

خطوات تنزيل ROS على Ubuntu 20.4

١- إنشاء ملف قائمة جديد

```
echo "deb http://packages.ros.org/ros/ubuntu focal main" | sudo tee  
/etc/apt/sources.list.d/ros-focal.list
```

٢- إضافة حلقة مفاتيح ROS الرسمية

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

٣- تحديث فهرس حزمة ROS

```
sudo apt update
```

٤- تثبيت حزمة ROS Noetic

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

٥- إعداد بيئة ROS Noetic

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

٦- التأكد من التنزيل

```
roscd
```

```
opt/ros/noetic/
```

```
ROS [Running]
21:09 8 يوليو
atheer@Atheer-VirtualBox: ~
atheer@Atheer-VirtualBox:~$ echo "deb http://packages.ros.org/ros/ubuntu focal main" | sudo tee /etc/apt/sources.list.d/ros-focal.list
[sudo] password for atheer:
deb http://packages.ros.org/ros/ubuntu focal main
atheer@Atheer-VirtualBox:~$ sudo apt-key adv --keyserver 'hkp://keyserver.ubuntu.com:80' --recv-key C1CF6E31E6BADE8868B172B4F42ED6FBAB17C654
54
Executing: /tmp/apt-key-gpghome.0n0tadJYGI/gpg.1.sh --keyserver hkp://keyserver.ubuntu.com:80 --recv-key C1CF6E31E6BADE8868B172B4F42ED6FBAB17C654
gpg: key F42ED6FBAB17C654: public key "Open Robotics <info@osrfoundation.org>" imported
gpg: Total number processed: 1
gpg:      imported: 1
atheer@Atheer-VirtualBox:~$ curl -sSL 'http://keyserver.ubuntu.com/pks/lookup?op=get&search=0xC1CF6E31E6BADE8868B172B4F42ED6FBAB17C654' |
sudo apt-key add -
Command 'curl' not found, but can be installed with:
sudo apt install curl
gpg: no valid OpenPGP data found.
atheer@Atheer-VirtualBox:~$ sudo apt install curl
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following package was automatically installed and is no longer required:
libblvm9
Use 'sudo apt autoremove' to remove it.
The following NEW packages will be installed:
curl
0 upgraded, 1 newly installed, 0 to remove and 17 not upgraded.
Need to get 162 kB of archives.
After this operation, 411 kB of additional disk space will be used.
Get:1 http://sa.archive.ubuntu.com/ubuntu focal-updates/main amd64 curl amd64 7.68.0-1ubuntu2.1 [162 kB]
Fetched 162 kB in 16s (10.0 kB/s)
Selecting previously unselected package curl.
(Reading database ... 189978 files and directories
currently installed.)
Preparing to unpack .../curl_7.68.0-1ubuntu2.1_amd64.deb ...
Unpacking curl (7.68.0-1ubuntu2.1) ...
Setting up curl (7.68.0-1ubuntu2.1) ...
Processing triggers for man-db (2.9.1-1) ...
```

```
ROS [Running]
21:14 8 يوليو
atheer@Atheer-VirtualBox: ~
After this operation, 411 kB of additional disk space will be used.
Get:1 http://sa.archive.ubuntu.com/ubuntu focal-updates/main amd64 curl amd64 7.68.0-1ubuntu2.1 [162 kB]
Fetched 162 kB in 16s (10.0 kB/s)
Selecting previously unselected package curl.
(Reading database ... 189978 files and directories
currently installed.)
Preparing to unpack .../curl_7.68.0-1ubuntu2.1_amd64.deb ...
Unpacking curl (7.68.0-1ubuntu2.1) ...
Setting up curl (7.68.0-1ubuntu2.1) ...
Processing triggers for man-db (2.9.1-1) ...
atheer@Atheer-VirtualBox:~$ curl -sSL 'http://keyserver.ubuntu.com/pks/lookup?op=get&search=0xC1CF6E31E6BADE8868B172B4F42ED6FBAB17C654' |
sudo apt-key add -
OK
atheer@Atheer-VirtualBox:~$ sudo apt update
Hit:1 http://sa.archive.ubuntu.com/ubuntu focal InRelease
Get:2 http://security.ubuntu.com/ubuntu focal-security InRelease [107 kB]
Get:3 http://packages.ros.org/ros/ubuntu focal InRelease [4650 B]
Get:4 http://sa.archive.ubuntu.com/ubuntu focal-updates InRelease [107 kB]
Get:5 http://packages.ros.org/ros/ubuntu focal/main amd64 Packages [236 kB]
Get:6 http://sa.archive.ubuntu.com/ubuntu focal-backports InRelease [98.3 kB]
Get:7 http://security.ubuntu.com/ubuntu focal-security/main amd64 Packages [129 kB]
Get:8 http://sa.archive.ubuntu.com/ubuntu focal-updates/main amd64 Packages [240 kB]
Get:9 http://security.ubuntu.com/ubuntu focal-security/main i386 Packages [46.2 kB]
Get:10 http://security.ubuntu.com/ubuntu focal-security/main amd64 DEP-11 Metadata [21.2 kB]
Get:11 http://security.ubuntu.com/ubuntu focal-security/universe amd64 Packages [37.2 kB]
Get:12 http://security.ubuntu.com/ubuntu focal-security/universe amd64 DEP-11 Metadata [35.6 kB]
Get:13 http://sa.archive.ubuntu.com/ubuntu focal-updates/main i386 Packages [125 kB]
Get:14 http://sa.archive.ubuntu.com/ubuntu focal-updates/main amd64 DEP-11 Metadata [165 kB]
Get:15 http://sa.archive.ubuntu.com/ubuntu focal-updates/universe amd64 Packages [126 kB]
Get:16 http://sa.archive.ubuntu.com/ubuntu focal-updates/universe i386 Packages [67.1 kB]
Get:17 http://sa.archive.ubuntu.com/ubuntu focal-updates/universe amd64 DEP-11 Metadata [172 kB]
Get:18 http://sa.archive.ubuntu.com/ubuntu focal-updates/universe amd64 c-n-f Metadata [4520 B]
Get:19 http://sa.archive.ubuntu.com/ubuntu focal-backports/universe amd64 DEP-11 Metadata [532 B]
Get:20 http://packages.ros.org/ros/ubuntu focal/main i386 Packages [15.4 kB]
Fetched 1739 kB in 56s (31.0 kB/s)
Reading package lists... Done
Building dependency tree
Reading state information... Done
21 packages can be upgraded. Run 'apt list --upgradable' to see them.
```



```
atheer@Atheer-VirtualBox:~$ source /opt/ros/noetic/setup.bash
atheer@Atheer-VirtualBox:~$ echo "source /opt/ros/noetic/setup.bash" >> ~/.bashrc
```

```
atheer@Atheer-VirtualBox:~$ rosrun
atheer@Atheer-VirtualBox:~$ roscd
atheer@Atheer-VirtualBox:/opt/ros/noetic$ roscore
... logging to /home/atheer/.ros/log/cfe597aa-c173-11ea-a91e-312d16298ab4/roslaunch-Atheer-VirtualBox-24890.log
Checking log directory for disk usage. This may take a while.
Press Ctrl-C to interrupt
Done checking log file disk usage. Usage is <1GB.

started roslaunch server http://Atheer-VirtualBox:40671/
ros_comm version 1.15.7

SUMMARY
=====

PARAMETERS
* /rostdistro: noetic
* /rosversion: 1.15.7

NODES

auto-starting new master
process[master]: started with pid [24912]
ROS_MASTER_URI=http://Atheer-VirtualBox:11311/

setting /run_id to cfe597aa-c173-11ea-a91e-312d16298ab4
process[rosout-1]: started with pid [24922]
started core service [/rosout]
```