

6AO.1.1 Application Notes

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QSPI NOR/eMMC partitions

In this release, the xloader and bootloader goes into QSPI and rest of the images go in to eMMC partitions. All TI software has been moved to the vendor partition. The table below summarizes the partition info:

Partition Info		
Partition Name	eMMC/QSPI	Binary to flash
xloader	QSPI	MLO
bootloader	QSPI	u-boot.img
boot	eMMC	boot.img (zImage + ramdisk.img)
environment	eMMC	<ul style="list-style-type: none">dra7-evm-lcd-ig.dtb (J6 Rev-G)dra7-evm-lcd-osd.dtb (J6 Rev-H)dra72-evm-lcd-ig.dtb (J6 Eco Rev-B)dra72-evm-revc-lcd-osd101t2045.dtb (J6 Eco Rev-C)dra71-evm-lcd-auo-g101evn01.0.dtb (J6 Entry)dra76-evm.dtb (J6 Plus EVM)
system	eMMC	system.img
vendor	eMMC	vendor.img
recovery	eMMC	recovery.img
ipu1	eMMC	ipu1 image for late attach
ipu2	eMMC	ipu2 image for late attach
dsp1	eMMC	dsp1 image for late attach
dsp2	eMMC	dsp2 image for late attach
data	eMMC	userdata.img

Syntax for fastboot flash command is

```
fastboot flash <partition name> <image file>
```

To update kernel (zImage) alone, flash the zimage partition

```
fastboot flash zimage <path to zImage>
```

To update ramdisk.img alone, you will have to create boot.img file and flash it. Steps to create boot.img file below

```
cd $YOUR_PATH/emmc_files
mkbootimg --kernel <path/to/zImage> --ramdisk <path/to/ramdisk.img> --ramdisk_offset 0x01f00000 --base 0x80000000 --output boot.img
```

Note: To update MLO and u-boot.img in SPI, follow commands below. They have to be flashed together.

```
fastboot oem spi
fastboot flash xloader <MLO File>
fastboot flash bootloader <u-boot.img file>
```

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Re-Building SGX kernel module

In 6AO releases, SGX driver module (pvrsrvkm.ko) is built as part of Android file system build.

J6 Entry Display Width

[6AO.1.0_Application_Notes#J6_Entry_Display_Width](#)

Kernel Modules

[6AO.1.0_Application_Notes#Kernel_Modules](#)

IPC

- IPC version used in this release is **3.47.01.00**
- IPC package is already included when you download Android source following instructions from release notes. It is in path \${MYDROID}/hardware/ti/ipc. You can also clone the IPC git tree individually from [git://git.ti.com/ipc/ipcdev.git](https://git.ti.com/ipc/ipcdev.git)
- Late Attach and Error Recovery
 - [Early_Boot_and_Late_Attach#Enabling_Early_Boot_and_Late_attach_on_Android_286AM.1.2.29](#)
 - [IPC_Slave_Error_Recovery](#)
- UIO and misc driver (for avoiding /dev/mem)
 - [IPC_GateMP_Support_for_UIO_and_Misc_Driver](#)
- Benchmarking
 - [IPC_BenchMarking](#)
- IPC Users Guide
 - [IPC_Install_Guide_Android](#)
 - [IPC_Users_Guide](#)

Multimedia

List of Media formats supported by Android <https://developer.android.com/guide/topics/media/media-formats.html>

Audio

[6AO.1.0_Application_Notes#Audio](#)

USB

[6AO.1.0_Application_Notes#USB](#)

Camera

[6AO.1.0_Application_Notes#Camera](#)

DCAN Vehicle HAL

[6AO.1.0_Application_Notes#DCAN_Vehicle_HAL](#)

Radio

- Radio platform bringup - [Jacinto_Radio_Integration](#)
- Radio package is available only through CDDS, please contact [Lester Longley \(mailto:lester@ti.com\)](mailto:lester@ti.com) for more info.

Display

Multidisplay

Android SDK by default does screen mirroring when multiple displays are connected (LCD Panel + HDMI for TI EVM).

If different content needs to be shown on the secondary display, App needs to be written using Presentation mode of Android. Alternatively, There is also a API demo app available in Android which can use to test presentation mode. It's called ApiDemos and is available in \$MYDROID/development/samples/ApiDemos location.

Once you launch this app, presentation mode can be tested by going to App --> Activity --> Presentation.

Full range co-effs

In Android SDK DSS and SGX are configured for limited range when doing YUV-RGB conversion. For enabling full range conversion on SGX and DSS use below listed patches:

- DSS: <http://review.omapzoom.org/#/c/38908/>
- SGX: <http://review.omapzoom.org/#/c/38863/>

HDMI

[6AO.1.0_Application_Notes#HDMI](#)

Recovery Mode

[6AO.1.0_Application_Notes#Recovery_Mode](#)

Boot Options

All eMMC option

[6AO.1.0_Application_Notes#All_eMMC_option](#)

Single Stage bootloader

[6AO.1.0_Application_Notes#Single_Stage_bootloader](#)

USB Peripheral Boot

[6AO.1.0_Application_Notes#USB_Peripheral_Boot](#)

Android Verified Boot

[Android_Verified_Boot](#)

AOSP Delta

To find out the delta/patches that TI added on top of Android AOSP, follow the instructions below

- This release is based on Oreo MR1 version of AOSP (8.1.0)
 - AOSP Branch: oreo-mr1-release
 - Corresponding TI Branch: d-oreo-mr1-release
- Once you have the 6AO.1.1 repo downloaded on your PC, use the command below to list out all patches added by TI on top of AOSP projects

```
cd $MYDROID
repo forall -p -c 'git log --oneline omap-mirror/oreo-mr1-release..omap-mirror/d-oreo-mr1-release'
```

Resource Allocation

[6AO_Resource_Allocation](#)

Errata Disposition

[DRA7xx_Errata_Status#DRA7xx_Status_.282016LTS.29](#)

LPAE and SGX buffers

For systems with more than 2GB memory (using LPAE), graphics buffers come from lowmem region of kernel. This puts additional crunch on lowmem and could lead to false oom scenario. To conserve some space in lowmem, internal graphics buffers (VBO, textures, parambufers, etc.) can be moved out of lowmem region. This is an optional change.

Changes: [dra7x_sgx_lpaе_changes.zip](#) (http://processors.wiki.ti.com/images/a/a7/Dra7x_sgx_lpaе_changes.zip)

- PVR Graphics driver change
 - Apply *0001-jacinto6-sgx_src-use-cma-allocations-instead-of-lowm.patch* to *device/ti/proprietary-open project*
- Kernel changes
 - Apply *0001-drivers-dma-contiguous-export-alloc-dealloc-APIs.patch* to Kernel
 - Add *cma=<size>@<addr>* to kernel bootargs (CONFIG_CMDLINE option in defconfig). Choose size that fits the system needs and choose an address range above lowmem region but below 2GB limit
 - Ex: *cma=384M@0xc0000000*

Post release patches

Domain	Issue/Subject	Fix	Component	Applicable to 6AM.x Release
Platform	MMC ADMA descriptor corruption	ce848f7c99d6d9b68b1735ef61bdd86130a849ab (http://git.omapzoom.org/?p=kernel/omap.git;a=commit;h=ce848f7c99d6d9b68b1735ef61bdd86130a849ab)	Kernel	Yes
Platform	eMMC 5.x wipe operation failure	http://review.omapzoom.org/#/c/38998/	Kernel	Yes
Multimedia	Invalid crop parameters from codec	http://review.omapzoom.org/#/c/38994/	AFS	Yes
Graphics	OOM issues with monkey test	http://review.omapzoom.org/#/c/38999/ http://review.omapzoom.org/#/c/39000/	AFS	-
Platform	Build failure in generating ota package	http://review.omapzoom.org/#/c/39001/	AFS	-
Graphics	Cumulative post release fixes for SGX DDK	http://review.omapzoom.org/#/c/39002/	AFS	-
Graphics	Potential crash in PVR kernel module	http://review.omapzoom.org/#/c/39004/	AFS	Yes

Keystone=

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1. switchcategory:MultiCore=

- For technical support on MultiCore devices, please post your questions in the C6000 MultiCore Forum
- For questions related to the BIOS MultiCore SDK (MCSDK), please use the BIOS Forum

Please post only comments related to the article **6AO.1.1 Application Notes** here.

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OMAPL1=For technical support on OMAP please post your questions on The OMAP Forum. Please post only comments about the article **6AO.1.1 Application Notes** here.

MAVRK=For technical support on MAVRK please post your questions on The MAVRK Toolbox Forum. Please post only comments about the article **6AO.1.1 Application Notes** here.

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