

TECHNICAL SUPPORT

Upgrade camera firmware

C-RED Cameras



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Glossary

- **HDR:** High Dynamic Range
- **ADU:** Analog Digital Unit
- **HG:** High Gain
- **LG:** Low Gain
- **ADC:** Analog to Digital Converter
- **NUC:** Non Uniformity Correction
- **IWR:** Integrate While Read
- **ITR:** Integrate Then Read
- **FPS:** Frames Per Second
- **CDS:** Correlated Double sample



1. Introduction

The USB 3.0 Loopback Plugs module from PassMark Software® enables to evaluate the speed of a computer USB port. This document is a user guide showing the necessary steps to install and use correctly the USB 3.0 loopback plug. The purpose of this application note is to explain how to upgrade the C-RED 2 / C-RED 3 firmware.

The camera upgrade is possible using the ethernet link only.

The camera update can be performed in two ways:

- The camera fetches the firmware from a http, ftp or tftp server. (1)
- The firmware is uploaded directly to the camera. (2)

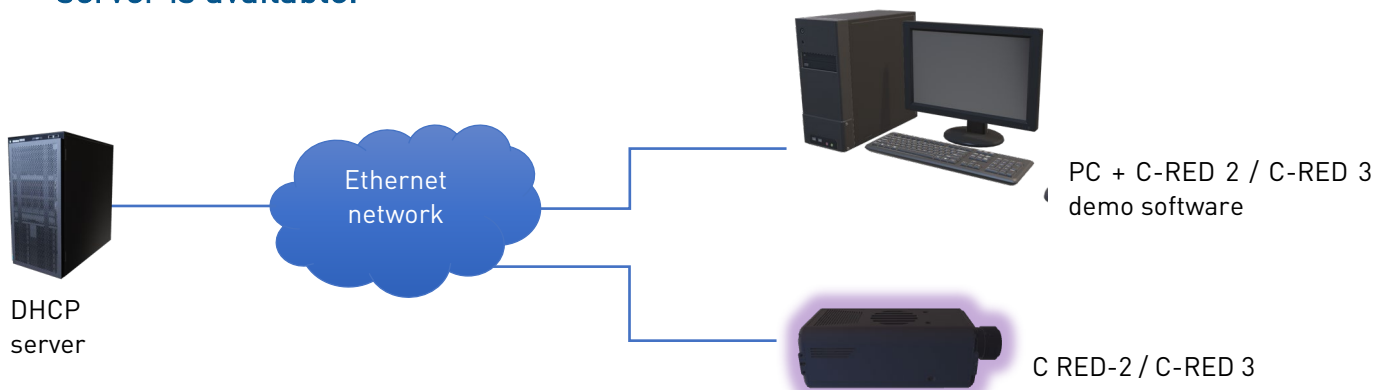
Notes:

- (1) Available on all firmware versions deployed.
- (2) Available on all C-RED 3 firmware versions deployed.
For C-RED 2, it is only available for cameras running a firmware version 3.0.0 or greater.

2. Set and check the IP connectivity.....

The first step to upgrade the camera is to provide IP connectivity to the camera.

2.1. Case 1: The camera is plugged on an ethernet network where a DHCP server is available.



By default, the camera is in automatic mode.

The camera fetches an IP address automatically using DHCP protocol.

You can check the IP address assigned to the camera using the "ipaddress" command in the GUI pseudo terminal.





However, if for any reason, a DHCP server is not available for the camera, it is possible to set a static IP address.

Obviously, the static IP address must be in the same sub network than the PC.

You can set it using the following commands:

```
fli-cli>set ip mode manual
fli-cli>set ip address xxx.yyy.zzz.ttt
fli-cli>set ip netmask xxx.yyy.zzz.ttt
```

If the server is on a different subnetwork you must also set the following additional parameters:

```
fli-cli>set ip gateway xxx.yyy.zzz.ttt
fli-cli>set ip dns xxx.yyy.zzz.ttt
fli-cli>set ip alternate-dns xxx.yyy.zzz.ttt
```

Then, reboot the camera.

The camera answers to the “ping” command. You can check the connectivity using this command from the PC.

The ping command is natively available for windows and Linux terminals. For example “ping XXX.XXX.XXX.XXX” with XXX.XXX.XXX.XXX the camera ip address.

Note: The camera ethernet interface is auto mdi-x, so a normal ethernet cable is ok.

2.2. Case 2: The camera is plugged directly to a PC.



In this case no DHCP server is available for the PC nor for the camera.

If the PC is configured to use DHCP, it falls back to an APIPA ip address.

APIPA ip addresses are addresses in the reserved local link 169.254.0.0/16 subnetwork.

On C-RED 3 camera, and C-RED 2 camera running under firmware version 3.0.0 or above, when the camera is configured to use DHCP, the camera will automatically also fall back to an APIPA address. The IP connection is automatically OK. You can check it using the ping command.

On C-RED 2 cameras running under firmware version older than 3.0.0, you must manually set a static IP address (different from the PC) in the 169.254.0.0/16 subnetwork.

You can set it using the following commands:

```
fli-cli>set ip mode manual
```





```
fli-cli>set ip address 169.254.127.127
fli-cli>set ip netmask 255.255.0.0
Reboot the camera.
```

Again, you can check the connectivity using the ping command.

3. Use or setup a server

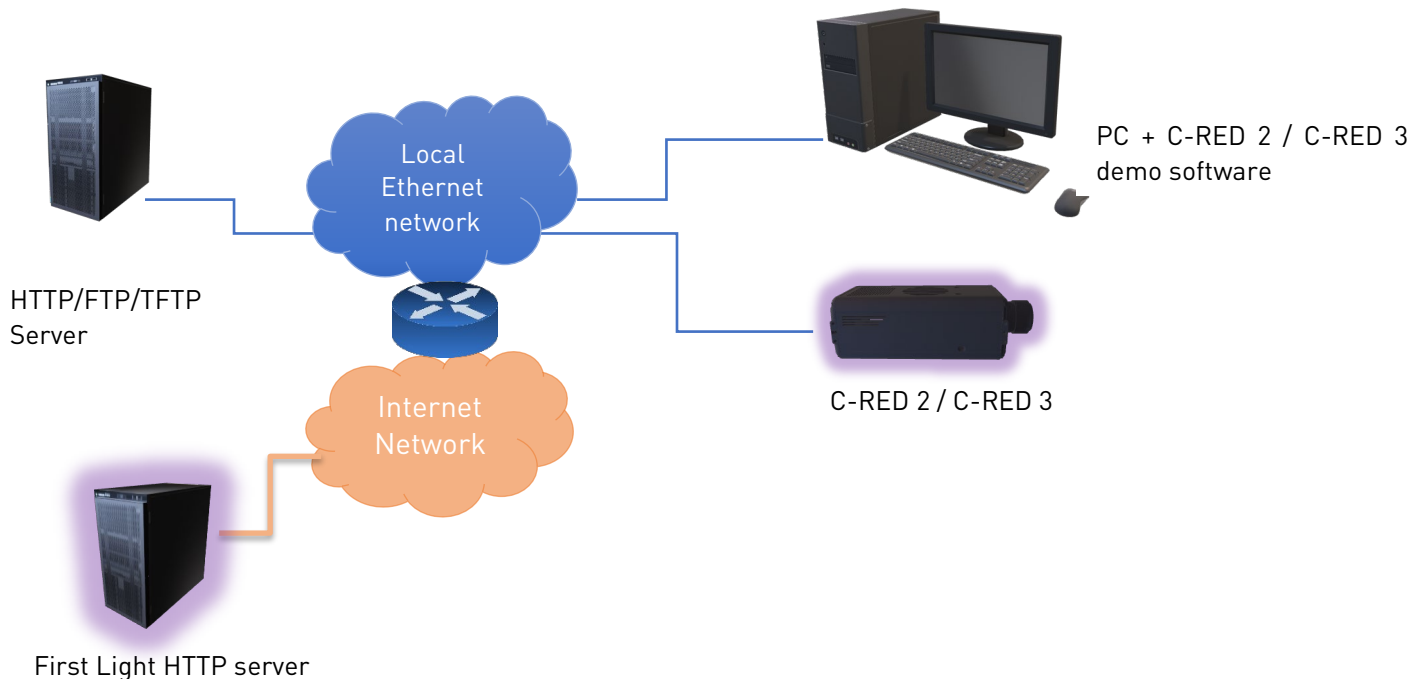
Once the IP connectivity is ok, the camera firmware can be upgraded.

3.1. The camera retrieves the firmware from a server

The server can be a HTTP, an FTP or a TFTP server.

Depending of the server type, the URL starts with `http://`, `ftp://` or `tftp://`

3.1.1. The camera is plugged on an ethernet network and a server is available (locally or on internet)



In such a case, upload the firmware to the server and note the URL to use to get it.

You can check the URL is valid using a web browser.

If the camera can have Internet access, the firmware can be directly retrieved from a firstlight server. The firmware upgrade can be done using directly a firmware link provided by firstlight.

In such case the firmware URL will looks like:

http://customer:firstlight@share.first-light.fr/public/13d77e/dl/credXfirm_prod_efuse_X_X_X.tar.gz

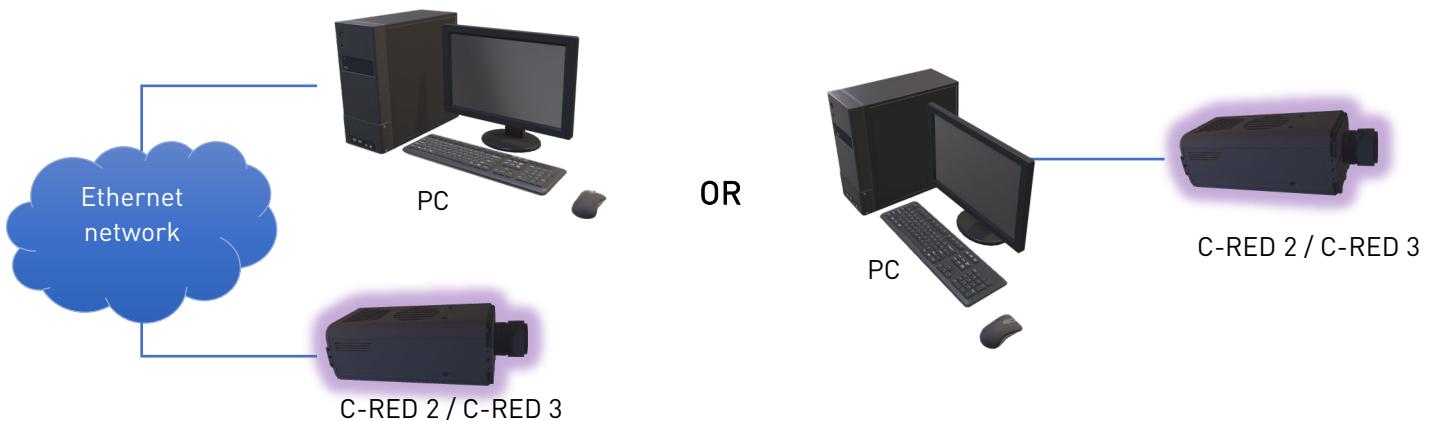




where:

- customer is the login
- firstlight the password
- share.first-light.fr is the firstlight server
- credXfirm_prod_efuse_X_X_X.tar.gz is the new firmware name.

3.1.2. The camera is plugged on an ethernet network but there is no ready-made server available or the camera is plugged directly to the PC.



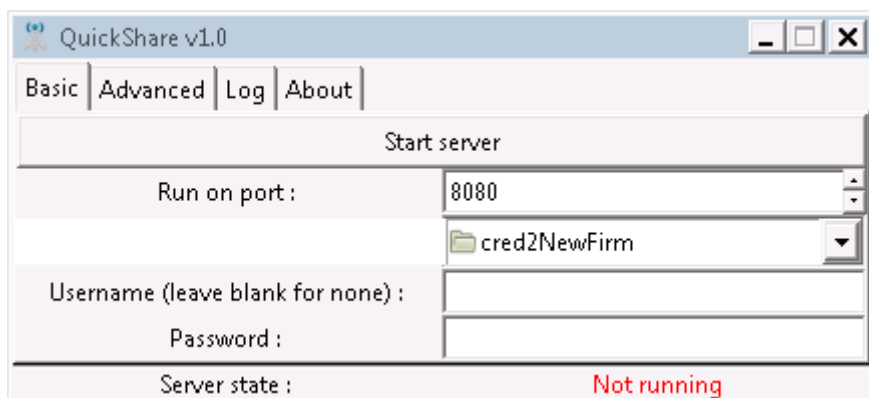
In such case, you must start a server on the PC to provide the firmware.

3.1.2.1. *Serve the firmware under windows*

For windows, quickshare software can be use. It is a very lightweight http server. It can be fetched from here: <https://share.first-light.fr/public/490cd6>

Quickshare serves the files in a directory. Put the firmware in that directory and use the URL in the GUI software.

In the capture below quickshare serves all the files under the cred2NewFirm folder using the 8080 TCP port.



The URL to use will be looks like <http://xxx.xxx.xxx.xxx:8080/firmware.tar.gz> with xxx.xxx.xxx.xxx = PC ip address. The URL can be checked using a web browser.

Note: If you have a running firewall, you may have to add an exception for quickshare.





3.1.2.2. *Serve the firmware under linux*

Under Linux a small tool called woof can be used. It is a onetime, command line, light http server. It is available as a package for most distributions.

For the distribution affiliated with Debian (ubuntu...)

```
sudo apt-get install woof
```

For the distribution affiliated with Redhat (centos, fedora...)

```
sudo yum install woof
```

The usage is very simple, call the command followed by the file to serve:

```
$ woof firmware.tar.gz  
Now serving on http://xxx.xxx.xxx.xxx:8080/firmware.tar.gz
```

With xxx.xxx.xxx.xxx = PC ip address

3.2. The firmware is uploaded to the camera

On C-RED 3, and on C-RED 2 cameras operating a firmware version 3.0.0 or greater, it is possible to upload the new firmware directly on the camera.

With this method no server is required, the camera is the server.

You just need to have a valid IP connection with the camera.

However, with this method, you need the firstlight demo GUI, you cannot run the firmware upgrade from the flicli command line interpreter.

4. Upgrade the firmware

4.1. From the command line interpreter

In the flicli command line interpreter use the command 'exec upgradefirmware'

Example:

```
fli-cli> exec upgradefirmware http://xxx.xxx.xxx.xxx:8080/firmware.tar.gz
```

4.2. From the firstlight GUI software

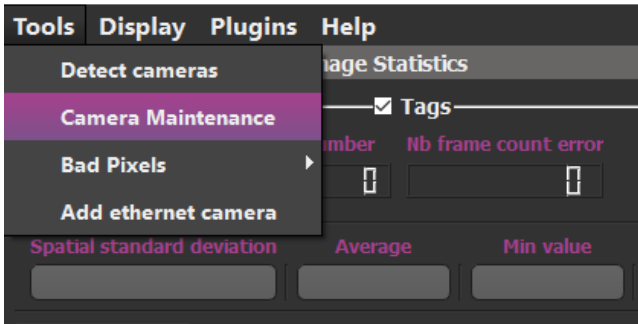
In order to upload/upgrade the FLI firmware it can be downloaded from the FLI account.

Once this step has been carried out, open FLI Vision, and then go on tool → Camera Maintenance

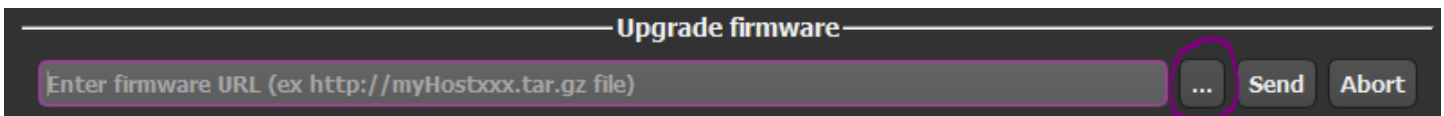




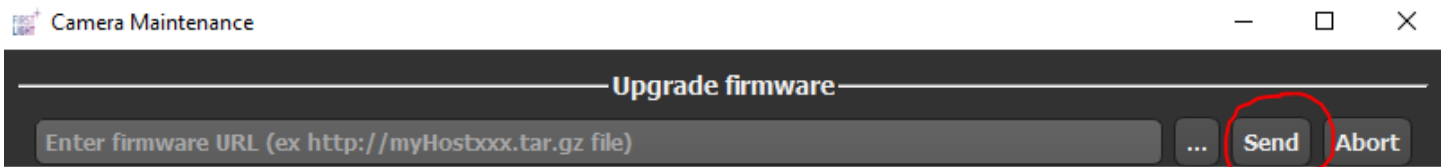
FirstLightVision



Step 3 : In the upgrade firmware section, click on the 3 dots, A file selection window will pop up, select the firmware and press ok.



Step 4 : select the firmware into the folder , click on open and then click on send



Your firmware is now upgraded, and the camera automatically reboot.

If the camera does not want to upgrade the firmware, check that the ethernet connection between the computer and the camera is well established. Once the firmware has been fully retrieved by the camera, it is not possible to interrupt the firmware upgrade. With this method you cannot interrupt the upgrade. However, if for any reason the upgrade failed, a 60s timeout will stop the upgrade process.

4.3. Upgrade firmware printings

During the upgrade process, you could see the followings printings:





```
fli-cli>
Checking file...

Loading.....Done

tmpfirmPkgFolder/EMMCBOOT_ENCRYPTED_EFUSE.BIN: OK
tmpfirmPkgFolder/QSPIBOOT_ENCRYPTED_EFUSE.BIN: OK
tmpfirmPkgFolder/product: OK
tmpfirmPkgFolder/swroot_version: OK

tmpfirmPkgFolder/version: OK

Upgrading from version 2.9.1 to 2.9.1
```

At the end of the process, the camera reboots automatically.

Note: On C-RED 2 camera, when installing firmware versions below 2.9.1, the restore factory settings button must also be pressed after the camera reboot.

For any further information, please contact First Light Imaging's support team (support@first-light.fr).



www.first-light-imaging.com