SSH on Raspberry Pi with Ethernet and or WiFi

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There are two ways you may connect to your Raspberry Pi via SSH: using an Ethernet cable or via WiFi.

Ethernet

For Ethernet connection, the easiest way to connect to a Pi is by setting up a static IP on both computers. This set of instructions works in Ubuntu, but it should be easily translatable to any other system.

Requirements

- Ethernet cable
- USB cable to power the RPi from the laptop

Configuration of the main desktop/laptop

First of all, click on the network symbol in the main panel (right next to the volume and the clock) and select Edit connections...

Now click on Add and select Ethernet as the type of connection. Click on Create... and name your connection however you prefer. Then un-tick all options under the General tab and go to the IPv4 Settings tab. Here set the Method to Manual and set up the box underneath as

```
Address 192.168.200.1
Netmask 255.255.255.0
Gateway 0.0.0.0          (why this value? wouldn't 192.168.200.1)
```

Configuration of the Raspberry Pi

After you have done this, it is time to go back to your Raspberry Pi. These operations should be performed on a RPi connected to a screen/keyboard.

Edit the interface file to set the network configuration:

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

Now change the content of the file to

```
auto lo

iface lo inet loopback

iface eth0 inet static
address 192.168.200.1xx
network 192.168.100.0            (not required)
netmask 255.255.255.0
broadcast 192.168.200.25         (not required)

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

Make sure that the package openssh-server is installed: `sudo apt-get install openssh-server`

Reboot the Pi or restart the network.

Back on the main desktop

Connect the RPi to the computer using the ethernet cable. Connect to the wired network (using the applet menu). Now you should be able to log into the RPi through ssh just by using:

```
ssh user_name@192.168.200.1xx
```

(use appropriate username and IP address depending on connection).

Sharing the internet connection

In order to share the internet connection of the main desktop/laptop, follow the process described in step 2 (Getting RPi on the internet) on the following page: http://l2ork.music.vt.edu/main/?page_id=2288

Wi-Fi

Connecting through SSH via Wi-Fi is even easier. Make sure that both computers are connected to the same Wi-Fi network, and in the computer you want to SSH to type

```
ifconfig
```

to find its IP address. Then you will be able to SSH just by using

```
ssh user_name@ip_address
```

Note that the receiver of the SSH connection will need to have incoming SSH enabled. This is easily done on the Pi by going to

```
sudo raspi-config
```

and choosing the option. In Ubuntu incoming SSH is not automatically enabled, so you will need to install an SSH server such as OpenSSH

```
sudo apt-get install openssh-server openssh-client
```

Now, there is a way of finding your Pi's IP address even without a screen, but it is applicable only to very small Wi-Fi networks. First of all you will need to install *fping* with

```
sudo apt-get install fping
```

Your router will tend to assign very similar IPs to the various machines connected to it, so find the IP of your laptop/PC first with *ifconfig* and then cyclically ping similar addresses. This can be done with the *fping -g* command. For example, if the IP of your computer is 192.168.100.2 try

```
fping -g 192.168.100.0 192.168.100.20
```

this will ping all addresses in the range 192.168.100.0 to 192.168.100.20 and report which ones are active. Then it's just a question of guesswork. DO NOT try this on eduroam. Thousands of computers are connected to the eduroam network, so you will need to ping an obscene amount of them, and never be able to find the right one.

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https://github.com/OpenLabTools/OpenLabTools.wiki.git
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