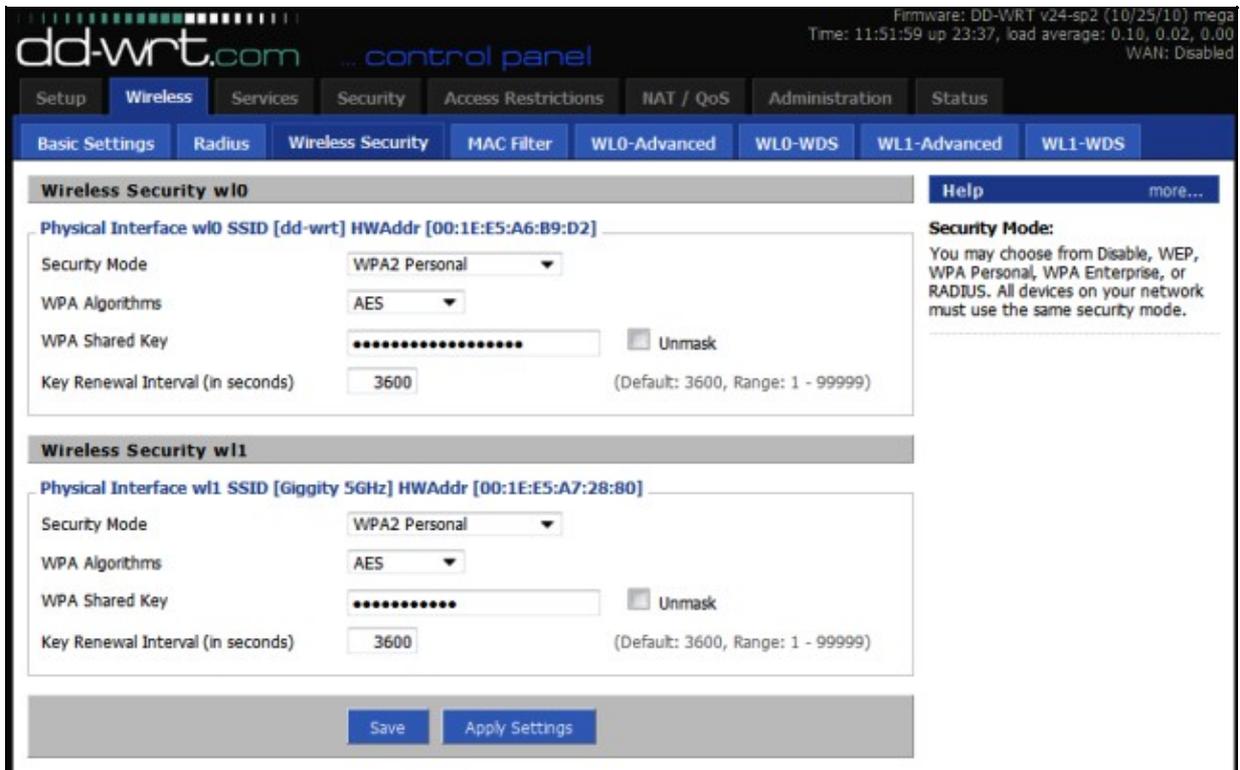
Connection Warning Notifier

Warning Notifier Enable Disable

Log Management

Log Enable Disable

Save Apply Settings Cancel Changes



Firmware: DD-WRT v24-sp2 (10/25/10) mega
Time: 11:51:59 up 23:37, load average: 0.10, 0.02, 0.00
WAN: Disabled

dd-wrt.com control panel

Setup **Wireless** Services Security Access Restrictions NAT / QoS Administration Status

Basic Settings Radius **Wireless Security** MAC Filter WLO-Advanced WLO-WDS WL1-Advanced WL1-WDS

Wireless Security wlo

Help more...

Physical Interface wlo SSID [dd-wrt] HWAddr [00:1E:E5:A6:B9:D2]

Security Mode WPA2 Personal

WPA Algorithms AES

WPA Shared Key [REDACTED] Unmask

Key Renewal Interval (in seconds) 3600 (Default: 3600, Range: 1 - 99999)

Wireless Security wl1

Physical Interface wl1 SSID [Giggity 5GHz] HWAddr [00:1E:E5:A7:28:80]

Security Mode WPA2 Personal

WPA Algorithms AES

WPA Shared Key [REDACTED] Unmask

Key Renewal Interval (in seconds) 3600 (Default: 3600, Range: 1 - 99999)

Save Apply Settings

WDS_Linked_router_network

The screenshot shows the dd-wrt control panel for a WRT610N router. The top navigation bar includes Setup, Wireless, Services, Security, Access Restrictions, NAT / QoS, Administration, and Status. The main menu has tabs for Basic Settings, Radius, Wireless Security, MAC Filter, WLO-Advanced, WLO-WDS, WLI-Advanced, and WLI-WDS. The current page is titled "Wireless Distribution System" and includes a "Help" link.

WDS Settings

Wireless MAC: 00:1E:E5:A7:28:80

LAN	▼	00	:	23	:	69	:	89	:	D9	:	94	WRT610N
Disable	▼	00	:	00	:	00	:	00	:	00	:	00	
Disable	▼	00	:	00	:	00	:	00	:	00	:	00	
Disable	▼	00	:	00	:	00	:	00	:	00	:	00	
Disable	▼	00	:	00	:	00	:	00	:	00	:	00	
Disable	▼	00	:	00	:	00	:	00	:	00	:	00	
Disable	▼	00	:	00	:	00	:	00	:	00	:	00	
Disable	▼	00	:	00	:	00	:	00	:	00	:	00	
Disable	▼	00	:	00	:	00	:	00	:	00	:	00	
Disable	▼	00	:	00	:	00	:	00	:	00	:	00	
Disable	▼	00	:	00	:	00	:	00	:	00	:	00	

Extra Options

Lazy WDS: Enable Disable (Default: Disable)

WDS Subnet: Enable Disable

NAT:

IP Address:

Subnet Mask:

Buttons: Save, Apply Settings, Cancel Changes

WDS_Linked_router_network

Firmware: DD-WRT v24-sp2 (10/25/10) mega
Time: 12:03:13 up 23:48, load average: 0.06, 0.04, 0.00
WAN: Disabled

dd-wrt.com ... control panel

Setup Wireless Services Security Access Restrictions NAT / QoS Administration **Status**

Router WAN LAN Wireless **Bandwidth** Sys Info

Wireless

Wireless Status

Interface	wl
MAC Address	00:1E:E5:A7:28:80
Radio	Radio is On
Mode	AP
Network	NA-Mixed
SSID	Giggy 5GHz
Channel	120 + 118
TX Power	84 mW
Rate	270 Mbps
Encryption - Interface wl	Enabled, WPA2 Personal
PPTP Status	Disconnected

Wireless Packet Info

Received (RX)	2662031 OK, no error	100%
Transmitted (TX)	4973191 OK, 227 errors	100%

Wireless Nodes

Clients

MAC Address	Interface	Uptime	Tx Rate	Rx Rate	Signal	Noise	SNR	Signal Quality
- None -								

WDS Nodes

MAC Address	Interface	Description	Signal	Noise	SNR	Signal Quality
00:23:69:09:D9:94	eth1	WRT610N	-55	-89	34	43%

[Site Survey](#) [Wiz survey](#)

Auto Refresh & On

Help [more...](#)

MAC Address:
This is the Router's MAC Address, as seen on your local, wireless network.

Network:
As selected from the Wireless tab, this will display the wireless mode (Mixed, G-Only, B-Only or Disabled) used by the network.

OUI Search:
By clicking on any MAC address, you will obtain the Organizationally Unique Identifier of the network interface (IEEE Standards OUI database search).

WDS_Linked_router_network

The screenshot shows the DD-WRT control panel interface. At the top, it displays the firmware version (DD-WRT v24-sp2 (10/25/10) mega) and system time (12:28:46). The navigation menu includes Setup, Wireless, Services, Security, Access Restrictions, NAT / QoS, Administration, and Status. The main content area is divided into several sections:

- Wireless Status:** Shows interface (wl1), MAC Address (00:23:69:89:09:04), Radio (Radio is On), Mode (AP), Network (NA-Mixed), SSID (Giggly 5GHz), Channel (120 + 118), TX Power (84 mW), Rate (270 Mbps), Encryption (Enabled, WPA2 Personal), and PPTP Status (Disconnected).
- Wireless Packet Info:** Shows Received (RX) as 4650035 OK, no error (100%) and Transmitted (TX) as 2742113 OK, 196 errors (100%).
- Wireless Nodes:** Contains two tables:
 - Clients:** A table with columns for MAC Address, Interface, Uptime, TX Rate, RX Rate, Signal, Noise, SNR, and Signal Quality. It lists two clients: 1C:48:D6:F0:81:98 (eth0) and F4:CE:46:4F:5A:C1 (eth0).
 - WDS Nodes:** A table with columns for MAC Address, Interface, Description, Signal, Noise, SNR, and Signal Quality. It lists one node: 00:1E:E5:A7:28:80 (eth1) with description WRT500N.

At the bottom, there are buttons for 'Site Survey' and 'Wifi survey', and an 'Auto Refresh is On' checkbox.

Multiple router setup

See [WDS multiple router setup](#)

Apple Airport Express

Verified with DD-WRT v2.3 (12/25/05) and AirPort Express v6.20 [1-21-2006]

Information updated for AirPort Express v6.3 and AirPort Utility v5.3.1 [3-16-2008]

DD-WRT (Save settings after each step)

1. **Wireless -> Basic Settings"** Set the channel on the DD-WRT to 1.

Multiple router setup

WDS_Linked_router_network

1. **Wireless -> WDS:** Select "LAN" option and enter the Airport Express's "AirPort ID" (can be found on the underside of the Airport Express itself - be careful not to choose the "Ethernet ID").
2. Set Lazy WDS and WDS subnet to disable
2. **Administration -> Management:** Set Loopback to disable.
3. **Security -> Firewall:** Turn off "Block Anonymous Internet Requests."

AirPort Express

1. Open AirPort Utility (found in /Applications/Utilities), select your AirPort Express from the left panel, and click "Manual Setup"
2. In the "AirPort" section:
 1. Select "Wireless" tab
 1. Select "Participate in WDS network"
 2. Set Network name to your wireless SSID name
 3. Set the wireless channel to 1
 4. Choose your security (only WEP will work wirelessly - if you want WPA on your network, you're going to have to connect the AirPort via an ethernet cable)
 2. Select "WDS" tab
 1. Set "WDS mode" as "WDS remote"
 2. In the Main Airport ID section enter your DD-WRT wireless MAC (can get this in **Status -> Wireless**)
3. In the "Music" section (if you want to use AirTunes):
 1. Make sure "Enable AirTunes" is selected
 2. Name and password-protect your speakers
4. Click "update"

If it works then there will be a solid green light (may take a couple of minutes) . If it does not work, you should connect Airport Express and WRT54G/GS using a CAT-5 cable and set up it. It might work.

This information is from [AirTunes, AirPort Express, and the WRT54G at ryanschwartz.net](http://ryanschwartz.net) - and has since [been edited to update information](#).

Also note that the above configuration with the Airport Express works with either no encryption or WEP encryption. When using WEP encryption, make sure you enter your WEP key into the Airport Express exactly how it is entered into the WRT54G, but **add a \$ to the beginning of the key**. \$ key is meant for hex (WEP). If you're not using hex, then you can leave it blank as normal.

In addition, also note that the wireless channel does not need to be 1, but it must be the same for both the DD-WRT and Airport Express. I have both units set to channel 11 and WDS works perfectly.

WPA/WPA2 encryption does not appear to work over WDS (but will work when the Airport Express is configured in client mode - but in client mode, the RJ45 connection is not usable). The error that the WRT54G reports back when the Airport Express is trying to associate via WPA over WDS is:
eapol_sup_dispatch wds0.49153: unknown EPOL type 3 . EPOL has to do with WPA, so perhaps if this issue can be resolved, then the two devices could associate. [EDIT: WPA2 seems to work just fine with the above configuration, as of March 16 2008.]

Warning: This guide does not work for Atheros-based DD-WRT routers, such as the D-Link DIR-300. Airport Express will not be able to participate in the WDS network.

WDS_Linked_router_network

Troubleshooting: Make sure that you disable the "AP Watchdog" daemon. If you have a wireless endpoint (like a laptop) which connects to the Airport station (because you use WDS) then the Linksys does not see any clients connected and restarts the wireless network over and over. You also could change other channel apart from 1, if you're having problems and you don't have to disable loopback.

Notes

- In some cases it may help to put the IP of the client router as a DMZ'd machine in the host router. Of course, this only works with a WDS between 2 routers.
 - ◆ <http://www.dd-wrt.com/phpBB2/viewtopic.php?t=669&highlight=dmz>
- The source material for this list comes primarily from the following DD-WRT forum posts:
 - ◆ <http://www.dd-wrt.com/phpBB2/viewtopic.php?t=124>
- If you're using encryption, remember to configure it on all routers!
- Set encryption after you got a running WDS.
- On the main **Status** page and the **Wireless Status** you can see the signal strength for any other routers in the WDS. If they are showing 0 then you're not connecting to them for some reason (wrong MAC address or, for WPA links, wrong SSID).
 - ◆ NOTE: Some security works with some dd-wrt and not with others. Lately (2010) the only security that has worked reliably is WEP and WPA2-AES. WPA2-AES is the ONLY security that should be used with N routers if you wish to have N speed.
- If you want to use more than 2 repeaters with WDS and define multiple WDS paths for redundancy then you **MUST** enable STP or the network will loop back on itself and destroy all functionality. [Quote from GeeTek]
- Make sure you use a proper forum recommended build for broadcom. See the announcements in the broadcom forum and read this thread: <http://www.dd-wrt.com/phpBB2/viewtopic.php?t=51486>

WDS Bridging without Access Point Function

(NOTE: This appears to be broke with v24 Final. It will brick a WAP54G v3.1.)

Sometimes you just want to bridge two points together. WDS has the advantage of correctly passing MAC addresses so either end could be the host (Internet connection on the LAN side).

1. Set up your WDS routers as you wish
2. Turn off the AP function using the following commands in the shell

```
nvramp set wl0_mode=wds
nvramp commit
reboot
```

You may also need to issue an additional command of

```
nvramp set wl_mode=wds
```

to turn off the AP.

1. After it reboots you'll have a WDS bridge which doesn't allow wireless clients.

Troubleshooting

WDS between DD-WRT v23 and DD-WRT v24 is imposible, thats a broadcom driver issue! by Meex info by BrainSlayer

Same LAN MAC Address Problem

If you are using two WRT54G V5V6 with same firmware version, you may end up on that both router use exactly same MAC address on its LAN, WAN, Wireless. Although you can change WAN and Wireless MAC address at WEB interface, it is hard to change LAN MAC address.

If both router use same LAN MAC address on WDS, you will see that: you can Ping any computer on both router, but you can NOT ping either router's IP, it will show "Destination Host Unreachable".

To fix this, please refer thread:

<https://www.dd-wrt.com/phpBB2/viewtopic.php?p=174925&highlight=&sid=4b806e3de8e572f678c8526ccf9ae5f6>

I have to revert one of my router back to Linksys version, then flash it again with custom build killer file.

Info by Victor

Constantly losing connection to Samba/Shared folder

If you notice that you constantly lose connection to your machine while streaming a video or transferring a file from a Samba/Shared folder over your WDS, you might want try underclocking your routers to the same CPU speed. Some Linksys WRT54G/GS are set as 216mhz (factory default), even after flashing dd-wrt. Try underclocking them to 200mhz under Administration -> Management -> Overclocking, in the dd-wrt administrative console. For a detailed list of which versions of Linksys WRT54G/GS run at what speed, please check the Wikipedia link to [Linksys WRT54G Series](#)

Note: This may not be necessary, if you experience this problem it might be worth trying but don't do it unless you have a problem. Changing the clock speed is somewhat of a risk and could damage your router.

Ralink Based Devices

--This section could use some work--

DIR-600 b1 to DIR-600 b2: Use encryption and the wlan WDS table freely.

Also, Atheros <-> Ralink and Broadcom <-> Ralink works in WDS (not use wpa/wpa2 between Atheros and Ralink, it doesn't work); (Ralink to Broadcom works but only "open", until you use Kernel 2.6 in broadcom -Ralink is k2.6-).

Also (maybe it's not to be mentioned here, but someone has to write it...):

Atheros at WDS AP -> Ralink in Client Mode (not bridged), works using wpa/wpa2 Mix/g/ng-mix/n-only. I only get G Speeds, but any encryption worked. Just set NG-Mix / 40 Mhz and turn short preamble on at atheros, and set Ralink to mixed or N-Only, 40 mhz and turn short preamble on. Use any encryption you desire.

Working Ralink Based Devices

- Buffalo WHR-G300N^

^This does not work through the Physical interface (wireless), BUT it does work through the Virtual interface (for me anyway - Just followed all the other instructions as written, and added a virtual Interface). Perhaps someone with more network savy can explain why and avoid the extra SSID. The other router used was a non-buffalo/non-dd-wrt router, the WDS mode set to "Repeater Mode". Obviously I hid the extra SSID. Hope this helps someone. So Can't be sure it works with other Buffalo WHR-G300N routers (I only have one).

- D-Link DIR-615^

^As with the Buffalo, you have to create a virtual wireless interface on the client, too. In my setup, I was using 2 DIR-615.

Note: 01/12/2010: **The above information is not entirely correct**

I've got it working on multiple DIR-615's without needing to use the virtual interface. However, if using the "physical" interface, you will need to manually add the wireless interface (ra0) to the network bridge. Even though it claims ra0 is already part of the bridge, you still need to add it again, otherwise you will have no connectivity when connecting to it (which may be the problem the two users above describe). This seems to be a bug as of build 14929.

To do this, go to **Setup => Networking => Assign to Bridge => Add => Select "br0", Interface "ra0" => Apply Settings**

With the DIR-615's WDS works in full 300 mbps mode up to and including build 14929 (after this, 40Mhz (HT) breaks). You can get at least 160mbps throughput under good conditions.

With DIR-615 (D4/D2 tested), Firmware 15778, **Wireless => WDS => WDS Settings => Select LAN**, enter MAC address of the routers you wish to connect, enter a note so you know which router the MAC refers to. i.e. UpstairsRouter. => **Extra Options => Disable - Eazy WDS, Save, then Apply Settings,**

DIR-615 (D4/D2 tested), Firmware 15778 works in 300Mbps mode. With 1 Host (Gateway) and 2 Client routers.

External Links

[Wikipedia's WDS entry](#)