

## Setup Process to use Internet with 4G HAT on Raspberry Pi

**Step 1:** Install PPP server

```
sudo apt-get install ppp
```

**Step 2:** Switch to root permission

```
sudo su
```

**Step 3:** Change directory

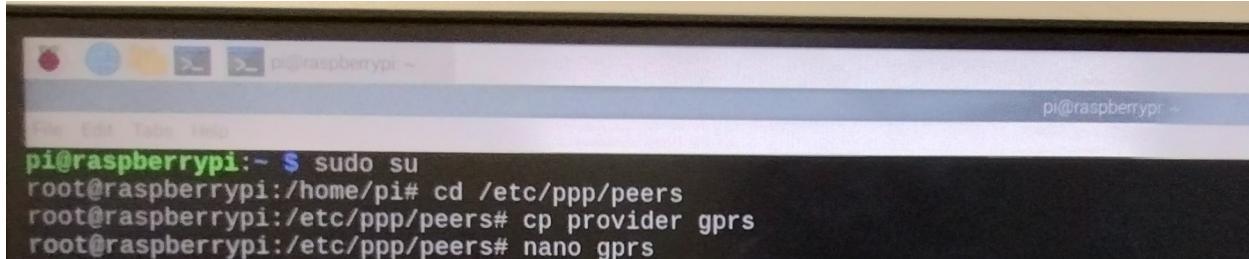
```
cd /etc/ppp/peers
```

**Step 4:** Create copy of provider file to gprs name file

```
cp provider gprs
```

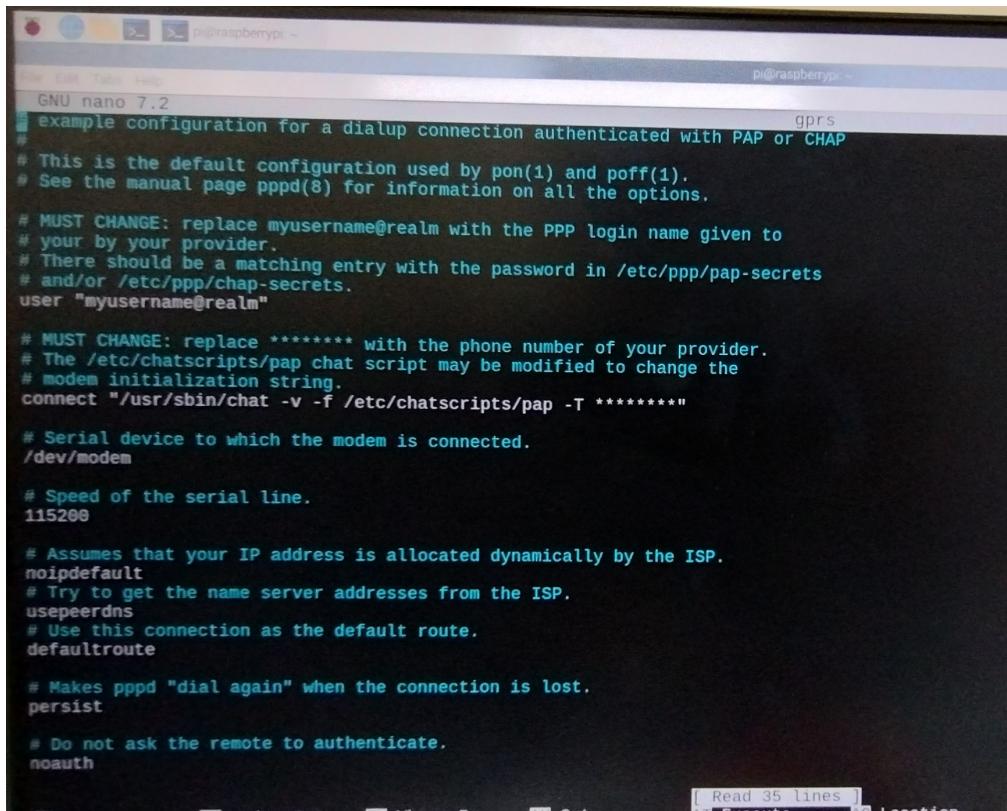
**Step 5:** Open file gprs and edit as instructed in next step

```
nano gprs
```



```
pi@raspberrypi:~ $ sudo su
root@raspberrypi:/home/pi# cd /etc/ppp/peers
root@raspberrypi:/etc/ppp/peers# cp provider gprs
root@raspberrypi:/etc/ppp/peers# nano gprs
```

**Step 6:** Editing gprs file as below. Default file contains,



```

pi@raspberrypi: ~
File Edit Tab Help
GNU nano 7.2 gprs
# example configuration for a dialup connection authenticated with PAP or CHAP
#
# This is the default configuration used by pon(1) and poff(1).
# See the manual page pppd(8) for information on all the options.
#
# MUST CHANGE: replace myusername@realm with the PPP login name given to
# your by your provider.
# There should be a matching entry with the password in /etc/ppp/pap-secrets
# and/or /etc/ppp/chap-secrets.
user "myusername@realm"

# MUST CHANGE: replace ***** with the phone number of your provider.
# The /etc/chatscripts/pap chat script may be modified to change the
# modem initialization string.
connect "/usr/sbin/chat -v -f /etc/chatscripts/pap -T *****

# Serial device to which the modem is connected.
/dev/modem

# Speed of the serial line.
115200

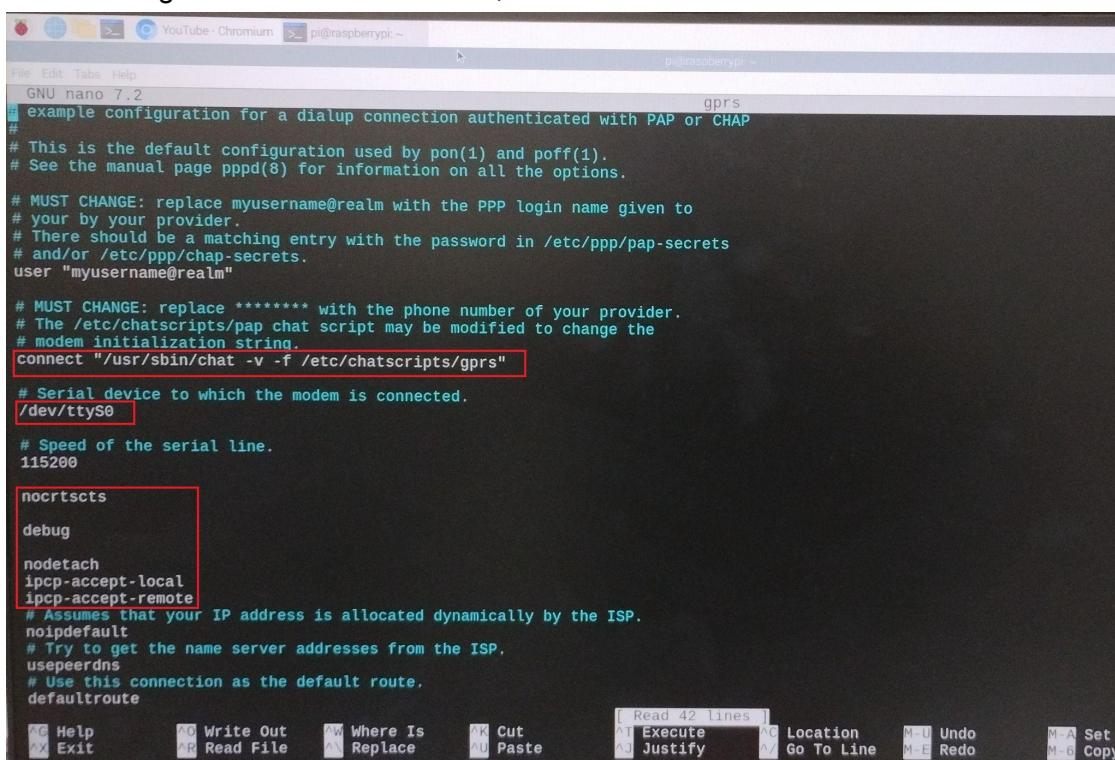
# Assumes that your IP address is allocated dynamically by the ISP.
noipdefault
# Try to get the name server addresses from the ISP.
usepeerdns
# Use this connection as the default route.
defaultroute

# Makes pppd "dial again" when the connection is lost.
persist

# Do not ask the remote to authenticate.
noauth
[ Read 35 lines ]

```

The following contents must be added, then saved.



```

pi@raspberrypi: ~
File Edit Tab Help
GNU nano 7.2 gprs
# example configuration for a dialup connection authenticated with PAP or CHAP
#
# This is the default configuration used by pon(1) and poff(1).
# See the manual page pppd(8) for information on all the options.
#
# MUST CHANGE: replace myusername@realm with the PPP login name given to
# your by your provider.
# There should be a matching entry with the password in /etc/ppp/pap-secrets
# and/or /etc/ppp/chap-secrets.
user "myusername@realm"

# MUST CHANGE: replace ***** with the phone number of your provider.
# The /etc/chatscripts/pap chat script may be modified to change the
# modem initialization string.
connect "/usr/sbin/chat -v -f /etc/chatscripts/gprs"

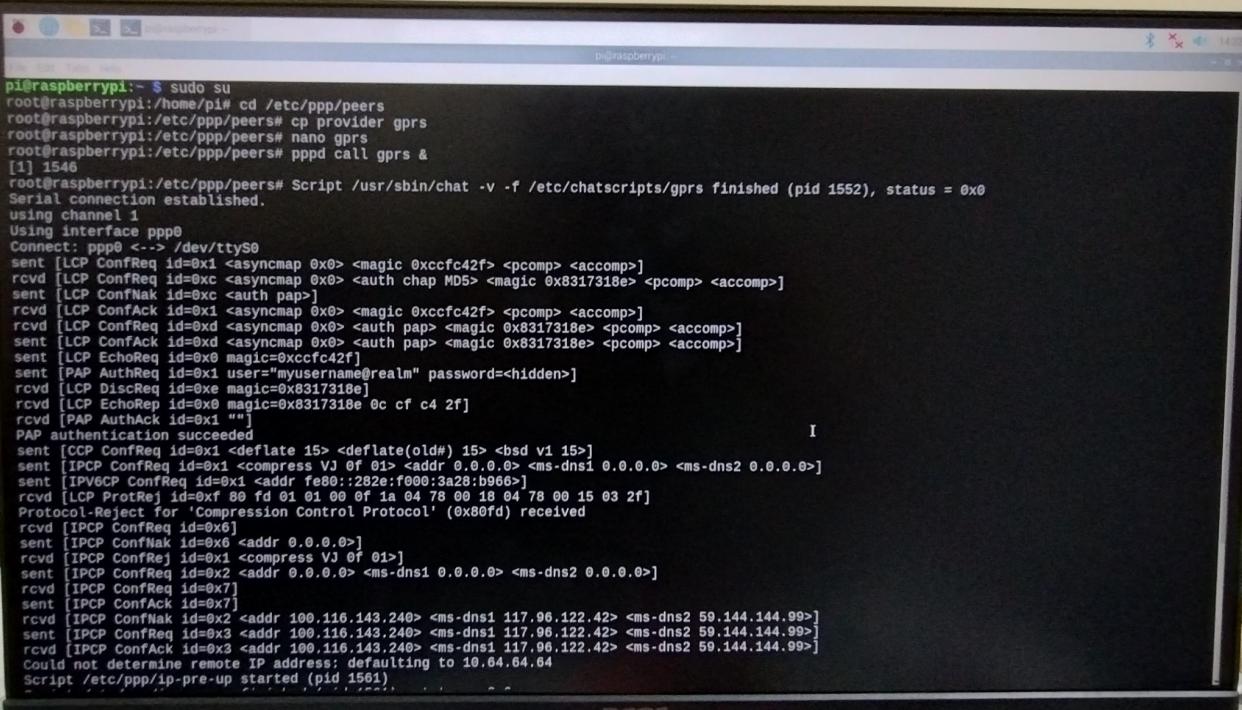
# Serial device to which the modem is connected.
/dev/ttys0

# Speed of the serial line.
115200

nocrtscts
debug
nodelach
ipcp-accept-local
ipcp-accept-remote
# Assumes that your IP address is allocated dynamically by the ISP.
noipdefault
# Try to get the name server addresses from the ISP.
usepeerdns
# Use this connection as the default route.
defaultroute
[ Read 42 lines ]

```

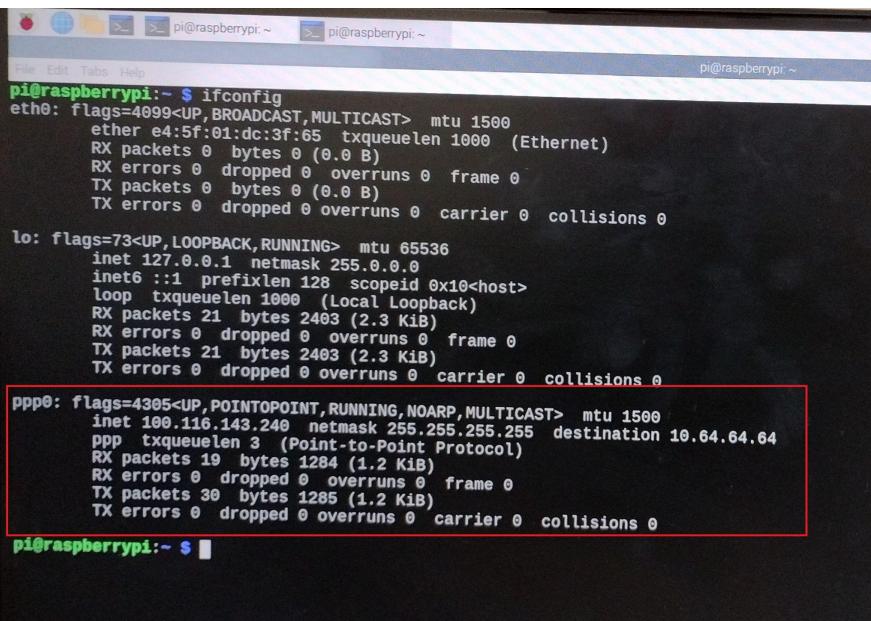
**Step 7:** Execute below command to run it in background  
***pppd call gprs &***



```
pi@raspberrypi:~ $ sudo su
root@raspberrypi:/home/pi# cd /etc/ppp/peers
root@raspberrypi:/etc/ppp/peers# cp provider gprs
root@raspberrypi:/etc/ppp/peers# nano gprs
root@raspberrypi:/etc/ppp/peers# pppd call gprs &
[1] 1546
root@raspberrypi:/etc/ppp/peers# Script /usr/sbin/chat -v -f /etc/chatscripts/gprs finished (pid 1552), status = 0x0
Serial connection established.
using channel 1
Using interface ppp0
Connect: ppp0 <-> /dev/ttys0
sent [LCP ConfReq id=0x1 <asyncmap 0x0> <magic 0xccfc42f> <pcomp> <accomp>]
rcvd [LCP ConfReq id=0xc <asyncmap 0x0> <auth chap MD5> <magic 0x8317318e> <pcomp> <accomp>]
sent [LCP ConfNak id=0xc <auth pap>]
rcvd [LCP ConfAck id=0x1 <asyncmap 0x0> <magic 0xccfc42f> <pcomp> <accomp>]
rcvd [LCP ConfReq id=0xd <asyncmap 0x0> <auth pap> <magic 0x8317318e> <pcomp> <accomp>]
sent [LCP ConfAck id=0xd <asyncmap 0x0> <auth pap> <magic 0x8317318e> <pcomp> <accomp>]
sent [LCP EchoReq id=0x0 magic=0xccfc42f]
sent [PAP AuthReq id=0x1 user="myusername@realm" password=<hidden>]
rcvd [LCP DiscReq id=0x0 magic=0x8317318e]
rcvd [LCP EchoReq id=0x0 magic=0x8317318e '0c cf c4 2f']
rcvd [PAP AuthAck id=0x1 ""]
PAP authentication succeeded
sent [CCP ConReq id=0x1 <deflate 15> <deflate(old#) 15> <bsd v1 15>]
sent [IPCP ConReq id=0x1 <compress VJ 0f 01> <addr 0.0.0.0> <ms-dns1 0.0.0.0> <ms-dns2 0.0.0.0>]
sent [IPV6CP ConReq id=0x1 <compress V6 0f 01> <addr fe80::282e:f000:3a2b:b966>]
rcvd [LCP ProtRej id=0xf 80 fd 01 01 00 0f 1a 04 78 00 18 04 78 00 15 03 2f]
Protocol-Reject for 'Compression Control Protocol' (0x80fd) received
rcvd [IPCP ConReq id=0x6]
sent [IPCP ConfNak id=0x0 <addr 0.0.0.0>]
rcvd [IPCP ConRej id=0x1 <compress V1 0f 01>]
sent [IPCP ConReq id=0x2 <addr 0.0.0.0> <ms-dns1 0.0.0.0> <ms-dns2 0.0.0.0>]
rcvd [IPCP ConReq id=0x7]
sent [IPCP ConfAck id=0x7]
rcvd [IPCP ConfNak id=0x2 <addr 100.116.143.240> <ms-dns1 117.96.122.42> <ms-dns2 59.144.144.99>]
sent [IPCP ConReq id=0x3 <addr 100.116.143.240> <ms-dns1 117.96.122.42> <ms-dns2 59.144.144.99>]
rcvd [IPCP ConfAck id=0x3 <addr 100.116.143.240> <ms-dns1 117.96.122.42> <ms-dns2 59.144.144.99>]
Could not determine remote IP address: defaulting to 10.64.64.64
Script /etc/ppp/ip-pre-up started (pid 1561)
```

At this step the internet is running from HAT.

**Step 8:** Verifying 4G HAT internet, Type below commands:  
***ifconfig***



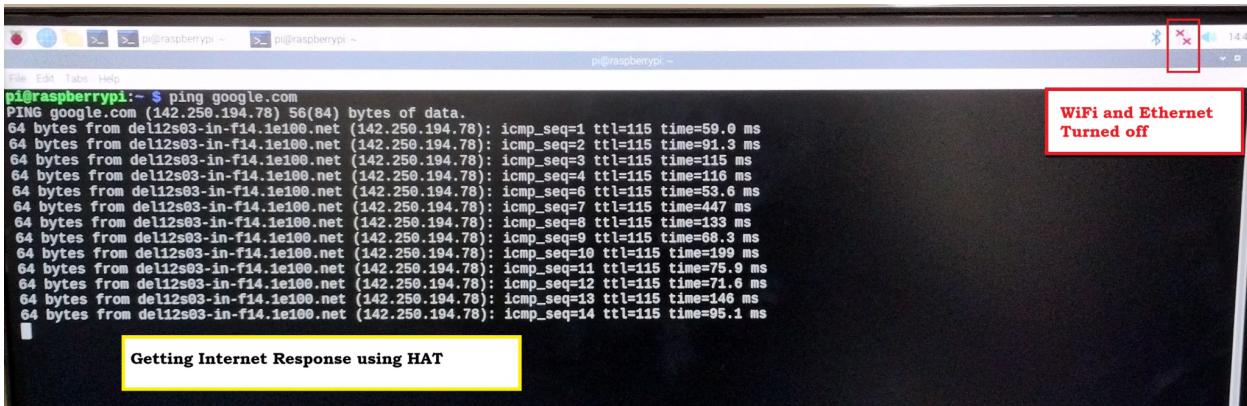
```
pi@raspberrypi:~ $ ifconfig
eth0: flags=4099<UP,BROADCAST,MULTICAST> mtu 1500
      ether e4:5f:01:dc:3f:65 txqueuelen 1000  (Ethernet)
      RX packets 0 bytes 0 (0.0 B)
      RX errors 0 dropped 0 overruns 0 frame 0
      TX packets 0 bytes 0 (0.0 B)
      TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

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 1000  (Local Loopback)
      RX packets 21 bytes 2403 (2.3 KiB)
      RX errors 0 dropped 0 overruns 0 frame 0
      TX packets 21 bytes 2403 (2.3 KiB)
      TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

ppp0: flags=4305<UP,POINTOPOINT,RUNNING,NOARP,MULTICAST> mtu 1500
      inet 100.116.143.240 netmask 255.255.255.255 destination 10.64.64.64
      ppp txqueuelen 3  (Point-to-Point Protocol)
      RX packets 19 bytes 1284 (1.2 KiB)
      RX errors 0 dropped 0 overruns 0 frame 0
      TX packets 30 bytes 1285 (1.2 KiB)
      TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

pi@raspberrypi:~ $
```

Switch off other internet options on Raspberry Pi like Ethernet and WiFi. Then ping to any site you will get a response due to 4G Hat internet.



```
pi@raspberrypi:~ $ ping google.com
PING google.com (142.250.194.78) 56(84) bytes of data.
64 bytes from del12s03-in-f14.1e100.net (142.250.194.78): icmp_seq=1 ttl=115 time=59.0 ms
64 bytes from del12s03-in-f14.1e100.net (142.250.194.78): icmp_seq=2 ttl=115 time=91.3 ms
64 bytes from del12s03-in-f14.1e100.net (142.250.194.78): icmp_seq=3 ttl=115 time=115 ms
64 bytes from del12s03-in-f14.1e100.net (142.250.194.78): icmp_seq=4 ttl=115 time=116 ms
64 bytes from del12s03-in-f14.1e100.net (142.250.194.78): icmp_seq=5 ttl=115 time=53.6 ms
64 bytes from del12s03-in-f14.1e100.net (142.250.194.78): icmp_seq=6 ttl=115 time=447 ms
64 bytes from del12s03-in-f14.1e100.net (142.250.194.78): icmp_seq=7 ttl=115 time=133 ms
64 bytes from del12s03-in-f14.1e100.net (142.250.194.78): icmp_seq=8 ttl=115 time=68.3 ms
64 bytes from del12s03-in-f14.1e100.net (142.250.194.78): icmp_seq=9 ttl=115 time=199 ms
64 bytes from del12s03-in-f14.1e100.net (142.250.194.78): icmp_seq=10 ttl=115 time=75.9 ms
64 bytes from del12s03-in-f14.1e100.net (142.250.194.78): icmp_seq=11 ttl=115 time=71.6 ms
64 bytes from del12s03-in-f14.1e100.net (142.250.194.78): icmp_seq=12 ttl=115 time=146 ms
64 bytes from del12s03-in-f14.1e100.net (142.250.194.78): icmp_seq=13 ttl=115 time=95.1 ms
64 bytes from del12s03-in-f14.1e100.net (142.250.194.78): icmp_seq=14 ttl=115 time=95.1 ms
```

Getting Internet Response using HAT

WiFi and Ethernet  
Turned off