Quick Setup Guide

1. Prerequisites

- OS on host machine - Ubuntu 20.04 LTS release.
- ROS2 Package - Foxy Fitzroy LTS release.
- ToF sensor connected to host machine.

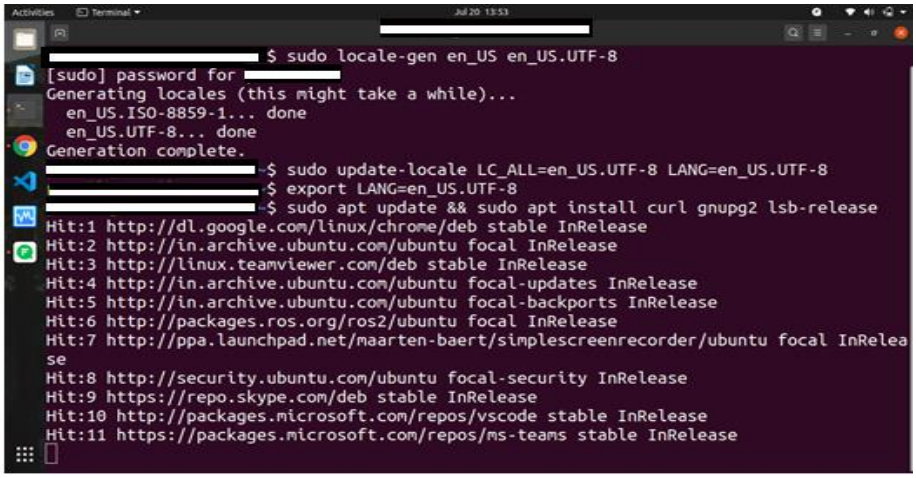
2. ROS2 Installation

- Open terminal in Ubuntu and enter set of below commands for ROS2 installation and environment setup. Refer the screenshot given for each command for reference.

```
sudo locale-gen en_US en_US.UTF-8
sudo update-locale LC_ALL=en_US.UTF-8 LANG=en_US.UTF-8
export LANG=en_US.UTF-8

sudo apt update && sudo apt install curl gnupg2 lsb-release
```

(Reference:https://index.ros.org/doc/ros2/Installation/Foxy/Linux-Install-Debians/)

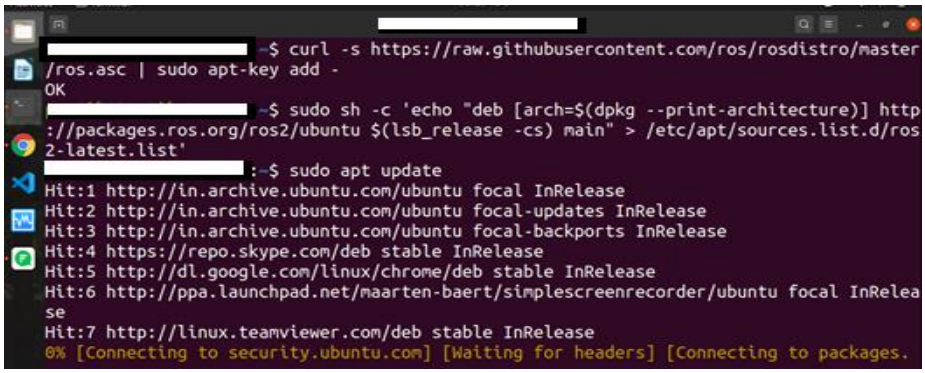


- Download ROS2 and update the local installation repo

```
curl -s
   https://raw.githubusercontent.com/ros/rosdistro/master/ros.asc |
   sudo apt-key add -

sudo sh -c 'echo "deb [arch=$(dpkg --print-architecture)]
   http://packages.ros.org/ros2/ubuntu $(lsb_release -cs) main" >
   /etc/apt/sources.list.d/ros2-latest.list'

sudo apt update
```



- Install ROS2 and run setup script

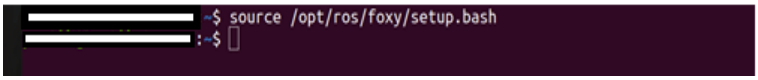
```
sudo apt install ros-foxy-desktop
```

Press “Y” to continue the setup.

3. Environment Setup & Workspace Creation

- Run setup bash file available in ROS structure

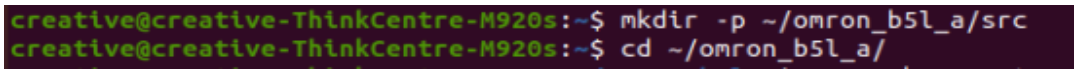
```
source /opt/ros/foxy/setup.bash
```



- Open a new terminal and set below set of commands to create Workspace and package with “omron_b5l_a” name

```
source /opt/ros/foxy/setup.bash

mkdir -p ~/omron_b5l_a/src
cd ~/omron_b5l_a/src
ros2 pkg create --build-type ament_cmake omron_b5l_a
```



- Download the source code package and extract it.
- Copy the required files from downloaded code to the package “omron_b5l_a” created in earlier steps
  - Navigate to “omron_b5l_a” directory in release package

```
cd ~/omron_b5l_a/src/omron_b5l_a/
```

  - Copy files in ROS package in “omron_b5l_a/src/omron_b5l_a/” directory created in workspace. Refer the screenshot below for more reference
    - “src” directory
    - “CMakeLists.txt” file
    - “include” directory

```
cp -r /home/creative/tof-ros2-integration/source/omron_b5l_a/*
~/omron_b5l_a/src/omron_b5l_a/
```

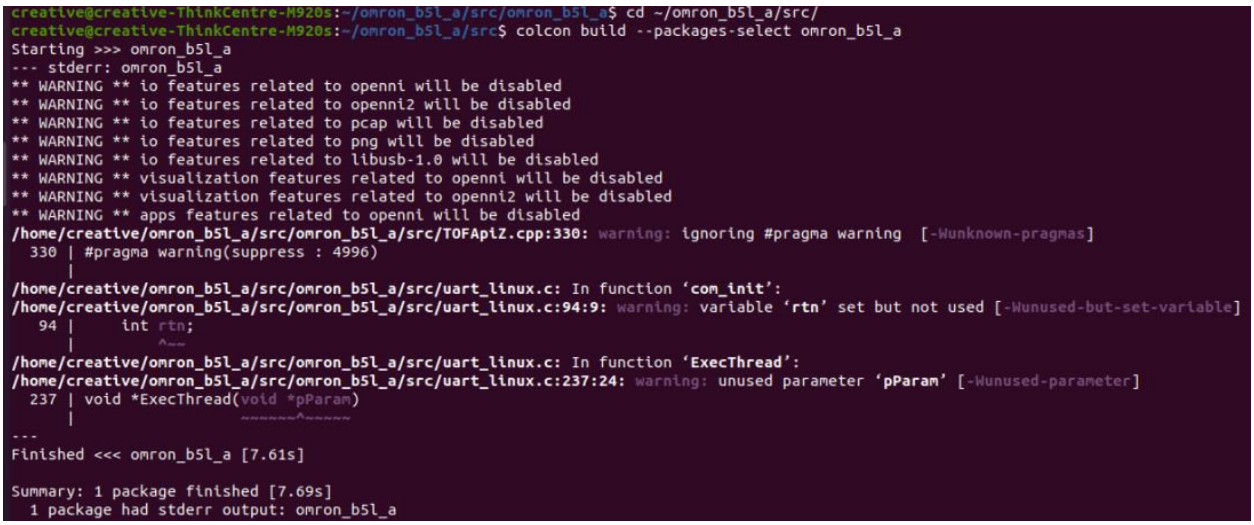
(*Update path ‘/home/creative/tof-ros2-integration/’ in above command with your system path)

  - Check OUTPUT_FORMAT parameter in configuration file stored at location “omron_b5l_a/src/omron_b5l_a/src/config/ToF_Sample.prm”. We are supporting 2 different formats
    - i) If OUTPUT_FORMAT = 257 or 258 then sample application will publish pointcloud2 data on “pointcloud2_xyzi” topic.
    - ii) If OUTPUT_FORMAT = 1 or 2 then sample application will publishpointcloud2 data on “pointcloud2_xyz”. So set this parameter according to your requirement.

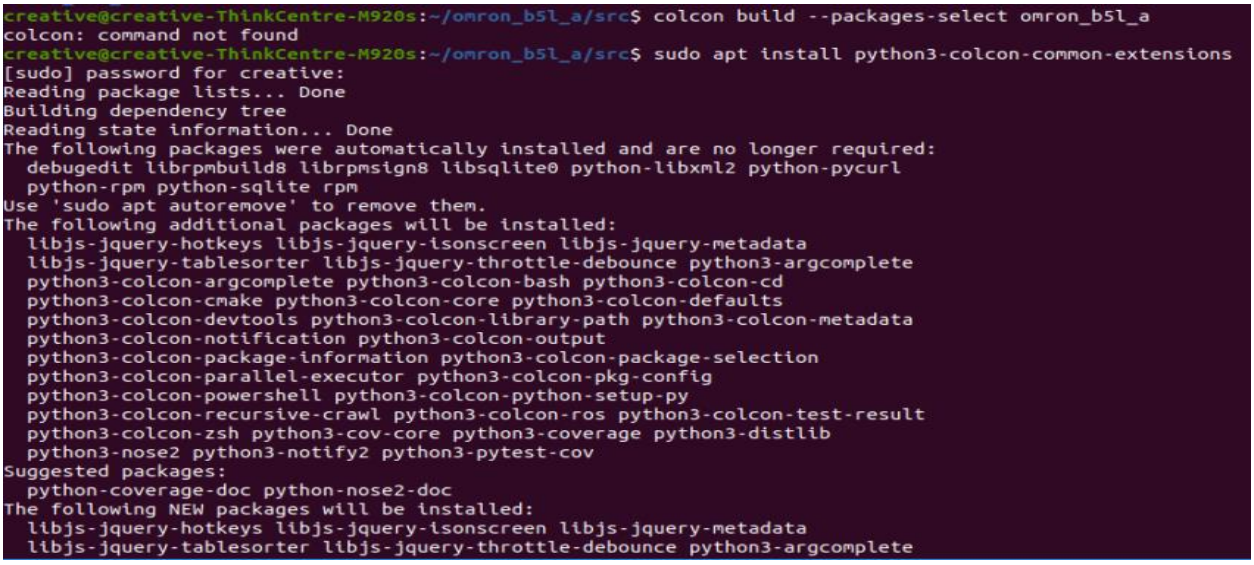
4. Compile and Run ToF interface Node

- Compile and Run ToF interface node with below steps

```
cd ~/omron_b5l_a/src/
colcon build --packages-select omron_b5l_a
```



* If an error occurs, that colcon command not found, please install colcon. Refer to below screenshot.



- sudo su
- source /opt/ros/foxy/setup.bash
- . install/setup.bash

```
creative@creative-ThinkCentre-M920s:~/omron_b5l_a/src$ sudo su
[sudo] password for creative:
root@creative-ThinkCentre-M920s:/home/creative/omron_b5l_a/src# source /opt/ros/foxy/setup.bash
root@creative-ThinkCentre-M920s:/home/creative/omron_b5l_a/src# . install/setup.bash
```

- ros2 run omron_b5l_a omron_b5l_a

```
root@creative-ThinkCentre-M920s:/home/creative/omron_b5l_a/src# ros2 run omron_b5l_a omron_b5l_a
omron_b5l_a application version 0.1 started
/dev/ttyUSB0 is opened successfully.
OMRON ToF Sensor:  B5L-A2S-U01 3.0.0 Revision:15182 Serial:02020120085
```

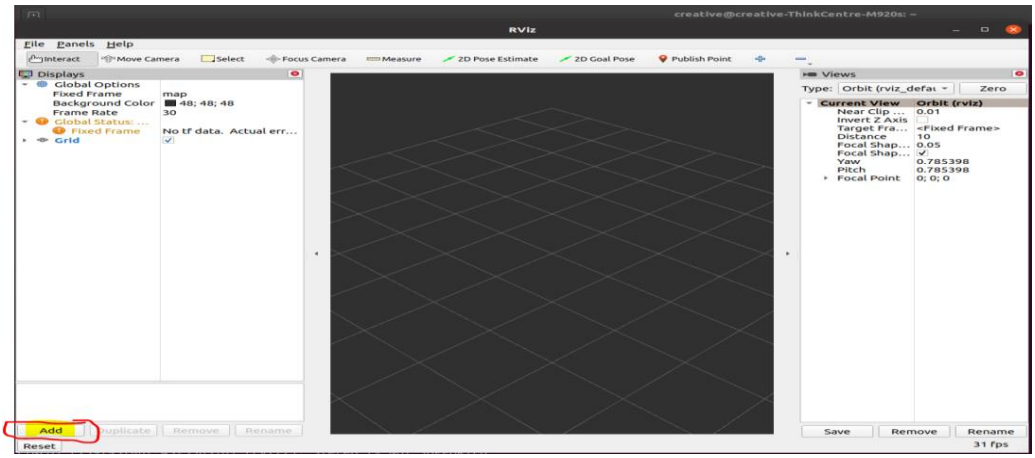
5. Configure and Run RVIZ2 Node

- Configure and Run RVIZ2 node with below steps.
  - Open new terminal and hit below commands

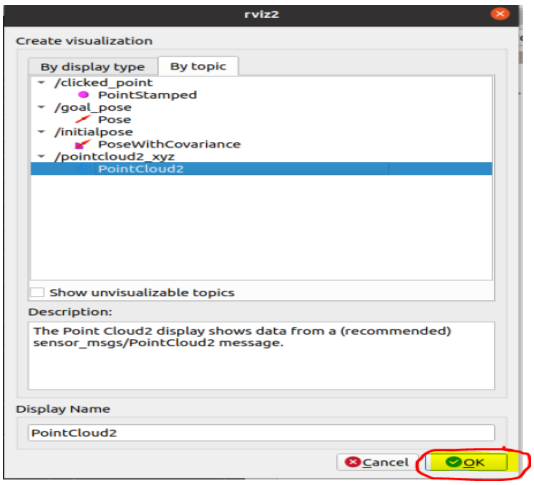
- source /opt/ros/foxy/setup.bash
- ros2 run rviz2 rviz2

```
creative@creative-ThinkCentre-M920s: ~
creative@creative-ThinkCentre-M920s:~$ source /opt/ros/foxy/setup.bash
creative@creative-ThinkCentre-M920s:~$ ros2 run rviz2 rviz2
[INFO] [1596057000.651569479] [rviz2]: Stereo is NOT SUPPORTED
[INFO] [1596057000.651654222] [rviz2]: OpenGl version: 4.6 (GLSL 4.6)
[INFO] [1596057000.683302224] [rviz2]: Stereo is NOT SUPPORTED
```

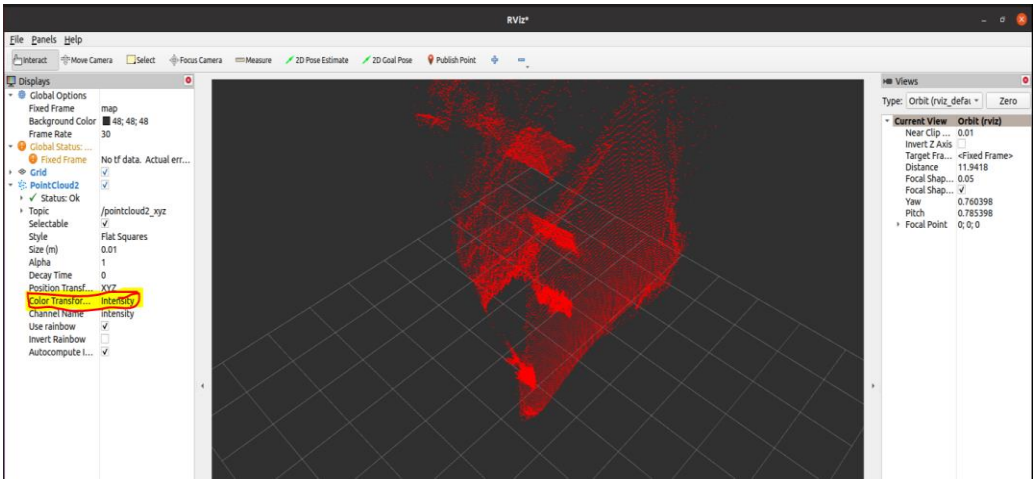
- Following screen will show up. Click on add.



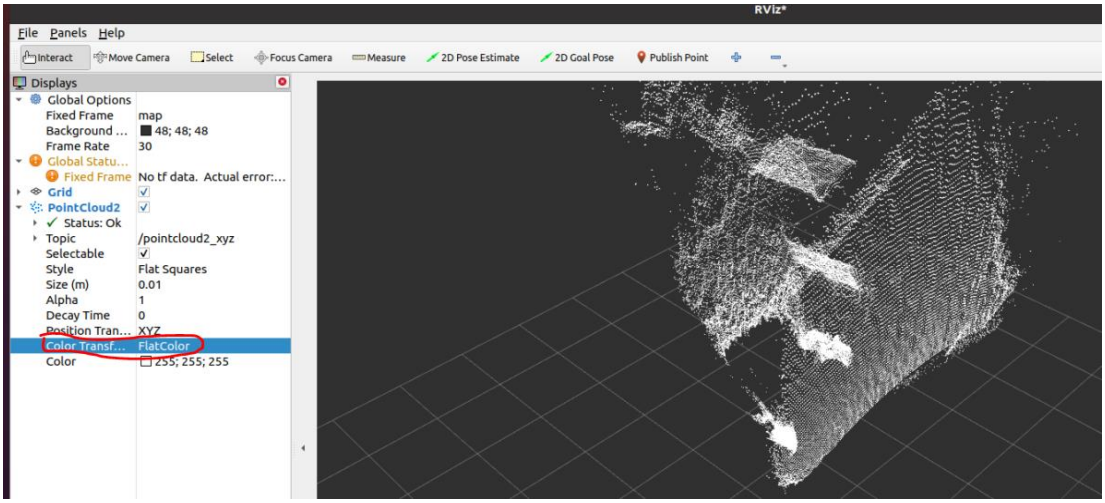
- A pop of rviz2 will open. Select By topic and then select PointCloud2. Press ok.



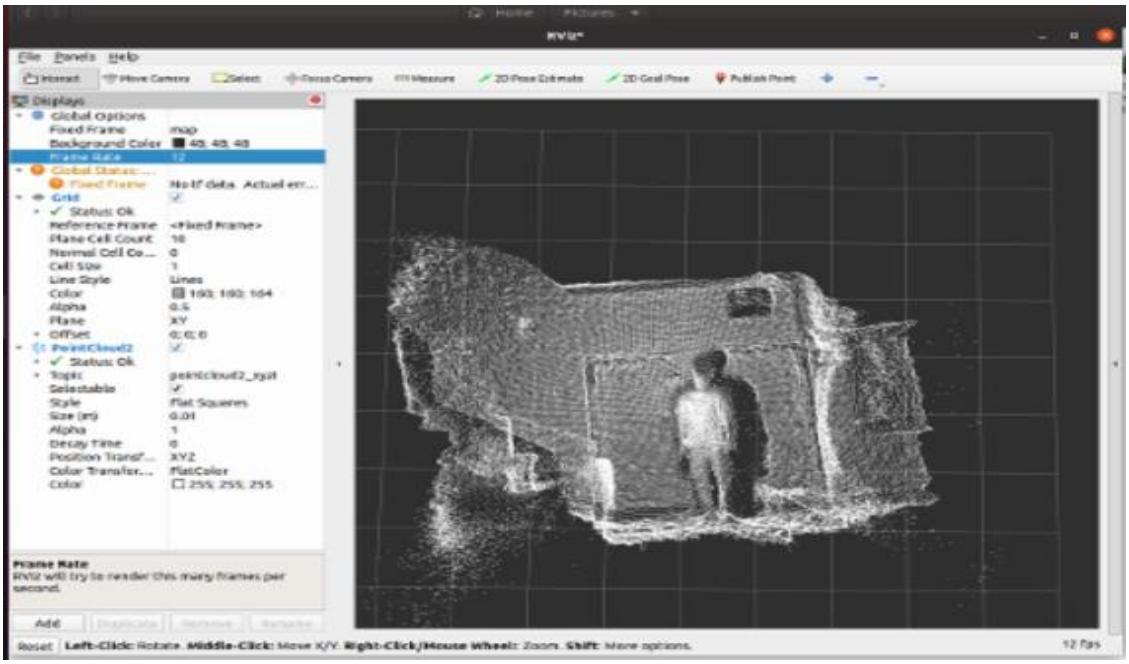
- By default, the color Transform will be intensity.



- Change Color Transform filed with “FlatColor ” to see black and white image



- Adjust RVIZ2 screen by zoom in/out and drag left/right with mouse pointer to see complete view.



6. Exit the Application

- Press “Ctrl+C” on application console (ToF publisher node OR RVIZ2) to exit the application.