# 飞拓科技

**Hokuyo 激光雷达 UST-10LX：**

1.首先下载相关节点包，UST-10LX 采用的接口是以太网接口，所以需要下载 urg_node 的包，

```
$ sudo apt-get install ros-indigo-urg-node
```

如果用的是 UST-30LX 这种采用 USB 接口的激光雷达，需要下载 hokuyo_node 的包：

```
$ sudo apt-get install ros-indigo-hokuyo-node
```

2.修改 Ubuntu 的 IP 地址：

编辑/etc/network/interfaces，添加一个静态的 IP 地址。

```
$ sudo gedit /etc/network/interfaces
```

在

```
auto lo
iface lo inet loopback
```

下面添加以下语句：

```
auto eth0
allow-hotplug eth0
iface eth0 inet static
        address 192.168.1.20
        netmask 255.255.255.0
```
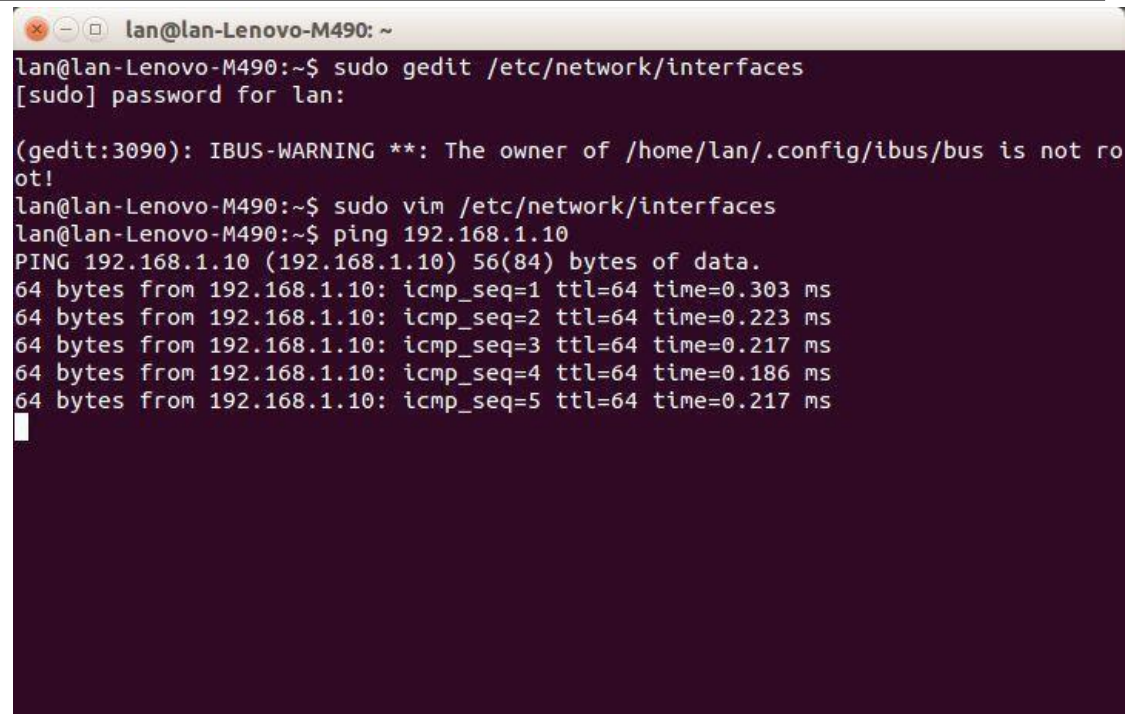


因为 Hokuyo 激光雷达的固定 IP 地址是 "192.168.1.10"（出厂设置是 "192.168.0.10"），所以在 Ubuntu 上添加 IP 地址时，使用"192.168.1.XX"，最后两个数字应该和"10 区分"，前面三段和激光雷达的 IP 一样。

将激光雷达连在电脑上，确认连接：

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```
$ ping 192.168.1.10
```
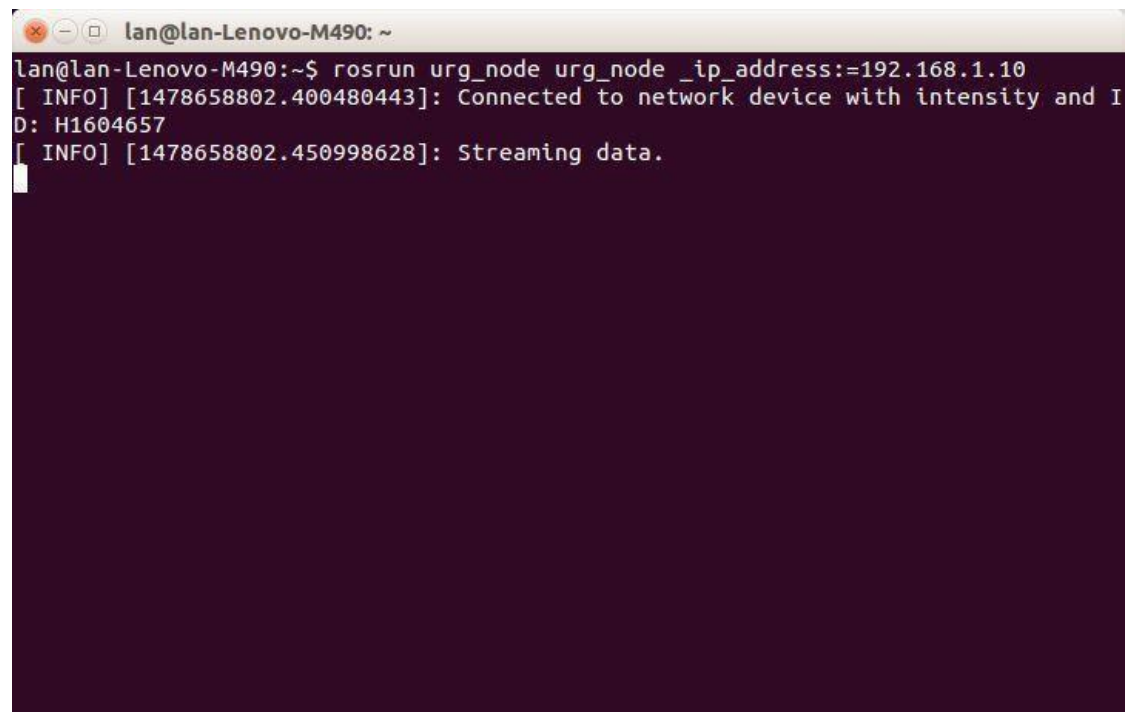
```
lan@lan-Lenovo-M490:~$ sudo gedit /etc/network/interfaces
[sudo] password for lan:

(gedit:3090): IBUS-WARNING **: The owner of /home/lan/.config/ibus/bus is not ro
ot!
lan@lan-Lenovo-M490:~$ sudo vim /etc/network/interfaces
lan@lan-Lenovo-M490:~$ ping 192.168.1.10
PING 192.168.1.10 (192.168.1.10) 56(84) bytes of data.
64 bytes from 192.168.1.10: icmp_seq=1 ttl=64 time=0.303 ms
64 bytes from 192.168.1.10: icmp_seq=2 ttl=64 time=0.223 ms
64 bytes from 192.168.1.10: icmp_seq=3 ttl=64 time=0.217 ms
64 bytes from 192.168.1.10: icmp_seq=4 ttl=64 time=0.186 ms
64 bytes from 192.168.1.10: icmp_seq=5 ttl=64 time=0.217 ms
```

3.确认激光雷达已经通电并连接在电脑上后，获取激光雷达数据：

```
$ roscore
$ rosrun urg_node urg_node _ip_address:=192.168.1.10
```

如果激光雷达是通过 USB 连接的，Ubuntu 会自动识别并连接。

```
lan@lan-Lenovo-M490:~$ rosrun urg_node urg_node _ip_address:=192.168.1.10
[ INFO] [1478658802.400480443]: Connected to network device with intensity and I
D: H1604657
[ INFO] [1478658802.450998628]: Streaming data.
```

4.查看激光雷达检测到的数据

```
$ rostopic echo /scan
```

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数据跳动的很快

```
lan@lan-Lenovo-M490: ~
51202, 0.18199999630451202, 0.18000000715255737, 0.18000000715255737, 0.18500000
23841858, 0.185000023841858, 0.18400000035762787, 0.18199999630451202, 0.181999
99630451202, 0.18700000643730164, 0.1860000044107437, 0.1829999983106995, 0.181
99999630451202, 0.18799999356269836, 0.18799999356269836, 0.18700000643730164, 0
.17900000512599945, 0.18000000715255737, 0.18000000715255737, 0.1879999935626983
6, 0.18799999356269836, 0.18799999356269836, 0.1889999955892563, 0.1889999955892
563, 0.18799999356269836, 0.18799999356269836, 0.19699999690055847, 0.1959999948
7400055, 0.19699999690055847, 0.19699999690055847, 0.20200000703334808, 0.196999
99690055847, 0.19699999690055847, 0.20200000703334808, 0.19900000095367432, 0.19
699999690055847, 0.20200000703334808, 0.20499999821186066, 0.20800000429153442,
0.2060000023841858, 0.2029999941587448, 0.20499999821186066, 0.2080000042915344
2, 0.20900000631809235, 0.20800000429153442, 0.21400000154972076, 0.212999999523
16284, 0.20399999618530273, 0.19900000095367432, 0.2029999941587448, 0.204999998
21186066, 0.20399999618530273, 0.194000057220459, 0.19200000166893005, 0.188999
9955892563, 0.17100000381469727, 0.17399994993209884, 0.17200000058412552, 0.1710
0000381469727, 0.17200000058412552, 0.17599999904632568, 0.16500000655651093, 0.1
6699999570846558, 0.16699999570846558, 0.1679999977350235, 0.16599999368190765,
0.16200000047683716, 0.16200000047683716, 0.15800000727176666, 0.159999996423721
3, 0.15700000524520874, 0.15700000524520874, 0.1589999943971634, 0.1599999964237
213, 0.164000004529953, 0.1589999943971634, 0.15800000727176666, 0.1589999943971
634, 0.16099999845027924, 0.16099999845027924, 0.16099999845027924, 0.1620000004
7683716, 0.16099999845027924, 0.16200000047683716, 0.1589999943971634, 0.1560000
0321865082, 0.16099999845027924, 0.16099999845027924, 0.15600000321865082, 0.149
00000393390656, 0.15399999916553497, 0.15700000524520874, 0.1570000
```

5.查看激光雷达扫描的消息类型和消息结构

$ rostopic type /scan

$ rosmsg show sensor_msgs/LaserScan

```
lan@lan-Lenovo-M490: ~
, 1275.0, 595.0]
---
lan@lan-Lenovo-M490:~$ rostopic type /sacm
unknown topic type [/sacm]
lan@lan-Lenovo-M490:~$ rostopic list
/diagnostics
/rosout
/rosout_agg
/scan
/urg_node/parameter_descriptions
/urg_node/parameter_updates
lan@lan-Lenovo-M490:~$ rostopic type /scan
sensor_msgs/LaserScan
lan@lan-Lenovo-M490:~$ rosmsg show sensor_msgs/LaserScan
std_msgs/Header header
  uint32 seq
  time stamp
  string frame_id
float32 angle_min
float32 angle_max
float32 angle_increment
float32 time_increment
float32 scan_time
float32 range_min
float32 range_max
float32[] ranges
float32[] intensities

lan@lan-Lenovo-M490:~$
```

6.在 rviz 中查看激光数据：

```
$ rosrun rviz rviz
```

在 Add 中依次添加 LaserScan 和话题/scan 下的 LaserScan。
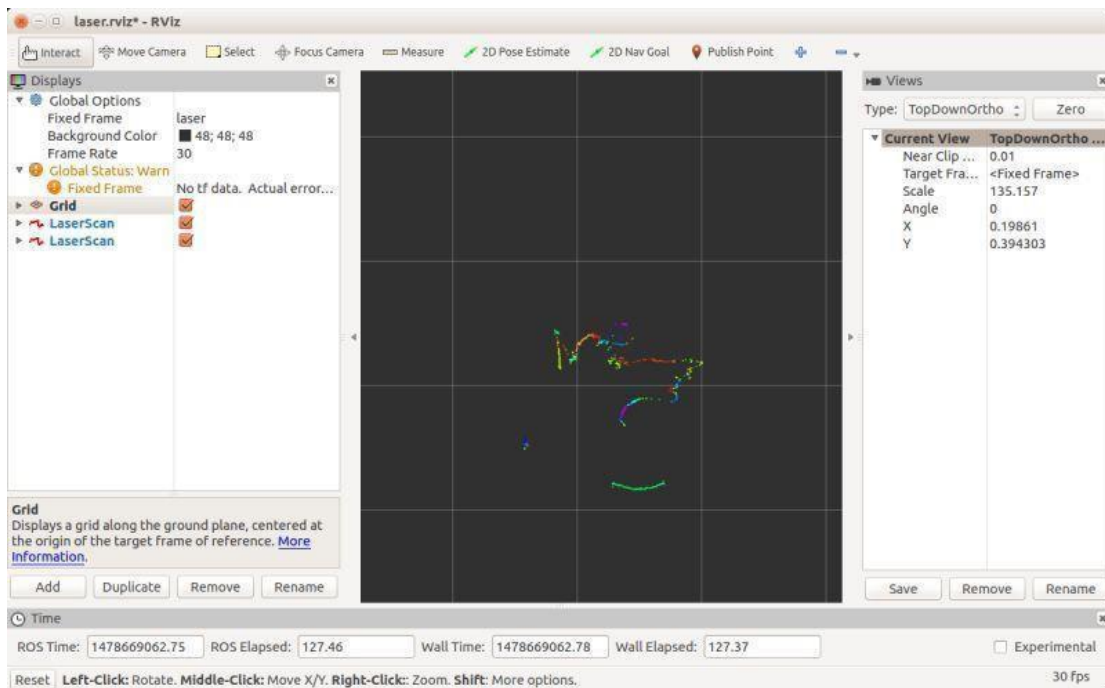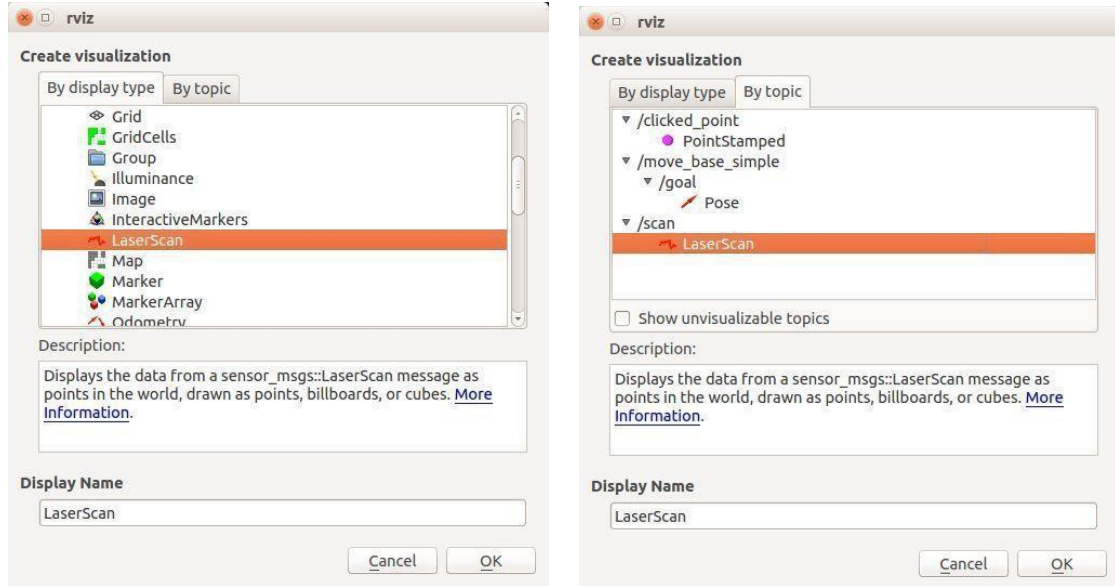
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