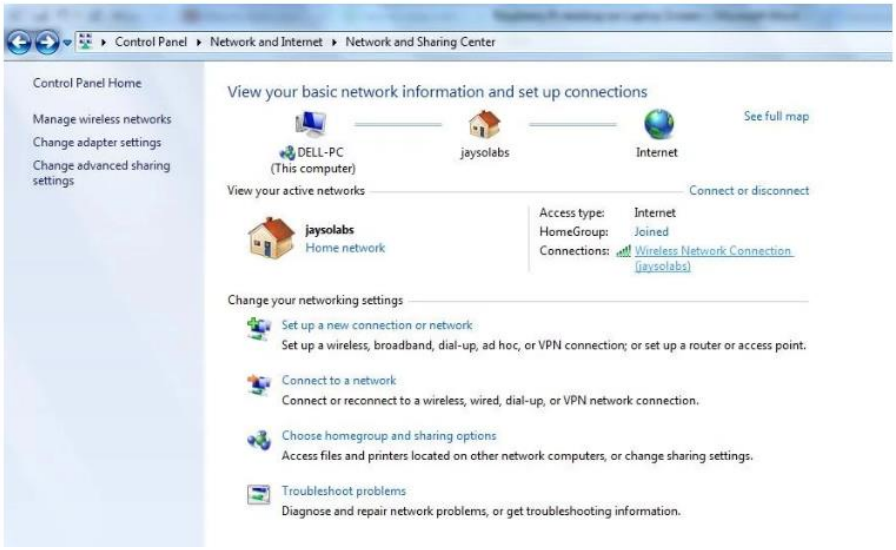
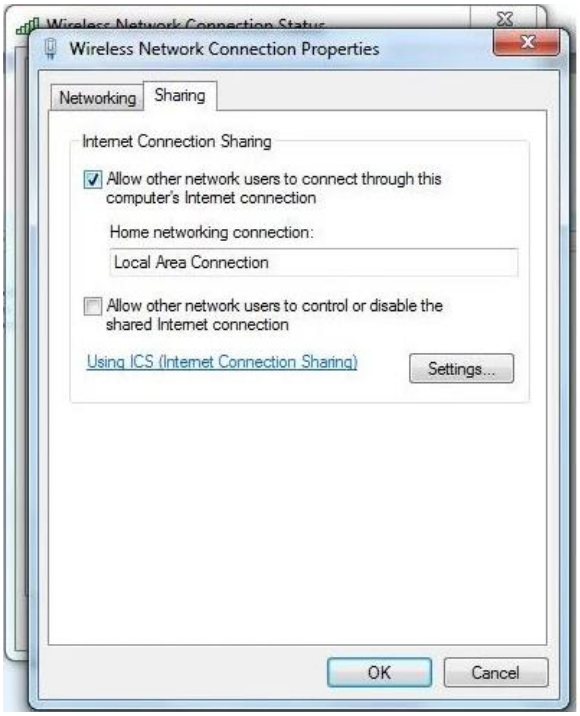
How to connect Raspberry Pi to laptop

- **Pre-requistes**
  - Raspberry Pi installed with Raspbian OS.
  - Ethernet cable
  - HDMI cable (only for first time)
  - HDMI display (only for first time)
- **Detailed Steps:**
  - Connect your micro USB cable to raspberry PI and power it on.
  - Connect your HDMI display (required only for first time) with raspberry pi.
  - The internet sharing has to be enabled to view the raspbian OS on laptop. The following steps below explains how to enable internet sharing on windows.
    - Connect your laptop and raspberry pi through ethernet cable.
    - In windows, go to network sharing and center.
    - Click on your wi-fi network.

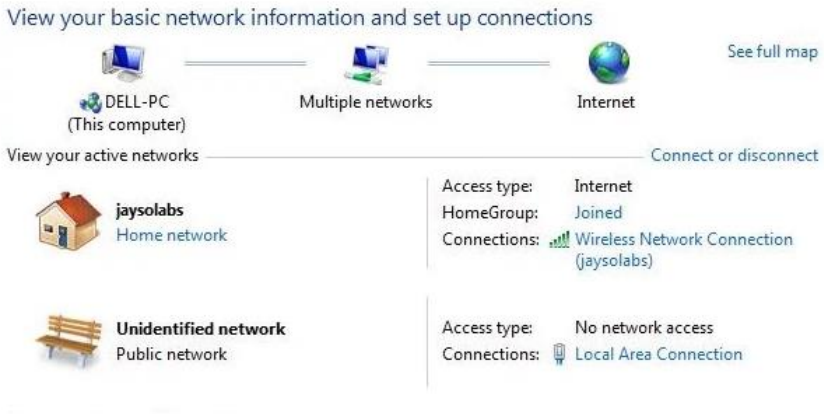


    - Click on properties and go to sharing tab.

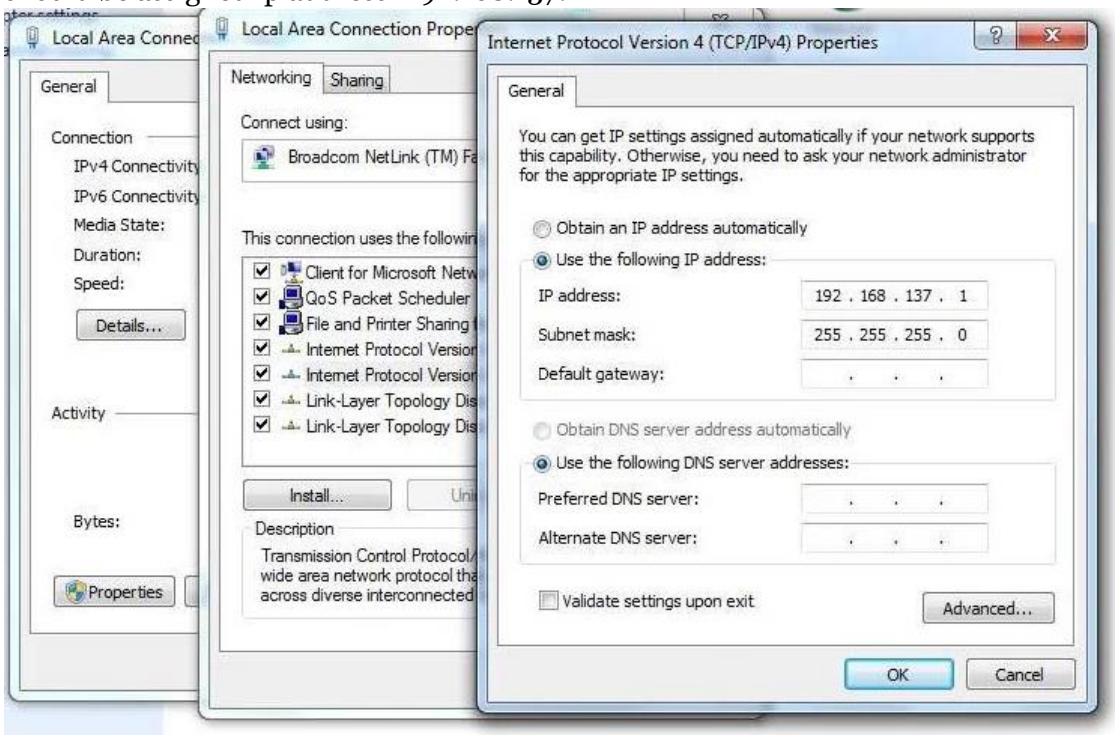


    - Select the checkbox “allow other network users to connect”.

- Check if the networking connection displays local area network.
- Verify ip is assigned to the interface by opening the new local area connection link created.



- Go to properties and see the ip address as shown in below figure. Your interface should be assigned ip address "192.168.137.1"



- You have successfully enable internet sharing on your device.

- To check ip address assigned to raspberry pi interface, open the command prompt and ping the ip address 192.168.137.255
- Stop the ping after 5 seconds
- Do arp -a and check the ip address that is assigned to your raspberry pi.
- Using the HDMI display, install VNC server on raspberry pi.
  - Open a terminal
  - sudo apt-get update
  - sudo apt-get install tightvncserver
- start vnc server on pi by typing " vncserver:1"
- enter a 8 digit password. You will use this to connect to raspberry pi later.
- Make sure you say no while for the reaonly password prompt.
- Setup the vnc on client side that is on your windows laptop.
  - Download and install vnc client.

    - Enter ip address of raspberry pi that you saw.
    - Enter the 8 digit password and press ok.
  - You should be able to see Raspbian OS screen on your laptop.

How to upgrade Raspbian OS from Debian jessie to Debian stretch

- Step 1: update system

```
$ sudo apt-get update
$ sudo apt-get upgrade
$ sudo apt-get dist-upgrade
```

- Step 2: Modify the release

```
$ sudo sed -i /deb/s/jessie/stretch/g /etc/apt/sources.list
$ sudo sed -i /deb/s/jessie/stretch/g /etc/apt/sources.list.d/*.list
```

- Step 3: Update the package list

```
$ sudo apt-get update
```

- Step 4: Update to Stretch OS

```
$ sudo apt-get upgrade
$ sudo apt-get dist-upgrade
```

- Step 5: clean up old unnecessary packages.

```
$ sudo apt-get autoremove
$ sudo apt-get autoclean
```

- Step 6: restart your raspberry pi.
- Step 7: after restarting you should be able to see your OS updated to stretch.

```
$ cat /etc/os-release
```

How to install Python3.7 on raspberry Pi

- Step 1: install the following dependencies on raspberry pi.

```
$ sudo apt-get install -y build-essential tk-dev libncurses5-dev libncursesw5-dev libreadline6-dev libdb5.3-dev libgdbm-dev libsqlite3-dev libssl-dev libbz2-dev libexpat1-dev liblzma-dev zlib1g-dev libffi-dev
```

- Step 2: Download Python

```
$ wget https://www.python.org/ftp/python/3.7.0/Python-3.7.0.tgz
```

- Step 3: Install Python3.7 by using the following commands:

```
$ sudo tar zxf Python-3.7.0.tgz
$ cd Python-3.7.0
$ sudo ./configure
```

```
$ sudo make -j 4
$ sudo make altinstall
```

- Step 4: check Python version

```
$ python3.7 -v
```

- Step 5: Make Python3.7 the default version by adding it bashrc.