

simsquare Cat.M1 module Hands-On Guide - Jetson Nano (with PPP) -

version 1.0

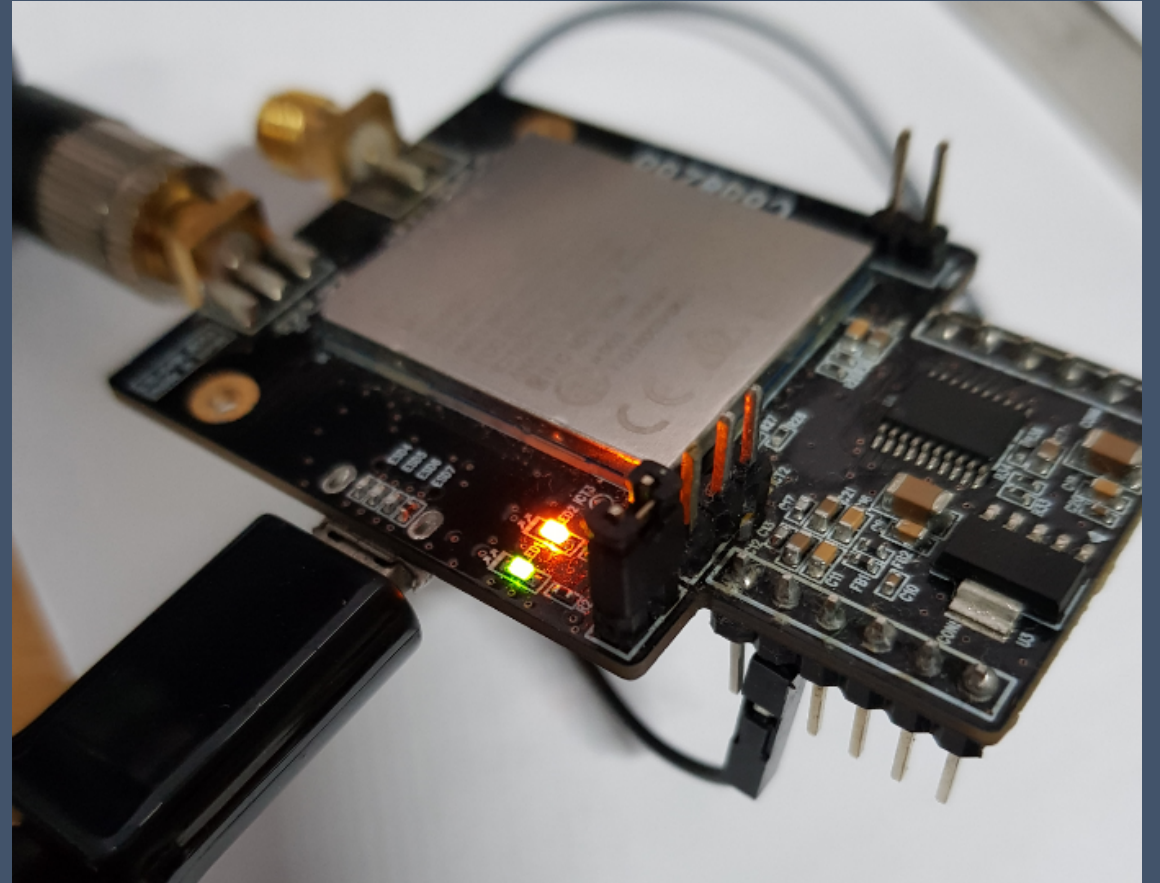
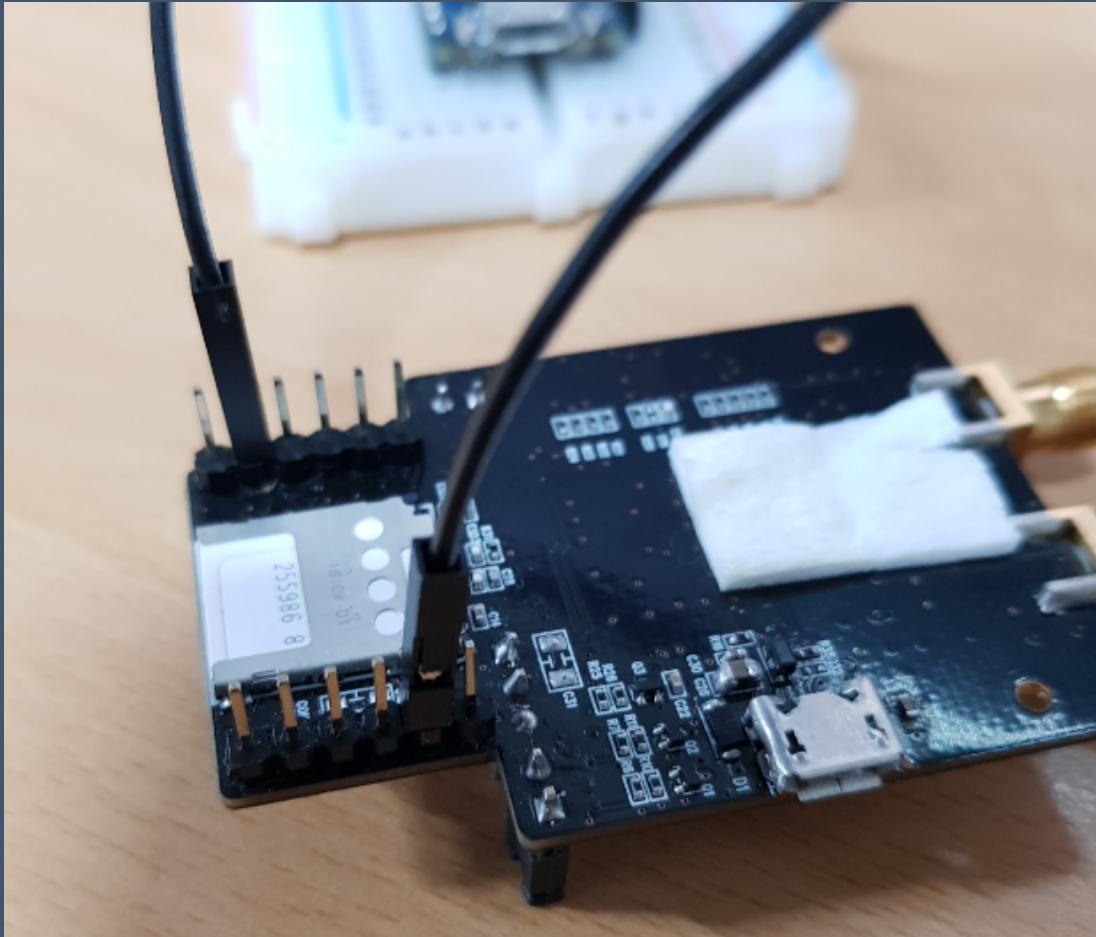
info@simsquare.net

www.simsquare.net

1. CAT.M1 Hardware

AT Command test procedures once it's connected via USB

1. Connect No. 5 from left on bottom to No.2 from right on top as in the photo below
2. Connect Micro USB cable to the USB port of Jetson Nano board



2. CAT.M1 Practice (Jetson Nano Image install)

1. Introduction

<https://developer.nvidia.com/embedded/learn/get-started-jetson-nano-devkit#intro>

2. Prepare for Setup

<https://developer.nvidia.com/embedded/learn/get-started-jetson-nano-devkit#prepare>

3. Write Image to the microSD Card

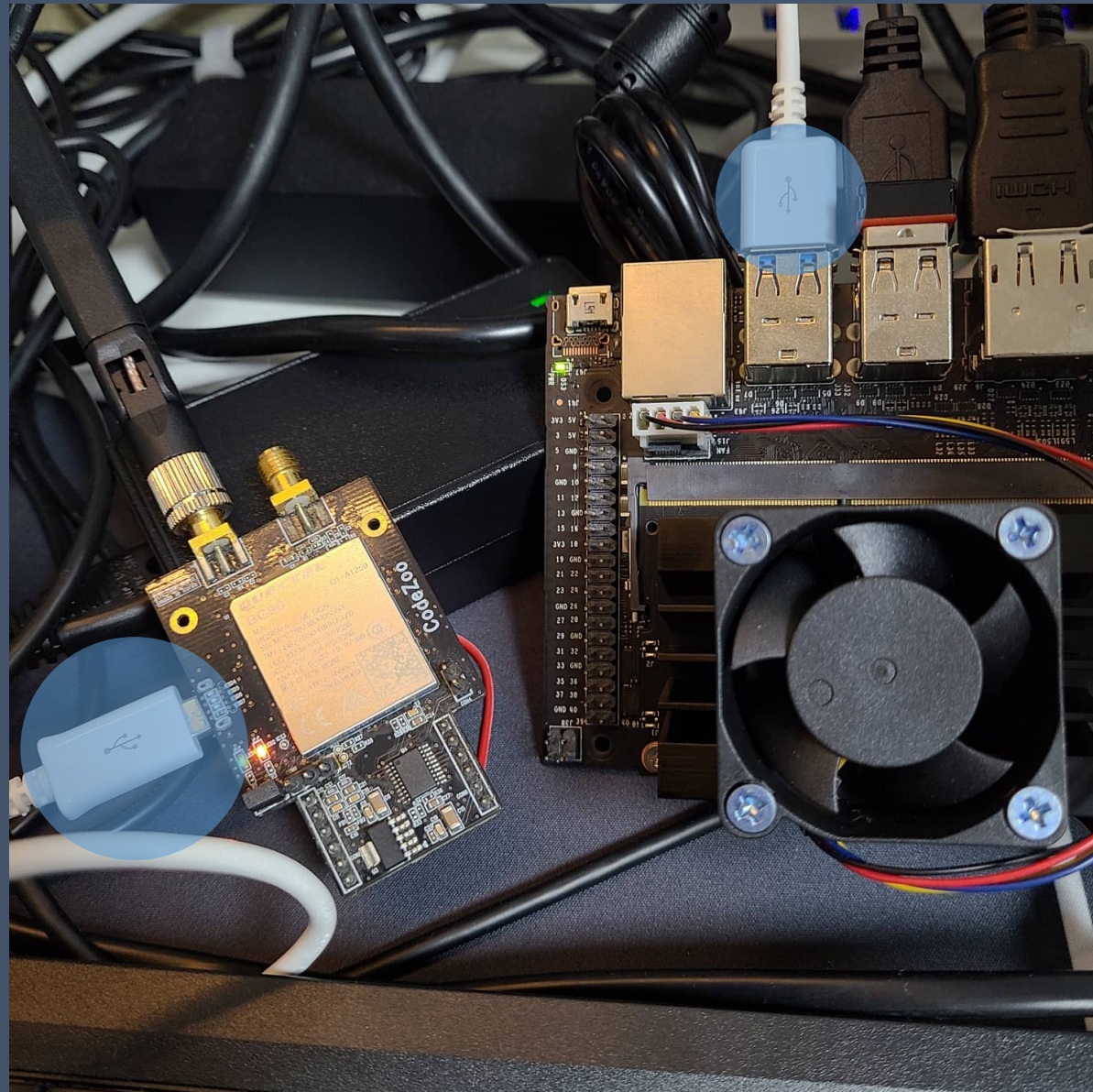
<https://developer.nvidia.com/embedded/learn/get-started-jetson-nano-devkit#write>

4. Setup and First Boot

<https://developer.nvidia.com/embedded/learn/get-started-jetson-nano-devkit#setup>

3. CAT.M1 Connect

Connect Micro USB cable to the USB port of Jetson Nano board



4. CAT.M1 WvDial install

WvDial is used to connect Cat.M1 modem to Jetson Nano via PPP(Point-to-Point Propocol).

1. Install WvDial :

```
sudo apt-get install wvdial
```

2. Edit the default configuration files.

```
sudo nano /etc/wvdial.conf
```

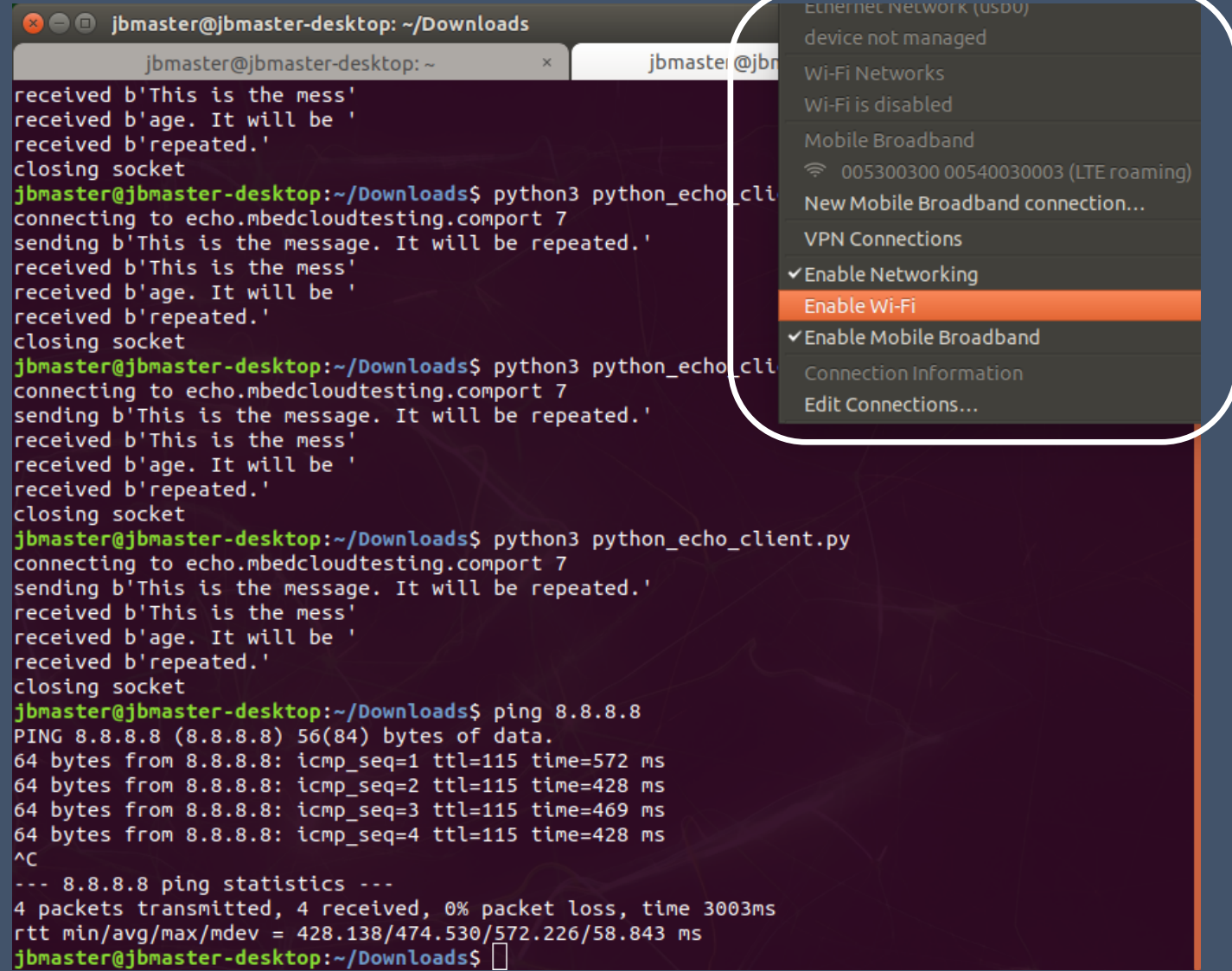
3. Reboot the system once editing is finished.

wvdial.conf

```
[Dialer Defaults]
Modem = /dev/ttyUSB3
Baud = 115200
Init1 = AT+CFUN=1
Init2 = ATZ
Init3 = AT+CGDCONT=1,"IP","internet.lte.cxn"
Phone = *99***1#
Dial Command = ATD
Username = codezoo
Password = codezoo
Auto DNS = 1
Check Def Route = 1
Carrier Check = 0
Stupid Mode = 1
Dial Attempts = 3
ISDN = 0
```

5. CAT.M1 PPP Test

Disable Jetson Nano Wi-Fi connection; click and check off "Enable Wi-Fi"



The image shows a terminal window on the left and a network settings menu on the right. The terminal window displays the output of a Python script and a ping command. The network settings menu is open, showing various network options, with 'Enable Wi-Fi' highlighted.

```
jbmaste@jbmaste-desktop: ~/Downloads
jbmaste@jbmaste-desktop: ~
received b'This is the mess'
received b'age. It will be '
received b'repeated.'
closing socket
jbmaste@jbmaste-desktop:~/Downloads$ python3 python_echo_cli
connecting to echo.mbedcloudtesting.comport 7
sending b'This is the message. It will be repeated.'
received b'This is the mess'
received b'age. It will be '
received b'repeated.'
closing socket
jbmaste@jbmaste-desktop:~/Downloads$ python3 python_echo_cli
connecting to echo.mbedcloudtesting.comport 7
sending b'This is the message. It will be repeated.'
received b'This is the mess'
received b'age. It will be '
received b'repeated.'
closing socket
jbmaste@jbmaste-desktop:~/Downloads$ python3 python_echo_client.py
connecting to echo.mbedcloudtesting.comport 7
sending b'This is the message. It will be repeated.'
received b'This is the mess'
received b'age. It will be '
received b'repeated.'
closing socket
jbmaste@jbmaste-desktop:~/Downloads$ ping 8.8.8.8
PING 8.8.8.8 (8.8.8.8) 56(84) bytes of data.
64 bytes from 8.8.8.8: icmp_seq=1 ttl=115 time=572 ms
64 bytes from 8.8.8.8: icmp_seq=2 ttl=115 time=428 ms
64 bytes from 8.8.8.8: icmp_seq=3 ttl=115 time=469 ms
64 bytes from 8.8.8.8: icmp_seq=4 ttl=115 time=428 ms
^C
--- 8.8.8.8 ping statistics ---
4 packets transmitted, 4 received, 0% packet loss, time 3003ms
rtt min/avg/max/mdev = 428.138/474.530/572.226/58.843 ms
jbmaste@jbmaste-desktop:~/Downloads$
```

The network settings menu shows the following options:

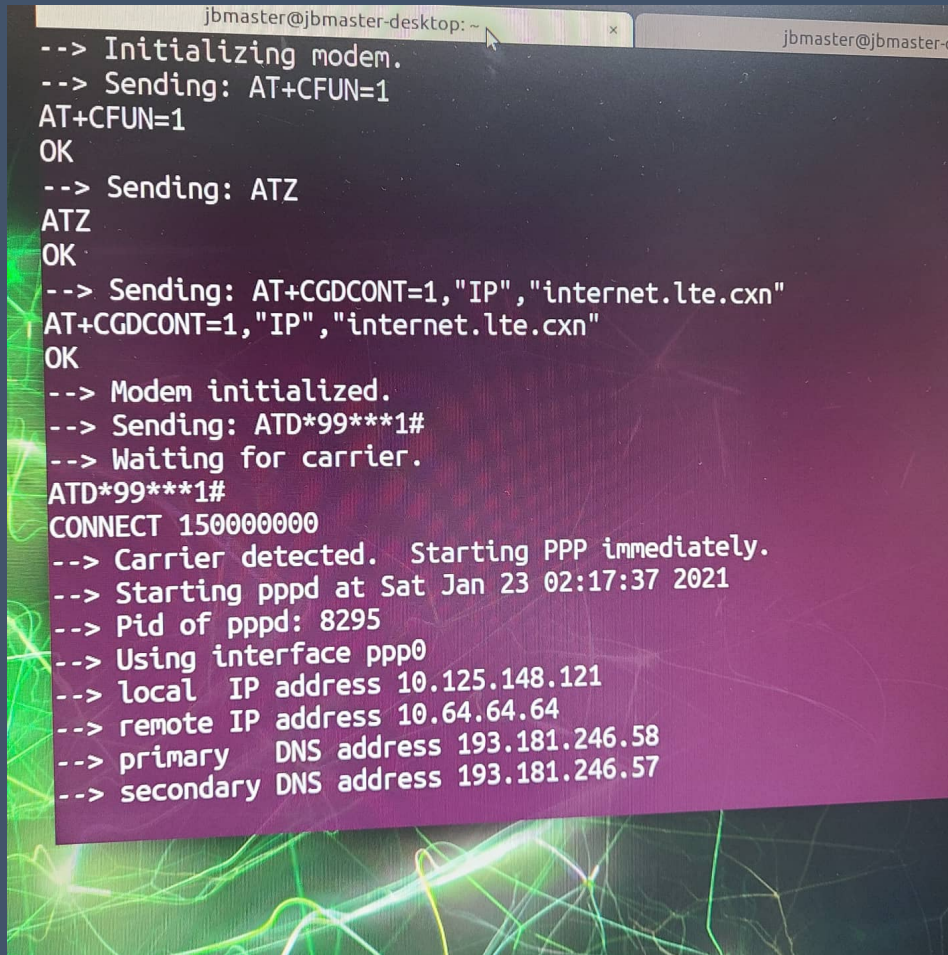
- Ethernet Network (usb0)
- device not managed
- Wi-Fi Networks
- Wi-Fi is disabled
- Mobile Broadband
- 005300300 00540030003 (LTE roaming)
- New Mobile Broadband connection...
- VPN Connections
- ✓ Enable Networking
- Enable Wi-Fi**
- ✓ Enable Mobile Broadband
- Connection Information
- Edit Connections...

5. CAT.M1 PPP Test

Run WvDial and check for connection.

`sudo wvdial`

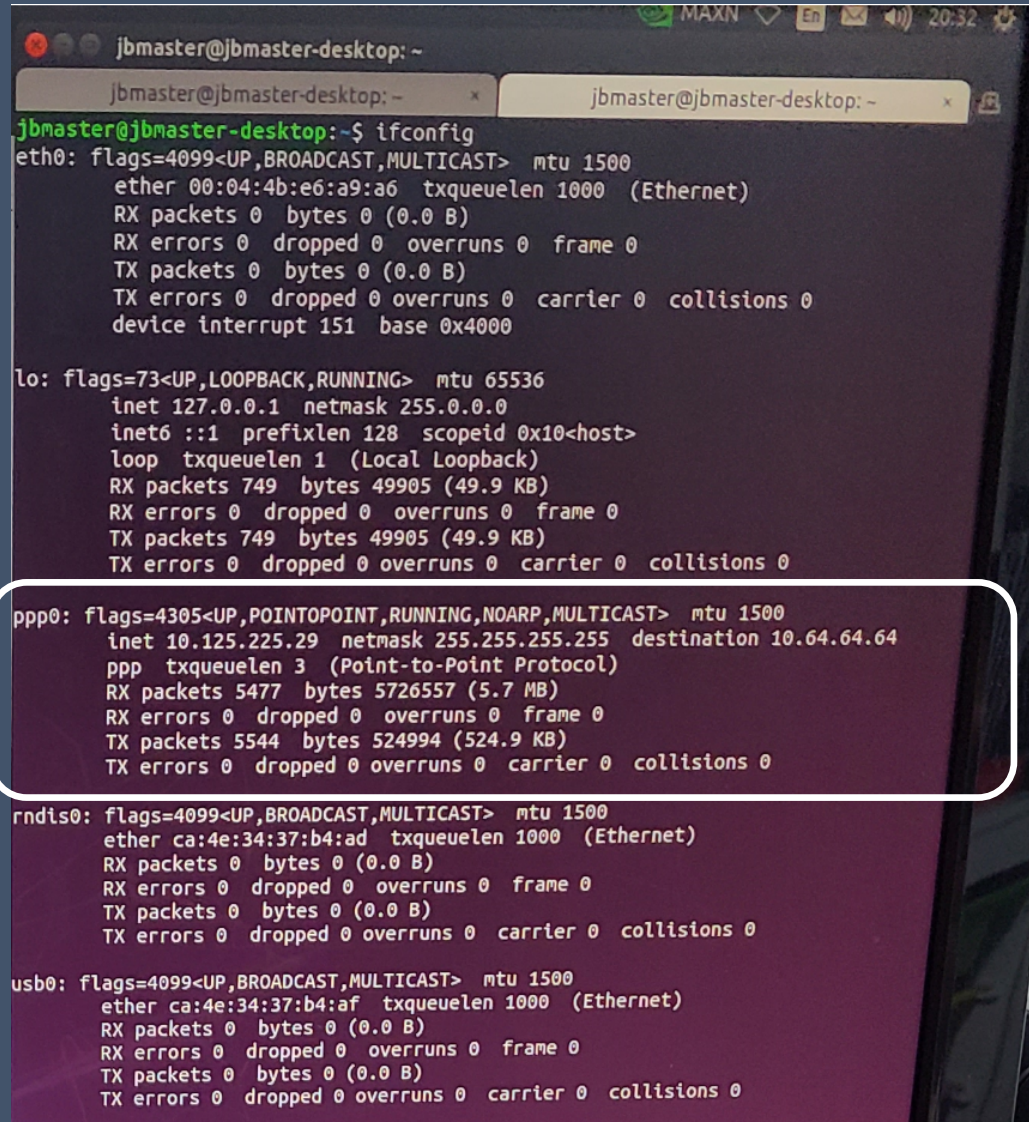
If it's connected, it should be showing as below.

A terminal window screenshot showing the output of the 'wvdial' command. The terminal has a dark background with light green text. The output shows the modem initialization process, including sending AT commands, waiting for a carrier, and successfully establishing a PPP connection with IP addresses and DNS settings.

```
jbmater@jbmater-desktop: ~  
--> Initializing modem.  
--> Sending: AT+CFUN=1  
AT+CFUN=1  
OK  
--> Sending: ATZ  
ATZ  
OK  
--> Sending: AT+CGDCONT=1,"IP","internet.lte.cxn"  
AT+CGDCONT=1,"IP","internet.lte.cxn"  
OK  
--> Modem initialized.  
--> Sending: ATD*99***1#  
--> Waiting for carrier.  
ATD*99***1#  
CONNECT 1500000000  
--> Carrier detected. Starting PPP immediately.  
--> Starting pppd at Sat Jan 23 02:17:37 2021  
--> Pid of pppd: 8295  
--> Using interface ppp0  
--> local IP address 10.125.148.121  
--> remote IP address 10.64.64.64  
--> primary DNS address 193.181.246.58  
--> secondary DNS address 193.181.246.57
```

5. CAT.M1 PPP – operability check

Run ifconfig in Jetson Nano Terminal and check PPP0 device.



```
jbmater@jbmater-desktop: ~  
jbmater@jbmater-desktop: ~  
jbmater@jbmater-desktop: ~$ ifconfig  
eth0: flags=4099<UP,BROADCAST,MULTICAST> mtu 1500  
ether 00:04:4b:e6:a9:a6 txqueuelen 1000 (Ethernet)  
RX packets 0 bytes 0 (0.0 B)  
RX errors 0 dropped 0 overruns 0 frame 0  
TX packets 0 bytes 0 (0.0 B)  
TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0  
device interrupt 151 base 0x4000  
  
lo: flags=73<UP,LOOPBACK,RUNNING> mtu 65536  
inet 127.0.0.1 netmask 255.0.0.0  
inet6 ::1 prefixlen 128 scopeid 0x10<host>  
loop txqueuelen 1 (Local Loopback)  
RX packets 749 bytes 49905 (49.9 KB)  
RX errors 0 dropped 0 overruns 0 frame 0  
TX packets 749 bytes 49905 (49.9 KB)  
TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0  
  
ppp0: flags=4305<UP,POINTOPOINT,RUNNING,NOARP,MULTICAST> mtu 1500  
inet 10.125.225.29 netmask 255.255.255.255 destination 10.64.64.64  
ppp txqueuelen 3 (Point-to-Point Protocol)  
RX packets 5477 bytes 5726557 (5.7 MB)  
RX errors 0 dropped 0 overruns 0 frame 0  
TX packets 5544 bytes 524994 (524.9 KB)  
TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0  
  
rndis0: flags=4099<UP,BROADCAST,MULTICAST> mtu 1500  
ether ca:4e:34:37:b4:ad txqueuelen 1000 (Ethernet)  
RX packets 0 bytes 0 (0.0 B)  
RX errors 0 dropped 0 overruns 0 frame 0  
TX packets 0 bytes 0 (0.0 B)  
TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0  
  
usb0: flags=4099<UP,BROADCAST,MULTICAST> mtu 1500  
ether ca:4e:34:37:b4:af txqueuelen 1000 (Ethernet)  
RX packets 0 bytes 0 (0.0 B)  
RX errors 0 dropped 0 overruns 0 frame 0  
TX packets 0 bytes 0 (0.0 B)  
TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0
```


5. CAT.M1 PPP – operability check

You can use Python codes to test :

python3 python_echo_client.py

```
import socket
import sys

#Create a TCP/IP socket
sock = socket.socket(socket.AF_INET, socket.SOCK_STREAM)

#Connect the socket to the port where the server is listening
server_address = ('echo.mbedcloudtesting.com',7)
print('connecting to {}port {}'.format(*server_address))
sock.connect(server_address)

try:

    #Send data
    message = b'This is the message. It will be repeated.'
    print('sending {!r}'.format(message))
    sock.sendall(message)

    #Look for the response
    amount_received = 0
    amount_expected = len(message)

    while amount_received < amount_expected:
        data = sock.recv(16)
        amount_received += len(data)
        print('received {!r}'.format(data))

finally:
    print('closing socket')
    sock.close()
```

Thank you!