Emulator not starting, API 31, Android 12 (Google Play APIs Intel x86 Atom_64 System Image)

DESCRIPTION to...@googlemail.com created issue #1

- Android Studio Bumblebee | 2021.1.1 Beta 4
  - determined by the emulator bug sending feature: Android Studio Version: 3.6.0-2
- Emulator Version: 30.9.5-7820599
- HAXM / KVM Version: KVM 12.0.0
- Android SDK Tools: 26.1.1
- Host Operating System: Ubuntu 20.04.3 LTS
- CPU Manufacturer: Intel CPU
- Virtualization is supported
- 64-bit CPU
- RAM: 5840 MB
- GPU:
- Build Fingerprint:

```
AVD Details: Name: Pixel_2_API_31
CPU/ABI: x86_64
Path: /home/USER/.android/avd/Pixel_2_API_31.avd
Target: google_apis_playstore [Google Play] (API level 31)
Skin: pixel_2
SD Card: 512M
AvdId: Pixel_2_API_31
PlayStore.enabled: true
avd.ini.displayname: Pixel 2 API 31
avd.ini.encoding: UTF-8
disk.dataPartition.size: 6442450944
fastboot.chosenSnapshotFile:
fastboot.forceChosenSnapshotBoot: no
fastboot.forceColdBoot: no
fastboot.forceFastBoot: yes
hw.accelerometer: yes
hw.arc: false
hw.audioInput: yes
hw.battery: yes
hw.camera.back: virtualscene
hw.camera.front: emulated
hw.cpu.ncore: 1
hw.dPad: no
hw.device.hash2: MD5:55acbc835978f326788ed66a5cd4c9a7
hw.device.manufacturer: Google
hw.device.name: pixel_2
hw.gps: yes
hw.gpu.enabled: yes
hw.gpu.mode: auto
hw.initialOrientation: Portrait
hw.keyboard: yes
hw.lcd.density: 420
hw.lcd.height: 1920
hw.lcd.width: 1080
hw.mainKeys: no
hw.ramSize: 1536
hw.sdCard: yes
hw.sensors.orientation: yes
hw.sensors.proximity: yes
hw.trackBall: no
image.sysdir.1: system-images/android-31/google_apis_playstore/x86_64/
runtime.network.latency: none
runtime.network.speed: full
showDeviceFrame: yes
skin.dynamic: yes
tag.display: Google Play
tag.id: google_apis_playstore
vm.heapSize: 256
```

Steps to Reproduce Bug:

- Start emulator via `emulator -verbose -avd Pixel_2_API_31 -no-audio -no-boot-anim -no-passive-gps -no-jni`

- Emulator UI launches

Expected Behavior:

- Android starts as expected.

Observed Behavior:

- Emulator screen stays black.
- Continuous output in the console:

```
VERBOSE | VirtIO WiFi: unexpected full virtqueue
VERBOSE | No acpi ini file provided, using default
```

console-log.txt
25 KB View Download

avd_details.txt
1.2 KB View Download

✓ Mentioned issues (1) ✓ Links (4)

Mentioned issues (1)

P3 Emulator 5.1 (API 22), "Unfortunately, Google Play services has stopped." error dia… " … image is compatible with my CPU and should start without errors? I found out that the Google APIs Intel

Links (4)

"http://hw.device.name"
"http://tag.id"
"https://elixir.bootlin.com/linux/v5.17/source/arch/x86/ke…"
"https://elixir.bootlin.com/linux/v5.17-rc4/source/arch/x86/include/… "

COMMENTS

hu...@google.com <hu...@google.com>

Assigned to an...@google.com.

to...@googlemail.com <to...@googlemail.com> #2

I tried again using:

- Android Studio Dolphin | 2021.3.1 Canary 7
- Pixel 6, Google APIs Intel x86 Atom_64 System Image, API level 31, Revision 9
- Android emulator version 31.3.5.0 (build_id 8275449)

The emulator still does not start. Anything you can do about it?

console.log
30 KB View Download

wd...@google.com <wd...@google.com> #3

Reassigned to wd...@google.com.

Do you still see this issue with virtiowifi after starting emulator with `-wipe-data`?

to...@googlemail.com <to...@googlemail.com> #4

Yes. The same.

wd...@google.com <wd...@google.com> #5

It seems like the output `VERBOSE | VirtIO WiFi: unexpected full virtqueue` is caused by kernel driver not being initialized. I am adding yahan@ here to see if there is any issue with w

```
VERBOSE | OpenGL Vendor=[Google (Intel Open Source Technology Center)]
VERBOSE | OpenGL Renderer=[Android Emulator OpenGL ES Translator (Mesa DRI Mobile Intel® GM45 Express Chipset (CTG))]
VERBOSE | OpenGL Version=[OpenGL ES 2.0 (2.1 Mesa 21.2.6)]
```

Is the Mesa gpu backend is still supported?

Message last modified on Mar 24, 2022 08:58AM

wd...@google.com <wd...@google.com> #6

Hi Tobias, could you try running emulator with `-show-kernel`? Thanks.

to...@googlemail.com <to...@googlemail.com> #7

Sure. I hope the log contains enough information to diagnose the issue.

console-with-show-kernel.log
23 KB View Download

wd...@google.com <wd...@google.com> #8

yahan@ It's weird that the kernel logs are not even showing.

ya...@google.com <ya...@google.com> #9

Roman I think you encountered a -show-kernel doesn't print issue before. Would you help to take a look?

rk...@google.com <rk...@google.com> #10

Yes, the android13-5.10 kernel disabled UART by default. You want to get the latest emulator or `-qemu -append 8250.nr_uarts=1`.

to...@googlemail.com <to...@googlemail.com> #11

I tried with appending the parameter. Still no success. Here is the log.

console-with-qemu.log
354 KB View Download

rk...@google.com <rk...@google.com> #12

At least there is a kernel log:

```
[ 0.000000] Linux version 5.10.66-android12-9-00021-g2c152aa32942-ab8087165 (build-user@build-host) (Android (7284624, based on r416183b) clang version 12.0
```

wd...@google.com <wd...@google.com> #13

In the kernel log provided in #11, there is a kernel panic. rkir@ Do you why this kernel panic occurs?

```
Kernel panic - not syncing: Attempted to kill init! exitcode=0x00000004
[    4.461855] CPU: 0 PID: 1 Comm: init Not tainted 5.10.66-android12-9-00021-g2c152aa32942-ab8087165 #1
[    4.462972] Hardware name: QEMU Standard PC (i440FX + PIIX, 1996), BIOS rel-1.11.1-0-g0551a4be2c-prebuilt.qemu-project.org 04/01/2014
[    4.462972] Call Trace:
[    4.462972]  panic+0x125/0x40b
[    4.462972]  do_exit+0xb9c/0xc20
[    4.462972]  do_group_exit+0x9a/0xe0
[    4.462972]  get_signal+0xd36/0xe50
[    4.462972]  ? send_signal+0x246/0x270
[    4.462972]  arch_do_signal+0x80/0x260
[    4.462972]  exit_to_user_mode_prepare+0xaa/0xe0
[    4.462972]  irqentry_exit_to_user_mode+0x9/0x20
[    4.462972]  irqentry_exit+0x12/0x60
[    4.462972]  exc_invalid_op+0x187/0x1d0
[    4.462972]  ? asm_exc_invalid_op+0xa/0x20
[    4.462972]  asm_exc_invalid_op+0x12/0x20
[    4.462972] RIP: 0033:0x50d390
[    4.462972] Code: 7e 16 41 89 f8 49 8d 40 ff 83 e7 03 48 83 f8 03 73 09 31 c9 31 c0 eb 40 31 c0 c3 49 29 f8 31 c9 31 c0 0f 1f 84 00 00 00 00 00 <f3> 48
[    4.462972] RSP: 002b:00007ffc62cf2ac8 EFLAGS: 00010246
[    4.462972] RAX: 0000000000000000 RBX: 0000000000000000 RCX: 0000000000000000
[    4.462972] RDX: 0000000000000078 RSI: 00007ffc62cf2ad0 RDI: 0000000000000000
[    4.462972] RBP: 0000000000528088 R08: 0000000000000010 R09: 00000000e5280b4f
[    4.462972] R10: 0000000000000000 R11: 0000000000000246 R12: 00000000005280c0
[    4.462972] R13: 0000000000528078 R14: 0000000000528070 R15: 00000000005350f8
[    4.462972] Kernel Offset: 0x23800000 from 0xffffffff81000000 (relocation range: 0xffffffff80000000-0xffffffffbfffffff)
```

rk...@google.com <rk...@google.com> #14

> asm_exc_invalid_op

https://elixir.bootlin.com/linux/v5.17/source/arch/x86/kernel/idt.c#L83

https://elixir.bootlin.com/linux/v5.17-rc4/source/arch/x86/include/asm/trapnr.h#L13

/* Invalid Opcode */

Message last modified on Mar 25, 2022 03:34PM

to...@googlemail.com <to...@googlemail.com> #15

Is there anything I can help with? Further information?

hs...@google.com <hs...@google.com> #16

Hi, can you tell me the exact CPU model? like Core i7 11800h.

to...@googlemail.com <to...@googlemail.com> #17

```
Intel® Core™2 Duo CPU P8600 @ 2.40GHz × 2
```

hs...@google.com <hs...@google.com> #18

Host CPU is missing the following feature(s) required for x86_64 emulation: SSE4.2 POPCNT.
The kernel panic was caused by POPCNT as shown in the supplied log.

Your CPU is too old to run this image. According to online search, any Intel Core iX CPUs should support POPCNT.

to...@googlemail.com <to...@googlemail.com> #19

- I see. Any chance that emulator support will be backported for such CPUs?
- Which emulator images (API levels) are working with such CPUs?

rk...@google.com <rk...@google.com> #20

> Any chance that emulator support will be backported for such CPUs?

I don't think we can change how the kernel or system image is built. Haitao, can we ask QEMU to emulate these instructions?

hs...@google.com <hs...@google.com> #21

I believe this #UD is handled by KVM. So unless KVM adds the support, we could do nothing.

to...@googlemail.com <to...@googlemail.com> #22

What do you mean by #UD please?

rk...@google.com <rk...@google.com> #23

> What do you mean by #UD please?

```
X86_TRAP_UD
```

https://elixir.bootlin.com/linux/v5.17-rc4/source/arch/x86/include/asm/trapnr.h#L13

hs...@google.com <hs...@google.com> #24

#ud means undefined instruction. The CPU generates this exception whenever it detects the next instruction is not supported. Upon receiving the exception, the kernel would kill the user spa

to...@googlemail.com <to...@googlemail.com> #25

How would I be able to see if an image is compatible with my CPU and should start without errors? I found out that the `Google APIs Intel x86 Atom_64 System Image 5.1.1 (Lollipop`

Would you be able to output a user-friendly error message if a CPU is incompatible?

rk...@google.com <rk...@google.com> #26

Reassigned to hs...@google.com.

> How would I be able to see if an image is compatible with my CPU and should start without errors?

Unfortunately I am not sure if we can know it ourselves. While we have control over the emulator binaries, we receive Linux kernel blobs from the Android Kernel Team, app blobs from differe