

# ROS

## Installation Tutorial

by

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This is a tutorial on how to install ROS in your machine using VirtualBox that runs Ubuntu version 18.04.

### Step 1: Installing the Virtual Machine

- You need ubuntu desktop version 18.04.
- You can download virtual machine (VirtualBox) from this link <https://www.virtualbox.org/wiki/Downloads> .

Then follow the instructions from

<https://www.youtube.com/watch?v=QbmRXJJKsvs>

or

<https://www.wikihow.com/Install-Ubuntu-on-VirtualBox>

### Step 2: Updating & Upgrading Ubuntu

Open terminal, then type:

```
sudo apt update
```

```
alaa@alaa-VirtualBox:~$ sudo apt update
[sudo] password for alaa:
```

After that, type:

```
sudo apt upgrade
```

```
alaa@alaa-VirtualBox:~$ sudo apt upgrade
Reading package lists... Done
Building dependency tree
```

### Step 3: Installing ROS

type the following commands on terminal:

- 1- 

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

```
alaa@alaa-VirtualBox:~$ sudo sh -c 'echo "deb http://packages.ros.org/ros/ubuntu $(lsb_release -sc) main" > /etc/apt/sources.list.d/ros-latest.list'
[sudo] password for alaa:
```

- 2- `sudo apt-key adv --keyserver 'hkp://keyserver.ubuntu.com:80' --recv-key C1CF6E31E6BADE8868B172B4F42ED6FBAB17C654`

```
alaa@alaa-VirtualBox:~$ sudo apt-key adv --keyserver 'hkp://keyserver.ubuntu.com:80' --recv-key C1CF6E31E6BADE8868B172B4F42ED6FBAB17C654
Executing: /tmp/apt-key-gpphone.hj0QLradot/gpg.1.sh --keyserver hkp://keyserver
```

- 3- `sudo apt update`

```
alaa@alaa-VirtualBox:~$ sudo apt-get update
Hit:1 http://security.ubuntu.com/ubuntu bionic-security InRelease
Hit:2 http://sa.archive.ubuntu.com/ubuntu bionic InRelease
```

- 4- `sudo apt install ros-melodic-desktop-full`

```
alaa@alaa-VirtualBox:~$ sudo apt install ros-melodic-desktop-full
Reading package lists... Done
Building dependency tree
Reading state information... Done
```

- 5- `sudo apt install python-rosdep python-rosinstall python-rosinstall-generator python-wstool build-essential`

- 6- `sudo apt install python-rosdep`

```
alaa@alaa-VirtualBox:~$ sudo apt install python-rosdep
Reading package lists... Done
Building dependency tree
```

- 7- `sudo rosdep init`

```
alaa@alaa-VirtualBox:~$ sudo rosdep init
Wrote /etc/ros/rosdep/sources.list.d/20-default.list
Recommended: please run
```

- 8- `rosdep update`

```
alaa@alaa-VirtualBox:~$ rosdep update
reading in sources list data from /etc/ros/rosdep/sources.list.d
Hit https://raw.githubusercontent.com/ros/rosdistro/master/rosdep/osx-homebrew.yaml
```

After running all the commands check the version to ensure that ROS installed successfully by typing : `rosversion -d`

```
alaa@alaa-VirtualBox:~$ rosversion -d
melodic
```

If it displays *melodic*, installation succeeded.

## Resources

<http://wiki.ros.org/melodic/Installation/Ubuntu>

<https://www.youtube.com/watch?v=QbmRXJJKsvs>

<https://www.wikihow.com/Install-Ubuntu-on-VirtualBox>

<https://www.udemy.com/course/ros-basics-program-robots/learn/lecture/8892580#overview>