Building and installation OP-TEE + AOSP on hikey960

The entire build takes place on Ubuntu 18.04.

Install all dependences:

```
sudo apt-get install android-tools-adb android-tools-fastboot autoconf \
        automake bc bison build-essential cscope curl device-tree-compiler \
        expect flex ftp-upload gdisk iasl libattr1-dev libc6:i386 libcap-dev \
        libfdt-dev libftdi-dev libglib2.0-dev libhidapi-dev libncurses5-dev \
        libpixman-1-dev libssl-dev libstdc++6:i386 libtool libz1:i386 make \
        mtools netcat python-crypto python-serial python-wand unzip uuid-dev \
        xdg-utils xterm xz-utils zlib1g-dev repo
```

Getting sources and compilation

```
mkdir optee && cd optee
export PLATFORM=hikey-hikey960
repo init –u https://github.com/OP-TEE/manifest.git -m hikey.xml
repo sync
cd build
make toolchains
make
```

At the time of writing this text, some time after the execution of make, there was an error about unavailability of the readdir64 function in the chacl.c, one of the solution of this problem:

```
gedit $(find ../ -name “chacl.c”)
```

Then replace in function `walk_dir line`:
`struct dirent64 *d;` to `struct dirent *d;`
`while ((d = readdir64(dir)) != NULL) {` to `while ((d = readdir(dir)) != NULL) {`

After that, re-run make and wait for the end of compilation, linux kernel is built by default with CoreSight tracing support.

Flashing

Flashing invoked via fastboot. To do this, you need to connect the board to the host via USB, also you need to set switches 1 and 3 to ON position (Auto Power и Ext Boot), and set 2 switch to OFF position (power must be turned offf).

Flashing is made with the following command:

```
make flash
```

This command will flash the following components: `ptable, fastboot, nvme, boot.` `Needed prm_table.img (ptable)` is located at:
https://snapshots.linaro.org/96boards/reference-platform/components/uefi-staging/latest/hikey960/debug/

Optional AOSP sections can be taken here:
https://snapshots.linaro.org/96boards/hikey960/linaro/aosp-master/latest/

After flashing is complete, for perf tracing you need do all steps described in document about dragonboard 410c.

Building AOSP for hikey960 without OP-TEE

Compiling environment:

```
repo init -u https://android.googlesource.com/platform/manifest -b master
repo sync
. ./build/envsetup.sh
lunch hikey960-userdebug
make -j32
```

Initial flashing (fastboot mode, 1 and 3 switches in ON position):

```
cd device/linaro/hikey/installer/hikey960
./flash-all.sh
```

Normal boot for AOSP without OP-TEE is built as follows:

```
git clone https://android.googlesource.com/kernel/hikey-linaro
cd hikey-linaro
git checkout -b android-hikey-linaro-4.9 origin/android-hikey-linaro-4.9
make ARCH=arm64 hikey960_defconfig
```

For additional settings:

```
make ARCH=arm64 menuconfig
```

For building you can also use the linaro toolchain (CROSS_COMPILE=aarch64-linux-gnu-), but android toolchain is recommened. Be here: https://android.googlesource.com/kernel/hikey-linaro/+/android-hikey-linaro-4.9

```
make ARCH=arm64 CROSS_COMPILE=aarch64-linux-android-
```

Boot image creating:

```
cp arch/arm64/boot/dts/hisilicon/hi3660-hikey960.dtb hikey-kernel/hi3660-hikey960.dtb-4.9
```

```
cp arch/arm64/boot/Image.gz-dtb hikey-kernel/Image.gz-dtb-hikey960-4.9
```

```
make bootimage
```

Then flashing via fastboot image received as a result:

```
fastboot flash boot boot.img
```