Hang in GLSurfaceView.Renderer.onDrawFrame can cause ANR when calling GLSurfaceView.onPause

+1 16   Hotlists (3)   Mark as Duplicate

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Assigned   Bug   P3   + Add Hotlist

STATUS UPDATE No update yet. Edit

DESCRIPTION ar...@gmail.com created issue #1

If GLSurfaceView.Renderer.onDrawFrame hangs for some reason and the application is put into background where you typically call GLSurfaceView.onPause(). The UI thread will hang.

I.e if this hangs:
https://cs.android.com/android/platform/superproject/+/android12L-release:frameworks/base/opengl/java/android/opengl/GLSurfaceView.java;l=1573;drc=5114f292ba49474752e1de252408e

Then GLSurfaceView.onPause() is called (e.g. because the application is moved to background).
mPaused will never get a chance to be set to true here:
https://cs.android.com/android/platform/superproject/+/android12L-release:frameworks/base/opengl/java/android/opengl/GLSurfaceView.java;l=1339;drc=5114f292ba49474752e1de252408e

So the UI thread will hang here:
https://cs.android.com/android/platform/superproject/+/android12L-release:frameworks/base/opengl/java/android/opengl/GLSurfaceView.java;drc=5114f292ba49474752e1de252408e65285

an ANR will be detected even though the hang is actually in the GLThread.

A workaround for a client could be to queue up or make sure onPause is run on the next guarderdRun() but probably this is a bug that should be fixed in the SDK.

Target SDK/API Level is 32. Tested on a Pixel 5 with Android 13 TQ1A.2212205.011,

✓ Links (5)

Links (5)

"https://cs.android.com/android/platform/superproject/+/android12L-release:frameworks/base/opengl/java/android/opengl/GLSurfaceView.java;l=1573;drc=5114f292ba4947… "
"https://cs.android.com/android/platform/superproject/+/android12L-release:frameworks/base/opengl/java/android/opengl/GLSurfaceView.java;l=1339;drc=5114f292ba4947… "
"https://cs.android.com/android/platform/superproject/+/android12L-release:frameworks/base/opengl/java/android/opengl/GLSurfaceView.java;drc=5114f292ba49… "
"https://github.com/aronyu79/Issue263307511"
"There is also a video with a repro case where the ANR never recovers at https://github.com/aronyu79/Issue263307511/blob/master/video.mp4"

COMMENTS

ra...@google.com <ra...@google.com>

Assigned to an...@google.com.

ar...@gmail.com <ar...@gmail.com> #2

GLSurfaceView.surfaceCreated(), GLSurfaceView.surfaceDestroyed() and GLSurfaceView.surfaceChanged() all exibit this and same workaround could be applied:

```
@Override
public void onPause() {
      queueEvent(() -> { // Que event allows update loop to be finished on GLThread before pausing
            mActivity.runOnUiThread(() -> {
                  super.onPause();
            });
      });
}

@Override
public void surfaceCreated(SurfaceHolder holder) {
      queueEvent(() -> { // Que event allows update loop to be finished on GLThread before pausing
            mActivity.runOnUiThread(() -> {
                  super.surfaceCreated(holder);
            });
      });
}

@Override
public void surfaceDestroyed(SurfaceHolder holder) {
      queueEvent(() -> { // Que event allows update loop to be finished on GLThread before pausing
            mActivity.runOnUiThread(() -> {
                  super.surfaceDestroyed(holder);
            });
      });
}

@Override
public void surfaceChanged(SurfaceHolder holder, int format, int w, int h) {
        queueEvent(() -> { // Que event allows update loop to be finished on GLThread before pausing
                mActivity.runOnUiThread(() -> {
                        super.surfaceChanged(holder, format, w, h);
                });
        });
}
```

This will allow the GLThread to recover and run but the UI thread is still hanging in android.os.MessageQueue.nativePollOnce and the Android ANR detect popup is shown.

ar...@gmail.com <ar...@gmail.com> #3

I've added a sample repro at:
https://github.com/aronyu79/Issue263307511

There is also a video with a repro case where the ANR never recovers at https://github.com/aronyu79/Issue263307511/blob/master/video.mp4

do...@google.com <do...@google.com>

Reassigned to jr...@google.com.

jr...@google.com <jr...@google.com> #4

Status: Won't Fix (Intended Behavior)

Don't hang your GL thread :)

It's expected & correct that some of these, such as surfaceDestroyed, block until the GL thread responds to them. After returning surfaceDestroyed, the surface is now destroyed, and thus ca

Some of these could be deferred, but if you're hitting ANRs then those ANRs are completely accurate still - your GL thread can't just hang, GLSurfaceView doesn't try to support such a scenar

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

If for some reason you do really want a different thread timeliness model, though, you're always free to use SurfaceView instead. GLSurfaceView doesn't do anything special that can't be don

ar...@gmail.com <ar...@gmail.com> #6

Alright that part is fine I guess. But the worse issue in the video is that when even the GLThread recovers, the ANRs keep firing (or at least the dialog keeps popping up). Is that intended beha

jr...@google.com <jr...@google.com> #7

The UI thread shouldn't hang indefinitely if the GL thread doesn't, no. I missed that part of the video, that seems odd...

[Deleted User] <[Deleted User]> #8

Ok, just to clarify (since the Status of the issue is still "Won't fix"). Do you want me to submit another issue on that odd behaviour or will you guys take a look?

(btw I think the ANR keeps popping up due to the UI thread is blocking on android.os.MessageQueue.nativePollOnce)

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

Status: Assigned (reopened)

> btw I think the ANR keeps popping up due to the UI thread is blocking on android.os.MessageQueue.nativePollOnce

ok that's both good news (it means GLSurfaceView works fine) and bad news (it means the ANR detection gets in a bad state somehow)

si...@gmail.com <si...@gmail.com> #10

remove and Block

ke...@gmail.com <ke...@gmail.com> #11

The similar issue is observed in our live wallpaper services which use `GLWallpaperService`. However there's no `runOnUiThread` in live wallpaper service. Can you please suggest a workaro

ma...@mikhisor.ru <ma...@mikhisor.ru> #12

We had similar bug: ANR message keeps popping up. ANR message was keep showing even if app was deleted from device (if you click "Wait" button on this ANR message).

Google, please fix ANR behavior and please fix log info for ANR. At this moment this log info is useless.

We fixed source of ANR message. It was some database task on UI thread.

But ANR logfile is totally misleading.

ANR message was:

```
Input dispatching timed out (2a4546b com.MyApp/crc64dd1260d3af25cc96.MainActivity (server) is not responding. Waited 10001ms for FocusEvent(hasFocus=true)
```

ANR stack trace was:

```
    #00 pc 00000000000a6b7c  /apex/com.android.runtime/lib64/bionic/libc.so (__epoll_pwait+12) (BuildId: d13ca61956ab303438d6a51096224408)
    #01 pc 0000000000017cc0  /system/lib64/libutils.so (android::Looper::pollInner(int)+192) (BuildId: 97f353c1a350efeb766e1e852854da85)
    #02 pc 0000000000017b9c  /system/lib64/libutils.so (android::Looper::pollOnce(int, int*, int*, void**)+116) (BuildId: 97f353c1a350efeb766e1e852854da8
    #03 pc 00000000001680cc  /system/lib64/libandroid_runtime.so (android::android_os_MessageQueue_nativePollOnce(_JNIEnv*, _jobject*, long, int)+48) (Bui
    #04 pc 00000000002ec504  /data/misc/apexdata/com.android.art/dalvik-cache/arm64/boot.oat (art_jni_trampoline+116)
    #05 pc 0000000000ad3868  /data/misc/apexdata/com.android.art/dalvik-cache/arm64/boot.oat (android.os.MessageQueue.next+312)
    #06 pc 0000000000acfc38  /data/misc/apexdata/com.android.art/dalvik-cache/arm64/boot.oat (android.os.Looper.loopOnce+104)
    #07 pc 0000000000acfa9c  /data/misc/apexdata/com.android.art/dalvik-cache/arm64/boot.oat (android.os.Looper.loop+1148)
    #08 pc 00000000007d9648  /data/misc/apexdata/com.android.art/dalvik-cache/arm64/boot.oat (android.app.ActivityThread.main+1480)
    #09 pc 0000000000457e00  /apex/com.android.art/lib64/libart.so (art_quick_invoke_static_stub+576) (BuildId: 12e00d030bcfeb51f978c01791e0cd24)
    #10 pc 000000000048c038  /apex/com.android.art/lib64/libart.so (_jobject* art::InvokeMethod<(art::PointerSize)8>(art::ScopedObjectAccessAlreadyRunnabl
    #11 pc 000000000048b9f8  /apex/com.android.art/lib64/libart.so (art::Method_invoke(_JNIEnv*, _jobject*, _jobject*, _jobjectArray*) (.__uniq.165753521
    #12 pc 00000000002f2148  /data/misc/apexdata/com.android.art/dalvik-cache/arm64/boot.oat (art_jni_trampoline+120)
    #13 pc 0000000000a377e0  /data/misc/apexdata/com.android.art/dalvik-cache/arm64/boot.oat (com.android.internal.os.RuntimeInit$MethodAndArgsCaller.run
    #14 pc 0000000000a42654  /data/misc/apexdata/com.android.art/dalvik-cache/arm64/boot.oat (com.android.internal.os.ZygoteInit.main+3604)
    #15 pc 0000000000457e00  /apex/com.android.art/lib64/libart.so (art_quick_invoke_static_stub+576) (BuildId: 12e00d030bcfeb51f978c01791e0cd24)
    #16 pc 000000000058bc24  /apex/com.android.art/lib64/libart.so (art::JValue art::InvokeWithVarArgs<_jmethodID*>(art::ScopedObjectAccessAlreadyRunnable
    #17 pc 0000000000609b6c  /apex/com.android.art/lib64/libart.so (art::JNI<true>::CallStaticVoidMethodV(_JNIEnv*, _jclass*, _jmethodID*, std::__va_list)
    #18 pc 00000000000c1c04  /system/lib64/libandroid_runtime.so (_JNIEnv::CallStaticVoidMethod(_jclass*, _jmethodID*, ...)+124) (BuildId: b1ba318dff2b3a
    #19 pc 00000000000ce470  /system/lib64/libandroid_runtime.so (android::AndroidRuntime::start(char const*, android::Vector<android::String8> const&, b
    #20 pc 0000000000002570  /system/bin/app_process64 (main+1304) (BuildId: df8ee709f77c2e3b9fca33b5a3ced970)
    #21 pc 000000000004a7d4  /apex/com.android.runtime/lib64/bionic/libc.so (__libc_init+100) (BuildId: d13ca61956ab303438d6a51096224408)
```

"dumpsys input" output was:

```
Input Dispatcher State at time of last ANR:
  ANR:
    Time: 2023-06-20 10:39:26
    Reason: 7ea41d7 com.MyApp/crc64dd1260d3af25cc96.MainActivity (server) is not responding. Waited 5005ms for FocusEvent(hasFocus=true)
    Window: ActivityRecord{233966e u0 com.MyApp/crc64dd1260d3af25cc96.MainActivity} t61} - 7ea41d7 com.MyApp/crc64dd1260d3af25cc96.MainActivity
  DispatchEnabled: true
  DispatchFrozen: false
  InputFilterEnabled: false
  FocusedDisplayId: 0
  FocusedApplications:
    displayId=0, name='ActivityRecord{233966e u0 com.MyApp/crc64dd1260d3af25cc96.MainActivity} t61}', dispatchingTimeout=5000ms
  FocusedWindows:
    displayId=0, name='7ea41d7 com.MyApp/crc64dd1260d3af25cc96.MainActivity'
  FocusRequests:
    displayId=0, name='7ea41d7 com.MyApp/crc64dd1260d3af25cc96.MainActivity' result='OK'
  Pointer Capture Requested: false
  Current Window with Pointer Capture: None
  TouchStates: <no displays touched>
  Display: 0
    logicalSize=1080x2340
        transform (ROT_0) (IDENTITY)
    Windows:
      0: name='[Gesture Monitor] swipe-up', id=1462, displayId=0, inputConfig=NOT_FOCUSABLE | TRUSTED_OVERLAY | SPY, alpha=1.00, frame=[0,0][0,0], global
        transform (ROT_0) (IDENTITY)
      1: name='[Gesture Monitor] edge-swipe', id=1434, displayId=0, inputConfig=NOT_FOCUSABLE | TRUSTED_OVERLAY | SPY, alpha=1.00, frame=[0,0][0,0], glob
        transform (ROT_0) (IDENTITY)
      2: name='895cd8a NavigationBar0', id=1440, displayId=0, inputConfig=NOT_FOCUSABLE | TRUSTED_OVERLAY | WATCH_OUTSIDE_TOUCH, alpha=1.00, frame=[0,220
        transform (ROT_0) (TRANSLATE)
            1.0000  0.0000  -0.0000
            0.0000  1.0000  -2208.0000
            0.0000  0.0000  1.0000
      3: name='8bdddd6 StatusBar', id=1441, displayId=0, inputConfig=NOT_FOCUSABLE | TRUSTED_OVERLAY, alpha=1.00, frame=[0,0][1080,66], globalScale=1.000
        transform (ROT_0) (IDENTITY)
      4: name='recents_animation_input_consumer', id=1451, displayId=0, inputConfig=NOT_VISIBLE | TRUSTED_OVERLAY, alpha=1.00, frame=[0,0][1080,2340], gl
        transform (ROT_0) (IDENTITY)
      5: name='7ea41d7 com.MyApp/crc64dd1260d3af25cc96.MainActivity', id=6570, displayId=0, inputConfig=0x0, alpha=1.00, frame=[0,0][1080,2340], globalSc
        transform (ROT_0) (IDENTITY)
      6: name='ee22270 ActivityRecordInputSink com.MyApp/crc64dd1260d3af25cc96.MainActivity', id=6566, displayId=0, inputConfig=NO_INPUT_CHANNEL | NOT_FO
        transform (ROT_0) (IDENTITY)
      7: name='502a35c ActivityRecordInputSink com.google.android.documentsui/com.android.documentsui.files.FilesActivity', id=4067, displayId=0, inputCo
        transform (ROT_0) (IDENTITY)
      8: name='4fe935b ActivityRecordInputSink com.google.android.apps.nexuslauncher/.NexusLauncherActivity', id=1457, displayId=0, inputConfig=NO_INPUT_
        transform (ROT_0) (IDENTITY)
      9: name='Wallpaper BBQ wrapper#1430', id=1430, displayId=0, inputConfig=NO_INPUT_CHANNEL | NOT_VISIBLE, alpha=1.00, frame=[-53,-116][2264,2457], gl
      transform (ROT_0) (SCALE TRANSLATE)
          0.3978  -0.0000  21.4816
          -0.0000  0.3978  46.5455
          0.0000  0.0000  1.0000
    10: name='495c0ef com.android.systemui.wallpapers.ImageWallpaper', id=1429, displayId=0, inputConfig=NOT_VISIBLE | NOT_FOCUSABLE | NOT_TOUCHABLE | 
      transform (ROT_0) (SCALE TRANSLATE)
          0.3978  -0.0000  21.4816
          -0.0000  0.3978  46.5455
          0.0000  0.0000  1.0000
Global monitors on display 0:
  0: 'PointerEventDispatcher0 (server)',
RecentQueue: length=10
  FocusEvent(hasFocus=true), age=62555ms
  MotionEvent(deviceId=12, eventTime=99011209814000, source=TOUCHSCREEN | STYLUS, displayId=0, action=DOWN, actionButton=0x00000000, flags=0x00000000, 
  MotionEvent(deviceId=12, eventTime=99011212811000, source=TOUCHSCREEN | STYLUS, displayId=0, action=MOVE, actionButton=0x00000000, flags=0x00000000, 
  MotionEvent(deviceId=12, eventTime=99011220981000, source=TOUCHSCREEN | STYLUS, displayId=0, action=MOVE, actionButton=0x00000000, flags=0x00000000, 
  MotionEvent(deviceId=12, eventTime=99011305236000, source=TOUCHSCREEN | STYLUS, displayId=0, action=UP, actionButton=0x00000000, flags=0x00000000, met
  FocusEvent(hasFocus=true), age=56024ms
  FocusEvent(hasFocus=true), age=12722ms
  FocusEvent(hasFocus=false), age=12317ms
  FocusEvent(hasFocus=true), age=12222ms
  FocusEvent(hasFocus=true), age=5006ms
PendingEvent: <none>
InboundQueue: <empty>
ReplacedKeys: <empty>
CommandQueue: <empty>
Connections:
  416: channelName='b09d0b7 com.google.android.documentsui/com.android.documentsui.files.FilesActivity (server)', windowName='b09d0b7 com.google.androi
    OutboundQueue: <empty>
    WaitQueue: <empty>
  504: channelName='[Gesture Monitor] swipe-up (server)', windowName='[Gesture Monitor] swipe-up (server)', status=NORMAL, monitor=false, responsive=tr
    OutboundQueue: <empty>
    WaitQueue: <empty>
  517: channelName='1ddef91 InputMethod (server)', windowName='1ddef91 InputMethod (server)', status=NORMAL, monitor=false, responsive=true
    OutboundQueue: <empty>
    WaitQueue: <empty>
  441: channelName='80ead48 pip-dismiss-overlay (server)', windowName='80ead48 pip-dismiss-overlay (server)', status=NORMAL, monitor=false, responsive=
    OutboundQueue: <empty>
    WaitQueue: <empty>
  442: channelName='[Gesture Monitor] edge-swipe (server)', windowName='[Gesture Monitor] edge-swipe (server)', status=NORMAL, monitor=false, responsiv
    OutboundQueue: <empty>
    WaitQueue: <empty>
  417: channelName='495c0ef com.android.systemui.wallpapers.ImageWallpaper (server)', windowName='495c0ef com.android.systemui.wallpapers.ImageWallpape
    OutboundQueue: <empty>
    WaitQueue: <empty>
  495: channelName='3f8d93b com.google.android.apps.nexuslauncher/com.google.android.apps.nexuslauncher.NexusLauncherActivity (server)', windowName='3f
    OutboundQueue: <empty>
    WaitQueue: <empty>
  444: channelName='14bc580 EdgeBackGestureHandler0 (server)', windowName='14bc580 EdgeBackGestureHandler0 (server)', status=NORMAL, monitor=false, res
    OutboundQueue: <empty>
    WaitQueue: <empty>
  391: channelName='8bdddd6 StatusBar (server)', windowName='8bdddd6 StatusBar (server)', status=NORMAL, monitor=false, responsive=true
    OutboundQueue: <empty>
    WaitQueue: <empty>
  343: channelName='895cd8a NavigationBar0 (server)', windowName='895cd8a NavigationBar0 (server)', status=NORMAL, monitor=false, responsive=true
    OutboundQueue: <empty>
    WaitQueue: <empty>
  529: channelName='7ea41d7 com.MyApp/crc64dd1260d3af25cc96.MainActivity (server)', windowName='7ea41d7 com.MyApp/crc64dd1260d3af25cc96.MainActivity (s
    OutboundQueue: <empty>
    WaitQueue: length=1
      FocusEvent(hasFocus=true), seq=26772, targetFlags=0x00000100, resolvedAction=0, age=5006ms, wait=5005ms
  382: channelName='577d96e ScreenDecorOverlayBottom (server)', windowName='577d96e ScreenDecorOverlayBottom (server)', status=NORMAL, monitor=false, r
    OutboundQueue: <empty>
    WaitQueue: <empty>
  378: channelName='7c95f26 NotificationShade (server)', windowName='7c95f26 NotificationShade (server)', status=NORMAL, monitor=false, responsive=true
    OutboundQueue: <empty>
    WaitQueue: <empty>
  369: channelName='7793c0e ScreenDecorOverlay (server)', windowName='7793c0e ScreenDecorOverlay (server)', status=NORMAL, monitor=false, responsive=tr
    OutboundQueue: <empty>
    WaitQueue: <empty>
  446: channelName='fc634f1 SecondaryHomeHandle0 (server)', windowName='fc634f1 SecondaryHomeHandle0 (server)', status=NORMAL, monitor=false, responsiv
    OutboundQueue: <empty>
    WaitQueue: <empty>
  383: channelName='72ff70c ShellDropTarget (server)', windowName='72ff70c ShellDropTarget (server)', status=NORMAL, monitor=false, responsive=true
    OutboundQueue: <empty>
    WaitQueue: <empty>
  561: channelName='2576b75 Acetone (server)', windowName='2576b75 Acetone (server)', status=NORMAL, monitor=false, responsive=true
    OutboundQueue: <empty>
    WaitQueue: <empty>
  462: channelName='recents_animation_input_consumer (server)', windowName='recents_animation_input_consumer (server)', status=NORMAL, monitor=false, r
```

```
      OutboundQueue: <empty>
      WaitQueue: <empty>
    192: channelName='PointerEventDispatcher0 (server)', windowName='PointerEventDispatcher0 (server)', status=NORMAL, monitor=true, responsive=true
      OutboundQueue: <empty>
      WaitQueue: <empty>
  AppSwitch: not pending
  Configuration:
    KeyRepeatDelay: 50ms
    KeyRepeatTimeout: 400ms
    LatencyTracker:
      mTimelines.size() = 6
      mEventTimes.size() = 6
    LatencyAggregator:
      Sketches:
        mDownSketches[0]->num_values = 410 size = 0.4KB mMoveSketches[0]->num_values = 5147 size = 1.2KB
        mDownSketches[1]->num_values = 81 size = 0.1KB mMoveSketches[1]->num_values = 830 size = 0.6KB
        mDownSketches[2]->num_values = 81 size = 0.1KB mMoveSketches[2]->num_values = 830 size = 0.7KB
        mDownSketches[3]->num_values = 81 size = 0.1KB mMoveSketches[3]->num_values = 830 size = 1.0KB
        mDownSketches[4]->num_values = 81 size = 0.2KB mMoveSketches[4]->num_values = 830 size = 1.2KB
        mDownSketches[5]->num_values = 81 size = 0.2KB mMoveSketches[5]->num_values = 830 size = 1.1KB
        mDownSketches[6]->num_values = 81 size = 0.2KB mMoveSketches[6]->num_values = 830 size = 1.2KB
      mNumSketchEventsProcessed=5557
      mLastSlowEventTime=98709512323840
      mNumEventsSinceLastSlowEventReport = 100
      mNumSkippedSlowEvents = 1

Input Manager Service (Java) State:
  Gesture Monitors (implemented as spy windows):
    0: name='[Gesture Monitor] edge-swipe', inputChannelToken=android.os.BinderProxy@a7fca38 displayId=0
    1: name='[Gesture Monitor] swipe-up', inputChannelToken=android.os.BinderProxy@cf0d229 displayId=0
```

Related logcat log which was indicative for this ANR:

```
06-19 18:15:53.774 10549 32648 32662 I OpenGLRenderer: Davey! duration=10845ms; Flags=0, FrameTimelineVsyncId=17139334, IntendedVsync=433948129946811, Vsy
```

PS: Just some helpful commands.

To get ANR log from device without root (logs will be in 'data/anr' folder):

```
adb bugreport
```

To get more details about ANR and Dispatcher State:

```
adb shell dumpsys input
```