

# ROS Environment Setup

This guide provides step-by-step instructions for setting up the ROS1 Noetic environment on Windows, macOS, and Linux systems.

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## Setting-up-on-ubuntu

- Ubuntu 20.04
  - ROS1 Noetic is natively supported on Ubuntu 20.04.
  - If you are using same Ubuntu version, you can directly following the official installation steps: <http://wiki.ros.org/noetic/Installation/Ubuntu>.
- Other Ubuntu version
  - refer to ROS docker image section or Virtual Machine section.

## Docker ROS image

- Install Docker runtime by following this instruction: <https://docs.docker.com/engine/install/>
- Pull ROS1 Noetic image:

```
docker pull osrf/ros:noetic-desktop-full
```

- Install rocker to provide X11 interface for the running GUI application in container:  
<https://github.com/osrf/rocker>

## Setting-up-on-non-linux

To install ROS1 Noetic, you need to have Ubuntu system environment. There are several way to achieve this on Windows and Macbook. You can choose any one you preferred.

## WSL(Windows Subsystem for Linux )

- WSL is a feature of Microsoft Windows that allows developers to run a Linux environment without the need for a separate virtual machine or dual booting.
- Follow the instruction: <https://learn.microsoft.com/en-us/windows/wsl/install> to install Ubuntu 20.04 system. Make sure you are using WSL2 instead of WSL1.
- Once you have Ubuntu 20.04 system, you can directly following the official installation steps: <http://wiki.ros.org/noetic/Installation/Ubuntu>.

## Virtual machine (recommend for apple silicon Macbook)

- VMware Fusion(Macbook) and VMware Workstation (Windows) is free for personal use. Download the software in here: <https://www.vmware.com/products/desktop-hypervisor/workstation-and-fusion>.
- Download the ubuntu 20.04 system image.
  - intel and amd CPU: <https://releases.ubuntu.com/focal/> (download the desktop image)
  - ARM CPU: <https://cdimage.ubuntu.com/releases/focal/release/> ( download the server image)
- Only for server image: Follow the video to install ubuntu desktop GUI : [https://drive.google.com/drive/folders/1\\_KbMO5OyEsgDzSCnMikap-dN4\\_b9TlaE?usp=share\\_link](https://drive.google.com/drive/folders/1_KbMO5OyEsgDzSCnMikap-dN4_b9TlaE?usp=share_link)
- Once you have Ubuntu 20.04 system, you can directly following the official installation steps: <http://wiki.ros.org/noetic/Installation/Ubuntu>.

## Dual-Boot

- Need to create the Ubuntu image in a usb driver.
- There lots of video in the youtube video teach you how to create this. Here is an example: <https://www.youtube.com/watch?v=-iSAyiicyQY>
- Once you have Ubuntu 20.04 system, you can directly following the official installation steps: <http://wiki.ros.org/noetic/Installation/Ubuntu>.