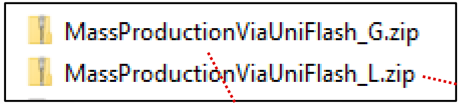
# UniFlash CLI with MSPM0 Device Guidance

**MSP Team**

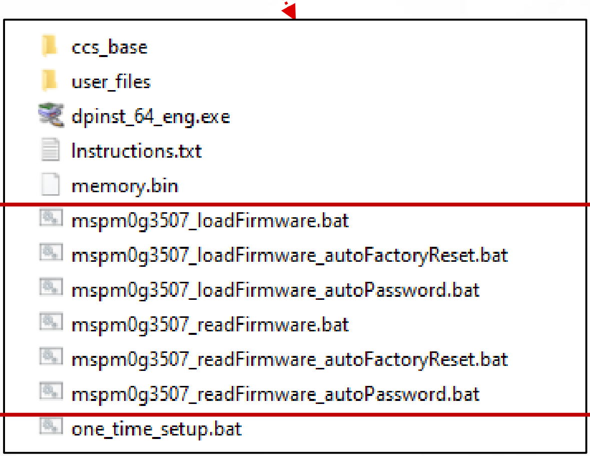
# Reference package



MassProductionViaUniFlash_G.zip

MassProductionViaUniFlash_L.zip

**In the reference package, click on the .bat file can directly let the CLI do the specific operation. Details please refer to “Instructions.txt”.**



ccs_base

user_files

dpinst_64_eng.exe

Instructions.txt

memory.bin

mspm0g3507_loadFirmware.bat

mspm0g3507_loadFirmware_autoFactoryReset.bat

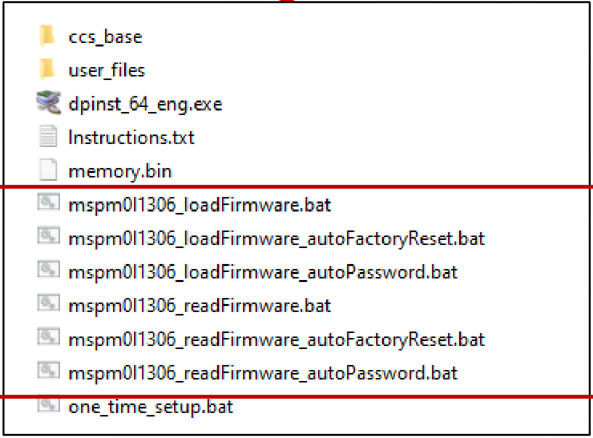
mspm0g3507_loadFirmware_autoPassword.bat

mspm0g3507_readFirmware.bat

mspm0g3507_readFirmware_autoFactoryReset.bat

mspm0g3507_readFirmware_autoPassword.bat

one_time_setup.bat



ccs_base

user_files

dpinst_64_eng.exe

Instructions.txt

memory.bin

mspm0l1306_loadFirmware.bat

mspm0l1306_loadFirmware_autoFactoryReset.bat

mspm0l1306_loadFirmware_autoPassword.bat

mspm0l1306_readFirmware.bat

mspm0l1306_readFirmware_autoFactoryReset.bat

mspm0l1306_readFirmware_autoPassword.bat

one_time_setup.bat

**Recommend user to play with the reference package and then do migration to their own package. Or just use the reference package to do mass production.**

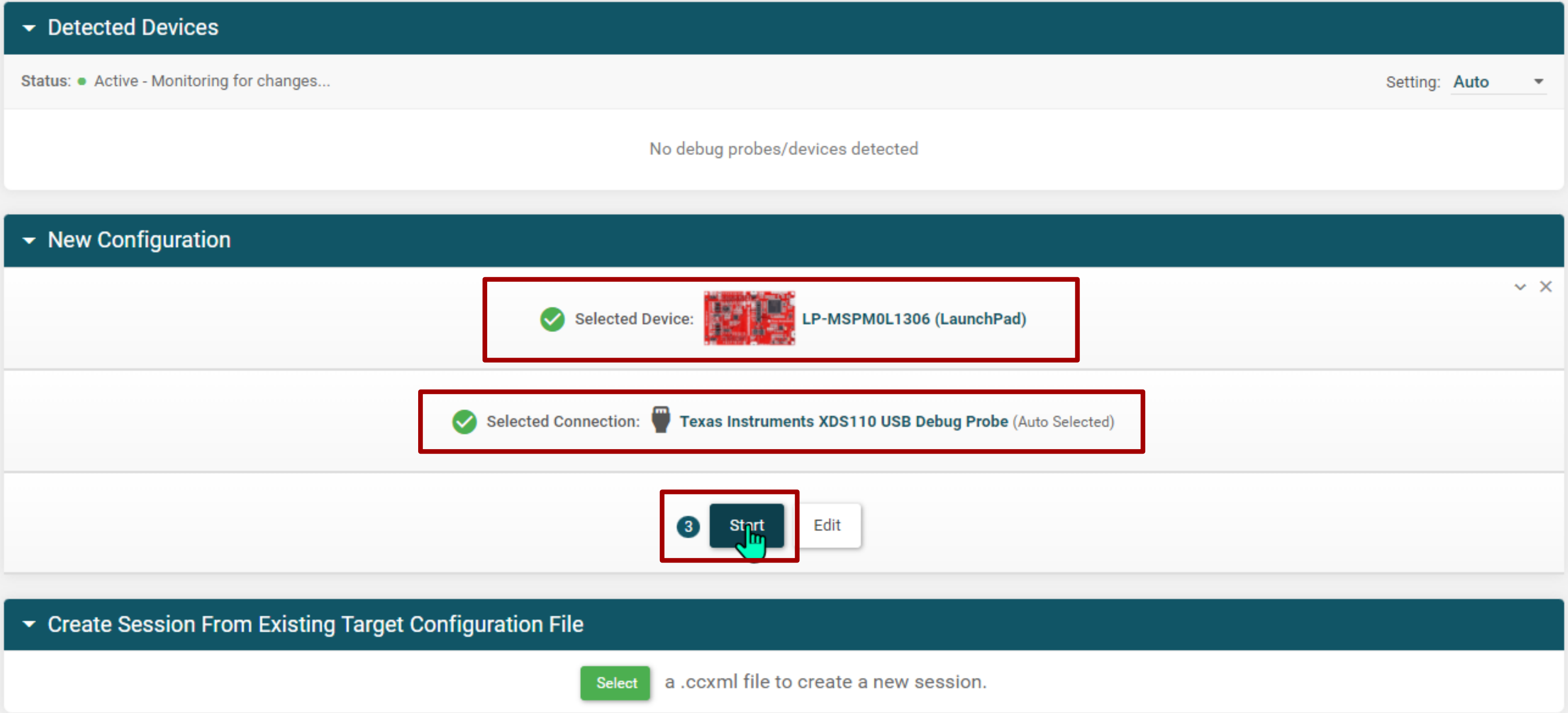
# Reference package

Link for the reference package:

https://e2e.ti.com/support/microcontrollers/arm-based-microcontrollers-group/arm-based-microcontrollers/f/arm-based-microcontrollers-forum/1351235/faq-uniflash-how-to-use-uniflash-command-line-interface-with-mspm0-device-load-images-and-read-memory

# Generate a Command Line Interface Package via UniFlash

# Generate a configuration via UniFlash



Detected Devices

Status: ● Active - Monitoring for changes...

Setting: Auto

No debug probes/devices detected

New Configuration

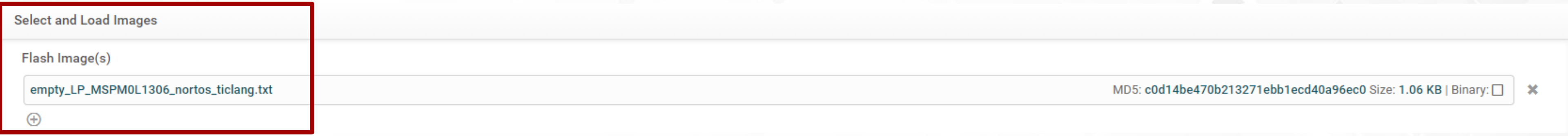
✓ Selected Device: LP-MSPM0L1306 (LaunchPad)

✓ Selected Connection: Texas Instruments XDS110 USB Debug Probe (Auto Selected)

Create Session From Existing Target Configuration File

a .ccxml file to create a new session.

# Generate a configuration via UniFlash



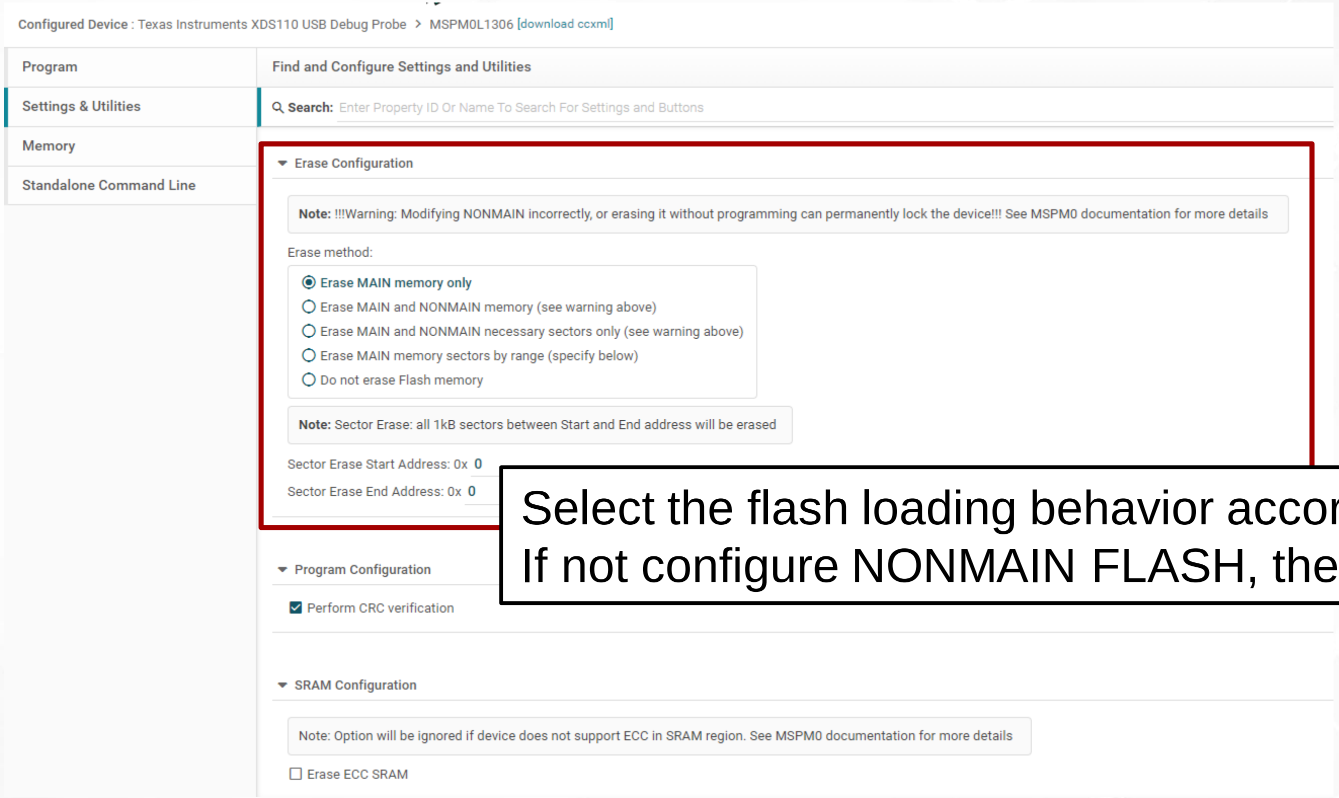
Select and Load Images

Flash Image(s)

empty_LP_MSPM0L1306_nortos_ticlang.txt MD5: c0d14be470b213271ebb1ecd40a96ec0 Size: 1.06 KB | Binary: □

Select the image you want to download.
Can skip this step and then manually add the images in the CLI package.

# Generate a configuration via UniFlash



Configured Device : Texas Instruments XDS110 USB Debug Probe > MSPM0L1306 [download ccxml]

Program
Settings & Utilities
Memory
Standalone Command Line
Find and Configure Settings and Utilities
Search: Enter Property ID Or Name To Search For Settings and Buttons

Erase Configuration

**Note:** !!!Warning: Modifying NONMAIN incorrectly, or erasing it without programming can permanently lock the device!!! See MSPM0 documentation for more details

Erase method:

● Erase MAIN memory only
○ Erase MAIN and NONMAIN memory (see warning above)
○ Erase MAIN and NONMAIN necessary sectors only (see warning above)
○ Erase MAIN memory sectors by range (specify below)
○ Do not erase Flash memory

**Note:** Sector Erase: all 1kB sectors between Start and End address will be erased

Sector Erase Start Address: 0x 0

Sector Erase End Address: 0x 0

Program Configuration

☑ Perform CRC verification

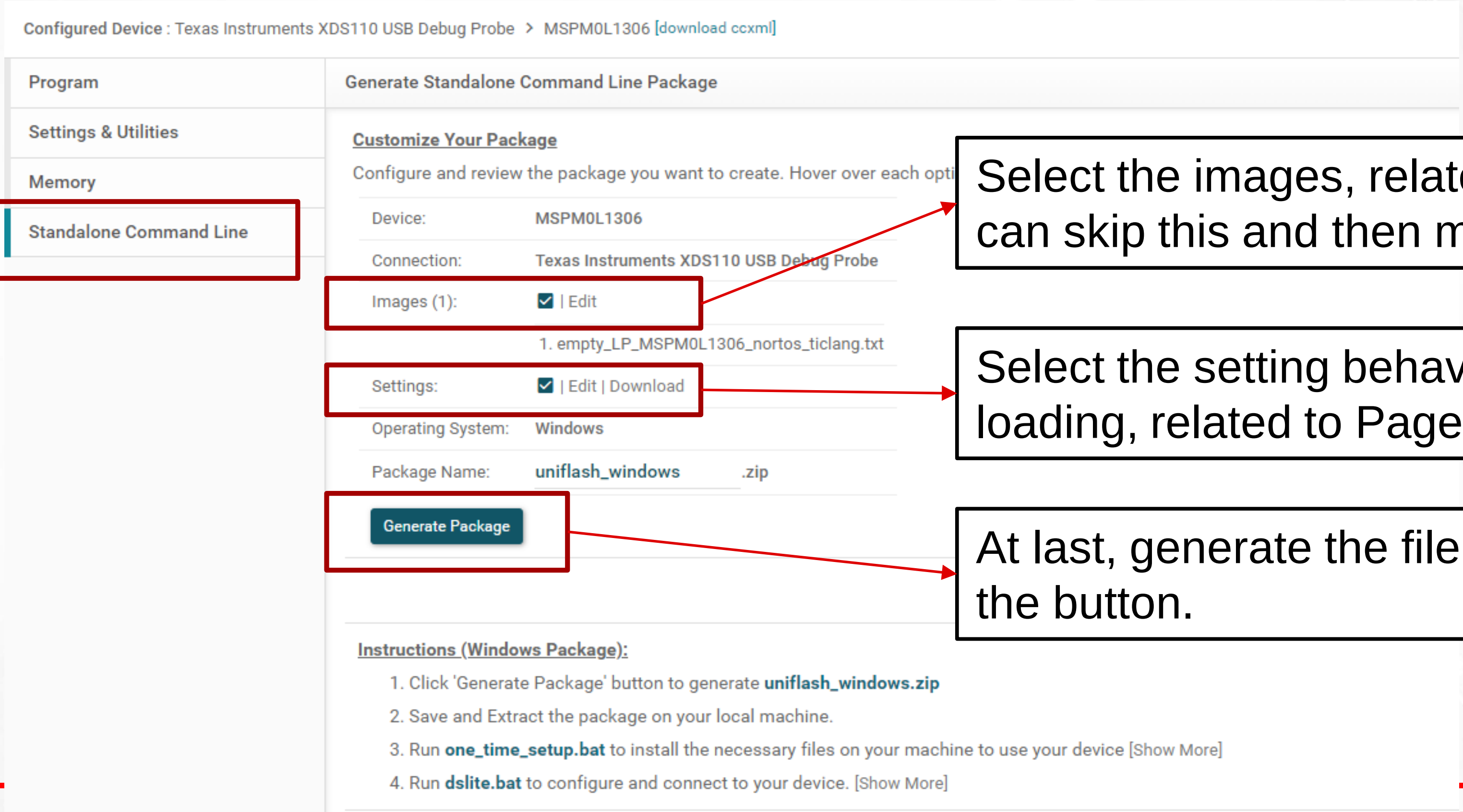
SRAM Configuration

Note: Option will be ignored if device does not support ECC in SRAM region. See MSPM0 documentation for more details

☐ Erase ECC SRAM

Select the flash loading behavior according your images. If not configure NONMAIN FLASH, then keep the default.

# Generate a configuration via UniFlash



Configured Device : Texas Instruments XDS110 USB Debug Probe > MSPM0L1306 [download ccxml]

Generate Standalone Command Line Package

Customize Your Package

Configure and review the package you want to create. Hover over each opti

Device: MSPM0L1306

Connection: Texas Instruments XDS110 USB Debug Probe

Images (1): ☑ | Edit

1. empty_LP_MSPM0L1306_nortos_ticlang.txt

Settings: ☑ | Edit | Download

Operating System: Windows

Package Name: uniflash_windows .zip

Instructions (Windows Package):

1. Click 'Generate Package' button to generate **uniflash_windows.zip**
2. Save and Extract the package on your local machine.
3. Run **one_time_setup.bat** to install the necessary files on your machine to use your device [Show More]
4. Run **dslite.bat** to configure and connect to your device. [Show More]

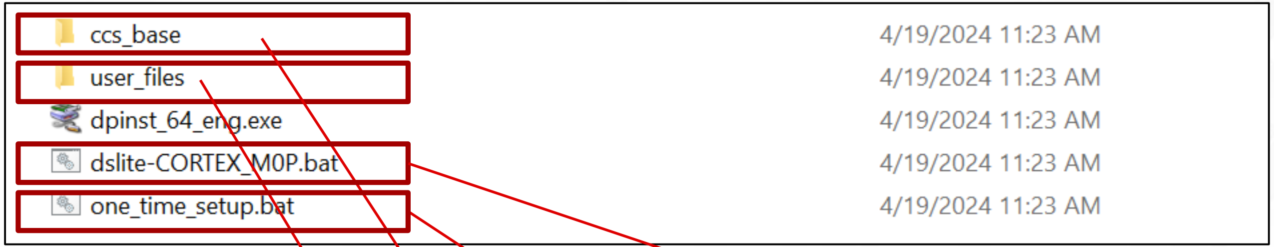
Select the images, related to Page6, can skip this and then manually add.

Select the setting behavior of flash loading, related to Page7.

At last, generate the file by click on the button.

# General introduction about CLI package

# Extract uniflash_windows.zip file to folder



| | |
|---|---|
| ccs_base | 4/19/2024 11:23 AM |
| user_files | 4/19/2024 11:23 AM |
| dpinst_64_eng.exe | 4/19/2024 11:23 AM |
| dslite-CORTEX_M0P.bat | 4/19/2024 11:23 AM |
| one_time_setup.bat | 4/19/2024 11:23 AM |

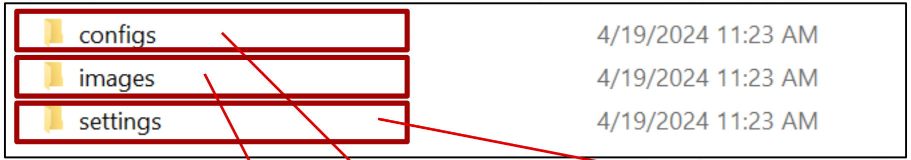
Necessary driver file for CLI.
There will be some files need modification for specific CLI behavior.

Scripts for loading images to device.
It is a batch file. You can modify it in notepad.exe, which you should follow the grammar of UniFlash command.

User specific setting for CLI.
.ccxml file. You can modify it in CCS and update it. Or, open it by notepad.exe, then modify it.

One time set up and run this one time before you firstly run the .bat file.

# User_files introduction



| | |
|---|---|
| configs | 4/19/2024 11:23 AM |
| images | 4/19/2024 11:23 AM |
| settings | 4/19/2024 11:23 AM |

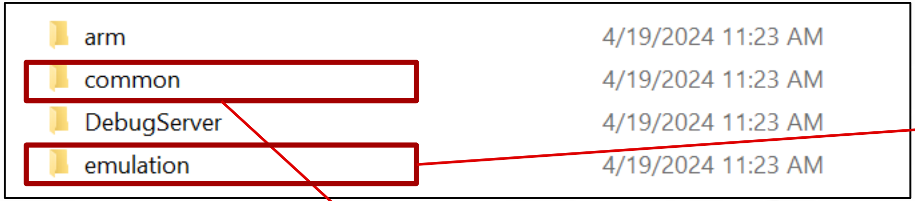
Debugger configuration.
It includes .ccxml file. You can modify it with a SDK example project in CCS and replace the original one. Or, open it by notepad.exe, and then modify it.

Images storage path.
Store the images need to be loaded to device.

Flash loader operation setting file.
Suggest user to use UniFlash to generate different setting of flash loading and then replace the original one.

Related to Page 7.

# ccs_base introduction

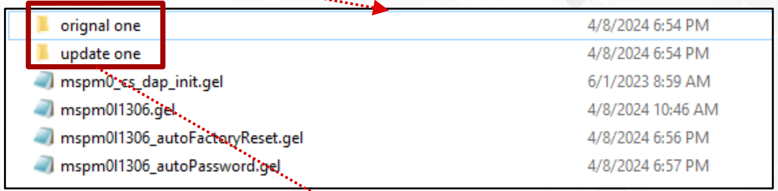


| | |
|---|---|
| arm | 4/19/2024 11:23 AM |
| common | 4/19/2024 11:23 AM |
| DebugServer | 4/19/2024 11:23 AM |
| emulation | 4/19/2024 11:23 AM |

Includes DSSM scripts execution file.
In the path “emulation\gel”, it has the setting file of DSSM scripts, and will be called by the .ccxml file in the path “user_files\configs”.

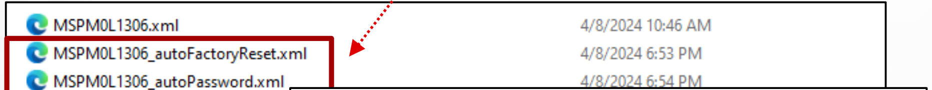
The **reference package** has provided some gel files for user reference.

Some files for CLI package to call.
Need change files in “\common\targetdb\devices” if CLI call different gel file. The provided reference package has changed files in this folder, user can refer to the reference package to modify. Or, just replace with the reference one.



| | |
|---|---|
| orignal one | 4/8/2024 6:54 PM |
| update one | 4/8/2024 6:54 PM |
| mspm0_cs_dap_init.gel | 6/1/2023 8:59 AM |
| mspm0l1306.gel | 4/8/2024 10:46 AM |
| mspm0l1306_autoFactoryReset.gel | 4/8/2024 6:56 PM |
| mspm0l1306_autoPassword.gel | 4/8/2024 6:57 PM |

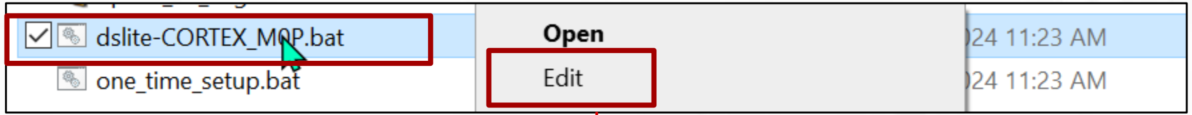
The “original one” folder includes the original cs_dap_init gel generated by UniFlash. And the update one is the new one to fix some bugs. Please use the update one [has been put in this gel folder by default].

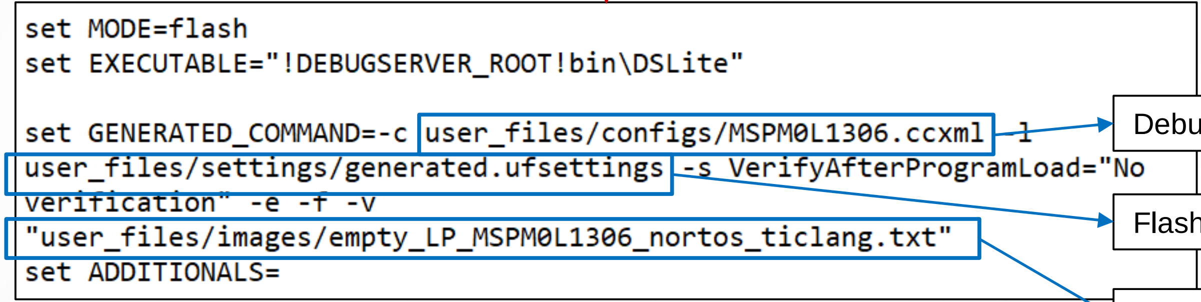


| | |
|---|---|
| MSPM0L1306.xml | 4/8/2024 10:46 AM |
| MSPM0L1306_autoFactoryReset.xml | 4/8/2024 6:53 PM |
| MSPM0L1306_autoPassword.xml | 4/8/2024 6:54 PM |

These are the modified files in the reference package for special operations.

# .bat introduction





```
set MODE=flash
set EXECUTABLE="!DEBUGSERVER_ROOT!bin\DSLite"

set GENERATED_COMMAND=-c user_files/configs/MSPM0L1306.ccxml -l
user_files/settings/generated.ufsettings -s VerifyAfterProgramLoad="No
verification" -e -f -v
"user_files/images/empty_LP_MSPM0L1306_nortos_ticlang.txt"
set ADDITIONALS=
```

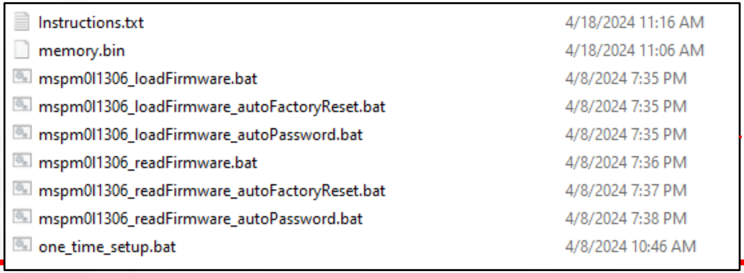
Note: user can change the .bat file to do specific loading / reading.

**Details please refer to UniFlash user guide (Page 16 will show the link).**

Debugger setting files.

Flash loader operation setting files.

The images where will be loaded to device.



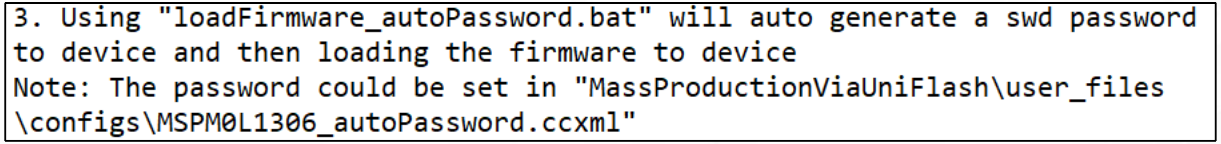
| | |
|---|---|
| Instructions.txt | 4/18/2024 11:16 AM |
| memory.bin | 4/18/2024 11:06 AM |
| mspm0l1306_loadFirmware.bat | 4/8/2024 7:35 PM |
| mspm0l1306_loadFirmware_autoFactoryReset.bat | 4/8/2024 7:35 PM |
| mspm0l1306_loadFirmware_autoPassword.bat | 4/8/2024 7:35 PM |
| mspm0l1306_readFirmware.bat | 4/8/2024 7:36 PM |
| mspm0l1306_readFirmware_autoFactoryReset.bat | 4/8/2024 7:37 PM |
| mspm0l1306_readFirmware_autoPassword.bat | 4/8/2024 7:38 PM |
| one_time_setup.bat | 4/8/2024 10:46 AM |

Note: The reference package provided some .bat file for user reference. **The introduction of each one is put in the "Instructions.txt" file.**

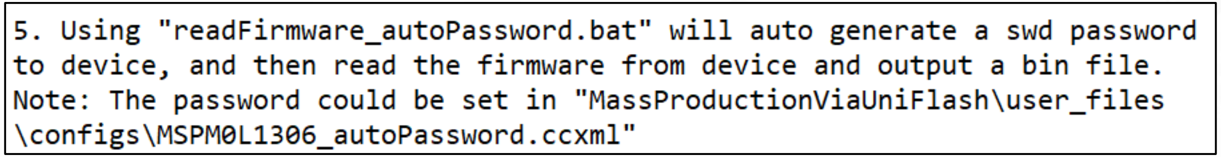
Although it is set for mspm0l136, it can also used for all mspm0l series.

# SWD password generation

In the “Instructions.txt”, it gives the method how to change the SWD password:

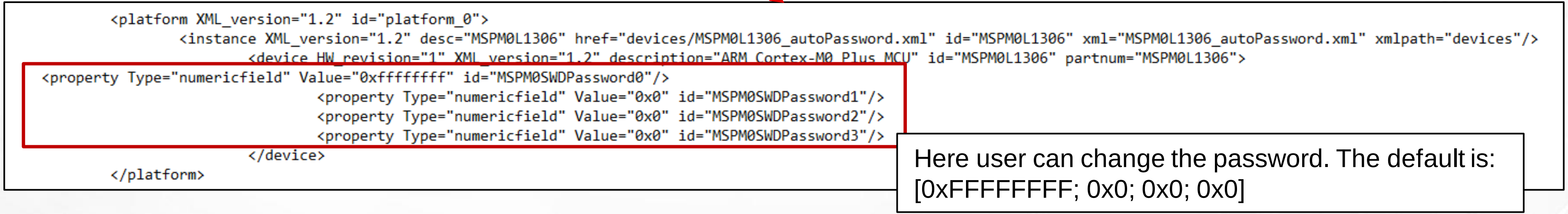


```
3. Using "loadFirmware_autoPassword.bat" will auto generate a swd password
to device and then loading the firmware to device
Note: The password could be set in "MassProductionViaUniFlash\user_files
\configs\MSPM0L1306_autoPassword.ccxml"
```



```
5. Using "readFirmware_autoPassword.bat" will auto generate a swd password
to device, and then read the firmware from device and output a bin file.
Note: The password could be set in "MassProductionViaUniFlash\user_files
\configs\MSPM0L1306_autoPassword.ccxml"
```

Open –> user_files\configs\MSPM0L1306_autoPassword.ccxml



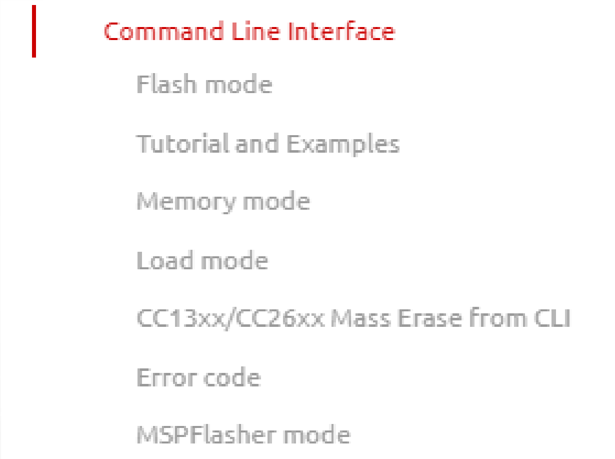
```
        <platform XML_version="1.2" id="platform_0">
                <instance XML_version="1.2" desc="MSPM0L1306" href="devices/MSPM0L1306_autoPassword.xml" id="MSPM0L1306" xml="MSPM0L1306_autoPassword.xml" xmlpath="devices"/>
                        <device HW_revision="1" XML_version="1.2" description="ARM Cortex-M0 Plus MCU" id="MSPM0L1306" partnum="MSPM0L1306">
    <property Type="numericfield" Value="0xffffffff" id="MSPM0SWDPassword0"/>
                                <property Type="numericfield" Value="0x0" id="MSPM0SWDPassword1"/>
                                <property Type="numericfield" Value="0x0" id="MSPM0SWDPassword2"/>
                                <property Type="numericfield" Value="0x0" id="MSPM0SWDPassword3"/>
                        </device>
        </platform>
```

Here user can change the password. The default is:
[0xFFFFFFFF; 0x0; 0x0; 0x0]

# BACKUP for
# UniFlash Command Grammar

# UniFlash Grammar

https://software-dl.ti.com/ccs/esd/uniflash/docs/v8_1/uniflash_quick_start_guide.html



## Command Line Interface

UniFlash Desktop comes with a Command Line Interface (CLI) in the package. To access CLI, go to the install directory and look for the DSLite startup script (dslite.bat for Windows and dslite.sh for Linux/OSX).

DSLite comes with a few different modes, with the default mode being 'flash', use for flash programming on your device. Other modes might be added in the future to expand the functionality. To see the list of available modes, use the --listMode option.

# BACKUP for GEL file

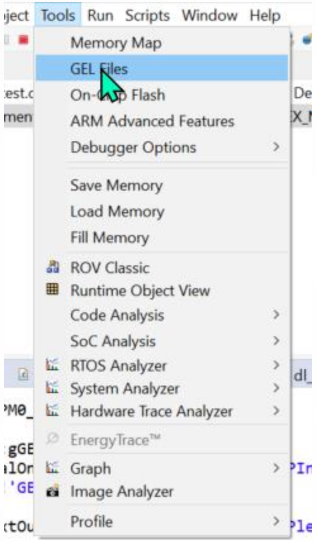
# .GEL file Introduction

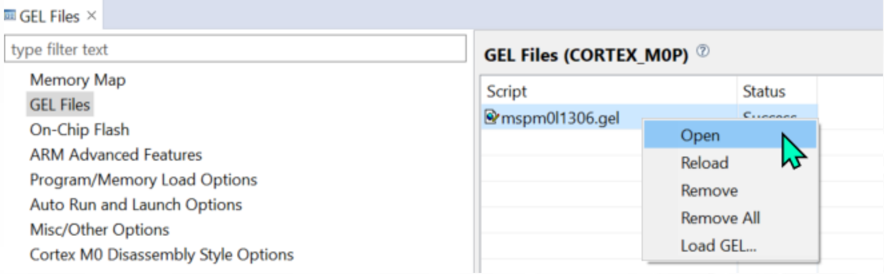
Useful Link (Introduction to .GEL file):

file:///C:/ti/ccs1230/ccs/eclipse/plugins/com.ti.ccstudio.usersguide.doc_12.3.0.202303241404/html/users_guide/ccs_debug-gel.html

# How to find and open .GEL file

(1)

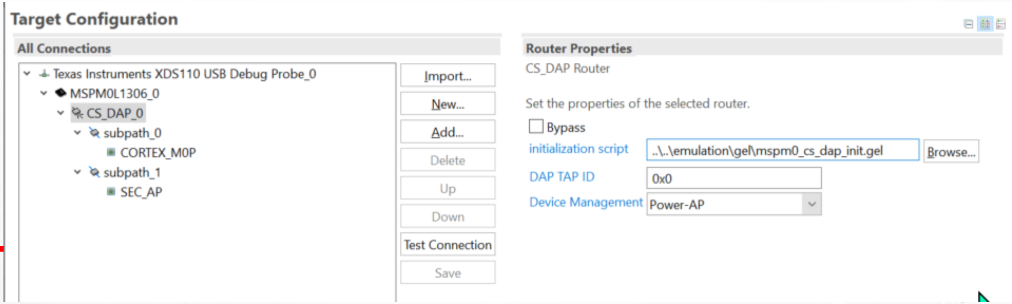




GEL Files (CORTEX_M0P)

| Script | Status |
|---|---|
| mspm0l1306.gel | Success |

(2)



Target Configuration

All Connections

- Texas Instruments XDS110 USB Debug Probe_0
  - MSPM0L1306_0
    - CS_DAP_0
      - subpath_0
        - CORTEX_M0P
      - subpath_1
        - SEC_AP

Router Properties

CS_DAP Router

Set the properties of the selected router.

□ Bypass

initialization script: ..\..\emulation\gel\mspm0_cs_dap_init.gel

DAP TAP ID: 0x0

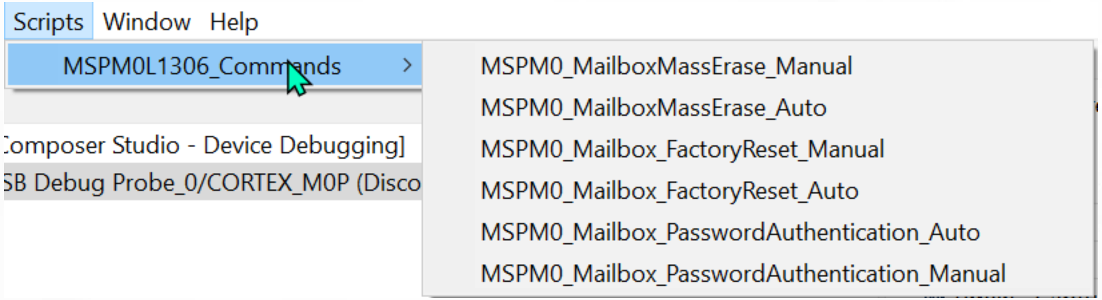
Device Management: Power-AP

In the ccs_base folder: C:\ti\ccs1230\ccs\ccs_base\emulation\gel

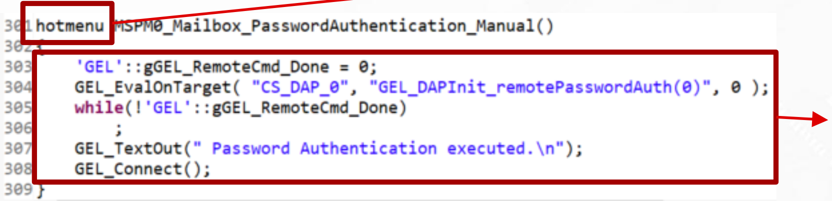
# .GEL file for scripts modification

There are much function in GEL file, and some will be called when connected, which could be used for special usage.

Also, there are some scripts in GEL for easier usage in CCS, such as:


Scripts
Window
Help
MSPM0L1306_Commands
Composer Studio - Device Debugging]
SB Debug Probe_0/CORTEX_M0P (Disco
MSPM0_MailboxMassErase_Manual
MSPM0_MailboxMassErase_Auto
MSPM0_Mailbox_FactoryReset_Manual
MSPM0_Mailbox_FactoryReset_Auto
MSPM0_Mailbox_PasswordAuthentication_Auto
MSPM0_Mailbox_PasswordAuthentication_Manual

How to add new scripts:



```
hotmenu MSPM0_Mailbox_PasswordAuthentication_Manual()
{
    'GEL'::gGEL_RemoteCmd_Done = 0;
    GEL_EvalOnTarget( "CS_DAP_0", "GEL_DAPInit_remotePasswordAuth(0)", 0 );
    while(!'GEL'::gGEL_RemoteCmd_Done)
        ;
    GEL_TextOut(" Password Authentication executed.\n");
    GEL_Connect();
}
```

Add the function to scripts menu.

The behavior of the scripts. The code grammar is same as C++.