

Building Android 11 for PH-1 on Apple Silicon

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This process should work on Intel.

This article is based on:

“*Building Android O with a Mac*” by Christopher Ney

<https://medium.com/@christopherney/building-android-o-with-a-mac-da07e8bd94f9>

Official Android documentation:

<https://source.android.com/setup/requirements>

“*Essential Products: device_essential_mata*” by Jean-Baptiste Théou and Gary Bisson

https://github.com/EssentialOpenSource/device_essential_mata



My Environment

- **Device:** MacBook Air (M1, 2020)
- **OS:** macOS Big Sur 11.1 (20C69)
- **Chip:** Apple M1
- **Memory:** 16GB
- **Device:** Essential PH-1(mata)

Install Xcode and Tools

- Install Xcode from the Mac Appstore:
<https://apps.apple.com/us/app/xcode/id497799835?mt=12>
- Install **Xcode command line** tools with:

```
$ xcode-select --install
```

- Install **Rosetta** with:

```
$ /usr/sbin/softwareupdate --install-rosetta
```

Creating a case-sensitive disk image

Case sensitive volume of 350GB with the following command line:

```
$ hdiutil create -type SPARSE -fs 'Case-sensitive'
```

Configure ZSH

Create and edit the **.zsh_env** file with the following code:

```
nano ~/.zshenv
```

Paste into the file

```
# set the number of open files to be 2048ulimit -
```

Download AOSP source code

We will be using android 11.0.0 r3 to match the mata opensource project.

https://github.com/EssentialOpenSource/device_essential

[_mata](#)

```
$ source ~/.zshenv
$ mkdir ~/.bin
$ curl https://storage.googleapis.com/git-repo-downloads/repo
$ chmod a+x ~/.bin/repo
$ mountForest
$ cd /Volumes/Forest
$ mkdir aosp_mata
$ cd aosp_mata

$ git config --global user.name "Your Name"
$ git config --global user.email "you@example.com"

$ repo init -u https://android.googlesource.com/platform/manifest
```

Add the Mata repo (Steps are only needed for PH-1)

```
$ mkdir -p device/essential$ cd device/essential$
```

Revert “sepolicy: support /system_ext and /product mapping files”

BOARD_SEPOLICY_VERS := 29.0 doesn't build and without it the wrong mapping (1000) is created and 29.0 one is empty. We will revert this change for now.

```
$ cd system/sepolicy
$ git revert 61178550157fce18861ddd59fa9a6a29cf06
```

```
$ cd ../../..
```

Download the vendor prebuilt for mata

```
$ cd device/essential/mata
$ curl -o vendor.zip "https://storage.googleapis.com/essential-mata-vendor-prebuilt/vendor.zip"
$ rm -f vendor.zip
$ cd ../../..
```

Fix the Build for OS X

Correct the SDK version

Download and uncompress the exact missing Mac SDK “10.15” version into the following directory:

- /Applications/Xcode.app/Contents/Developer/Platforms/MacOSX.platform/Developer/SDKs/

Download Mac SDKs:

<https://github.com/phracker/MacOSX-SDKs/releases>

Correct the PAGE_SIZE error in Big Sur

Edit **system/core/base/cmsg.cpp**

Add a line to the file. “**size_t psize = getpagesize();**”

```
namespace base {size_t psize = getpagesize();ssi;
```

Replace the two instances of **PAGE_SIZE** with **psize**

```
if (cmsg_space >= psize) {
```

Build AOSP

```
$ source build/envsetup.sh  
$ lunch mata-userdebug  
$ make -j4
```

Final output should look like this!

```
[100% 48449/48449] Install system fs image:  
out/target/product/mata/system.img
```

```
##### build completed successfully (03:31:26 (hh:mm:ss))  
#####
```

Flash to Device

Add the google platform-tools to your machine.

<https://developer.android.com/studio/releases/platform-tools>

I extracted the folder to ~/.bin to keep things clean.

```
$ nano ~/.zshenv
```

Paste into the file

```
export PATH=~/.bin/platform-tools:$PATH
```

Flash the images to the device.

```
$ source ~/.zshenv
$ adb reboot bootloader
$ cd $OUT
$ fastboot flash:raw boot_a boot.img
$ fastboot flash:raw boot_b boot.img
$ fastboot flash system_a system.img
$ fastboot flash system_b system.img
$ fastboot flash vendor_a vendor.img
$ fastboot flash vendor_b vendor.img
$ fastboot erase userdata
$ fastboot reboot
$ croot
```

