

SC20 Logo&Animation Changing User Guide

Smart LTE Module Series

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About the Document

History

Revision	Date	Author	Description
1.0	2017-04-06	Barnett WANG	Initial
1.1	2018-06-06	Arthur LIU	Added the method to update splash.img in customers' emmc folder and the information about about.c codes (Chapter 2.1).

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1 Introduction

This document mainly introduces how to change the logo of little kernel (LK) and boot/shutdown animations according to customers' preferences in SC20's Android system.

2 Change Logo of LK

This chapter introduces two methods to change the logo of LK in SC20's Android system.

2.1. Method One: Through Creating Image “splash.img” (Recommended)

1. Create a folder *logo* in path *android/device/qcom/comom/display*. Put customers' desired image *xxx.png* and script *logo_gen.py* which are used for creating the logo into the folder, and then execute the following command to generate the image *splash.img*.

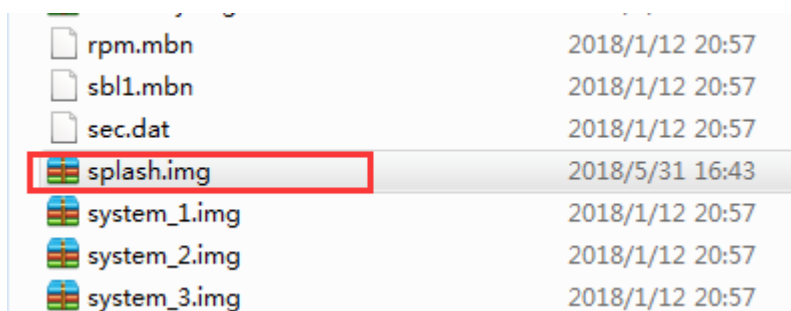
```
python./logo_gen.py xxx.png
```

2. Download *splash.img* to partition *splash* of the device by executing the following commands:

```
adb reboot bootloader
fastboot flash splash splash.img
fastboot reboot
```

3. If there is a need update *splash.img* into *emmc* folder, please refer to the following steps:

- a) Copy *splash.img* into the *emmc* folder.



rpm.mbn	2018/1/12 20:57
sbl1.mbn	2018/1/12 20:57
sec.dat	2018/1/12 20:57
splash.img	2018/5/31 16:43
system_1.img	2018/1/12 20:57
system_2.img	2018/1/12 20:57
system_3.img	2018/1/12 20:57

- b) As illustrated below, fill the filename blank in the *rawprogram_unsparse.xml* file (path: root directory of *emmc* folder) with the splash image name *splash.img*, and then update the whole image.

```
file_sector_offset="0" filename="" label="fsc" num_partition_sectors="2" physical_partition
file_sector_offset="0" filename="" label="ssd" num_partition_sectors="16" physical_partitic
file_sector_offset="0" filename="splash.img" label="splash" num_partition_sectors="204800"
file_sector_offset="0" filename="" label="DDR" num_partition_sectors="64" physical_partitic
file_sector_offset="0" filename="" label="fsg" num_partition_sectors="3072" physical_partit
file_sector_offset="0" filename="sec.dat" label="sec" num_partition_sectors="32" physical_p
```

4. If the right logo cannot be shown after the above steps, please change the code as shown below.
Download path for original code: *bootable/bootloader/lk/app/about/about.c*

```
@@ -2721,10 +2721,17 @@ struct fbimage* splash_screen_mmc()
}

if (splash_screen_check_header(logo)) {
-    dprintf(CRITICAL, "ERROR: Splash image header invalid\n");
-    return NULL;
+
+    dprintf(CRITICAL, "ERROR: -%lld- -%d- Splash image header invalid\n",ptn,index);
+    if (mmc_read(ptn, (unsigned int *) logo, sizeof(logo->header))) {
+        dprintf(CRITICAL, "ERROR: Cannot read splash image header\n");
+        return NULL;
+    }
+
+    if (splash_screen_check_header(logo)) {
+        dprintf(CRITICAL, "ERROR: Splash image header invalid\n");
+        return NULL;
+    }
}
fb_display = fbcon_display();
```

NOTES

1. Customers' image must be in PNG format and the BPP 8 is not supported.
2. The *xxx.png* image resolution must be consistent with the device display resolution. For instance, if the display resolution is 720×1280, then the *xxx.png* resolution must be 720×1280.

2.2. Method Two: Through Compiling About Image

This method is not recommended as our about partition is limited, which results in difficulties in choosing the right image.

1. Install a software “ffmpeg” by executing the following commands:

```
sudo add-apt-repository ppa:kirillshkrogalev/ffmpeg-next
sudo apt-get update
sudo apt-get install ffmpeg
```

2. Execute the following commands to generate the raw data of customers' image, which will be used to create the logo.

```
ffmpeg -i xxx.png -f rawvideo -pix_fmt rgb565 splash_565.raw  
xxd -i splash_565.raw > splash.h
```

- Put the raw data to the array `imageBuffer_rgb888[]` in `android/bootable/bootloader/lk/platform/msm_shared/include/splash.h` and execute the following command to generate image `emmc.appaboot.mbn`.

```
make about -j8
```

NOTE

```
#define SPLASH_IMAGE_WIDTH    xxx  
#define SPLASH_IMAGE_HEIGHT  yyy
```

In the above codes available in `splash.h`, “xxx” and “yyy” are variables to indicate the image resolution, and the two values should be inversed according to the actual resolution of images. For instance, if a image’s actual resolution is 120×130, then “xxx” should be 130 and “yyy” should be 120.

- Download the image `emmc.appaboot.mbn` to the device by executing the following commands:

```
adb reboot bootloader  
fastboot flash about emmc.appaboot.mbn  
fastboot reboot
```

NOTES

- Customers' image must be in PNG format.
- The “xxx.png” in the commands mentioned above should be replaced by the specific name of customers’ desired image.
- The actual size of about partition is defined in the “about” line of `rawprogram_unsparse.xml` file in `emmc` folder, and the value cannot be changed.

3 Change Boot/Shutdown Animations

This chapter introduces how to change the boot and shutdown animations of SC20's Android system.

1. For boot animation, unzip the file *bootanimation.zip* in *Android/vendor/qcom/proprietary/qrdplus/Extension/apps/BootAnimation/*. And for shutdown animation, unzip the file *shutdownanimation.zip* in *Android/vendor/qcom/proprietary/qrdplus/Extension/apps/ShutdownAnimation/*. The file contents are as below, which are used for creating boot or shutdown animations.

- **part0**: a folder contains PNG images
- **part1**: a folder contains PNG images
- **desc.txt**: defines how the images in the folders are displayed

2. Name the images which are used for creating customers' desired animations in *part* folders, and make sure the images are named in numerical format and in proper sequence, i.e. the images in the first part should start with, let's say, *00000.jpg* and go on till *00020.jpg*, and the images in the second part should then start off with *00021.jpg* and go on till *00043.jpg*, for instance.

3. Open the file *desc.txt*, and the contents will be shown in the following format, then modify the parameters according to customers' requirements for creating the animations.

```
desc.txt
1 720 1280 15
2 p 1 0 part0
3 p 0 0 part1
4
```

The meanings of the contents are:

- 720 1280 15
 - 720 1280 Resolution of the images (width×height)
 - 15 The frame rate that images display
- p 1 0 part0
 - p A tag
 - 1 Defines the number of times this part loops (1 means once)

0 Defines the switching interval of the part
part0 Folder *part0*

- p 0 0 part1

p A tag
0 Means the part will loop indefinitely (until the system starts)
0 Defines the switching interval of the part
part0 Folder *part1*

4. Compress the modified folders *part0* and *part1* and file *desc.txt* as one file. Then execute the command below to generate image *system.img* which contains the zip file.

```
make systemimage -j8
```

5. Download the image *system.img* to the device by executing the following commands:

```
adb reboot bootloader  
fastboot flash system system.img  
fastboot reboot
```

NOTES

1. The file names in *bootanimation.zip* and *shutdownanimation.zip* cannot be changed.
2. Our module platform use the *bootanimation_WVGA.zip* package.
3. New *part* folders such as *part2*, *part3*, or *part4*...can be added in sequence to store more images according to customers' needs. And if new folders are added, then the parameter contents of the new part need to be added as well in *desc.txt*. Generally, two folders are enough.
4. The resolution of the customers' images cannot exceed the screen resolution of the device.
5. If the modified part folders and *desc.txt* are compressed via "WinRAR" in Windows system, please select compression method as "**STORE**"; and if they are compressed in Linux system, please use command **zip -0 -r ../bootanimation.zip ./***.