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How To: Wifi to Ethernet Bridge(Updated for RPi 3)

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- [pathhead](#)

Posts: 21
Joined: Mon Dec 14, 2015 7:19 pm

How To: Wifi to Ethernet Bridge(Updated for RPi 3) [Quote](#)

Thu Jan 14, 2016 11:15 pm

The method I had here originally no longer works. I have updated the guide to work with the Raspberry Pi 3 and the built in wifi.

Originally, this would allow something connected to the Pi via ethernet to get an IP directly from the WiFi. That might still be possible but for my purposes was not necessary.

This is basically just a reversed version of [this guide \(https://frillip.com/using-your-raspberry-pi-3-as-a-wifi-access-point-with-hostapd/\)](https://frillip.com/using-your-raspberry-pi-3-as-a-wifi-access-point-with-hostapd/).

This method works by creating a DHCP server on the Pi's ethernet connection and internally it 'shares' the internet access between etho and wlano. A device connected to the Pi's ethernet will get an IP address from the Pi, not the WiFi, but will still have internet access.

I used a jessie light image but it should work with any... The only package that is needed is dnsmasq however from a clean install it is a good idea to make sure everything is up-to-date:

Code:

```
sudo apt-get update && sudo apt-get upgrade -y && sudo apt-get install rpi-update dnsmasq -y
sudo rpi-update
```

Reboot before continuing.

Connect to WiFi

First, setup the wifi connection that will be bridged to the ethernet.

Code:

```
sudo nano /etc/wpa_supplicant/wpa_supplicant.conf
```

Add:

Code:

```
network={
    ssid="mynetwork"
    psk="secret"
    key_mgmt=WPA-PSK
}
```

Ethernet Static IP

Next, setup a static ip for the dhcp server.

Code:

```
sudo nano /etc/network/interfaces
```

Comment out the existing etho line and add:

Code:

```
#iface eth0 inet manual
allow-hotplug eth0
iface eth0 inet static
    address 172.24.1.1
    netmask 255.255.255.0
    network 172.24.1.0
    broadcast 172.24.1.255
```

dnsmasq setup

Save the old dnsmasq conf file and create a new one.

Code:

```
sudo mv /etc/dnsmasq.conf /etc/dnsmasq.conf.orig
sudo nano /etc/dnsmasq.conf
```

Add:

Code:

```
interface=eth0      # Use interface eth0
listen-address=172.24.1.1 # Explicitly specify the address to listen on
bind-interfaces      # Bind to the interface to make sure we aren't sending things elsewhere
server=8.8.8.8        # Forward DNS requests to Google DNS
domain-needed        # Don't forward short names
bogus-priv           # Never forward addresses in the non-routed address spaces.
dhcp-range=172.24.1.50,172.24.1.150,12h # Assign IP addresses between 172.24.1.50 and 172.24.1.150 with a 12 hour lease time
```

Enable IPv4 forwarding.

Code:

```
sudo nano /etc/sysctl.conf
```

Uncomment the following line:

```
Code:

net.ipv4.ip_forward=1
```

IP Tables

Add this:

```
Code:

sudo iptables -t nat -A POSTROUTING -o wlan0 -j MASQUERADE
```

Configure it to load on reboot by first saving it to a file:

```
Code:

sudo sh -c "iptables-save > /etc/iptables.ipv4.nat"
```

Then create a 'hook' file with a line to restore the ip tables :

```
Code:

sudo nano /lib/dhcpcd/dhcpcd-hooks/70-ipv4-nat
```

Add:

```
Code:

iptables-restore < /etc/iptables.ipv4.nat
```

After a reboot you should automatically connect to your wifi and, assuming it has internet access, anything plugged into your Pi's ethernet port will have internet access as well.

Good luck...

Last edited by [pathead](#) on Sat Jun 11, 2016 12:27 am, edited 3 times in total.



[DougieLawson](#)

Posts: 34354

Joined: Sun Jun 16, 2013 11:19 pm

Location: Basingstoke, UK

Contact: [Website](#)

Re: How To: Wifi to Ethernet Bridge [Quote](#)

Fri Jan 15, 2016 8:21 am

You do NOT need sudo in /etc/rc.local. It's running with root privileges already.

Note: Having anything remotely humorous in your signature is completely banned on this forum.

Any DMs sent on Twitter will be answered next month.

pathead

Posts: 21

Joined: Mon Dec 14, 2015 7:19 pm

Re: How To: Wifi to Ethernet Bridge [Quote](#)

Fri Jan 15, 2016 10:41 pm

Sorry about that! Like I said I am new. I edited the post.

Thank you for the feedback!

pumatrax

Posts: 4

Joined: Thu Dec 24, 2015 6:09 am

Re: How To: Wifi to Ethernet Bridge [Quote](#)

Sat Jan 16, 2016 3:40 am

Hi,I've been trying to get a bridge working for days. There were times were I had it working but after reboot I lost it as sometimes I was able to get it to work by removing and adding the bridge and bringing interfaces up and down..

Sad to say that after a clean install with NOOBs and trying your method which is really all the basics I know that needs be setup, but its still not working. Should I do a clean install with Rasbian Jessie 4.1 image?

pumatrax

Posts: 4

Joined: Thu Dec 24, 2015 6:09 am

Re: How To: Wifi to Ethernet Bridge [Quote](#)

Sat Jan 16, 2016 4:05 am

welp! I just finished the clean install and used your settings again and it works. I haven't done an update yet. Big thank you!



Quill

Posts: 2

Joined: Sun Jan 17, 2016 12:03 am

Re: How To: Wifi to Ethernet Bridge [Quote](#)

Sun Jan 17, 2016 12:25 am

Hi,

I'm a new RPi user and very inexperienced with any of this.

Code:

```
sudo brctl addif br0 wlan0 eth0
```

gives me the result

Code:

```
can't add wlan0 to bridge br0: Operation not supported
```

Can you give me any idea what the problem could be?

[fubk](#)

Posts: 2

Joined: Mon Jan 25, 2016 9:15 pm

Re: How To: Wifi to Ethernet Bridge [Quote](#)

Tue Jan 26, 2016 10:54 pm

I can get this solution to work with only the correct usb wifi dongle. It has to do with the chipsets. Some people were saying it had to do with the older linux kernels but I didn't see any difference.

[pathead](#)

Posts: 21

Joined: Mon Dec 14, 2015 7:19 pm

Re: How To: Wifi to Ethernet Bridge [Quote](#)

Mon Feb 15, 2016 12:28 am

Thank fubk. This had stopped working for me and you helped me realize it was because I had switched wifi dongles...

Quill, which wifi dongle are you using? I was able to get this working with [http://www.amazon.com/Edimax-EW-7811Un- ... 003MTTJOY/](http://www.amazon.com/Edimax-EW-7811Un-...003MTTJOY/) (<http://www.amazon.com/Edimax-EW-7811Un-150Mbps-Raspberry-Supports/dp/Boo3MTTJOY/>)

I was unable to get it working with [http://www.amazon.com/Cable-Matters-Wir ... 00MXD2T5G/](http://www.amazon.com/Cable-Matters-Wir...00MXD2T5G/) (<http://www.amazon.com/Cable-Matters-Wireless-150Mbps-Detachable/dp/BooMXD2T5G/>) though.



[Quill](#)

Posts: 2

Joined: Sun Jan 17, 2016 12:03 am

Re: How To: Wifi to Ethernet Bridge [Quote](#)

Thu Apr 21, 2016 6:59 pm

Absolutely forgot about this (and I still haven't got it working)

I'm using the official Raspberry Pi dongle (<https://shop.pimoroni.com/collections/raspberry-pi/products/official-raspberry-pi-wifi-dongle>) with BCM43143 chipset

stdavis68**Posts:** 1**Joined:** Thu May 12, 2016 9:48 pm**Re: How To: Wifi to Ethernet Bridge** [Quote](#)

Thu May 12, 2016 9:51 pm

Time to bring this back.

I have the Pi3

Running the:

Code:

```
sudo brctl addif br0 wlan0 eth0
```

results in:

can't add wlan0 to bridge br0: Operation not supported

This is with the built in Wi-Fi adapter. Is this a compatibility issue?

**Yugoslav****Posts:** 3**Joined:** Wed May 11, 2016 3:29 pm**Location:** Yugoslavia**Re: How To: Wifi to Ethernet Bridge** [Quote](#)

Fri May 13, 2016 9:22 pm

Quill wrote:

Hi,

I'm a new RPi user and very inexperienced with any of this.

Code:

```
sudo brctl addif br0 wlan0 eth0
```

gives me the result

Code:

```
can't add wlan0 to bridge br0: Operation not supported
```

Can you give me any idea what the problem could be?

Same problem both with integrated Rpi (3) WiFi and with TP-LINK wifi adapter.

An ounce of action is worth a ton of theory.

[mfa298](#)

Posts: 1383

Joined: Tue Apr 22, 2014 11:18 am

Re: How To: Wifi to Ethernet Bridge [Quote](#)

Sat May 14, 2016 8:21 am

Yugoslav wrote:

Quill wrote:

Hi,

Code:

```
can't add wlan0 to bridge br0: Operation not supported
```

Can you give me any idea what the problem could be?

Same problem both with integrated Rpi (3) WiFi and with TP-LINK wifi adapter.

I think the issue with this setup (and potentially the reason some dongles give you errors) is that it's not supported in the 802.11 (wireless) specifications. The packets going over the wifi connection are likely to get changed (in particular the ethernet address of the source machine).

I first saw this with virtual machines over a bridged wifi network where the dhcp server saw all the virtual machines using the mac address of the host machines wifi dongle.



[Cancelor](#)

Posts: 754

Joined: Wed Aug 28, 2013 4:09 pm

Location: UK

Re: How To: Wifi to Ethernet Bridge [Quote](#)

Sat May 14, 2016 11:07 am

Could you enter the following command in a terminal and post the results:-

```
Code:
netstat -i
```

This will show if wlan0 is present.

Are you getting this message when booting or when trying to set up the bridge?

Can't find the thread you want? Try googling : YourSearchHere site:raspberrypi.org

[epoch1970](#)

Posts: 2220

Joined: Thu May 05, 2016 9:33 am

Location: Paris, France

Re: How To: Wifi to Ethernet Bridge [Quote](#)

Sat May 14, 2016 1:16 pm

User mfa298 is correct I'm afraid.

I would be surprised if bridging the wireless interface in client mode actually works.

"S'il n'y a pas de solution, c'est qu'il n'y a pas de problème." Les Shadoks, J. Rouxel

[miguej](#)

Posts: 9

Joined: Fri May 27, 2016 7:37 pm

Re: How To: Wifi to Ethernet Bridge [Quote](#)

Fri May 27, 2016 7:48 pm

Ok,

I'm trying create the bridge on a raspy B ...

It seems to work (no problem using addif etc etc)..but anyway I'll tell you.

Raspbian Jessie kernel 4.4.9+

Wifi Adapter-> obda:8179 Realtek Semiconductor Corp. (driver r8188eu)

my /etc/network/interfaces -->

```
Code:

# interfaces(5) file used by ifup(8) and ifdown(8)

# Please note that this file is written to be used with dhcpcd
# For static IP, consult /etc/dhcpcd.conf and 'man dhcpcd.conf'

# Include files from /etc/network/interfaces.d:
source-directory /etc/network/interfaces.d

auto lo
iface lo inet loopback

iface eth0 inet manual
```



```
allow-hotplug wlan0
iface wlan0 inet manual
    wpa-roam /etc/wpa_supplicant/wpa_supplicant.conf

iface wifiathome inet static
    address 192.168.0.9
    netmask 255.255.255.0
    gateway 192.168.0.1
    dns-nameservers 8.8.8.8 8.8.4.4
```

Now...

ifconfig PREVIOUS to create bridge

Code:

```
eth0      Link encap:Ethernet  HWaddr b8:27:eb:92:e8:49
          inet6 addr: fe80::ca66:f12:95bd:e886/64 Scope:Link
          UP BROADCAST MULTICAST  MTU:1500  Metric:1
          RX packets:0 errors:0 dropped:0 overruns:0 frame:0
          TX packets:0 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:1000
          RX bytes:0 (0.0 B)  TX bytes:0 (0.0 B)

lo        Link encap:Local Loopback
          inet addr:127.0.0.1  Mask:255.0.0.0
          inet6 addr: ::1/128 Scope:Host
          UP LOOPBACK RUNNING  MTU:65536  Metric:1
          RX packets:144 errors:0 dropped:0 overruns:0 frame:0
          TX packets:144 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:1
          RX bytes:11900 (11.6 KiB)  TX bytes:11900 (11.6 KiB)

wlan0     Link encap:Ethernet  HWaddr e8:94:f6:23:56:7b
          inet addr:192.168.0.9  Bcast:192.168.0.255  Mask:255.255.255.0
          inet6 addr: fe80::ea94:f6ff:fe23:567b/64 Scope:Link
          UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
          RX packets:783 errors:0 dropped:90 overruns:0 frame:0
          TX packets:434 errors:0 dropped:2 overruns:0 carrier:0
          collisions:0 txqueuelen:1000
          RX bytes:163529 (159.6 KiB)  TX bytes:105964 (103.4 KiB)
```

So...let's go!

sudo brctl addbr bro

sudo brctl addif bro wlan0 eth0

and now...

Code:

```
br0       Link encap:Ethernet  HWaddr b8:27:eb:92:e8:49
          inet addr:169.254.155.71  Bcast:169.254.255.255  Mask:255.255.0.0
          inet6 addr: fe80::fea8:1882:688d:457f/64 Scope:Link
          UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
          RX packets:32 errors:0 dropped:0 overruns:0 frame:0
          TX packets:45 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:1000
          RX bytes:2120 (2.0 KiB)  TX bytes:11694 (11.4 KiB)
```

```

eth0      Link encap:Ethernet  HWaddr b8:27:eb:92:e8:49
          inet6 addr: fe80::ca66:f12:95bd:e886/64 Scope:Link
          UP BROADCAST MULTICAST  MTU:1500  Metric:1
          RX packets:0 errors:0 dropped:0 overruns:0 frame:0
          TX packets:0 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:1000
          RX bytes:0 (0.0 B)  TX bytes:0 (0.0 B)

lo        Link encap:Local Loopback
          inet addr:127.0.0.1  Mask:255.0.0.0
          inet6 addr: ::1/128 Scope:Host
          UP LOOPBACK RUNNING  MTU:65536  Metric:1
          RX packets:144 errors:0 dropped:0 overruns:0 frame:0
          TX packets:144 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:1
          RX bytes:11900 (11.6 KiB)  TX bytes:11900 (11.6 KiB)

wlan0     Link encap:Ethernet  HWaddr e8:94:f6:23:56:7b
          inet addr:192.168.0.9  Bcast:192.168.0.255  Mask:255.255.255.0
          inet6 addr: fe80::ea94:f6ff:fe23:567b/64 Scope:Link
          UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
          RX packets:1061 errors:0 dropped:102 overruns:0 frame:0
          TX packets:594 errors:0 dropped:2 overruns:0 carrier:0
          collisions:0 txqueuelen:1000
          RX bytes:212376 (207.3 KiB)  TX bytes:135818 (132.6 KiB)

```

And....it seems not to work...

What should I do now? Any Ideas?

Thanks for reading till here ^_^

epoch1970

Posts: 2220

Joined: Thu May 05, 2016 9:33 am

Location: Paris, France

Re: How To: Wifi to Ethernet Bridge [Quote](#)

Sat May 28, 2016 2:00 am

The bridge doesn't have an address on the network, it has an ipv4ll (auto-ip, APIPA address).

wlano has got the address. It should not have one anymore.

This attempt is futile. Bridging wlan in client mode *is not allowed by the wifi standard*.

Only if the interface is in AP mode, meaning use hostapd.

"S'il n'y a pas de solution, c'est qu'il n'y a pas de problème." Les Shadoks, J. Roussel

tylernt

Posts: 3

Joined: Mon Aug 19, 2013 11:37 pm

Re: How To: Wifi to Ethernet Bridge [Quote](#)

Wed Jun 08, 2016 7:22 pm

For those of you not wanting to use hostapd but still wanting to pseudo-bridge a WLAN client to the LAN, there's another way: Proxy ARP!

[https://wiki.debian.org/BridgeNetworkCo ... nsProxyArp](https://wiki.debian.org/BridgeNetworkConnectionsProxyArp) (<https://wiki.debian.org/BridgeNetworkConnectionsProxyArp>)

Proxy ARP is Layer 3 rather than Layer 2, but "most" things will work just fine. The notable exception to this is DHCP, but as the above link notes you can use a DHCP helper or simply deploy another DHCP server on the other side of the pseudo-bridge (perhaps using the Pi itself as said DHCP server).



Cancelor

Posts: 754

Joined: Wed Aug 28, 2013 4:09 pm

Location: UK

Re: How To: Wifi to Ethernet Bridge [Quote](#)

Thu Jun 09, 2016 12:56 pm

tylernt wrote:

For those of you not wanting to use hostapd but still wanting to pseudo-bridge a WLAN client to the LAN, there's another way: Proxy ARP!

[https://wiki.debian.org/BridgeNetworkCo ... nsProxyArp](https://wiki.debian.org/BridgeNetworkConnectionsProxyArp) (<https://wiki.debian.org/BridgeNetworkConnectionsProxyArp>)

Proxy ARP is Layer 3 rather than Layer 2, but "most" things will work just fine. The notable exception to this is DHCP, but as the above link notes you can use a DHCP helper or simply deploy another DHCP server on the other side of the pseudo-bridge (perhaps using the Pi itself as said DHCP server).

Yey Yah! debian.org refuring to the RPi 😊

Can't find the thread you want? Try googling : YourSearchHere site:raspberrypi.org

pathead

Posts: 21

Joined: Mon Dec 14, 2015 7:19 pm

Re: How To: Wifi to Ethernet Bridge [Quote](#)

Sat Jun 11, 2016 12:24 am

Updated post to a different method that will work on a Raspberry Pi 3 with the built in WiFi...

mfa298

Posts: 1383

Joined: Tue Apr 22, 2014 11:18 am

Re: How To: Wifi to Ethernet Bridge [Quote](#)

Sat Jun 11, 2016 7:36 am

pathead wrote:

Updated post to a different method that will work on a Raspberry Pi 3 with the built in WiFi...

I'm not sure that such a major change to the original post is a great idea as it makes all the following posts confusing. At the very least you should probably have stuck an obvious comment in there to say that it's been totally re-written. A better approach might have been to but the details in a new post and then stick a comment at the top of the first post saying you've provided new instruction with a link to the new post.

As for some comments on the updated post:

- You shouldn't need to run rpi-update. The latest stable firmware package is provided via apt-get upgrade. rpi-update gives you a testing firmware which may be broken.
- If setting static IP in /etc/network/interfaces you need to disable dhcpcd for that interface. A better approach might be putting the static IP settings into /etc/dhcpcd.conf
- There's an iptables-persistent package that handles loading the iptables config at boot which may be better than using dhcpcd (however your method is much better than just putting an entry in rc.local)
- It might be worth commenting that 172.24.1 is part of the private address space as lots of people won't know that (most people only know about the 192.168/16 and 10/8 private ranges).



[Cancelor](#)

Posts: 754

Joined: Wed Aug 28, 2013 4:09 pm

Location: UK

Re: How To: Wifi to Ethernet Bridge [Quote](#)

Sat Jun 11, 2016 9:58 pm

pathead wrote:

Updated post to a different method that will work on a Raspberry Pi 3 with the built in WiFi...

WOOT WOOT, many thanks **pathead**.

Jessie has made so many guides and tutorials non functional.

I wish more ppl would update their threads.

Can't find the thread you want? Try googling : YourSearchHere site:raspberrypi.org



[Cancelor](#)

Posts: 754

Joined: Wed Aug 28, 2013 4:09 pm

Location: UK

Re: How To: Wifi to Ethernet Bridge [Quote](#)

Thu Jun 16, 2016 6:21 pm

pathead wrote:

Updated post to a different method that will work on a Raspberry Pi 3 with the built in WiFi...

Is this now a routing solution instead of a bridging solution?

Can't find the thread you want? Try googling : YourSearchHere site:raspberrypi.org

mfaz98

Posts: 1383

Joined: Tue Apr 22, 2014 11:18 am

Re: How To: Wifi to Ethernet Bridge [Quote](#)

Thu Jun 16, 2016 6:46 pm

Cancelor wrote:

pathead wrote:

Updated post to a different method that will work on a Raspberry Pi 3 with the built in WiFi...

Is this now a routing solution instead of a bridging solution?

Yes!

Although bridging solutions with wlan client to Ethernet aren't really supported by the wifi protocols so have issues (if they work at all)

eddiez

Posts: 1

Joined: Wed Aug 31, 2016 4:22 pm

Re: How To: Wifi to Ethernet Bridge(Updated for RPi 3) [Quote](#)

Wed Aug 31, 2016 4:32 pm

Hi guys,

I got the bridge working on the RPi 3 according to the original (updated) post. But I did not realize that this might interfere with other things... I'm not sure but I think this is now forwarding all traffic from the wlan0 to the eth0 therefore rendering the samba and ssh useless. I can't get the RPi to respond to ping anymore (from wlan0) and I assume that the reason is that it is being forwarded.

Do you think this is what happened and if so, how do I fix this? The RPi is supposed to share the internet connection to a digibox but I would like to still ssh to the RPi as it is a headless setup.

regisin

Posts: 5

Joined: Thu Jul 28, 2016 3:23 am

Re: How To: Wifi to Ethernet Bridge(Updated for RPi 3) [Quote](#)

Sun Sep 04, 2016 3:29 am

Hey there.

I followed the original updated post as it is right now. I got the dns server and the wifi connection working but I wasn't able to make the "bridging". I connect my laptop to the ethernet cable, I get the IP address, but cannot ping even google.

The WiFi in question uses WPA2 Enterprise, not sure if should matter though. Is there a way to debug to see what's going on?

UPDATE: nevermind, my mistake, keyboard was in another language so got a lot of typos along the way.. sorry.

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