

# DD-WRT for Hotspots

From Personal

This is a synopsis of a setup that has worked well for a small coffee shop. I would imagine this is a common way to want to set up a router to be used as a public wifi hotspot. Most of this information is spread out in other guides, but there were some holes. These notes were made during setup and contain elements specifically related to the hardware used, but will hopefully aid others.

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## Router and Firmware

- Model: WRTSL54G
- DD-WRT Version: v24 preSP2 (Build13064)

## Goal

Use a single DD-WRT to create a wired and wireless private network and wireless public network (wifi hotspot).

- Private and public network cannot communicate.
- Public network clients do not have access to other public network clients.
- Public network has splash page with terms of agreement button.
- Splash page hosted from router.

192.168.1.1 is used for the public network and something slightly more obscure, 192.168.10.1 is used for the private.

## Changes

List of changes made in web GUI from default. These instructions are not specific to the WRTSL54G, and could vary from router to router depending on hardware capability.

Each table represents a **Top Tab** → **Bottom Tab** while looking at the WebGUI. Only changes are documented (with one noted exception) and are displayed here in the same order on their respective page.

### Setup → Basic Setup

Optional Settings	
Router Name	<whatever>
Router IP	
Local IP Address	192.168.10.1
Network Address Server Settings (DHCP)	
Static DNS 1	8.8.4.4 (Google's DNS)
Static DNS 2	208.67.222.222 (OpenDNS's DNS)
Static DNS 3	156.154.71.1 (DNS Advantage DNS)
Time Settings	
Time Zone	UTC-6:00
Server IP/Name	time.nist.gov

Make note the connection to the WebGUI through the web browser will be reset if the Local IP Address is changed. Feel free to replace Static DNS 3 with an ISP provided DNS.

Wireless setup has to be done before going back to **Setup** → **Networking**. This step creates a virtual wireless interface that will be separated from the wired and wireless LAN in subsequent steps.

### Wireless → Basic Settings

Physical Interface w10	
Wireless Network Name (SSID)	<name of private wireless network>
Wireless SSID Broadcast	Disable
Virtual Interfaces	
click add	
Wireless Network Name (SSID)	<name of public hotspot>
AP Isolation	Enable

This sets up encryption on the unbroadcasted SSID. Changing the WPA Shared Key and sharing it with few is recommended.

### Wireless → Wireless Security

Physical Interface w10	

Security Mode	WPA2 Personal
WPA Algorithms	TKIP+AES
WPA Shared Key	<whatever>

### Wireless → Advanced Settings

<b>Advanced Settings</b>	
Bluetooth Coexistence Mode	Enable
Wireless GUI Access	Disable

Feel free to turn on Radio Time Restrictions that match the businesses hours of operation.

Back to the Setup tab to separate the virtual wireless network from everything else.

Reference: [http://www.dd-wrt.com/wiki/index.php/Separate\\_LAN\\_and\\_WLAN](http://www.dd-wrt.com/wiki/index.php/Separate_LAN_and_WLAN)

### Setup → Networking

<b>Create Bridge</b>	
click add	
Bridge 0	br1
click <b>Save</b> at bottom of page to reveal next settings	
IP Address	192.168.1.1
Subnet Mask	255.255.255.0
click <b>Apply Settings</b> at bottom of page	
<b>Assign to Bridge</b>	
click add	
Assignment 0	br1
Interface	wl0.1
click <b>Apply Settings</b> at bottom of page	
<b>Multiple DHCP Server</b>	
click add	
DHCP 0	br1
Max	100

So the router can be accessed with Putty (<http://www.chiark.greenend.org.uk/~sgtatham/putty/>).

### Services → Services

<b>Secure Shell</b>	
SSHD	Enable
<b>Telnet</b>	
Telnet	Disable

This mounts the USB flash drive. The primary reason for the flash drive is to host the html file that make up the splash page for the public wireless network.

### Services → USB

<b>USB Support</b>	
Core USB Support	Enabled
USB 2.0 Support	Enabled
USB Storage Support	Enabled
ext2 / ext3 File System Support	Enabled
Automatic Drive Mount	Enabled
Disk Mount Point	/mnt

Disk Info should look something like this:

```

--- /dev/discs/disc0/disc
Block device, size 496 MiB (520093696 bytes)
DOS/MBR partition map
Partition 1: 64 MiB (67108864 bytes, 131072 sectors from 2048)
Type 0x82 (Linux swap / Solaris)
Linux swap, version 2, subversion 1, 4 KiB pages, little-endian
Swap size 63.99 MiB (67100672 bytes, 16382 pages of 4 KiB)
Partition 2: 431 MiB (451936256 bytes, 882688 sectors from 133120)
Type 0x83 (Linux)
Ext2 file system
UUID E14C9ED5-53B3-4F97-BFBA-350C32AA6AFC (DCE, v4)
Volume size 431 MiB (451936256 bytes, 441344 blocks of 1 KiB)
Status: Mounted on /mnt

```

Now for the fun stuff. All settings for NoCatSplash are displayed here. There should be more info about nocatsplash below. Don't fret if Internet connection is lost after these settings are applied, it will come back after the firewall settings are made. WebGUI access will still be available while these changes are being made. Replace example.com with your website's domain.

### Services → Hotspot

<b>NoCatSplash</b>	
NoCatSplash	Enable
Gateway IP Addr	192.168.1.1

Gateway Name Interface	<whatever> br1
Home Page	http://example.com/
Homepage Redirection	Enable
Allowed Web Hosts	example.com
Document Root	/mnt/splashd
Splash URL	http://example.com/splash.html
Exclude Ports	25
MAC White List	
Login Timeout	14400
Verbosity	2
Route Only	Disable

Changing the Router Username and Router Password is recommended. Boot Wait should be enabled just in case (can't remember if it is enabled by default).

**Administration →  
Management**

<b>Router Password</b>	
Router Username	<whatever>
Router Password	<whatever>
<b>Boot Wait</b>	
Boot Wait	Enable

Have you tried turning it off and on again? Older hardware may need to be restarted more often.

**Administration → Keep Alive**

<b>Schedule Reboot</b>	
Schedule Reboot	Enable
At a set Time	03:00 Sunday

These firewall rules will stop traffic between the two networks. Also there are rules that will force NoCatSplash to only work on br1 without interfering with br0. (For the record, this is new to me, feedback is appreciated)

**Administration → Commands**

<b>Command Shell</b>
Copy and paste the following into the text box.

```
iptables -I FORWARD -i br1 -o br0 -m state --state NEW -j DROP
iptables -I FORWARD -i br0 -o br1 -m state --state NEW -j DROP

iptables -A NoCat_NAT -t nat -s 192.168.10.0/24 -j MASQUERADE
iptables -A NoCat_Capture -t nat -s 192.168.10.0/24 -j DNAT
iptables -A NoCat -s 192.168.10.0/24 -j ACCEPT
```

click **Save Firewall**

Administration → Backup → click **Backup** and keep the downloaded file some place safe.

## Flash Drive notes

There are some helpful guides about setting up the flash drive. In this example the beginning of the flash drive is a 64mb Linux swap partition. No idea if it actually uses the swap partition.

## References

[http://www.dd-wrt.com/wiki/index.php/USB\\_storage#USB\\_Guide\\_for\\_v24\\_and\\_v24SP1\\_Mega\\_of\\_DD-WRT](http://www.dd-wrt.com/wiki/index.php/USB_storage#USB_Guide_for_v24_and_v24SP1_Mega_of_DD-WRT)

## NoCatSplash

NoCatSplash is a simple program, but in this case it is complicated by the fact we have two bridges.

Current settings have customers go to a simple "I accept" splash page. Upon clicking accept they are routed to <http://example.com/> and given unrestricted Internet access for 4 hours.

The example page <http://example.com/splash.html> will have to be hosted from an accessible web server. Even though the splash.html can be copied to the flash drive manually, having it hosted will make changes easier. When the router reboots it will automatically copy the splash.html page from the web server to its local `/mnt/splashd/` folder. The down side is it only copies splash.html, not images or any other files that might be referred to. Coincidentally, because 'example.com' is in the **Allowed Web Hosts** box, the files splash.html link to might still work if the paths are absolute (meaning no `./` or `../` shortcuts, but writing out the whole `http://example.com`). This is something that will have to be tested more thoroughly.

The splash.html page can be almost anything you want. It probably won't do PHP because that is a server side script. Any javascript or flash should work. The only requirement is the html form that makes up the Accept button which I'll copy here.

```
<form method="post" id="login" action="http://192.168.1.1:5280/">
<input type="hidden" name="accept_terms" value="yes">
<input type="hidden" name="redirect" value="http://example.com/">
<input type="hidden" name="mode_login">
<input type="submit" value="Accept Terms of Use">
</form>
```

My recommendation is keep the splash page simple and have it redirect to an events page or something frequently updated.

## References

1. Pink blog that walks through setting up: <http://dev.gengar.org/2011/02/nocatsplash/>
2. Forum with firewall iptable commands to make it work with multiple bridges: <http://www.dd-wrt.com/phpBB2/viewtopic.php?p=417418>

## Command Line

Show all current leases, not the greatest display:

```
cat /tmp/nocat.leases
```

Display network configuration, useful to show what network is what.

```
ifconfig
```

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- This page was last modified on 24 March 2012, at 23:04.
- This page has been accessed 4 times.