ROS Workshop - Tutorial 3 - Install ROS

ME 4140 - Introduction to Robotics - Fall 2020

Overview:

After completing *Tutorial 1 - Virtualize Ubuntu*, your new operating system is running, and you are ready to install ROS. You can read more about the installation here on the wiki.

System Requirements:

- **OS**: This tutorial is intended for the Ubuntu 18.04 LTS operating system. Alternate flavors of 18.04 (i.e. - Mint, Mate, kbuntu) may work but have not been tested.
- **Internet:** Your computer must be connected to the internet to proceed. Downloading and installing ROS may take approximately 15 to 30 minutes .

Disclaimer:

- **Copy and Paste Errors:** It is strongly recommended to download this PDF and view it in Ubuntu so that you can copy and paste the required commands correctly.
- **Backup:** If you are using a virtual machine, it is recommend to make a snaphot of your virtual machine in case you want to revert. See *Tutorial 1 - Virtualize Ubuntu* for details.

Installation Instructions:

Press Ctrl + Alt + T to open a new terminal, then carefully copy each command and paste it into the terminal then press Enter . **The terminal commands are shown in gray boxes.**

1. Setup your sources.list 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'
```

2. Set up your keys which are used authenticate software packages for security.

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

3. Update your Ubuntu system. It is a good idea to do this regularly.

```
sudo apt update
```

4. Download and install ROS Melodic Desktop-Full. Depending on your network connection this step will take some time. Now is a good time to get a ☕ 😎.

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

5. Evironment Setup (2 separate commands). This appends the *.bashrc* file which runs each time you open a new terminal.

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

```
source ~/.bashrc
```

6. Install Development Tools. You are almost there!

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

7. Initialize rosdep (2 separate commands)

```
sudo rosdep init
```

```
rosdep update
```

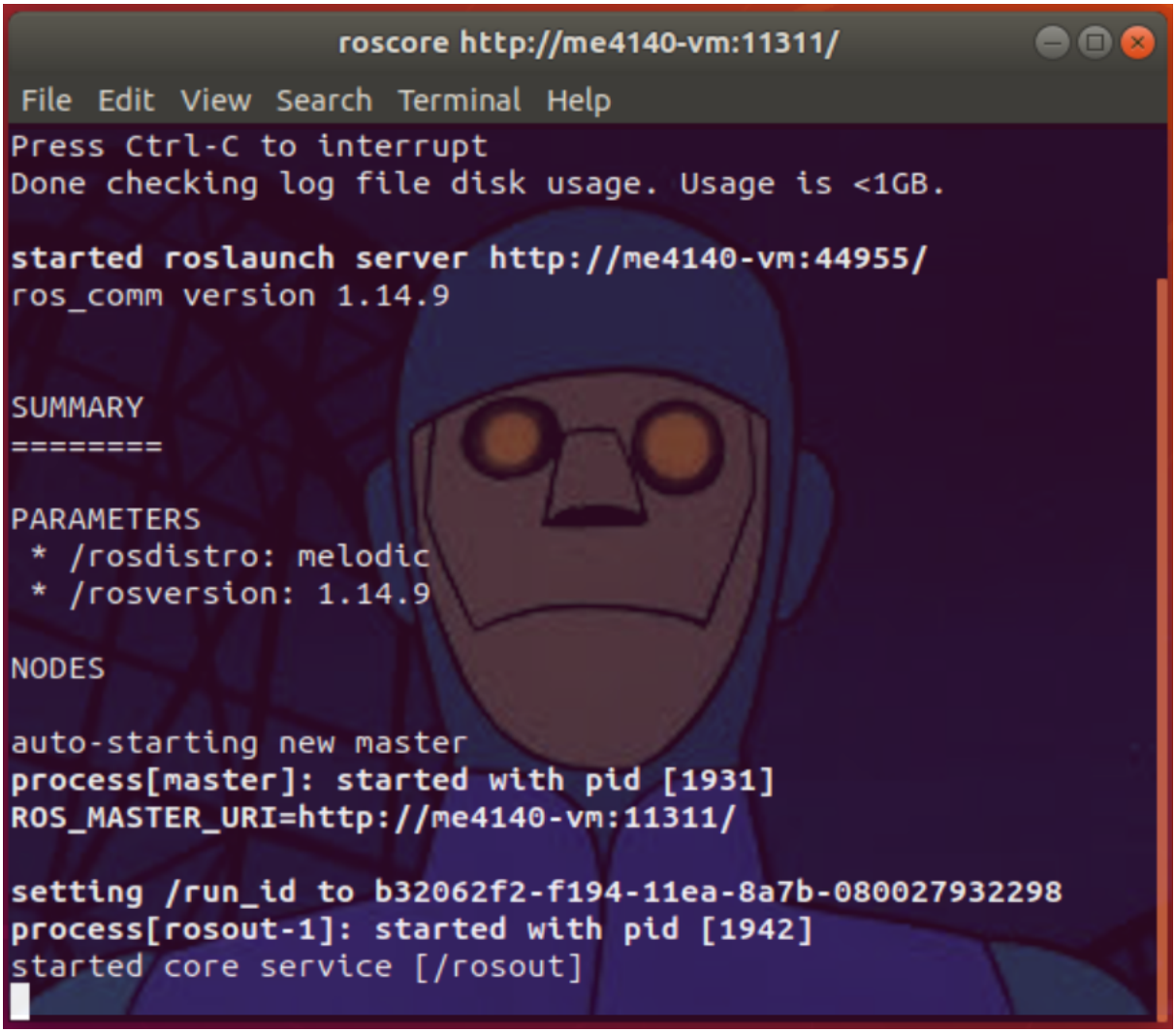
After completing Step 7 you have installed ROS on your Ubuntu system. Now it is time to test the installation.

Test ROS Installation

Close all open terminal windows. Next, open a new terminal and try the following command.

```
roscore
```

If the installation was successful, the terminal output will be *similar* to the image below.



Abort the roscore process by clicking in the terminal and pressing Ctrl + C, then close the terminal window. Congratulations, you have installed ROS Melodic.

Tutorial Complete:

If you see ROS start in the terminal your ROS installation was successful!