

# Processor SDK Linux HS Support



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This page captures the specific instructions for running Processor SDK Linux Automotive on DRA7xx HS devices as an addendum to [Processor SDK Linux Automotive Software Developers Guide](http://processors.wiki.ti.com/index.php/Processor_SDK_Linux_Automotive_Software_Developers_Guide) ([http://processors.wiki.ti.com/index.php/Processor\\_SDK\\_Linux\\_Automotive\\_Software\\_Developers\\_Guide](http://processors.wiki.ti.com/index.php/Processor_SDK_Linux_Automotive_Software_Developers_Guide)).

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## Prerequisites

### EVM Hardware

J6 HS EVM revisions G or H, or J6 ECO HS EVM revisions B or C is required.

### TI SECDEV Software

TI SECDEV software package, version 4.6.0 is required to build boot images for HS EVMs. To obtain TI SECDEV package, please contact a TI representative.

- Step 1:** Select or create a directory on the development host for SECDEV installation.
- Step 2:** Export the environment variable **TI\_SECURE\_DEV\_PKG\_AUTO** to point to this path.
- Step 3:** Create a directory called "dra7" here and extract the contents of the SECDEV package.

In summary, the contents of the SECDEV package must be available at **\$TI\_SECURE\_DEV\_PKG\_AUTO/dra7** for building boot images for HS devices.

## Build SDK images for HS

Yocto system is used to build SDK images for HS devices. Follow the process as documented in the SDG ([http://processors.wiki.ti.com/index.php/Processor\\_SDK\\_Linux\\_Automotive\\_Software\\_Developers\\_Guide#Building\\_Yocto\\_Filesystem](http://processors.wiki.ti.com/index.php/Processor_SDK_Linux_Automotive_Software_Developers_Guide#Building_Yocto_Filesystem)), stop before this running this command.

```
host $ ./build-core-sdk.sh dra7xx-evm
```

**For J6 Rev. G EVM**, there are two patches that are required

Apply the following patch to meta-glsdk, at yocto-layers/sources/meta-glsdk

1. [0001-u-boot-ti-staging-Changes-for-HS-boot-in-Rev-G.patch](http://processors.wiki.ti.com/images/8/83/0001-u-boot-ti-staging-Changes-for-HS-boot-in-Rev-G.patch.gz) (<http://processors.wiki.ti.com/images/8/83/0001-u-boot-ti-staging-Changes-for-HS-boot-in-Rev-G.patch.gz>)

Apply the following patch to meta-arago, at yocto-layers/sources/meta-arago

2. [0001-optee-os-Add-patch-for-Rev-G-support.patch](http://processors.wiki.ti.com/images/2/2b/0001-optee-os-Add-patch-for-Rev-G-support.patch.gz) (<http://processors.wiki.ti.com/images/2/2b/0001-optee-os-Add-patch-for-Rev-G-support.patch.gz>)

**For J6 ECO Rev. B EVM**, apply the following patch to meta-glsdk, at yocto-layers/sources/meta-glsdk

1. [0001-u-boot-ti-staging-Changes-for-HS-boot-in-Rev-G.patch](http://processors.wiki.ti.com/images/8/83/0001-u-boot-ti-staging-Changes-for-HS-boot-in-Rev-G.patch.gz) (<http://processors.wiki.ti.com/images/8/83/0001-u-boot-ti-staging-Changes-for-HS-boot-in-Rev-G.patch.gz>)

**For J6 Rev. H EVM** and **For J6 ECO Rev. C EVM** no patches are required.

Now, run the command below. Note that the machine name must be given as **dra7xx-hs-evm** for HS devices.

```
host $ ./build-core-sdk.sh dra7xx-hs-evm
```

After build is complete the generated images can be found in yocto-layers/build/arago-tmp-external-linaro-toolchain/deploy/images/dra7xx-hs-evm

Generated images

Image name	Description
tisdk-rootfs-image-dra7xx-hs-evm-<DATE>.rootfs.tar.xz	This is the filesystem tarball. Copy and extract it on the rootfs partition of the boot media.
u-boot-<MACHINE-NAME>.img	Copy as u-boot.img in boot partition.
MLO-<MACHINE-NAME>	Copy as MLO in boot partition.

**Note 1 (fitImage.itb):** The yocto build does not generate the FIT image incorporating signed Linux kernel zImage, signed DTB files, and OP-TEE OS image. This file must be generated manually using the command below and copied to /boot of rootfs partition.

```
host $ cd $PSDKLA_INSTALL_DIR/yocto-layers/build/arago-tmp-external-linaro-toolchain/work/dra7xx_hs-evm-linux-gnueabi/linux-ti-staging/<VERSION>/build
host $ mkimage -f fit-image.its fitImage.itb
```

**Note 2 (uenv.txt):** The build does not generate a uenv.txt. You need to copy it from the prebuilt binaries in the release to boot partition. The following line must be added to boot fitImage.itb for SD card boot:

```
mmcboot=run update_to_fit;run args_mmc;run loadimage;bootm ${loadaddr}#${fdtfile}
```

OP-TEE Trusted execution environment

Processor SDK Linux Automotive supports [OP-TEE](https://github.com/OP-TEE/optee_os) ([https://github.com/OP-TEE/optee\\_os](https://github.com/OP-TEE/optee_os)), a open-source, GlobalPlatform compliant Trusted Execution Environment. OP-TEE components are integrated into the SDK and will be available as a out-of-the-box demo.

- 1. OP-TEE OS is built as a binary image, signed and included in fitImage.itb to be loaded by u-boot.
- 2. OP-TEE linux driver is included in TI baseline Linux kernel in SDK.
- 3. OP-TEE client library and tee-suppllicant(userspace components) are included in the SDK filesystem. tee-suppllicant daemon is launched into background by default.

Testing OP-TEE

The SDK filesystem includes the *xtest* consolidated testing tool from OP-TEE. Running this application with no arguments executes the full test suite and prints out the results, which must look like this:

```
root@dra7xx-hs-evm:~# xtest
...
23519 subtests of which 0 failed
69 test cases of which 0 failed
0 test case was skipped
TEE test application done!
```

1. switchcategory:MultiCore=

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