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).

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) 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-key adv --keyserver 'hkp://keyserver.ubuntu.com:80' --recv-key C1CF6E31E6BADE8868B172B4F42ED6FBAB17C654
```

If you experience issues connecting to the keyserver, you can try substituting `hkp://pgp.mit.edu:80` or `hkp://keyserver.ubuntu.com:80` in the previous command.

Alternatively, you can use curl instead of the apt-key command, which can be helpful if you are behind a proxy server:

```
curl -sSL 'http://keyserver.ubuntu.com/pks/lookup?op=get&search=0xC1CF6E31E6BADE8868B172B4F42ED6FBAB17C654' | 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 (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
```

2. Tutorials

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

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