

framework小技能： android编译make详细过程日志查看showcommands/verbose.log

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背景：

平时做aosp开发时候，如果要编译某一个模块就会直接使用命令make，或者make xxx模块，比如：

```
make SettingsProvider
make SystemUI
make bootanimation
```

这样就直接有对应的apk，或者bin文件了，具体这些apk或者bin文件是如何生成的其实一点都不清楚，那么有没有什么方法可以看到这些bin文件或者apk的是如何生成的呢？特别时候有时候做一些错误排查等情况，非常需要一个详细日志来看一下错在哪里。

下面就来介绍一下如何查看这些make产物的详细输出日志。

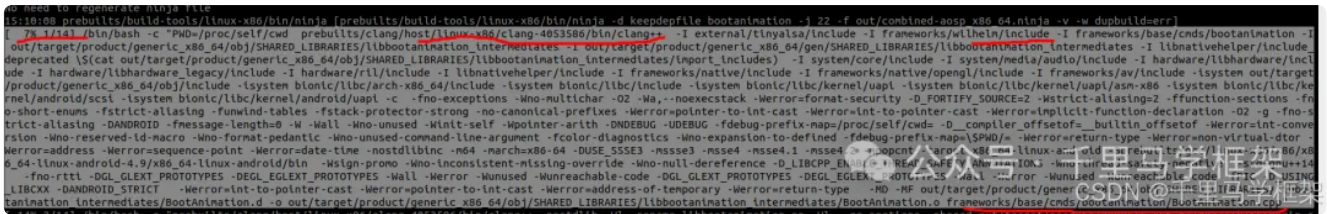
aosp8.1的低版本查看方式

在aosp8.1版本时候可以使用make showcommands xx目标的方式来展示详细的编译日志，具体使用如下：

bin文件情况

```
make showcommands bootanimation
```

日志太多，可以取一点核心部分看看

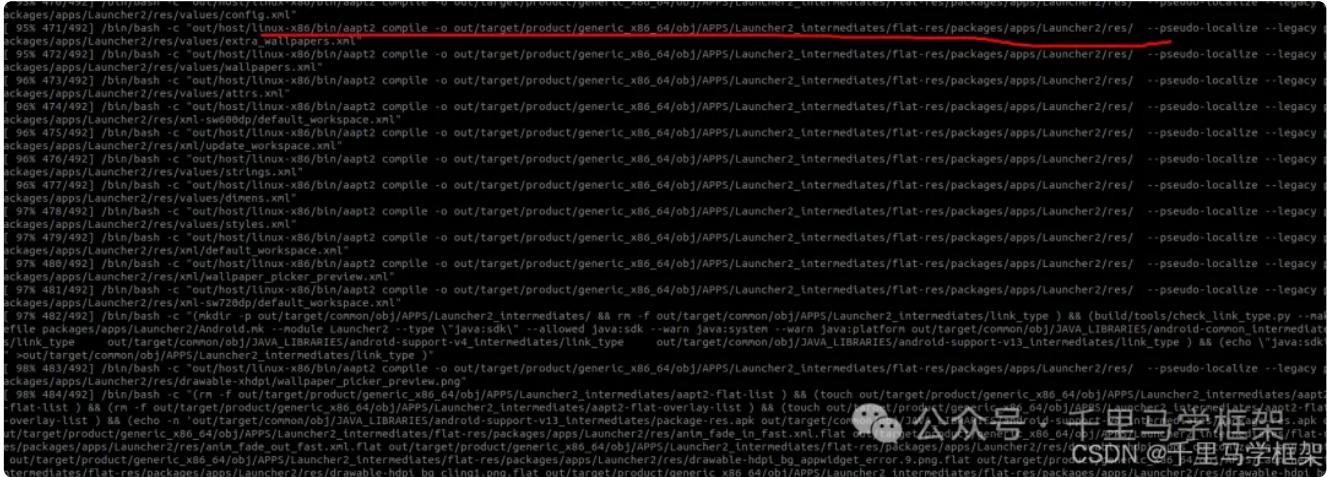


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上图可以看出来，最开始是编译个目标总共的任务数量，有一个详细的任务进度，实际上编译bin文件用的是prebuilts/clang/host/linux-x86/clang-4053586/bin/clang++这个工具链进行编译的，有通过参数把头文件目录，和cpp源文件进行编译。

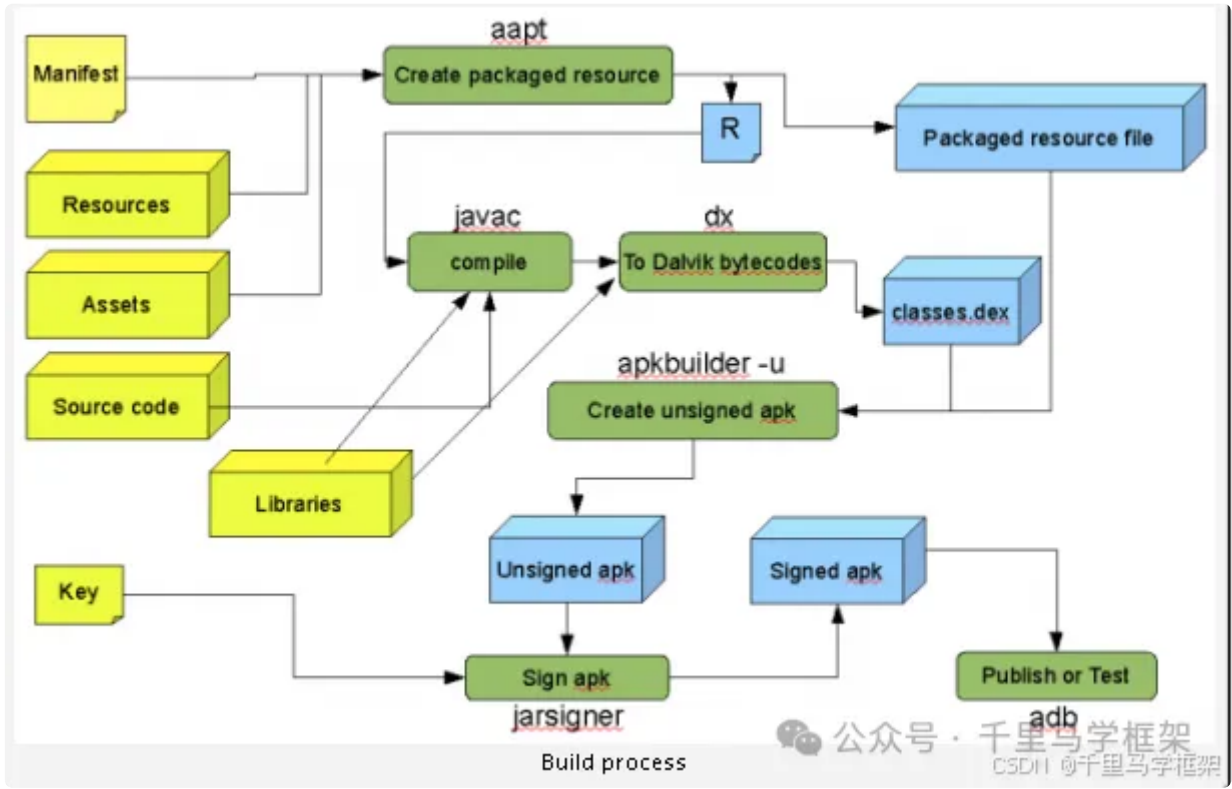
编译apk情况

同样如果编译apk则展示如下



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apk的编译相对流程就比较多，上面日志太多，只展示了一小部分，即aapt2打包资源：



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- aapt->aidl -> javac-> dx(dex)-> apkbuilder-> jarsigner-> zipalign
- 第一步：打包资源文件，生成R.java文件
 - 第二步：处理AIDL文件，生成对应的.java文件（工程没有用到AIDL，那这个过程就可以省了）
 - 第三步：编译Java文件，生成对应的.class文件
 - 第四步：把.class文件转化成.dex文件
 - 第五步：打包生成未签名的.apk文件
 - 第六步：对未签名.apk文件进行签名
 - 第七步：对签名后的.apk文件进行对齐处理

aosp14高版本查看方式：

如果高版本android上面也使用make showcommands xx命令会发生什么呢？

```
test@test:~/disk2/aosp14$ make showcommands SettingsProvider
!The argument `showcommands` is no longer supported.
!Instead, the verbose log is always written to a compressed file in the output dir:
!
!  gzip -cd/home/test/disk2/aosp14/out/verbose.log.gz | less -R
!
!Older versions are saved in verbose.log.#.gz files

15:34:32Invalid argument

#### failed to build some targets (1 seconds) ####
```

可以看到这里直接报错说showcommands已经不再支持了，不过这里也说了详细的日志已经被压缩打包成了verbose.log.gz文件，直接去这个文件看就行。

下面来看看这个verbose.log.gz文件情况：

```
test@test:~/disk2/nx563j_aosp14/out$ ls-l verbose.log.*
-rw-rw-r--1testtest5753Sep2013:57 verbose.log.1.gz
-rw-rw-r--1testtest11123Sep2014:00 verbose.log.gz
```


这里注意verbose.log.gz是在out的根目录查看既可以，但这里需要注意一下，它一般是编译几次就有几个这种verbose.log.gz，末尾加了数字，比如verbose.log.1.gz,verbose.log.2.gz的方式。这里一般查看的最新的日志就是 verbose.log.gz，可以从文件时间情况也看得出来。

打开后如下：



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看看日志

```
./status: no need to regenerate ninja file
10 verbose: *katt*: regen check time: 0.000345
11 verbose: *katt*: glob time (regen): 0.000037 / 4
12 verbose: *katt*: 0 find nodes
13 verbose: *katt*: 262 symbols
14 status: Starting ninja...
15 [2/35] /bin/bash -c 'out/host/linux-x86/bin/aapt2 compile -o out/target/common/obj/APPS/SettingsProvider__auto_generated_rro_vendor_intermediates/flat-res/device/generic/x86/overlay/frame
SettingsProvider/res/ --pseudo-localize device/generic/x86/overlay/frameworks/base/packages/SettingsProvider/res/values/defaults.xml'
16 [3/35] /bin/bash -c 'out/host/linux-x86/bin/aapt2 compile -o out/target/common/obj/APPS/SettingsProvider__auto_generated_rro_vendor_intermediates/flat-res/device/generic/goldfish/overlay/
packages/SettingsProvider/res/ --pseudo-localize device/generic/goldfish/overlay/frameworks/base/packages/SettingsProvider/res/values/defaults.xml'
17 [4/35] /bin/bash -c 'echo -e -n "50" > out/soong/.intermediates/frameworks/base/packages/SettingsProvider/SettingsProvider/android_common/dexpreopt/dexpreopt.config' '{\n  "Name": "Sett
"DexLocation": "/system/priv-app/SettingsProvider/SettingsProvider.apk",\n  "UncompressedDex": true,\n  "HasApkLibraries": false,\n  "PreoptFlags": null,\n  "ProfileIsTextListing"
"EnforceUsesLibraries": true,\n  "ProvidesUsesLibrary": "SettingsProvider",\n  "Archs": [\n    "x86_64"\n  ],\n  "DexPreoptImageLocationsOnHost": [\n    ],\n  "out/soong/dexpre
dex_bootjars/android/system/framework/boot.art",\n  "out/soong/dexpreopt_x86_64/dex_mainlinejars/android/system/framework/boot-framework-adsservices.art",\n  "DexPreoptImage
[\n    "/system/framework/boot.art",\n    "/system/framework/boot-framework-adsservices.art",\n    ],\n  "PreoptBootClassPathDexLocations": [\n    "/apex/com.android.art/javal
"/apex/com.android.art/javalib/core-lb-art.jar",\n    "/apex/com.android.art/javalib/okhttp.jar",\n    "/apex/com.android.art/javalib/bouncycastle.jar",\n    "/apex,
javalib/apache.xml.jar",\n    "/system/framework/framework.jar",\n    "/system/framework/framework-graphics.jar",\n    "/system/framework/ext.jar",\n    "/system/framework
common.jar",\n    "/system/framework/votv-common.jar",\n    "/system/framework/ins-common.jar",\n    "/apex/com.android.lib/javalib/core-icu4j.jar",\n    "/apex/com.andri
javalib/framework-adsservices.jar",\n    "/apex/com.android.adsservices/javalib/framework-sdksandbox.jar",\n    "/apex/com.android.appsearch/javalib/framework-appsearch.jar",\n
com.android.btservices/javalib/framework-bluetooth.jar",\n    "/apex/com.android.configinfrastructure/javalib/framework-configinfrastructure.jar",\n    "/apex/com.android.conscryp
conscrypt.jar",\n    "/apex/com.android.devicelock/javalib/framework-devicelock.jar",\n    "/apex/com.android.healthfitness/javalib/framework-healthfitness.jar",\n    "/apex/co
javalib/android.net.ipsec.lke.jar",\n    "/apex/com.android.media/javalib/updatable-media.jar",\n    "/apex/com.android.mediaprovider/javalib/framework-mediaprovider.jar",\n
com.android.ondvicepersonalization/javalib/framework-ondvicepersonalization.jar",\n    "/apex/com.android.os.statsd/javalib/framework-statsd.jar",\n    "/apex/com.android.pernt
framework-permission.jar",\n    "/apex/com.android.permission/javalib/framework-permission-s.jar",\n    "/apex/com.android.scheduling/javalib/framework-scheduling.jar",\n
com.android.sdkext/javalib/framework-sdkextensions.jar",\n    "/apex/com.android.tethering/javalib/framework-connectivity.jar",\n    "/apex/com.android.tethering/javalib/framewor
t.jar",\n    "/apex/com.android.tethering/javalib/framework-tethering.jar",\n    "/apex/com.android.uwb/javalib/framework-uwb.jar",\n    "/apex/com.android.virt/javalib/frame
virtualization.jar",\n    "/apex/com.android.wifi/javalib/framework-wifi.jar",\n    ],\n  "PreoptExtractedApk": false,\n  "NoCreateAppImage": false,\n  "ForceCreateAppImage": fal
"PresignedPrebuilt": false,\n  "BuildPath": "out/soong/.intermediates/frameworks/base/packages/SettingsProvider/SettingsProvider/android_common/dexpreopt/SettingsProvider.jar",\n  "D
soong/.intermediates/frameworks/base/packages/SettingsProvider/SettingsProvider/android_common/aligned/SettingsProvider.jar",\n  "ManifestPath": "out/soong/.intermediates/frameworks/ba
SettingsProvider/SettingsProvider/android_common/manifest_merger/AndroidManifest.xml",\n  "ProfileClassListing": "",\n  "ProfileBootListing": "",\n  "EnforceUsesLibrariesStatusFile"
soong/.intermediates/frameworks/base/packages/SettingsProvider/SettingsProvider/android_common/enforce_uses_libraries.status",\n  "ClassLoaderContexts": {\n    "28": [\n
"Name": "org.apache.http.legacy",\n    "Optional": true,\n    "Host": "out/soong/.intermediates/external/apache-http/org.apache.http.legacy/android_common/aligned,
org.apache.http.legacy.jar",\n    "Device": "/system/framework/org.apache.http.legacy.jar",\n    "Subcontexts": [\n    ],\n    "29": [\n
{\n    "Name": "android.hidl.manager-V1.0-java",\n    "Optional": false,\n    "Host": "out/soong/.intermediates/system/libhidl/transport/manager/V1.0/ar
V1.0-java/android_common/aligned/android.hidl.manager-V1.0-java.jar",\n    "Device": "/system/framework/android.hidl.manager-V1.0-java.jar",\n    "Subcontexts": [\n
{\n    "Name": "android.hidl.base-V1.0-java",\n    "Optional": false,\n    "Host": "out/soong/.intermediates/system/libhidl/transport/bai
android.hidl.base-V1.0-java/android_common/aligned/android.hidl.base-V1.0-java.jar",\n    "Device": "/system/framework/android.hidl.base-V1.0-java.jar",\n    "Sub
{\n    },\n    "30": [\n    {\n    "Name": "android.test.base",\n    "Optional": true,\n    "Host": "out/soong/.intermed
base/test-base/android.test.base/android_common/aligned/android.test.base.jar",\n    "Device": "/system/framework/android.test.base.jar",\n    "Subcontexts": [\n
{\n    "Name": "android.test.mock",\n    "Optional": true,\n    "Host": "out/soong/.intermediates/frameworks/base/test-mock/android.test
aligned/android.test.mock.jar",\n    "Device": "/system/framework/android.test.mock.jar",\n    "Subcontexts": [\n    ],\n    "DexPreopt
{\n    },\n    "out/soong/dexpreopt_x86_64/dex_mainlinejars/android/system/framework/x86_64/boot-framework-adsservices.art",\n    "out/soong/dexpreopt_x86_64/dex_mainli
system/framework/x86_64/boot-framework-adsservices.oat",\n    "out/soong/dexpreopt_x86_64/dex_mainlinejars/android/system/framework/x86_64/boot-framework-adsservices.dex",\n
"PreoptBootClassPathDexFiles": [\n    "out/soong/dexpreopt_x86_64/dex_bootjars_input/core-oj.jar",\n    "out/soong/dexpreopt_x86_64/dex_bootjars_input/core-libart.jar",\n
dexpreopt_x86_64/dex_bootjars_input/okhttp.jar",\n    "out/soong/dexpreopt_x86_64/dex_bootjars_input/bouncycastle.jar",\n    "out/soong/dexpreopt_x86_64/dex_bootjars_input/apache
```

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可以看得出和原来的showcommands方式是一样的，所以高版本aosp其实这块做的更好了，保存成了文件，更加方便我们查看。