MEDIATEK

NvRAM
Product Info feature

NvRAM Product Info feature

- **Version 1.0**
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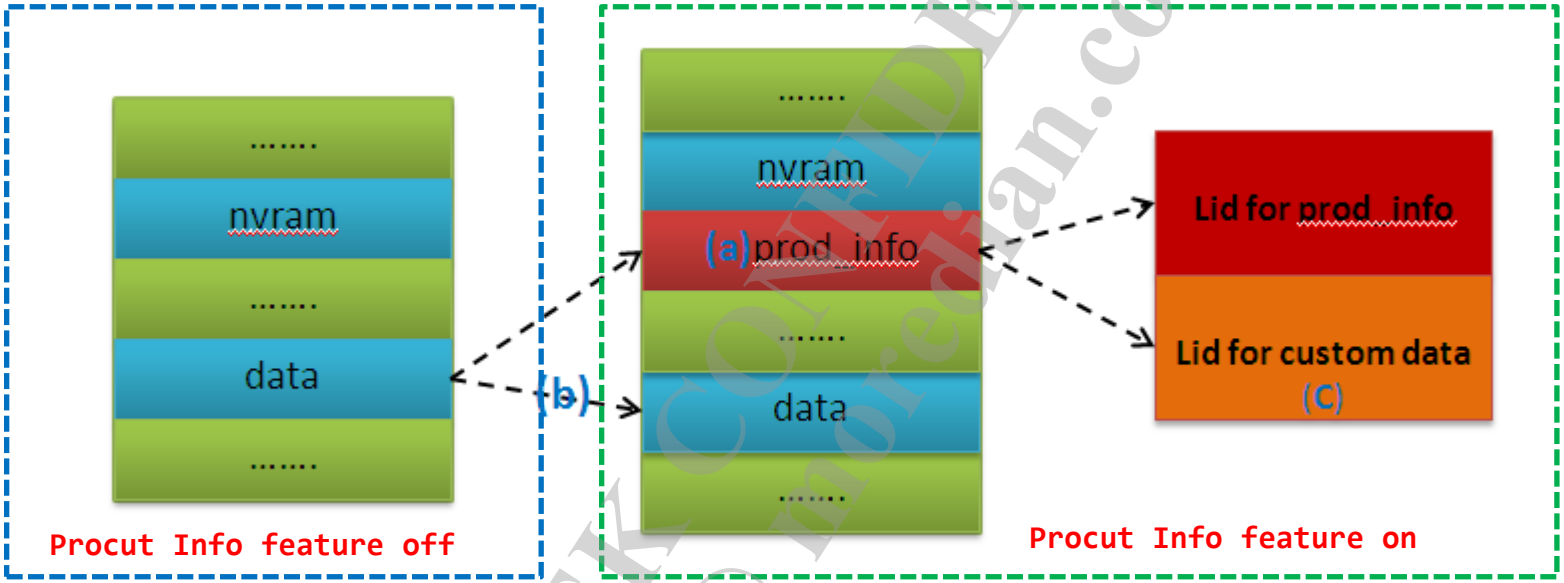
Introduction

- **Product Info Feature is mainly for storing customer's important "product" information in a new nvram partition, which can not access by end user and will remain unchanged when firmware upgrade or factory reset occur.**
- **Product Info Feature has two important functions**
  - Protect customer's important "product information"
    - Move product information (NVRAM data)from "/data/nvram/APCFG/APRDEB/PRODUCT_INFO" to new nvram parition(**pro_info**)
    - Save as raw data in pro_info partition but not file which can easily access by end user
  - Apply your own nvram data to pro_info partition
    - Save nvram data which is added by yourself to pro_info partition and these data can remain unchaned when firmware upgrade or factory reset occur.
    - When you operate your own nvram data in pro_info partition, it has no impact on nvram data which backup in NVRAM partition(Binregion). So, important data in NVRAM partition like IMEI is safety.

Architecture



Modify list

a) Add partition named pro_info after nvram partition

b) Move lid pro_info(/data/nvram/APCFG/APRDCL/PROC_INFO to prod_info partition

c) Add lids (or a lid list) to prod info for custom data if need.

Enable Product Info feature step by step

1. Enable Feature Option in ProjectConfig.mk

– In path of alps/mediatek/config/$project/ProjectConfig.mk

```
MTK_PRODUCT_INFO_SUPPORT=yes
```

2. Add Pro_info partition to partition_table_MT6577.xls

– In path of alps/mediatek/bulid/tools/ptgen/MT65**/

Index	Partition	Type	Size	Main_Size(KB)	Size(Byte)	Size(Byte)	Down Load?	Region	Reserved
1	PRELOADER	Raw data	256 KB	256	262144	0x40000	1	BOOT_1	0
2	DSP_BL	Raw data	768 KB	768	786432	0xC0000	1	BOOT_1	0
3	MBR	Raw data	16 KB	16	16384	0x4000	1	USER	0
4	PMT	Raw data	4 MB	4096	4194304	0x400000	0	USER	0
5	PRO_INFO	Raw data	3 MB	3072	3145728	0x300000	0	USER	0
6	NVRAM	Raw data	5 MB	5120	5242880	0x500000	0	USER	0

– There is something you should be careful

- The name for new partition had better to be the same as “**PRO_INFO**”, if you like to choose the other one, please change the name in alps/mediatek/custom/common/cgen/CFG_file_info.c as well.

Please refer to mtk’s document about how to add a partition for detail

Enable Product Info feature step by step

```
#ifdef MTK_PRODUCT_INFO_SUPPORT
extern bool nvram_new_partition_support()
{
    return true;
}
const TABLE_FOR_SPECIAL_LID g_new_nvram_lid[] =
{
    { AP_CFG_REEB_PRODUCT_INFO_LID, 0, 1024 * 1024 },
};
const unsigned int g_new_nvram_lid_count = sizeof(g_new_nvram_lid)
const char *nvram_new_partition_name = "/dev/pro_info";
extern const char *nvram_new_partition_name;
extern const TABLE_FOR_SPECIAL_LID g_new_nvram_lid[];
extern const unsigned int g_new_nvram_lid_count;
#else
extern bool nvram_new_partition_support()
```

- make sure pro_info partition is located before NVRAM partition
- The size of pro_info parition is 3M at least and should be 128K alignment.
- Make sure the size of your struct for product info should be page alignment
  - Nand :Nand Page Size alignment
  - EMMC : 512 byte alignment

Enable Product Info feature step by step

3. Modify Range of Product Info lid

– In path of alps/mediatek/custom/common/cgen/CFG_file_info.c

```
#ifdef MTK_PRODUCT_INFO_SUPPORT
extern bool nvram_new_partition_support()
{
    return true;
}
const TABLE_FOR_SPECIAL_LID g_new_nvram_lid[] =
{
    { AP_CFG_REEB_PRODUCT_INFO_LID, 0, 1024 * 1024 },
};
const unsigned int g_new_nvram_lid_count = sizeof(g_new_nvram_lid)
const char *nvram_new_partition_name = "/dev/pro_info";
extern const char *nvram_new_partition_name;
extern const TABLE_FOR_SPECIAL_LID g_new_nvram_lid[];
extern const unsigned int g_new_nvram_lid_count;
#else
extern bool nvram_new_partition_support()
```

```
typedef struct
{
   int lid;
   off_t start_address;
   off_t size;
} TABLE_FOR_SPECIAL_LID;
```

– **Notes**

- **start_address and size** should be block alignment(128K alignment)
- If you add item in g_new_nvram_lid, you should make sure that the range of item should not overlap.

Enable Product Info feature step by step

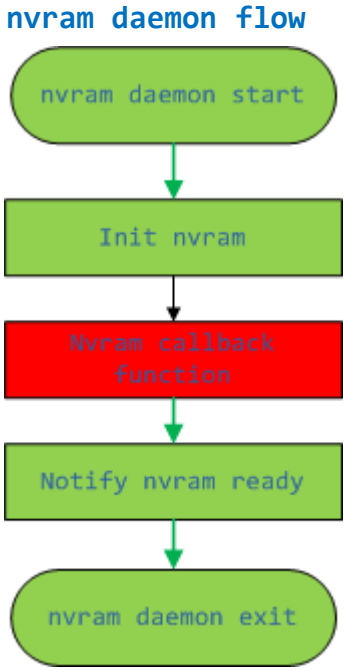
4. Complete callback function for nvram daemon if need.

- In path of alps/mediatek/external/nvram/libnvram_daemon_callback/libnvram_daemon_callback.c
- If you want do some work related to nvram in nvram daemon when boot up, you can change my_callback. Otherwise, you can pass this step.

```
int my_callback(void)
{
    LOGD("nvram daemon callback will run!!!");
    return 0;
}
```

Add your code before **return 0**

- **Notes**
  - my_callback should be keep simple, because do too much thing will impact the boot time.
  - Return number of my_callback will print in main.log, so you can used return number to debug.
  - Please don't change anything except my_callback in this file



Add a additional lid to product_info partition

- **Sometimes, you want to add some nvram file, which can remain unchanged when factory reset occur. Of course, you can make it by backup to NVRAM partition, but this will bring risk that you may destroy data like IMEI when you call backup interface outside the factory. So we provide a new ways to you if you want to change nvram data outside the factory.**
- **Add a additional lid to product_info partition will meet your needs.**
  - The additional lid will store in product info partition that will remain unchanged when factory reset occur.
  - The additional lid will be following product info lid.
  - You can add any number of lid as long as the partition is large enough

Add a additional lid to product_info partition

- **Step by step to add lid to product_info partition**

1. Enable Feature Option in ProjectConfig.mk
   - In path of alps/mediatek/config/$project/ProjectConfig.mk

```
MTK_PRODUCT_INFO_SUPPORT=yes
```

2. Add a lid(nvram data) according to Customization in NvRAM(page 7~Page9)

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3. Add your additional lid item to g_new_nvram_lid(CFG_file_info.c)

```
const TABLE_FOR_SPECIAL_LID g_new_nvram_lid[] =
{
    { AP_CFG_REEB_PRODUCT_INFO_LID, 0, 128 * 1024 },
    { AP_CFG_REEB_PRIVATE_DATA_LID, 128 * 1024, 1024 * 128 },
};
```

- Notes
  - **start_address and size** should be block alignment(128K alignment)
  - make sure that the range of items should not overlap.

Add a additional lid to product_info partition

- **Step by step to add lid to product_info partition**

4. If you don't want to move PRODUCT_INFO file from data to pro_info partition, you need two more job to do.

   a) Delete pro_info item from g_new_nvram_lid(CFG_file_info.c)

```
#ifdef MTK_PRODUCT_INFO_SUPPORT
extern bool nvram_new_partition_support()
{
    return true;
}
const TABLE_FOR_SPECIAL_LID g_new_nvram_lid[] =
{
    { AP_CFG_REEB_PRODUCT_INFO_LID, 0, 128 * 1024 },
    { AP_CFG_REEB_PRIVATE_DATA_LID, 1024 * 128, 128 * 1024},
};
```

```
#ifdef MTK_PRODUCT_INFO_SUPPORT
extern bool nvram_new_partition_support()
{
    return true;
}
const TABLE_FOR_SPECIAL_LID g_new_nvram_lid[] =
{
    { AP_CFG_REEB_PRIVATE_DATA_LID, 0, 128 * 1024},
};
```

   b) Delete Macro MTK_PRODUCT_INFO_SUPPORT from aBackupToBinRegion(CFG_file_info.c)

```
FileName aBackupToBinRegion[]=
{
    {"FILE_VER",AP_CFG_FILE_VER_INFO_LID},
    {"BT_Addr",AP_CFG_RDEB_FILE_BT_ADDR_LID},
    {"WIFI",AP_CFG_RDEB_FILE_WIFI_LID},
    {"AUXADC",AP_CFG_RDCL_FILE_AUXADC_LID},
    {"FACTORY",AP_CFG_RDCL_FACTORY_LID},
    {"BWCS",AP_CFG_RDCL_BWCS_LID},
    {"HWMON_ACC",AP_CFG_RDCL_HWMON_ACC_LID},
    {"HWMON_GYRO",AP_CFG_RDCL_HWMON_GYRO_LID},
    {"WIFI_CUSTOM",AP_CFG_RDEB_WIFI_CUSTOM_LID},
    {"GPS",AP_CFG_CUSTOM_FILE_GPS_LID},
#ifndef MTK_PRODUCT_INFO_SUPPORT
    {"PRODUCT_INFO",AP_CFG_REEB_PRODUCT_INFO_LID},
#endif
#ifdef MTK_SDIORETRY_SUPPORT
    {"SDIO_RETRY",AP_CFG_RDEB_SDIO_RETRY_LID},
```

```
FileName aBackupToBinRegion[]=
{
    {"FILE_VER",AP_CFG_FILE_VER_INFO_LID},
    {"BT_Addr",AP_CFG_RDEB_FILE_BT_ADDR_LID},
    {"WIFI",AP_CFG_RDEB_FILE_WIFI_LID},
    {"AUXADC",AP_CFG_RDCL_FILE_AUXADC_LID},
    {"FACTORY",AP_CFG_RDCL_FACTORY_LID},
    {"BWCS",AP_CFG_RDCL_BWCS_LID},
    {"HWMON_ACC",AP_CFG_RDCL_HWMON_ACC_LID},
    {"HWMON_GYRO",AP_CFG_RDCL_HWMON_GYRO_LID},
    {"WIFI_CUSTOM",AP_CFG_RDEB_WIFI_CUSTOM_LID},
    {"GPS",AP_CFG_CUSTOM_FILE_GPS_LID},
    {"PRODUCT_INFO",AP_CFG_REEB_PRODUCT_INFO_LID},
#ifdef MTK_SDIORETRY_SUPPORT
    {"SDIO_RETRY",AP_CFG_RDEB_SDIO_RETRY_LID},
#endif
```

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