

Android GPS Driver User Guide

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About the Document

History

Revision	Date	Author	Description
1.0	2014-05-06	Joe WANG	Initial
1.1	2015-04-11	Kent XU	Added applicable modules

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1 Introduction

This document mainly introduces how to integrate the GPS driver into Android OS for Quectel GPS module.

This document is applicable to Quectel GPS series modules and UC20 module.

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2 System Integration

This chapter describes the structure of Android GPS driver and explains how to integrate the GPS driver into Android OS of Quectel GPS module.

2.1. The Structure of Android GPS Driver

GPS is a kind of hierarchical structure. GPS devices transmit the GPS data to Android GPS applications through GPS hardware driver. Then GPS HAL driver transmits the received GPS data to GPS applications through JNI and Framework. The following figure illustrates the structure of GPS driver.

Quectel GPS driver works in HAL, and it will be compiled as “gps.default.so” file.

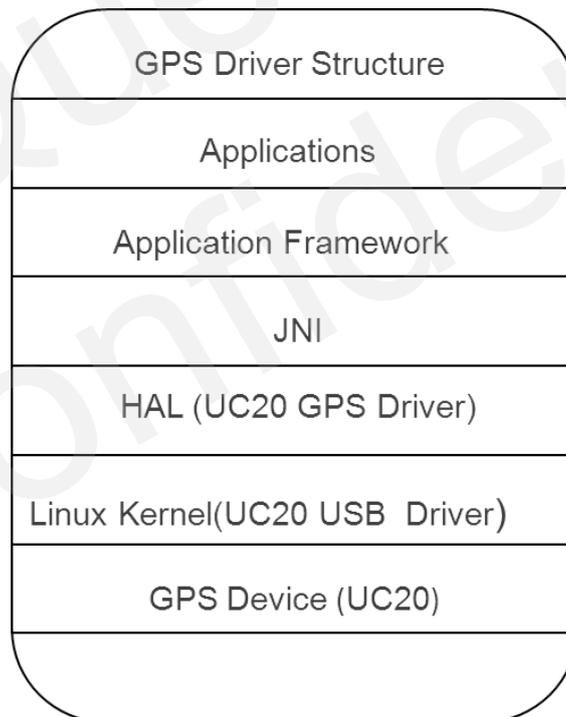


Figure 1: GPS Driver Structure (Take UC20 for Example)

2.2. Compile Driver

If your platform is developed based on Android OS, you must retrieve the Android source code files and install an appropriate cross compiler first. Then compile the Android source file to generate an image file and download the image file into the target machine. The detailed steps are shown as below.

2.2.1. Copy Source Code Directory of GPS Driver

Copy the “gps/” from source code directory of Quectel GPS driver to “(_\$AndroidSourceRoot)/hardware/libhardware/modules”.

2.2.2. Modify Android Makefile

Modify the “Android.mk” file under the “(_\$AndroidSourceRoot)/hardware/libhardware/modules” directory as below:

```
hardware_modules := gralloc hwcomposer audio nfc gps  
include $(call all-named-subdir-makefiles,$(hardware_modules))
```

2.2.3. Compile Android Source File

In this step, you can build your Android source code project and create a new image file for target device. When the image file is created, please download it to your target board and test it with Quectel GPS module.

2.3. Load GPS Driver

When Quectel GPS module is connected with the Android system mentioned above, the system will recognize Quectel GPS module first and load the GPS driver. After the GPS driver has been loaded, you can use GPS Application to test.

3 Supplementary Note

When you use Quectel GPS driver, you may encounter some problems or you want to modify it, here are some instructions that may help you.

3.1. Modify GPS Configuration File

Quectel GPS driver has a configuration file named "gps_cfg.inf", you should copy it to "/system/etc" on your board, and modify the file to adapt your requirement as below:

1. Modify GPS module type (take UC20 for example):

```
MODULE_TYPE=UC20
```

2. Modify NMEA port path (take UC20 for example):

```
NMEA_PORT_PATH=/dev/ttyUSB1
```

3. Modify baud rate (take UC20 for example):

```
BAUD_RATE=115200
```

3.2. Modify GPS Log Mode (Optional)

The default GPS log mode is system mode, you can get log by following command:

```
logcat -s gps_ql
```

If you need to redirect GPS log to other log file, you can modify following code in "gps_ql.c":

```
#define QL_GPS_LOG
```

The default GPS log file is "/mnt/ql_gps_log". If you need to change it, you can modify the following code in "ql-log.c":

```
#define QL_GPS_LOG_PATH "/mnt/ql_gps_log"
```

3.3. Modify Log Level (Optional)

The default GPS log level is “LOG_INFO”. If you need to modify it, you can modify the following code in “gps_qt.c”:

```
# define LOG_LVL LOG_INFO
```

3.4. Delete Other “gps.*.so” File

If there are other “gps.*.so” files in the directory of “/system/lib/hw”, you should delete them except for “gps.default.so”, to ensure that the system can recognize the correct GPS driver.

3.5. Fail to Get GPS Data

If your GPS application fails to get GPS data, you should check the following aspects:

- Move your GPS antenna out of your window, make sure it can receive GPS signal.
- Ensure the directory of “/system/lib/hw” only has “gps.default.so”.
- Ensure you have modify “gps_cfg.inf” correctly.
- Ensure “gps_cfg.inf” is in the right directory on your board.
- Ensure the GPS in Android system setting has been enabled.
- Check GPS log to ensure the GPS driver has been loaded.
- If you have checked all the aspects above, and the problem cannot be solved yet, please modify the GPS log level to “LOG_DEBUG”. After obtaining GPS log file, please send the file to Quectel technical support, we will solve your problem as soon as possible.

4 Appendix A Reference

Table 1: Terms and Abbreviations

Abbreviation	Description
GPS	Global Position System
HAL	Hardware Abstraction Layer
OS	Operating System

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