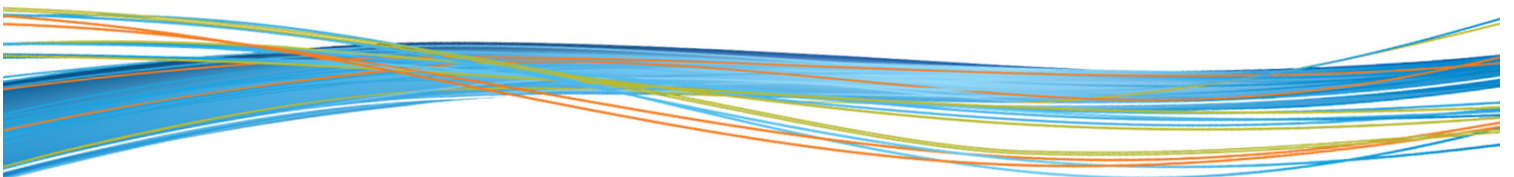# USER MANUAL

Wi-Pi Installation Procedure for Raspbian on Raspberry Pi

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Prerequisites	
Hardware	▪ Raspberry Pi Model B, Model B(512 MB) ▪ Wi-Pi USB WiFi network interface card ▪ USB hub to connect keyboard and mouse ▪ **NOT** connected to a cable LAN
Software	▪ Raspbian "Wheezy" onwards
Information	▪ Know your WiFi network basic settings – see table below ▪ Know your router's IP address, and make sure it is connected to the internet.

One obvious point. One USB socket will now be dedicated to Wi-Pi. That means you are going to need to use a USB hub to connect a keyboard and mouse.

Operating System Support
Raspbian already has Wi-Pi's drivers' built in, so the process of downloading the driver and installing it is not necessary. However, there are still a few actions necessary before Wi-Pi can be fully operational on your Raspberry Pi.

Editing Files
If you aren't familiar with editing text files, now is the time to learn! It is better to use a command line editor like **vi** or **nano**, both of which are already installed on Raspberry Pi. Whichever one is choosen, it is important they are run as the **root** or **superuser**, otherwise any edits made will not be saved due to security restrictions. This is achieved by using the command **sudo** before starting the selected editor. **sudo** means "superuser do", and is a way becoming the administrator for the computer, albeit for the duration of the command:

sudo vi <file to be edited>, or

sudo nano <file to be edited>

If you prefer to use an editor from the desktop like **Leafpad**, you can, but you must start it with the command line command

sudo leafpad <file to be edited>

Also note that if you haven't already made sure you have changed directory to the place where the files to be edited are located, you need to include the full path to the file as well.

Editing The Wi-Pi Configuration Files and Starting Network Services

1. **Configure Wireless Settings**
   So, knowing that the driver is already installed, configuring the wireless settings should be straightforward. In other words, telling the operating system what the WiFi access point name is, what type of encryption is in use on that access point, and the password – all the normal things that you'd see from a Windows computer when you scan for WiFi networks. Unfortunately, there is no scan feature here, so we must know this detail beforehand. To help, you can note the required detail in the table below:

Parameter	Write Your Details Below
ESSID The is the WiFi name your wireless router uses to identify itself.	
Encryption Type Usually, this falls into to two main groups, WEP and WPA/WPA2.	
Encryption Key The alphanumeric key you have to enter to gain access to your WiFi network.	

The file we need to edit is called **interfaces**, and it is located in folder **/etc/network.** So, if we were using Nano, the command we need to use would is

root@raspberrypi:~# sudo nano /etc/network/interfaces

The file will already have a network entry for the localhost, or loopback network interface, and the Ethernet socket, known as **eth0**. We're going to add a new interface called **wlan0**,

There are two slightly different ways of editing this file, depending on which of type broad types of encryption is in use on the WiFi network you wish to connect to.

In the case of WPA/WPA2, add the following lines to the end of the **interfaces** document:

auto wlan0
iface wlan0 inet dhcp
wpa-ssid <name of your WiFi network>
wpa-psk <password of your WiFi network>

In the case of WEP, add the following instead

auto wlan0
iface wlan0 inet dhcp
wireless-essid <name of your WiFi network>
wireless-key <password of your WiFi network>

Make sure these files are typed exactly as they are presented here, and also note that you do not type the "**<**" and "**>**" brackets.

2. **Restart the Network Services**
Even though the above procedure may have been exactly, the network services already running on the Raspberry Pi need to be told to stop, adopt the new settings, and start again. For that to happen, network services on the Raspberry Pi need to be restarted, or better still, reboot Raspberry Pi. Make sure the Wi-Pi card is plugged in to the USB socket before the restart is performed.

Restarting the network is achieved with the following command

root@raspberrypi:~# sudo /etc/init.d/networking restart

3. **Verify everything is working**
There are few ways to check that everything is working the way it should.
- First of all, try to open a public web page, for example using **Midori**, Raspbian's lightweight browser. If that is successful, such a web page can be browsed, the installation has succeeded.
- If the webpage could not be viewed, try the next step. Send a **ping** to your local router by using the ping command. Using the command line, type something like **ping 192.168.1.1**, (assuming your router address is 192.168.1.1 – it will be unique to your own setup. If successful, you should see a series of responses that look a little like this

  64 bytes from 192.168.1.1: icmp_req=1 ttl=254 time=6.86 ms

  Press Ctrl-c to stop exit ping.

- If that didn't work, its time to look a little closer to the wireless interface itself. Again, in the command line, type **ifconfig**. You should get a response made up of three main sections, which are the key interfaces – **eth0**, **lo**, and **wlan0**. If the **wlan0** section exists, that is good – it means part of your configuration worked – go and check your typing, and the WiFi access point information you have entered. If, within that section, you have an entry that reads

  inet addr: 192.168.1.43 (or some other address)

  that is good, and means you have succeeded. There will be a problem elsewhere related to your WiFi access point or router that needs to be resolved.

Revisions		
24-Aug-2012	Revision 1.0	Raspbian user guide created
18-Oct-2012	Revision 1.1	Raspbian user guide amended