

Installing ROS Kinetic on Ubuntu 16.04 LTS

This file will help you to install ROS (Robotics Operating System) on your Linux Ubuntu (16.04 LTS) machine.

What is ROS?

Robot Operating System (ROS) is a framework which provides tools and libraries to help software developers to create robot applications. The primary goal of ROS is to support code reuse in robotics research and development. Testing of robot code can be time-consuming and error-prone and sometimes physical robot might not be present. ROS provides a solution to this problem as it separates the hardware part and decision making (coding) part. Because of this separation, we can replace hardware part with a model in the simulator and test the behavior of decision-making part. It is an **open-source** software. It also provides a simple way to record and play data.

To know more about ROS you can visit [here](#).

The main ROS client libraries (C++ and Python) are geared toward a Unix-like system, primarily because of their dependence on large collections of open-source software. Hence these client libraries require Linux operating system.

You must install the **ROS-Kinetic** in **Ubuntu 16.04** on your PC/Laptop.

You can download the **Ubuntu 16.04 desktop image** here: ([64-bit](#)) / ([32-bit](#)) [Direct Download].

NOTE: ROS must be installed on Ubuntu 16.04 LTS only.

Installing Instructions for ROS-Kinetic on Ubuntu 16.04:

This document assumes that the host OS on which ROS Kinetic is to be installed is Ubuntu 16.04 LTS. This document offers a very concise walk-through of the ROS Installation. For a detailed step-by-step explanation of the commands used, please visit the [ROS Kinetic Installation page](#).

The steps listed below install the 'Desktop-Full' ROS Kinetic. If your host machine has any constraints regarding memory you should visit the link above to install a trimmed version of ROS Kinetic.

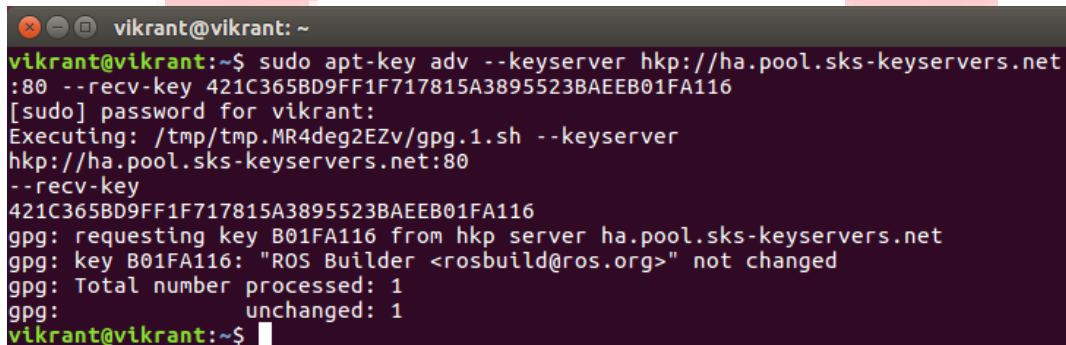
- Execute the following commands/steps in the terminal one after the other:

```
>> sudo sh -c 'echo "deb http://packages.ros.org/ros/ubuntu \$(lsb_release -sc) main" >
/etc/apt/sources.list.d/ros-latest.list'
```

Note: This is a single command.

```
>> sudo apt-key adv --keyserver hkp://ha.pool.sks-keyservers.net:80 --recv-key
421C365BD9FF1F717815A3895523BAEEB01FA116
```

Note: This is a single command. The following should be the output of the command once you run it:



```
vikrant@vikrant: ~
vikrant@vikrant:~$ sudo apt-key adv --keyserver hkp://ha.pool.sks-keyservers.net
:80 --recv-key 421C365BD9FF1F717815A3895523BAEEB01FA116
[sudo] password for vikrant:
Executing: /tmp/tmp.MR4deg2EZv/gpg.1.sh --keyserver
hkp://ha.pool.sks-keyservers.net:80
--recv-key
421C365BD9FF1F717815A3895523BAEEB01FA116
gpg: requesting key B01FA116 from hkp server ha.pool.sks-keyservers.net
gpg: key B01FA116: "ROS Builder <rosbuild@ros.org>" not changed
gpg: Total number processed: 1
gpg:      unchanged: 1
vikrant@vikrant:~$
```

```
>> sudo apt-get update
```

```
>> sudo apt-get install ros-kinetic-desktop-full
```

```
>> sudo rosdep init
```

```
>> rosdep update
```

```
>> echo "source /opt/ros/kinetic/setup.bash" >> ~/.bashrc
```

```
>> source ~/.bashrc
```

```
>> sudo apt-get install python-rosinstall
```

To test whether ROS is installed successfully on your system:

- First, open the terminal and run the command “*roscore*”. You should see the output in the terminal as shown in the image “[roscore_test.png](#)”.

Before proceeding to the next tutorial, you must first create a ROS workspace. Follow and complete the [Creating a Workspace and Learning ROS.pdf](#) in the tutorials folder to achieve this. Once you complete the mentioned tutorial, you proceed to the next installation pdf

