

# ROS 2

Setup ROS 2 on Virtual Ubuntu OS

<https://docs.ros.org/en/galactic/Installation.html>

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<https://aws.amazon.com/blogs/robotics/ros2-foxy-fitzroy-robot-development/>

**Nodes**

**Topics**

**Services**

**Parameter server**

# Install packets

## 1. Install ros2 foxy

- Ubuntu Linux - Focal Fossa (20.04) 64-bit

-**Step1.**

<https://docs.ros.org/en/galactic/Installation/Ubuntu-Development-Setup.html>

-**Step2.**

<https://docs.ros.org/en/galactic/Installation/Ubuntu-Install-Debians.html>

```
sudo apt install ros-galactic-desktop  
source /opt/ros/galactic/setup.bash
```

## 2. Install packets in C++ (rclcpp)

## 3. Install packets for testing

```
source /opt/ros/galactic/setup.bash  
ros2 run demo_nodes_cpp talker
```

```
source /opt/ros/galactic/setup.bash  
ros2 run demo_nodes_py listener
```

# Cli on ros 2

- ros2 node list
- node info <node\_name>

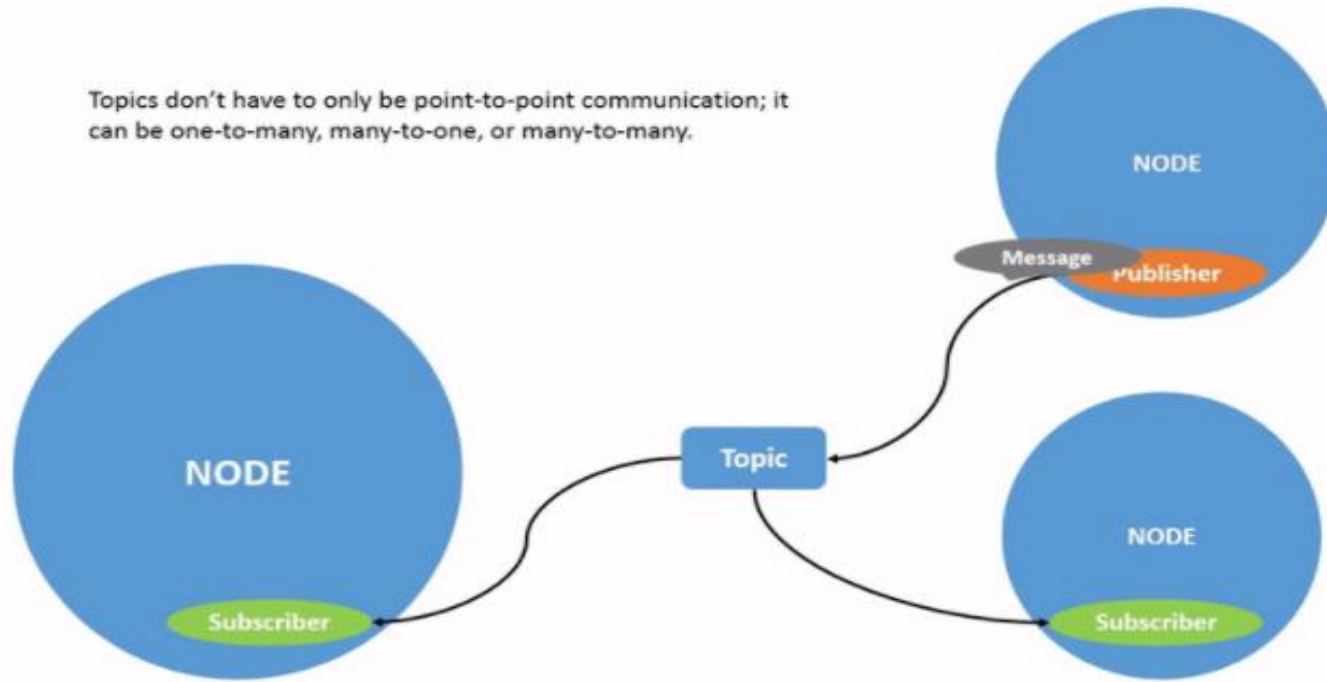
```
thonglt@thonglt-virtual-machine:~/ros2_galactic$ ros2 node list
/talker
thonglt@thonglt-virtual-machine:~/ros2_galactic$ ros2 node info talker
Unable to find node 'talker'
thonglt@thonglt-virtual-machine:~/ros2_galactic$ ros2 node info /talker
/talker
Subscribers:
  /parameter_events: rcl_interfaces/msg/ParameterEvent
Publishers:
  /chatter: std_msgs/msg/String
  /parameter_events: rcl_interfaces/msg/ParameterEvent
  /rosout: rcl_interfaces/msg/Log
Service Servers:
  /talker/describe_parameters: rcl_interfaces/srv/DescribeParameters
  /talker/get_parameter_types: rcl_interfaces/srv/GetParameterTypes
  /talker/get_parameters: rcl_interfaces/srv/GetParameters
  /talker/list_parameters: rcl_interfaces/srv/ListParameters
  /talker/set_parameters: rcl_interfaces/srv/SetParameters
  /talker/set_parameters_atomically: rcl_interfaces/srv/SetParametersAtomically
Service Clients:

Action Servers:

Action Clients:

thonglt@thonglt-virtual-machine:~/ros2_galactic$
```

Topics don't have to only be point-to-point communication; it can be one-to-many, many-to-one, or many-to-many.



# rclcpp

- `ros2 node list`
- `node info <node_name>`

# rclcpp

How to create an example

<https://docs.ros.org/en/galactic/Tutorials/Writing-A-Simple-Cpp-Service-And-Client.html>

installing system dependencies.

<http://wiki.ros.org/rosdep>

<http://wiki.ros.org/rosdep/Tutorials/How%20to%20add%20a%20system%20dependency>

<https://colcon.readthedocs.io/en/released/>

Example at

<https://github.com/ros2/examples/tree/master/rclcpp>

<https://roboticsbackend.com/create-a-ros2-cpp-package/>