

Raspberry Pi Wifi Using the TPLINK TL-WN721N USB Wifi Adapter

Introduction

eLinux.org has a link to a web page that explains how to install Wifi on the Raspberry PI using the TPLINK TL-WN721N USB Wifi adapter:

([http://elinux.org/RPi_Peripherals#Wireless: TP-Link TL-WN722N USB wireless adapter .28Debian 6.29](http://elinux.org/RPi_Peripherals#Wireless:_TP-Link_TL-WN722N_USB_wireless_adapter_.28Debian_6.29))

However, this link is now somewhat out of date, as the latest Raspbian distro contains all the drivers required for this device. Thus all the bits on updating your system and installing the various drivers is not required.

Rather, once the necessary configuration entries are made, you can just plug in the TL-WN721N and it will work. There are some caveats at this time however which will be described later in this document.

The device is "plug and play". If you plug it into a running Raspberry Pi, it will cause the device to reboot. As I have not had a console monitor attached when doing this, I cannot say whether it does a clean shutdown or just a hardware reset. I will assume a reset, so don't just plug and unplug the device casually.

Configuration

There are two files that must be edited to configure the wifi adapter.

/etc/network/interfaces

This file contains the network configuration for all network devices. To configure wifi, add the following lines at the end of the existing file:

```
auto wlan0
iface wlan0 inet dhcp
wpa-conf /etc/wpa.conf
```

If you want your wifi to have a static IP instead, then the following lines should be added instead:

```
auto wlan0
iface wlan0 inet static
    address 10.1.2.40
    netmask 255.255.255.0
    network 10.1.2.0
    broadcast 10.1.2.255
    gateway 10.1.2.1
wpa-conf /etc/wpa.conf
```

You should use the actual values for your network and subnet in the above.

Notes:

- I started out using a static IP, but ended up using DHCP as it is less hassle on the Raspberry Pi.
- In order to get wifi working, I ended up configuring a separate wifi router that I could dedicate to the Raspberry Pi. It's on a different subnet from my main house, and allowed me to play with security settings and such without compromising the main house wifi.

/etc/wpa.conf

This file contains the configuration information for getting the wifi adapter to link up to a wifi router or access point and connect to your network. It contains the wireless network name (SSID), security settings and other connect options. For a basic wifi connection with NO security and a visible SSID, the file only needs a minimum of information:

```
network={
  ssid="wifi name"
  key_mgmt=NONE
}
```

If you turn off SSID broadcast on your wifi router or access point (recommended), then you need to tell the Pi that it's invisible:

```
network={
  ssid="wifi name"
  scan_ssid=1 #hidden ssid
  key_mgmt=NONE
}
```

For a wifi setup with no security, this is all you need. Now plug in the USB wifi adapter and it will find the wifi network, connect and be up and running.

Security

I could not get wifi security working on my Raspberry Pi. There are a set of config commands for the wpa.conf file that will set the type of security key used (WEP, WPA or WPA2), the method of encryption (TKIP/AES) and so on. My main wifi uses WPA2 with TKIP. No matter what, I could not get it to connect reliably.

In the end I elected for NO security, but to prevent anyone just accessing the wifi, I did enable MAC address restriction on the router. This means that only those devices with a registered MAC (hardware) address can access the wifi. Of course, MAC address spoofing can defeat this, but that represents a pretty sophisticated level of hacking. For now, it will suffice.

Eventually I will play with security again and get WPA2 working, at which time I will update this document

Other Notes

I notice that I cannot for some reason use the same subnet for both my wired connection and my wifi connection on the Raspberry Pi. Every time I tried, the Pi networking locked up solid. I had to remove the USB wifi adapter and 'hard boot' (i.e. Remove power, count to 10, restore power) and then wait until the wifi timed out (about 30 sec) before the wired network was restored. In the end I just moved the wifi to a separate subnet and it works fine.

Finally, after the device has been on for some hours (in my case over 12), I found the wifi was down. The USB wifi adapter was still flashing "A-OK" but I could not log in nor ping the Pi. I had to hard boot the device and the wifi came back no problem. Checking the logs did not reveal the cause of the problem.