





Ubuntu install of ROS Noetic

 The ROS build farm (<http://build.ros.org>) builds Debian packages for several Ubuntu platforms, listed below. These packages are ready to use so you don't have to build from source (</noetic/Installation/Source>). You can check the status of individual packages  [here](http://repositories.ros.org/status_page/ros_noetic_default.html) (http://repositories.ros.org/status_page/ros_noetic_default.html).

Note that there are also packages available from Ubuntu upstream. Please see UpstreamPackages (</UpstreamPackages>) to understand the difference.

If you rely on these packages, please support OSRF.

These packages are built and hosted on infrastructure maintained and paid for by the  Open Source Robotics Foundation (<http://www.osrfoundation.org>), a 501(c)(3) non-profit organization. If OSRF were to receive one penny for each downloaded package for just two months, we could cover our annual costs to manage, update, and host all of our online services. Please consider  donating to OSRF today (<https://www.openrobotics.org/support-the-ros-buildfarm>).

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1. Installation

1.1 Configure your Ubuntu repositories

Configure your Ubuntu repositories to allow "restricted," "universe," and "multiverse." You can [follow the Ubuntu guide](https://help.ubuntu.com/community/Repositories/Ubuntu) (<https://help.ubuntu.com/community/Repositories/Ubuntu>) for instructions on doing this.

1.2 Setup your sources.list

Setup your computer to accept software from packages.ros.org.

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

Mirrors ([/ROS/Installation/UbuntuMirrors](#)) Source Debs ([/DebianPackageSources](#)) are also available

1.3 Set up your keys

```
sudo apt install curl # if you haven't already installed curl
curl -s https://raw.githubusercontent.com/ros/rosdistro/master/ros.asc | sudo apt-key add -
```

1.4 Installation

First, make sure your Debian package index is up-to-date:

```
sudo apt update
```

Now pick how much of ROS you would like to install.

Desktop-Full Install: (Recommended) : Everything in **Desktop** plus 2D/3D simulators and 2D/3D perception packages

```
sudo apt install ros-noetic-desktop-full
```

or click [here](https://packages.ros.org/ros/ubuntu/apt:ros-noetic-desktop-full?refresh=yes) (apt:ros-noetic-desktop-full?refresh=yes)

Desktop Install: Everything in **ROS-Base** plus tools like rqt (/rqt) and rviz (/rviz)

```
sudo apt install ros-noetic-desktop
```

or click here (apt:ros-noetic-desktop?refresh=yes)

ROS-Base: (Bare Bones) ROS packaging, build, and communication libraries. No GUI tools.

```
sudo apt install ros-noetic-ros-base
```

or click here (apt:ros-noetic-ros-base?refresh=yes)

There are even more packages available in ROS. You can always install a specific package directly.

```
sudo apt install ros-noetic-PACKAGE
```

e.g.

```
sudo apt install ros-noetic-slam-gmapping
```

To find available packages, see  ROS Index (<https://index.ros.org/packages/page/1/time/#noetic>) or use:

```
apt search ros-noetic
```

1.5 Environment setup

You must source this script in every **bash** terminal you use ROS in.

```
source /opt/ros/noetic/setup.bash
```

It can be convenient to automatically source this script every time a new shell is launched. These commands will do that for you.

Bash

If you have more than one ROS distribution installed, `~/.bashrc` must only source the `setup.bash` for the version you are currently using.

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

zsh

```
echo "source /opt/ros/noetic/setup.zsh" >> ~/.zshrc  
source ~/.zshrc
```

1.6 Dependencies for building packages

Up to now you have installed what you need to run the core ROS packages. To create and manage your own ROS workspaces, there are various tools and requirements that are distributed separately. For example, `rosinstall` (`/rosinstall`) is a frequently used command-line tool that enables you to easily download many source trees for ROS packages with one command.

To install this tool and other dependencies for building ROS packages, run:

```
sudo apt install python3-rosdep python3-rosinstall python3-rosinstall-generator python3-wstool build-essential
```

1.6.1 Initialize rosdep

Before you can use many ROS tools, you will need to initialize `rosdep`. `rosdep` enables you to easily install system dependencies for source you want to compile and is required to run some core components in ROS. If you have not yet installed `rosdep`, do so as follows.

```
sudo apt install python3-rosdep
```

With the following, you can initialize `rosdep`.

```
sudo rosdep init  
rosdep update
```

2. Tutorials

Now, to test your installation, please proceed to the ROS Tutorials (`/ROS/Tutorials`).

3. ROS One-line Installation

Check out  this tutorial (<http://wiki.ros.org/ROS/Installation/TwoLineInstall/>) to install ROS Noetic using a single command.

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