GPSClient Manual

**1. Installing Required Softwares**

This manual is using **Ubuntu 12.04 LTS** Linux distribution and assuming build tools (GCC C compiler, make, etc.) has been previously installed.

**1.1 GPSD**

Issue this following command to install gpsd related packages:

$ sudo apt-get install gpsd libgps-dev python-gps

Configure gpsd to run on a specified GPS device such as through USB (/dev/USBX) or serial port (/dev/ttySX), for example to run GPSD on a USB GPS:

$ gpsd -b -S 2947 -N /dev/ttyUSB0

Alternatively, to run GPSD without having a real GPS device, use **gpsfake** program (shipped by python-gps package) with NMEA log (gps.log) file included in gpsclient tarball.

$ cd gpsclient

$ gpsfake gps.log

Then GPSD should be started automatically and ready for streaming.

**1.2. PostgreSQL**

Issue these following commands to install PostgreSQL related packages:

$ sudo apt-get install postgresql postgresql-client libpq-dev

$ sudo /etc/init.d/postgresql start

Create a table on a specific database, the table schema can be found in **database.sql** in gpsclient tarball. Follow this command to create table on a database name **dbname** with user **postgres**

$ psql -h localhost -U postgres dbname < database.sql

Please consider to create another user and grant any required permissions, the user **postgres** is intended for administration and example only.

**2. Build, Configure and Run**

The supplied gpsclient tarball already contain gpsclient binary file in order to just running, goto section 2.3 Running to start gpsclient without building.

**2.1 Build**

Assuming build tools have been installed, issue these following command to build:

$ tar xzf gpsclient.tar.gz

$ cd gpsclient

$ make

If success gpsclient binary file name **gpsclient** will be created.

**2.2. Configuration**

Configuration can be changed by editing **gpsclient.conf** file, the following table describes each of configuration key.

|  |  |  |
| --- | --- | --- |
| Key name | Default value | Description |
| client-name | client | Cient name |
| ucast-addr | 0.0.0.0 | Unicast address to bind, ex 192.168.10.1. When not specified will bind on any address |
| ucast-port | 6000 | Unicast port |
| mcast-addr | 0.0.0.0 | Multicast address to bind, when not specified will bind on any address |
| mcast-port | 6001 | Multicast port |
| mcast-group-addr | 224.0.0.1 | Multicast group address |
| bcast-addr | 0.0.0.0 | Broadcast address to bind, ex 192.168.10.255. If not specified will bind on any address |
| bcast-port | 6002 | Broadcast port |
| packet-validation | yes | Whether to enable or disable packet validation check, if set to “yes” any received packet will be checked to match packet’s format rule. Set to “no” to disable |
| gpsd-addr | 127.0.0.1 | GPSD host address |
| gpsd-port | 2947 | GPSD host port |
| db-addr | 127.0.0.1 | Database host address |
| db-port | 5432 | Database host port |
| db-name | db-name | Database name |
| db-user | db-user | Database username |
| db-passwd | db-passwd | Database username’s password |
| buffer-file | /tmp/gpsclient.db | Buffer file used to store data temporary |
| buffer-interval | 10 | Interval to send data in buffer in second |

**2.3. Running**

To run gpsclient use the following command template:

$ ./gpsclient <configuration-file>

For example:

$ ./gpsclient gpsclient.conf

Or to run in background and redirect output to a file gpsclient.log:

$ ./gpsclient gpsclient.conf > gpsclient.log 2>&1&

Example output

$ ./gpsclient gpsclient.conf

[INFO] 140422.110557.07 client-name=client1

[INFO] 140422.110557.08 ucast=192.168.0.2:6000 mcast=192.168.0.2:6001 mcast-group-addr=224.0.0.1 bcast=192.168.0.255:6002

[INFO] 140422.110557.08 gpsd-addr=127.0.0.1 gpsd-port=2947 [config.c:46]

[INFO] 140422.110557.08 db-addr=127.0.0.1 db-port=5432 db-name=rpos db-user=postgres db-passwd=passwd

[INFO] 140422.110557.08 buffer-file=/home/ardhanm/gpsclient.db buffer-interval=10

[INFO] 140422.110557.37 processed 2 records to db

[INFO] 140422.110557.76 msg recvd type=bcast addr=192.168.0.2

[INFO] 140422.110557.76 type=bcast addr=192.168.0.2 tsp=1352036978.000000 lat=55.671197 lon=12.521450

[INFO] 140422.110558.81 msg recvd type=ucast addr=192.168.0.2

[INFO] 140422.110558.81 type=ucast addr=192.168.0.2 tsp=1352037139.000000 lat=55.670537 lon=12.521670

**4. Problem and Solving**

**4.1 Examine Error and Warning Message**

Some known error messages

|  |  |
| --- | --- |
| Error message | Resolution |
| [ERROR] could not read config file | Configuration file was not found or could not be read, check if configuration file exists and has permission to read |
| [ERROR] could not connect to gpsd | Check whether GPSD is running and gpsd address and port has been configured correctly in configuration file |
| [ERROR] could not read gpsd | Check whether GPSD is running |
| [ERROR] could not connect to database | Check whether PostgreSQL server is running and make sure database address, port, name, username and password has been configured correctly in configuration file. Examine gpsclient log (output) to see further error messages |
| [ERROR] could not initialize buffer file | Check whether buffer file is exists and has permission to access it |
| [WARNING] invalid header hdr=XX addr=X.X.X.X | Received an invalid message header |
| [WARNING] invalid msg length len=XX addr=X.X.X.X | Received invalid message length |
| [WARNING] invalid checksum crc=XX addr=X.X.X.X | Received message with invalid checksum |

**4.2. Examine Database Record**

Example command to view database record:

$ psql -h localhost -U postgres gpsdb -c "select \* from gpsclient limit 10"

client\_name | client\_ip | sender\_ip | gps\_tsp | gps\_latitude | gps\_longitude | packet\_type

-------------+---------------+-------------+------------+--------------+---------------+-------------

client1 | 192.168.0.2 | 192.168.0.2 | 1352037664 | 55.670768 | 12.519293 | 1

client1 | 192.168.0.255 | 192.168.0.2 | 1352037150 | 55.67048 | 12.5215 | 3

client1 | 192.168.0.2 | 192.168.0.2 | 1352037139 | 55.670537 | 12.52167 | 1

client1 | 192.168.0.255 | 192.168.0.2 | 1352036978 | 55.671197 | 12.52145 | 3

client1 | 192.168.0.2 | 192.168.0.2 | 1352036967 | 55.671195 | 12.521498 | 1

client1 | 192.168.0.255 | 192.168.0.2 | 1352037770 | 55.671368 | 12.518645 | 3

client1 | 192.168.0.2 | 192.168.0.2 | 1352037236 | 55.670093 | 12.520463 | 1

client1 | 192.168.0.255 | 192.168.0.2 | 1352037085 | 55.671082 | 12.521853 | 3

client1 | 192.168.0.2 | 192.168.0.2 | 1352037123 | 55.670703 | 12.521867 | 1

client1 | 192.168.0.255 | 192.168.0.2 | 1352036974 | 55.6712 | 12.52146 | 3

(10 rows)

Database table column’s description:

|  |  |
| --- | --- |
| Column Name | Description |
| client\_name | Name of the client |
| client\_ip | Client IP address |
| sender\_ip | IP address of sender |
| gps\_tsp | GPS fix timestamp |
| gps\_latitude | GPS fix latitude |
| gps\_longitude | GPS fix longitude |
| packet\_type | Type of packet where:  0 = manual, 1 = unicast, 2 = multicast, 3 = broadcast |