

# QDownloadProj Linux

# User Guide

**LTE Standard Module Series**

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# About the Document

## Revision History

Version	Date	Author	Description
-	2024-03-06	Aaron LIU	Creation of the document
1.0	2024-03-25	Aaron LIU	First official release

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# 1 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.

## 2 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
<i>demo</i>	Configuration files and JSON files used for erasing partitions.
<i>gccout</i>	Executable file generated by compilation.
<i>inc</i>	Header files.
<i>src</i>	Source code files.
<i>cli_demo.txt</i>	Usage demos.
<i>compile_cmd.txt</i>	Compilation demos.
<i>ReleaseNote</i>	Release note.

# 3 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
<b>-p &lt;port&gt;</b>	Configures the UART or USB port number for downloading firmware. <b>&lt;port&gt;</b> : UART or USB port number. String without double quotes. Required parameter.
<b>-c &lt;cfgfile&gt;</b>	Configures the path of the configuration file required for firmware upgrade. <b>&lt;cfgfile&gt;</b> : Configuration file path, determined by the module model. String without double quotes. Required parameter.
<b>-S</b>	Divides the FullFOTA upgrade package into three independent files (BL, AP and CP types) used for the upgrade.
<b>-b &lt;image&gt;</b>	Downloads an independent file, such as <b>-b BL</b> . <b>&lt;image&gt;</b> : Type of independent file. String without double quotes. Required parameter. <i>BL</i> Bin file whose name starts with <i>ap_bootloader</i> <i>AP</i> Bin file whose name starts with <i>ap_at_command</i> <i>CP</i> Bin file whose name starts with <i>cp-demo-flash</i>
<b>-B &lt;image&gt; &lt;image&gt; ...</b>	Downloads multiple independent files and separate two files with a space, such as <b>-B "BL AP CP"</b> . <b>&lt;image&gt;</b> : Type of independent file. String with double quotes. Required parameter. <i>BL</i> Bin file whose name starts with <i>ap_bootloader</i> <i>AP</i> Bin file whose name starts with <i>ap_at_command</i> <i>CP</i> Bin file whose name starts with <i>cp-demo-flash</i>
<b>-e &lt;partition&gt;</b>	Erases a partition, such as <b>-e "0x800000 0x400000 0"</b> . <b>&lt;partition&gt;</b> : Partition to be erased. String with double quotes. Format: <i>&lt;addr&gt; &lt;length&gt; &lt;type&gt;</i> . Required parameter. <b>&lt;addr&gt;</b> : Integer type. Starting address for erasure. Required parameter. <b>&lt;length&gt;</b> : Integer type. Length of data to be erased from the partition. Required parameter. <b>&lt;type&gt;</b> : Integer type. Type of erasure. Fixed to 0 (Erasing a block). Required

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	parameter.
<b>-E &lt;multipartition&gt;</b>	<p>Erases multiple partitions, such as <b>-E "all"</b>.</p> <p><b>&lt;multipartition&gt;</b>: Partition identifier. String with double quotes. Required parameter.</p> <p><i>all</i>      Partitions other than <i>cal</i>.</p> <p><i>nvm</i>      NVM partition.</p> <p><i>cal</i>      Calibration partition.</p>
<b>-r</b>	Reboots the module after the FullFOTA upgrade.
<b>-s</b>	Downloads the upgrade package with the <i>agentboot</i> partition skipped.
<b>-v</b>	Displays the QDownloadProj toolkit version.
<b>-h</b>	Displays help information.

---

# 4 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/utlis.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 = 0x4000
```

```
[system]
syspath = ./root/EG800QEULCR01A03M04/ap_at_command.bin
burnaddr = 0x24000
```

```
[cp_system]
cp_syspath = ./root/EG800QEULCR01A03M04/cp-demo-flash.bin
burnaddr = 0x0
```

*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 = 0x200000
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.

# 5 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