# GNSS

- wonderful introduction on GNSS
- stations that broadcast real time RTCM (protocol) Radio Technical Commission for Maritime
- ubxtool examples
- NEO-M9N
- ZED-F9P

## 2022

Use gpsd as ntrip client on ublox device

pygnssutils

Configure ublox as base station and run an rtrip server with PyGPSClient

## 2020

### ntrip caster

- https://gitlab.com/ihfazhillah/simple-ntrip-caster/-/tree/master
- https://gitlab.com/hydrasystem/ntripcaster.git

sourcetable.dat

```
CAS;rtcm-
ntrip.org;2101;NtripInfoCaster;BKG;0;DEU;50.12;8.69;http://www.rtcm-ntrip.or
g/home
STR;castagne;Verona;RTCM3;none;1;none;TEST;ITA;45.4935250;11.1068889;421;0;r
eceiver5;none;B;N;3600;none
```

test caster, must return source table

```
curl http://192.168.2.50:2101
```

### ntrip base station

configure ublox in NMEA

```
systemctl stop gpsd
systemctl stop gpsd.socket

DEVICE=/dev/gps0
ubxtool -f $DEVICE -p RESET
```

```
ubxtool -f $DEVICE -e NMEA
ubxtool -f $DEVICE -d BINARY
ubxtool -f $DEVICE -p SAVE
```

ntrip source

```
str2str -in 'serial://ttyACM0:115200#stq' -out
'ntrips://:mev@localhost:2101/castagne#rtcm2' -p 45.4935250 011.1068889 421
-msg "1004,1006,1019,1033,1012,1030"
```

GPS

```
gpsd -N -n -D3 /dev/gps0 # no -b option


# with DGPS
gpsd -N -n -D3 /dev/gps0 ntrip://NTRIP.itsware.net:2101/AB50_RTCM3
psd -N -n -D1 /dev/gps0 ntrip://rtk2go.com:2101/MEV0
```

```
ubxtool -p MON-VER

UBX-MON-VER:
  swVersion EXT CORE 1.00 (61b2dd)
  hwVersion 00190000
  extension ROM BASE 0x118B2060
  extension FWVER=HPG 1.12
  extension PROTVER=27.11
  extension MOD=ZED-F9P
  extension GPS;GLO;GAL;BDS
  extension QZSS


export UBXOPTS="-P 27.11 -v 2"
ubxtool -p RESET
ubxtool -e BINARY
ubxtool -e NMEA
```

get current dynamic mode

```
ubxtool -p CFG-NAV5

...
dynModel (Portable)
...


# or
ubxtool -p CFG-NAV5 | grep dynModel
```

switch model to automotive

```
ubxtool -p MODEL,4
ubxtool -p SAVE
```

# udev

/etc/udev/rules.d/91-ubox.rules

```
#SUBSYSTEMS=="usb", DRIVERS=="usb", ACTION=="add",
ATTRS{idVendor}=="1546", ATTRS{idProduct}=="01a9", SYMLINK+="gps0",
MODE="0666"
ATTRS{idVendor}=="1546", ATTRS{idProduct}=="01a9", SYMLINK+="gps%n",
TAG+="systemd", ENV{SYSTEMD_WANTS}="gpsdctl@%k.service"
```

/etc/default/gpsd

```
START_DAEMON="false"
# binary mode for ublox
GPSD_OPTIONS="-b"
DEVICES=""
USBAUTO="true"
```

# test

- https://gpsd.gitlab.io/gpsd/ppp-howto.html

```
gpsd -b -N /dev/ttyACM0

gpspipe -r | nc -l 29999
```

```
yay -S qt5-location
```

qml

```
import QtQuick 2.1
import QtQuick.Window 2.0
import QtPositioning 5.5
import QtLocation 5.6

Window {
  id:page
  width: 1024
  height: 1024
  visible: true

  Map {
```

```
    id:myMap
    anchors.fill: parent
    plugin: mapPlugin
    zoomLevel: 23

    property MapCircle circle

    function update(pos) {
      removeMapItem(circle);

      circle = Qt.createQmlObject('import QtLocation 5.3; MapCircle {}',
page);
      circle.radius = 2;
      circle.color = "transparent";
      circle.border.color = "red"
      circle.border.width = 3;
      myMap.addMapItem(circle);

      circle.center = pos.coordinate;
      myMap.center = pos.coordinate;

      //console.log("Coordinates: ", pos.coordinate.latitude,
pos.coordinate.longitude);
    }
  }

  Plugin {
    id: mapPlugin
    name: "osm"
  }

  PositionSource {
    id: gpsPos
    updateInterval: 500
    active: true
    nmeaSource: "socket://localhost:29999"

    onPositionChanged: {
      myMap.update(position);
    }
  }
}
```