

## Setup ROS connection between Raspberry Pi and Linux PC:

In this tutorial, you will learn how to setup a ROS connection between Raspberry Pi and PC. There will be only one ROS master for both Raspberry Pi and PC. We have to change the “bashrc” file in such a way that these both machines connect to only single master. Follow the procedure given below to do same.

**NOTE:** In the following procedure **PC will be ROS master** (roscore will be running in PC terminal)

1. Setup SSH connection between Raspberry Pi and PC. Refer [WIFI Network connection and SSH.pdf](#) document to setup connection.
2. Open “.bashrc” file of **Raspberry Pi**:

*sudo gedit ~/.bashrc*

3. Add the following lines at the end of .bashrc file

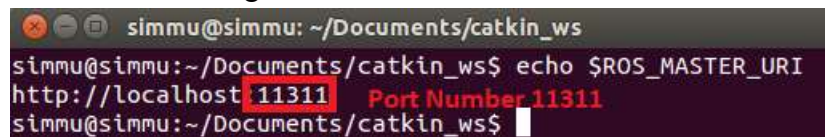
*export ROS\_IP=<IP\_Address\_RPI>*

*export ROS\_MASTER\_URI=http://<IP\_Address\_PC>:<Port\_Number>*

You can find the **IP address of R-PI** using “**ifconfig**” command in R-PI terminal. Similarly, you can find the PC IP address by running the same command in PC terminal. Type the following command in PC terminal to find port number

*echo \$ROS\_MASTER\_URI*

Output of above is shown in Figure 1.1



```
simmu@simmu: ~/Documents/catkin_ws
simmu@simmu:~/Documents/catkin_ws$ echo $ROS_MASTER_URI
http://localhost:11311 Port Number 11311
simmu@simmu:~/Documents/catkin_ws$
```

Figure 1.1: port number

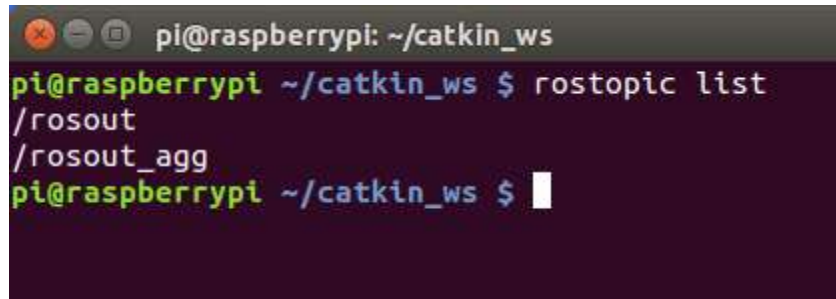
4. Save the file and source .bashrc using command “**source ~/.bashrc**”
5. Now open .bashrc file of PC and add the following line to it

*export ROS\_IP=<IP\_Address\_PC>*

6. Save .bashrc file and source it
7. Now run the “**roscore**” command in PC terminal. If you had done everything ok, this command will run without any error.
8. To check both R-PI and PC connected. Type following command in R-PI terminal

### *rostopic list*

This command will return output as shown in Figure 1.2

A terminal window with a dark purple background. The title bar shows 'pi@raspberrypi: ~/catkin\_ws'. The prompt is 'pi@raspberrypi ~/catkin\_ws \$'. The command 'rostopic list' has been entered, and the output is displayed on two lines: '/rosout' and '/rosout\_agg'. The prompt is now 'pi@raspberrypi ~/catkin\_ws \$' with a white cursor.

```
pi@raspberrypi: ~/catkin_ws
pi@raspberrypi ~/catkin_ws $ rostopic list
/rosout
/rosout_agg
pi@raspberrypi ~/catkin_ws $
```

Figure 1.2: output of **rostopic list** command

This command output ensures that your R-PI and PC are connected to one master which is running on PC. Similarly, you can also make R-PI as master instead of PC.