MLF Format Spec

Sky Yang/John Lee

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Overview

- **Sections**
  - MLF format contains
    - 2 fixed sections
      - Package Download Profile
      - Package Info Main
    - 1 dynamic section
      - Package Info ## (## is one-based index)
  - Data is formed with key and value separated by "=" character in one line.
    - Ex: Key=Value

Section 1: Package Download Profile

- Store values to
  - Define file format version
  - Configure tool behaviors
  - Values for emergency download
- Keys

Key	Description
PROFILE_VER	MLF format version
PROJECT	Project abbreviate name
PLATFORM	Platform name to configure tool behavior
PACKAGE_NUMBER	Total number of dynamic section
INITOPTION	Bitwise value to configure tool behavior
INITDLTYPE	Bitwise value to configure tool behavior
GPFLAG	Emergency download value for platform I1.
SECURITY_VER	security version start from 0001

Section 1: Package Download Profile

- PROFILE_VER
  - File format version; it shall be "1.0".

Section 1: Package Download Profile

- PROJECT
  - Project abbreviate name; ex: "VKY" for Vicky project.

Section 1: Package Download Profile

- PLATFORM
  - Platform name with following definition.

Platform	Description
Q3	Qualcomm chipsets except 8x25
Q4	Qualcomm 8x25 chipsets
I1	Intel chipsets
M2	MTK chipsets
N1	NVIDIA chipsets
T1	TI Chipsets

Section 1: Package Download Profile

- PACKAGE_NUMBER
  - Total number of dynamic section (i.e. Package Info ##).

Section 1: Package Download Profile

- INITOPTION
  - Bitwise value to configure tool behavior

Bitwise Value	Description
0x2	Ignore rebooting device in the end of fastboot process; thus device would keep on fastboot mode.
0x4	Ignore fastboot process in the end of emergency download process; thus device would download boot loaders only.

Section 1: Package Download Profile

- **INITDLTYPE**
  - Bitwise value to configure tool behavior

Bitwise Value	Description
0x20	MLF format is scripted type; it shall be set for new projects.

Section 2: Package Info Main

- Store values to
  - Define image files for emergency download
  - Image files may be different per each platform
- Keys

Platform	Keys
Q3	EHX_FILE, EMG_FILE
Q4	EHX_FILE, EBN_FILE, EMG_FILE
I1	FW_DNX_FILE, FW_IMAGE_FILE, OS_DNX_FILE, OS_FASTBOOT_IMAGE_FILE
M2	N/A
N1	CFG_FILE, BCT_FILE, EBT_FILE
T1	CFG_FILE

Section 3: Package Info

- Total number is defined in "PACKAGE_NUMBER" of "Package Download Profile" section

- Use 64th bit of "OPTION" to identify package type.
  - Image Type (0): Perform image actions such as flash or erase.
  - Command Type (1): Perform command actions such as OEM command.

- Keys

Keys	Description
PACKAGE_NAME	Name as partition name or command
BOOT_NAME	Name as partition name or command
OPTION	Bitwise value to configure package behavior
IMAGE_FILE	Name as image file
TIMEOUT	Custom timeout value in microsecond

Section 3.1: Image Type of Package Info

- OPTION Bitwise Value: 0x1
    - Ignore; do nothing for this package.
- Keys

Keys	Description
PACKAGE_NAME	Non-used.
BOOT_NAME	Non-used.
IMAGE_FILE	Non-used.
TIMEOUT	Non-used.

Section 3.1: Image Type of Package Info

- OPTION Bitwise Value: 0x2
  - Perform flash operation.
  - Same behavior as 'fastboot.exe flash' command.
- Keys

Keys	Description
PACKAGE_NAME	Component name for ImageShelf.
BOOT_NAME	Partition name for fastboot boot loader.
IMAGE_FILE	Image file name.
TIMEOUT	Custom timeout value in microsecond.

Section 3.1: Image Type of Package Info

- OPTION Bitwise Value: 0x4
  - Perform erase operation.
  - Same behavior as 'fastboot.exe erase' command.
- Keys

Keys	Description
PACKAGE_NAME	Component name for ImageShelf.
BOOT_NAME	Partition name for fastboot boot loader.
IMAGE_FILE	Non-used.
TIMEOUT	Custom timeout value in microsecond.

Section 3.1: Image Type of Package Info

- OPTION Bitwise Value: 0x8
  - Perform erase operation when erasing user data.
  - Same behavior as 'fastboot.exe erase' command.
- Keys

Keys	Description
PACKAGE_NAME	Component name for ImageShelf.
BOOT_NAME	Partition name for fastboot boot loader.
IMAGE_FILE	Non-used.
TIMEOUT	Custom timeout value in microsecond.

Section 3.1: Image Type of Package Info

- OPTION Bitwise Value: 0x200
  - Perform flash operation only if group name is matched.
  - Combined-used with OPTION bitwise value 0x1000000000000002 of command type
- Keys

Keys	Description
PACKAGE_NAME	Component name for ImageShelf and group name with format: component(group).
BOOT_NAME	Partition name for fastboot boot loader and group name with format: partition(group).
IMAGE_FILE	Image file name.
TIMEOUT	Custom timeout value in microsecond.

- Remark:
  - Perform command to query device group name (note: refer to 0x1000000000000002 of command type)
  - Perform flash operation only if group name is matched

Section 3.1: Image Type of Package Info

- OPTION Bitwise Value: 0x400
  - Perform erase operation in system-level station of factory.
  - Available in PTISPLUS only.
  - Same behavior as 'fastboot.exe erase' command.
- Keys

Keys	Description
PACKAGE_NAME	Component name for ImageShelf.
BOOT_NAME	Partition name for fastboot boot loader.
IMAGE_FILE	Non-used.
TIMEOUT	Custom timeout value in microsecond.

Section 3.1: Image Type of Package Info

- OPTION Bitwise Value: 0x800
  - Perform erase operation in borad-level station of factory.
  - Available in PTISPLUS only.
  - Same behavior as 'fastboot.exe erase' command.
- Keys

Keys	Description
PACKAGE_NAME	Component name for ImageShelf.
BOOT_NAME	Partition name for fastboot boot loader.
IMAGE_FILE	Non-used.
TIMEOUT	Custom timeout value in microsecond.

Section 3.1: Image Type of Package Info

- OPTION Bitwise Value: 0x1000
  - Perform simultaneous flash operation.
  - Same behavior as 'fastboot.exe simu_flash' command.
- Keys

Keys	Description
PACKAGE_NAME	Component name for ImageShelf.
BOOT_NAME	Partition name for fastboot boot loader.
IMAGE_FILE	Image file name.
TIMEOUT	Custom timeout value in microsecond.

Section 3.1: Image Type of Package Info

- OPTION Bitwise Value: 0x2000
  - Perform boot operation.
  - Same behavior as 'fastboot.exe boot' command.
- Keys

Keys	Description
PACKAGE_NAME	Component name for ImageShelf.
BOOT_NAME	Partition name for fastboot boot loader.
IMAGE_FILE	Image file name.
TIMEOUT	Custom timeout value in microsecond.

Section 3.1: Image Type of Package Info

- OPTION Bitwise Value: 0x4000
  - Perform flash operation when erasing user data.
  - Same behavior as 'fastboot.exe flash' command.
- Keys

Keys	Description
PACKAGE_NAME	Component name for ImageShelf.
BOOT_NAME	Partition name for fastboot boot loader.
IMAGE_FILE	Image file name.
TIMEOUT	Custom timeout value in microsecond.

Section 3.1: Image Type of Package Info

- OPTION Bitwise Value: 0x8000
  - Perform simultaneous operation when erasing user data.
  - Same behavior as 'fastboot.exe simu_flash' command.
- Keys

Keys	Description
PACKAGE_NAME	Component name for ImageShelf.
BOOT_NAME	Partition name for fastboot boot loader.
IMAGE_FILE	Image file name.
TIMEOUT	Custom timeout value in microsecond.

Section 3.1 : Image Type of Package Info

- OPTION Bitwise Value: 0x100000
  - Perform simultaneous operation for security aboot usage in factory.

- Keys

Keys	Description
PACKAGE_NAME	Component name for ImageShelf.
BOOT_NAME	Partition name for fastboot boot loader.
IMAGE_FILE	Image file name(.mbn) without encryption.
TIMEOUT	Custom timeout value in microsecond.

Section 3.1 : Image Type of Package Info

- OPTION Bitwise Value: 0x200000
  - Perform simultaneous operation for security aboot usage in service center.

- Keys

Keys	Description
PACKAGE_NAME	Component name for ImageShelf.
BOOT_NAME	Partition name for fastboot boot loader.
IMAGE_FILE	Image file name(.zip) with encryption.
TIMEOUT	Custom timeout value in microsecond.

Section 3.2: Command Type of Package Info

- OPTION Bitwise Value: 0x1000000000000000
  - Pass-through fastboot commands (ex: 'fastboot.exe getvar' command).
- Keys

Keys	Description
PACKAGE_NAME	Fastboot command
BOOT_NAME	Fastboot command
IMAGE_FILE	Non-used.
TIMEOUT	Custom timeout value in microsecond.

Section 3.2: Command Type of Package Info

- OPTION Bitwise Value: 0x1000000000000001
  - Ignore; do nothing for this package.
- Keys

Keys	Description
PACKAGE_NAME	Non-used.
BOOT_NAME	Non-used.
IMAGE_FILE	Non-used.
TIMEOUT	Non-used.

Section 3.2: Command Type of Package Info

- OPTION Bitwise Value: 0x1000000000000002
  - Perform fastboot command to query device group name.
  - Combined-used with OPTION bitwise value 0x200 of image type
- Keys

Keys	Description
PACKAGE_NAME	Fastboot command with response string as group name
BOOT_NAME	Same as PACKAGE_NAME.
IMAGE_FILE	Non-used.
TIMEOUT	Custom timeout value in microsecond.

- Remark:
  - Perform command to query device group name
  - Perform flash operation only if group name is matched (note: refer to 0x200 of image type)

Section 3.2: Command Type of Package Info

- OPTION Bitwise Value: 0x1000000000000004
  - Perform fastboot command to unlock Android verified boot.
  - Same behavior as 'fastboot.exe oem dm-verify <PSN MD5>' command.
- Keys

Keys	Description
PACKAGE_NAME	Fastboot command: oem dm-verify
BOOT_NAME	Same as PACKAGE_NAME.
IMAGE_FILE	Non-used.
TIMEOUT	Custom timeout value in microsecond.

- Remark:
  - Perform 'oem dm-verify' command w/ MD5 value, calculated by PSN