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QUECTEL LTE Standard Module Series User Guide

**QDownloadProj Linux
User Guide
LTE Standard Module Series
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Contents

LTE Standard Module Series

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About the Document

Revision History

Version	Date	Author	Description
–	3/6/2024	Aaron LIU	Creation of the document
1.0	3/25/2024	Aaron LIU	First official release

Introduction

This document outlines how to use the QDownloadProj toolkit to upgrade the firmware of Quectel EG800Q series, EG915Q series and EG916Q-GL modules on a Linux system.

Toolkit

QDownloadProj toolkit includes configuration files, the executable file, header files, source code files, usage demos, compilation demos, and the tool release note, as listed below.
Table 1: File List

Folder/File	Description
demo	Configuration files and JSON files used for erasing partitions.
gccout	Executable file generated by compilation.
inc	Header files.
src	Source code files.
cli_demo.txt	Usage demos.
compile_cmd.txt	Compilation demos.
ReleaseNote	Release note.

Parameters

QDownloadProj supports multiple parameters for different commands, and you can configure the specified parameters as needed. This chapter provides a detailed description of the usage and configuration of each parameter.

Table 2: Parameter Description

Command	Description
-p <port>	Configures the UART or USB port number for downloading firmware. \<port>: UART or USB port number. String without double quotes. Required parameter.
-c <cfgfile>	Configures the path of the configuration file required for firmware upgrade. \<cfgfile>: Configuration file path, determined by the module model. String without double quotes. Required parameter.
-S	Divides the FullFOTA upgrade package into three independent files (BL, AP and CP types) used for the upgrade.
-b <image>	Downloads an independent file, such as -b BL. \<image>: Type of independent file. String without double quotes. Required parameter. BL Bin file whose name starts with ap_bootloader AP Bin file whose name starts with ap_at_command CP Bin file whose name starts with cp-demo-flash
-B <image> …	Downloads multiple independent files and separate two files with a space, such as -B "BL AP CP". \<image>: Type of independent file. String with double quotes. Required parameter. BL Bin file whose name starts with ap_bootloader AP Bin file whose name starts with ap_at_command CP Bin file whose name starts with cp-demo-flash
-e <partition>	Erases a partition, such as -e "0x800000 0x400000 0". \<partition>: Partition to be erased. String with double quotes. Format: \<addr> \<length> \<type>. Required parameter. \<addr>: Integer type. Starting address for erasure. Required parameter. \<length>: Integer type. Length of data to be erased from the partition. Required parameter. \<type>: Integer type. Type of erasure. Fixed to 0 (Erasing a block). Required parameter.
-E <multipartition>	Erases multiple partitions, such as -E "all". \<multipartition>: Partition identifier. String with double quotes. Required parameter. all Partitions other than cal. nvm NVM partition. cal Calibration partition.
-r	Reboots the module after the FullFOTA upgrade.
-s	Downloads the upgrade package with the agentboot partition skipped.
-v	Displays the QDownloadProj toolkit version.
-h	Displays help information.

Usage

This chapter explains how to compile and utilize the QDownloadProj toolkit to upgrade the module firmware on a Linux system using the EG800Q series module as an example.

4.1. Compile Source Code

Execute the following command to compile the source code and generate an executable program (tool), e.g., DownloadCLI (You can customize the name of the tool) and store the tool in the gccout folder.
<Your cross compiler>gcc -D_LINUX -g -o gccout/DownloadCLI -I inc src/download_cli.c src/action.c src/linux_comm.c src/utils.c src/package.c src/crc.c src/sha256.c src/ini.c src/cJSON.c

4.2. Modify Configuration File

Step 1: Open the QDownloadProj toolkit, enter the \demo\config directory and open the corresponding configuration file depending on the module model and upgrade method.

- Configuration file for the firmware upgrade via UART: cfg_ec618_uart.ini
- Configuration file for the firmware upgrade via USB: cfg_ec618_usb.ini

Step 2: Modify the specified parameters in the configuration file as shown below.

- Configure pkgpath under [package_info] to change the storage path for the FullFOTA upgrade package.

[package_info] pkgpath = ./root/EG800QEULCR01A03M04/at command.binpkg
EG800QEULCR01A03M04 in the above path is only an example and should be replaced with the actual module firmware version used.

- Configure agpath under [agentboot] to change the path for the agentboot file.

For the firmware upgrade via UART:

[agentboot] agpath = ./demo/image_ec618/agentboot_uart/agentboot.bin
For the firmware upgrade via USB: [agentboot] agpath = ./demo/image_ec618/agentboot_usb/agentboot.bin

- Configure blpath, syspath and cp_syspath under [bootloader], [system] and [cp_system] to change the storage paths of each type of firmware files (BL, AP and CP types) generated after the division of the FullFOTA upgrade package.

[bootloader] blpath = ./root/EG800QEULCR01A03M04/ap_bootloader.bin burnaddr = 0×4000
[system] syspath = ./root/EG800QEULCR01A03M04/ap_at_command.bin burnaddr = 0×24000
[cp_system] cp_syspath = ./root/EG800QEULCR01A03M04/cp-demo-flash.bin burnaddr = 0×0
EG800QEULCR01A03M04 in the above path is only an example and should be replaced with the actual firmware version used.

- Configure [otherfile] (Optional)

The default configuration of [otherfile] is displayed below. You can customize the filepath, burnaddr and storage_type parameters as needed.

[otherfile1] filepath = ap_application.bin
burnaddr = 0×200000
storage_type=ap_flash

4.3. Divide Upgrade Package

According to the inherent logic of the QDownloadProj toolkit, a FullFOTA upgrade package is divided into three independent files for a firmware upgrade as follows:

Step 1: Copy both the FullFOTA upgrade package and the QDownloadProj toolkit containing the DownloadCLI

tool generated in Chapter 4.1 to the Linux device.

Step 2: Execute the following command in Linux device's QDownloadProj/gccout directory to run DownloadCLI tool and divide the FullFOTA upgrade package.

For the firmware upgrade via UART:

```
./DownloadCLI -c ../demo/config/cfg_ec618_uart.ini -S
```

For the firmware upgrade via USB:

```
./DownloadCLI -c ../demo/config/cfg_ec618_usb.ini -S
```

Step 3: Once the upgrade package is divided, DownloadCLI tool automatically exits. To verify if the division is successful, check the exit code using the following command. 0 indicates a successful division, while other values indicate failed division.

```
# echo $?
```

4.4. Upgrade Firmware

Firmware upgrade can be performed via UART or USB.

4.4.1. Firmware Upgrade via UART

Step 1: Connect the module to the device through USB to serial cable.

Step 2: Execute the following command in the device's QDownloadProj/gccout directory to run DownloadCLI tool for the firmware upgrade. The three independent files (BL, AP and CP types) are downloaded by default.

```
./DownloadCLI -c ../demo/config/cfg_ec618_uart.ini -p /dev/ttyUSB0 -B "BL AP CP" -r
```

To download a custom file to the module, add OTHER1 after BL AP CP as shown below:

```
./DownloadCLI -c ../demo/config/cfg_ec618_uart.ini -p /dev/ttyUSB0 -B "BL AP CP OTHER1" -r
```

Step 3: Once the upgrade is completed, DownloadCLI tool automatically exits. To verify the firmware upgrade success, check either the exit code of DownloadCLI tool or the message displayed in the last line of the log printed on the terminal where the DownloadCLI tool was executed during the upgrade process.

Execute the following command to get the exit code of DownloadCLI tool. 0 indicates a successful upgrade, while other values indicate an upgrade failure.

```
# echo $?
```

If the firmware is upgraded successfully, "Burnlist success" is displayed in the last line of the log, as shown below. Other information displayed indicates firmware upgrade failure.

```
# ./DownloadCLI -c ../demo/config/cfg_ec618_uart.ini -p /dev/ttyUSB0 -B "BL AP CP OTHER1" -r
[2024-0-24 16:35:22:445][INFO][src/action.c-125]:Burnlist = BL AP CP OTHER1
[2024-0-24 16:35:22:445][INFO][src/action.c-128]:Burn 4 files
[2024-0-24 16:35:22:445][INFO][src/action.c-24]:Burn action start, type = BL
…
[2024-0-24 16:36:10:431][INFO][src/package.c-310]:Current progress: 67%
[2024-0-24 16:36:10:432][INFO][src/package.c-36]:Ab handshake
[2024-0-24 16:36:11:015][INFO][src/package.c-310]:Current progress: 100%
[2024-0-24 16:36:11:140][INFO][src/action.c-101]:Burn action success
[2024-0-24 16:36:11:140][INFO][src/package.c-40]:Lpc handshake
[2024-0-24 16:36:11:148][INFO][src/action.c-109]:System reset success
[2024-0-24 16:36:11:251][INFO][src/action.c-144]:Burnlist success
```

In case of a firmware upgrade failure, please contact Quectel Technical Support for assistance and resolution.

4.4.2. Firmware Upgrade via USB

Step 1: Manually short the USB_BOOT pin and power on the module.

Step 2: Execute the following command in the device's QDownloadProj/gccout directory to run the DownloadCLI tool for the firmware upgrade. The three independent files (BL, AP and CP types) are downloaded by default.

```
./DownloadCLI -c ../demo/config/cfg_ec618_usb.ini -p /dev/ttyACM0 -B "BL AP CP" -r
```

To download a custom file to the module, add OTHER1 after BL AP CP as shown below.

```
./DownloadCLI -c ../demo/config/cfg_ec618_usb.ini -p /dev/ttyACM0 -B "BL AP CP OTHER1" -r
```

Step 3: Once the upgrade is completed, the DownloadCLI tool automatically exits. To verify firmware upgrade success, check either the exit code of the DownloadCLI tool or the message displayed in the last line of the log printed on the terminal where the DownloadCLI tool was executed during the upgrade process.

Execute the following command to get the exit code of the DownloadCLI tool. 0 indicates a successful upgrade, while other values indicate an upgrade failure.

```
# echo $?
```

If the firmware is upgraded successfully, "Burnlist success" is displayed in the last line of the log, as shown below. Other information displayed indicates firmware upgrade failure.

```
# ./DownloadCLI -c ../demo/config/cfg_ec618_usb.ini -p /dev/ttyACM0 -B "BL AP CP" -r
[2024-0-24 16:46:18:411][INFO][src/action.c-125]:Burnlist = BL AP CP
[2024-0-24 16:46:18:411][INFO][src/action.c-128]:Burn 3 files
[2024-0-24 16:46:18:411][INFO][src/action.c-24]:Burn action start, type = BL
…
[2024-0-24 16:46:58:474][INFO][src/package.c-310]:Current progress: 88%
[2024-0-24 16:46:58:474][INFO][src/package.c-36]:Ab handshake
[2024-0-24 16:46:58:933][INFO][src/package.c-310]:Current progress: 100%
[2024-0-24 16:46:59:057][INFO][src/action.c-101]:Burn action success
[2024-0-24 16:46:59:057][INFO][src/package.c-40]:Lpc handshake
[2024-0-24 16:46:59:065][INFO][src/action.c-109]:System reset success
[2024-0-24 16:46:59:066][INFO][src/action.c-144]:Burnlist success
```
In case of a firmware upgrade failure, please contact Quectel Technical Support for assistance and resolution.

Appendix Reference

Table 3: Terms and Abbreviations

Abbreviation	Description
JSON	JavaScript Object Notation
LTE	Long Term Evolution
NVM	Non-Volatile Memory
UART	Universal Asynchronous Receiver/Transmitter
USB	Universal Serial Bus

QDownloadProj_Linux_User_Guide

Documents / Resources

QUECTEL LTE Standard Module Series [pdf] User Guide
LTE Standard Module Series, Standard Module Series, Module Series, Series

References

- **User Manual**