

6AO.1.1 Release Notes

Introduction

These Release Notes provide instructions for both,

- Testing the release using a pre-built binary image which can be loaded onto eMMC on EVM board
- Rebuilding the Android binary image from the Android sources

This software release has been developed and verified in the following software and hardware environment.

OS Kernel: Linux® 4.4.117

Android: Android™ Oreo™ MR1 8.1 (OPM1.171019.021)

Toolchain: Android linux-x86 toolchain android-eabi-4.9

Supported J6 Platforms: J6 EVM (REV H), J6 Eco EVM (Rev C), J6 Entry EVM, and J6 Plus EVM

IPC Version: 3.47.01.00

Build Host OS: Ubuntu 64 bit with Java8

Daily Build Version: JACINTO6_O_DB build 185

NOTE: Same set of software binaries work for both J6, J6 Eco, J6 Entry, and J6 Plus EVMs, only the device tree file (.dtb) is different for different EVMs. Refer to [6AO.1.1_Application_Notes](#) for more details

Release Features

Following new features are enabled/tested for J6 and J6 Eco in this release:

- **Boot:** fastboot, QSPI/NOR + emmc boot, Single stage bootloader, USB peripheral boot, HS Boot with FIT model, IPU Loading, Switch to recovery mode, Verified boot
- **Platform:** LPAE support, SELinux enforce mode
- **IPC:** MessageQ, MmRpc, Late attach support, error recovery : DEH And MMU faults
- **Connectivity:** USB2.0/USB3.0 Host, Gadget and dual-role, Dual Ethernet, SD card detect, eMMC HS200 mode, DCAN
- **Power:** AVS0, MPU DVFS, ABB
- **Thermal:** Governors implemented for MPU (On Die), Monitoring implemented for all on chip sensors
- **Video:** 1080p60 MP4/H264/MP2, H264 Video Encode (F2F)
- **Audio:** MP3/AAC playback, stereo audio out on McASP, 5.1 Audio on HDMI, Downmix to Stereo on McASP when disconnected, Aux-In, ARM<->DSP Audio Routing, APPE HAL phase-1
- **Display:** SGX accelerated UI and touch, DRM/KMS, DSS WB, SGX and DSS simultaneous composition.
- **Camera:** Android Camera App with TVP5158 Analog camera on JAMR3, VIP: YUYV/RGB888 format capture, NV12 capture, Interlaced capture, VPE: color conversion, V4L2 M2M, scalar, DEI
- **Radio:** HD 1.5 Radio Library (ARM/DSP rendering) and DAB Radio support
- **WiLink8Q:** WLAN - Wi-Fi/Wi-Fi
- **Secure boot:** Validated in this release on HS device and M-Shield DK Lite v4.5.4 (available in CDDS Only). Customers needing access to the M-Shield DK Lite package should contact their TI representatives.
- **Vehicle:** Auto HMI, VehicleHAL with DCAN

Release Limitations

In this release:

Key	Component	Summary	Comments
PSDKAA-2059	Application/Framework	Monkey test causes OOM issue	Fix: 6AO.1.1_Application_Notes#Post_release_patches
PSDKAA-1991	Graphics	OOM on LPAE kernel	WA: 6AO.1.1_Application_Notes#LPAE_and_SGX_buffers
PSDKAA-2079	Unknown	6AO.1.1: Platform CTS failures	
PSDKAA-2078	Graphics	6AO.1.1: Graphics CTS failures	
PSDKAA-2077	Video	6AO.1.1: Multimedia CTS failures	
PSDKAA-2036	Kernel	MMC: wipe operation failure on emmc 5.x cards	Fix: 6AO.1.1_Application_Notes#Post_release_patches
PSDKAA-2073	Application/Framework	SELinux warnings vehicle-hal, drm-hal	drm feature not part of SDK
PSDKAA-	Compositor	J6Plus: Enabling DVI interface causes surfaceflinger	TI EVM specific

Contents

Introduction

- Release Features
- Release Limitations

Using the Prebuilt Release Image

Rebuilding Android from Sources

- Build PC setup
- Downloading Release Software
 - Android Filesystem Sources
 - U-Boot Sources
 - Kernel & Driver Sources
- Build Instructions
 - Setting up build environment
 - Building U-boot sources
 - Building Kernel
 - Building Android Filesystem (AFS)
- Preparing Android Image
 - Preparing eMMC binaries/images

Flashing eMMC images

- DIP Switch settings
- Flashing procedure

Application notes/Additional Info

Technical support

1977		crash	
PSDKAA-1360	Kernel	MMC: Importing SD card in Android results in Kernel crash	Fix: 6AO.1.1_Application_Notes#Post_release_patches

Using the Prebuilt Release Image

The prebuilt release image can be obtained from [here](http://software-dl.ti.com/infotainment/jacinto6/android/6AO_1_1_Release/index_FDS.html) (http://software-dl.ti.com/infotainment/jacinto6/android/6AO_1_1_Release/index_FDS.html). After you download the binaries, follow the flashing instruction from "Flashing eMMC images" section.

Rebuilding Android from Sources

Build PC setup

You need a 64 bit Ubuntu machine for building Android file system.

Install Pre-requisite packages for building the Android File System

Follow instructions from official Android page [here](https://source.android.com/source/initializing.html#setting-up-a-linux-build-environment) (<https://source.android.com/source/initializing.html#setting-up-a-linux-build-environment>) for setting up the packages required for building Android.

Proxy/Firewall

If you are behind proxy/firewall, workaround it using the instructions in [1] (http://omapedia.org/wiki/Host_PC_Setup). For installing repo make sure you also export https_proxy environment variable.

Install latest repo tool

```
mkdir ~/bin -p
sudo apt-get install curl
curl http://commondatastorage.googleapis.com/git-repo-downloads/repo > ~/bin/repo
chmod a+x ~/bin/repo
```

Tool Chain for building Kernel and Drivers

The Kernel and Driver sources are built using the Android linux-x86 toolchain for ARM GNU/Linux version . This tool chain can be obtained when you pull the Android code based on the released manifest that will be given.

Downloading Release Software

Android Filesystem Sources

You can get the Android source for this release by doing:

```
cd <your work directory>
mkdir -p 6AO.1.1
cd 6AO.1.1
export YOUR_PATH=$PWD
mkdir -p mydroid; cd mydroid
export MYDROID=$PWD
repo init -u git://git.omapzoom.org/platform/omapmanifest.git -b 6AO.x -m RLS_6AO.1.1.xml
repo sync
```

U-Boot Sources

```
cd ${YOUR_PATH}
git clone git://git.omapzoom.org/repo/u-boot.git
cd u-boot
git checkout 6AO.1.1
```

Kernel & Driver Sources

```
cd ${YOUR_PATH}
mkdir kernel
git clone git://git.omapzoom.org/kernel/omap.git kernel/android-4.4
cd kernel/android-4.4
git checkout 6AO.1.1
```

Build Instructions

Setting up build environment

From your work directory (6AO.1.1 folder):

```
export YOUR_PATH=$PWD
export MYDROID=${YOUR_PATH}/mydroid
export CROSS_COMPILE=${MYDROID}/prebuilts/gcc/linux-x86/arm/arm-linux-androideabi-4.9/bin/arm-linux-androideabi-
```

Building U-boot sources

Instructions for building x-loader and bootloader

```
cd ${YOUR_PATH}/u-boot
export CROSS_COMPILE=${MYDROID}/prebuilts/gcc/linux-x86/arm/arm-linux-androideabi-4.9/bin/arm-linux-androideabi-
export ARCH=arm
make distclean
make dra7xx_ewm_config
make
```

Building Kernel

Instructions for building kernel and device tree. Note the new step to build modules.

```
cd ${YOUR_PATH}/kernel/android-4.4
export CROSS_COMPILE=${MYDROID}/prebuilts/gcc/linux-x86/arm/arm-linux-androideabi-4.9/bin/arm-linux-androideabi-
export ARCH=arm
make mrproper
./ti_config_fragments/defconfig_builder.sh -t ti_sdk_dra7x_android_release
make ti_sdk_dra7x_android_release_defconfig
make uImage LOADADDR=0x80008000
make dtbs
make modules
```

Building Android Filesystem (AFS)

Instructions for building Android file system. Note that building AFS now requires that you build Kernel and export the Kernel path before starting the build.

```
cd $MYDROID
. build/envsetup.sh
lunch full_jacinto6evm-userdebug
export KERNELDIR=${YOUR_PATH}/kernel/android-4.4
make -j2 clean
make -j2
```

Preparing Android Image

Preparing eMMC binaries/images

```
cd $YOUR_PATH
mkdir emmc_files
cp -v ${MYDROID}/out/target/product/jacinto6evm/*img emmc_files
cp -v ${MYDROID}/device/ti/jacinto6evm/fastboot.sh emmc_files
cp -v ${MYDROID}/out/host/linux-x86/bin/{simg2img,make_ext4fs,mkbootimg,fastboot,adb} emmc_files
cp -v ${MYDROID}/out/host/linux-x86/lib64/{libc++.so,libcutils.so,liblog.so,libselinux.so,libpcre2.so} emmc_files
cp -v ${YOUR_PATH}/kernel/android-4.4/arch/arm/boot/zImage emmc_files/kernel
cp -v ${YOUR_PATH}/kernel/android-4.4/arch/arm/boot/dts/dra7*.dtb emmc_files
cp -v ${YOUR_PATH}/u-boot/MLO emmc_files/GP_MLO
cp -v ${YOUR_PATH}/u-boot/MLO emmc_files/
cp -v ${YOUR_PATH}/u-boot/u-boot.img emmc_files
```

Flashing eMMC images

The default setup is to flash MLO and u-boot.img to QSPI and remaining binaries (kernel, dtb file and AFS) to emmc.

- Instructions are same for J6 and J6 Eco EVM
- For more info on partitions and flashing refer to "[QSPI NOR/eMMC partitions](#)" Application note.

DIP Switch settings

Required DIP switch settings: This configuration corresponds to the following device boot order: SD ⇒ QSPI_1

J6 ES1.x / J6 Eco EVM

J6 ES2.0 EVM

Flashing procedure

Wireless Connectivity

[Clocks & Timers](#)
[Data Converters](#)

[Logic](#)
[Power Management](#)

- [Microcontrollers \(MCU\)](#)
- [OMAP Applications Processors](#)

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