F150.Fw: Generating the DFU image

This document describes how to generate the Device Firmware Upgrade image to be used by SBSFU.

Table of Contents

References

- ST Tools:
  - STM32CubeIDE:
    - version: 1.14.0
    - URL: 🔲 STM32CubeIDE - STMicroelectronics
  - STM32CubeProgrammer:
    - version: 2.11.0
    - URL: 🔲 STM32CubeProg - STMicroelectronics
  - Git for Windows
    - version v2.45.2
    - URL: 🔶 Git for Windows

- ST App.Notes:
  - https://www.st.com/resource/en/application_note/an5056-integration-guide-for-the-xcubesbsfu-stm32cube-expansion-package-stmicroelectronics.pdf

Requirements

IDE and workspace

STM32CubeIDE / Programmer

Required to build and flash the firmware.

1. Download the installers for STM32CubeIDE and STM32CubeProgrammer.

2. Unzip & run each installer.
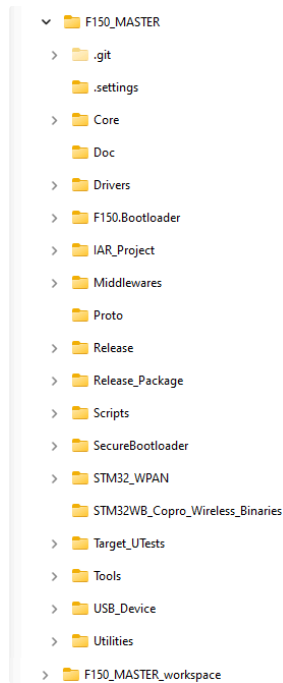
3. Add binaries to your system PATH:

a. STM32CubeIDE:

By default: `C:\ST\STM32CubeIDE_<version>`

b. STM32CubeProgrammer:

By default: `C:\Program Files\STMicroelectronics\STM32Cube\STM32CubeProgrammer\bin`

Workspace

The build scripts require a workspace located at the same level as the project files, named **F150_MASTER_workspace**. The directory structure should look like this:

Python

To build the projects, the Python build system needs some dependencies defined in:

- F150_MASTER\requirements.txt

To install the dependencies, run the command:

```
1  pip install -r requirements.txt
```

Git

Git / Bash

Required to build the firmware.

1. Download the installer for Git.

2. Unzip & run each installer.

3. Add binaries to your system PATH:

a. For Git:

by default `c:\Program Files\Git\bin\`

b. For sh:

by default `c:\Program Files\Git\cmd\`

Tasks.py

Build process

Tasks.py calls the build processes for all the related projects in a specific order, which is mandatory as each project requests some assets generated by the other projects, such as:

1. BLE_OTA
2. SeCoreBin
3. SBSFU
4. CDx_F150

📁 Release_Package folder

The zip created by `invoke release-binaries` includes:

- Binaries:
  - CaireDiagnostics-F150-App-FULL-vM.mm.bbbbb.bin (the full binary to flash or DFU)
  - CaireDiagnostics-F150-App-vM.mm.bbbbb.sfb (the OTA image)
  - UpgradeViaDFU.py
- Tools
  - fuota.py