

How to debug power wake lock issue

Applicable platform:

Generic

Problem description:

We find some modules or android applications acquire the power wake locks for a long time that cause much more power consumption. From logs or bugreport we only can find the type of wake locks and which process acquire but didn't release it. So we suspend to make a debug patch to help debug this kinds of issue.

Debug patch:

1. /frameworks/base, Print the java call stack if some apps call PowerManager API newWakeLock, And print the long time WakeLocks about every 1mins.

```
diff --git a/core/java/android/os/PowerManager.java b/core/java/android/os/PowerManager.java
```

```
index 9c25848..92ae189 100644
```

```
--- a/core/java/android/os/PowerManager.java
```

```
+++ b/core/java/android/os/PowerManager.java
```

```
@@ -1420,6 +1420,12 @@ public final class PowerManager {
```

```
};
```

```
WakeLock(int flags, String tag, String packageName) {
```

```
+ //Filter tag, e.g ConsumerIrService
```

```
+ if(tag != null && tag.equals("ConsumerIrService")){
```

```
+ Log.d(TAG, "flags = " + flags+ "tag = " + tag);
```

```
+ Log.d(TAG, Log.getStackTraceString(new Throwable()));
```

```
+ }
```

```
+
```

```
mFlags = flags;
```

```
mTag = tag;
```

```
mPackageName = packageName;
```

```
diff --git a/services/core/java/com/android/server/power/PowerManagerService.java b/services/core
/java/com/android/server/power/PowerManagerService.java
```

```
index 697801f..7725495 100644
```

```
--- a/services/core/java/com/android/server/power/PowerManagerService.java
```

```
+++ b/services/core/java/com/android/server/power/PowerManagerService.java
```

```
@@ -1903,6 +1903,9 @@ public final class PowerManagerService extends SystemService
```

```
final long when = now - MIN_LONG_WAKE_CHECK_INTERVAL;
```

```
long nextCheckTime = Long.MAX_VALUE;
```

```
final int numWakeLocks = mWakeLocks.size();
```

```
+ if (numWakeLocks > 0) {
```

```
+ Slog.d(TAG, "Dump WakeLock: mLocks.size=" + numWakeLocks + ":");
```

```
+ }
```

```
for (int i = 0; i < numWakeLocks; i++) {
```

```
final WakeLock wakeLock = mWakeLocks.get(i);
```

```
if ((wakeLock.mFlags & PowerManager.WAKE_LOCK_LEVEL_MASK)
```

```
@@ -1920,6 +1923,7 @@ public final class PowerManagerService extends SystemService
```

```
}
```

```
}
```

```
}
```

```
+ Slog.d(TAG, "WakeLock[" + i + "]: " + wakeLock.toString());
```

```
}
```

```
mNotifyLongScheduled = 0;
```

```
mHandler.removeMessages(MSG_CHECK_FOR_LONG_WAKELOCKS);
```

```
@@ -3953,6 +3957,10 @@ public final class PowerManagerService extends SystemService
```

```
sb.append(" pid=");
```

```
sb.append(mOwnerPid);
```

```
}
```

```
+ if (mPackageName != null && !mPackageName.equals("")) {
```

```
+ sb.append(" mPackageName=");
```

```
+ sb.append(mPackageName);
```

```
+ }
```

```
if (mWorkSource != null) {
```

```
sb.append(" ws=");
```

```
sb.append(mWorkSource);
```

2. /frameworks/native, Print the native call stack if some modules acquire WakeLock.

```
diff --git a/services/powermanager/Android.bp b/services/powermanager/Android.bp
```

```
index 7b3af70..4f9118e 100644
```

```
--- a/services/powermanager/Android.bp
```

```
+++ b/services/powermanager/Android.bp
```

```
@@ -6,6 +6,8 @@ cc_library_shared {
```

```
shared_libs: [
```

```
"libutils",
```

```
"libbinder",
```

```
+ "libutilscallstack",
```

```
+ "liblog",
```

```
],
```

```
cflags: [
```

```
diff --git a/services/powermanager/IPowerManager.cpp b/services/powermanager/  
IPowerManager.cpp
```

```
index ea3a831..f45ac66 100644
```

```
--- a/services/powermanager/IPowerManager.cpp
```

```
+++ b/services/powermanager/IPowerManager.cpp
```

```
@@ -17,6 +17,7 @@
```

```
#define LOG_TAG "IPowerManager"
```

```
//#define LOG_NDEBUG 0
```

```
#include <utils/Log.h>
```

```
+#include <utils/CallStack.h>
```

```
#include <stdint.h>
```

```
#include <sys/types.h>
```

```
@@ -38,7 +39,12 @@ public:
```

```
virtual status_t acquireWakeLock(int flags, const sp<IBinder>& lock, const String16& tag,
```

```
const String16& packageName, bool isOneWay)
```

```
{
```

```
- Parcel data, reply;
```

```
+ //Filter tag, e.g AudioMix.
```

```
+ if(strcmp(String8(tag).string(), "AudioMix") == 0) {
```

```
+ ALOG(LOG_ERROR, LOG_TAG, "acquireWakeLock flags %d, tag %s, packageName %s", flags,  
String8(tag).string(), String8(packageName).string());
```

```
+ CallStack callStack(LOG_TAG);
```

```

+ }

+ Parcel data, reply;

data.writeInterfaceToken(IPowerManager::getInterfaceDescriptor());

data.writeStrongBinder(lock);

@@ -54,7 +60,12 @@ public:

virtual status_t acquireWakeLockWithUid(int flags, const sp<IBinder>& lock, const String16& tag,
const String16& packageName, int uid, bool isOneWay)

{

- Parcel data, reply;

+ //Filter tag, e.g AudioMix.

+ if(strcmp(String8(tag).string(), "AudioMix") == 0) {

+ ALOG(LOG_ERROR, LOG_TAG, "acquireWakeLockWithUid flags %d, tag %s, packageName %s", flags, String8(tag).string(), String8(packageName).string());

+ CallStack callStack(LOG_TAG);

+ }

+ Parcel data, reply;

data.writeInterfaceToken(IPowerManager::getInterfaceDescriptor());

data.writeStrongBinder(lock);

```

Related logs:

1. Java code call newWakeLock:

02-03 06:44:17.702 1572 1572 D PowerManager: tag=ConsumerIrService;java.lang.Throwable

02-03 06:44:17.702 1572 1572 D PowerManager: at android.os.PowerManager\$WakeLock.<init>(PowerManager.java:1430)

02-03 06:44:17.702 1572 1572 D PowerManager: at android.os.PowerManager.newWakeLock(PowerManager.java:766)

02-03 06:44:17.702 1572 1572 D PowerManager: at com.android.server.ConsumerIrService.<init>(ConsumerIrService.java:45)

02-03 06:44:17.702 1572 1572 D PowerManager: at com.android.server.SystemServer.startOtherServices(SystemServer.java:855)

02-03 06:44:17.702 1572 1572 D PowerManager: at com.android.server.SystemServer.run(SystemServer.java:437)

02-03 06:44:17.702 1572 1572 D PowerManager: at com.android.server.SystemServer.main(SystemServer.java:300)

02-03 06:44:17.702 1572 1572 D PowerManager: at java.lang.reflect.Method.invoke(Native Method)

02-03 06:44:17.702 1572 1572 D PowerManager: at com.android.internal.os.RuntimeInit\$MethodAndArgsCaller.run(RuntimeInit.java:493)

02-03 06:44:17.702 1572 1572 D PowerManager: at com.android.internal.os.ZygoteInit.main(ZygoteInit.java:838)

2. Long time wake lock list:

//Here test app com.qualcomm.qsensorlog.MainActivity call newWakeLock and acquire, ACQ it's the WakeLock been acquired total time.

01-14 12:56:52.250 1555 1612 D PowerManagerService: Dump WakeLock: mLocks.size=1:

01-14 12:56:52.251 1555 1612 D PowerManagerService: WakeLock[0]:PARTIAL_WAKE_LOCK 'MainActivity' ACQ=-41s53ms (uid=10118 pid=11206 mPackageName=com.qualcomm.qsensorlog)

.....

01-14 12:59:00.011 1555 1612 D PowerManagerService: Dump WakeLock: mLocks.size=2:

01-14 12:59:00.012 1555 1612 D PowerManagerService: WakeLock[0]:PARTIAL_WAKE_LOCK 'MainActivity' ACQ=-2m48s814ms LONG (uid=10118 pid=11206 mPackageName=com.qualcomm.qsensorlog)

01-14 12:59:00.012 1555 1612 D PowerManagerService: WakeLock[1]:PARTIAL_WAKE_LOCK '*alarm*' ACQ=-1ms (uid=1000 pid=1555 mPackageName=android ws=WorkSource{1000})

01-14 13:00:00.014 1555 1612 D PowerManagerService: Dump WakeLock: mLocks.size=2:

01-14 13:00:00.015 1555 1612 D PowerManagerService: WakeLock[0]:PARTIAL_WAKE_LOCK 'MainActivity' ACQ=-3m48s817ms LONG (uid=10118 pid=11206 mPackageName=com.qualcomm.qsensorlog)

01-14 13:00:00.015 1555 1612 D PowerManagerService: WakeLock[1]:PARTIAL_WAKE_LOCK '*alarm*' ACQ=-5ms (uid=1000 pid=1555 mPackageName=android ws=WorkSource{1000})

.....

01-14 13:12:00.015 1555 1612 D PowerManagerService: Dump WakeLock: mLocks.size=2:

01-14 13:12:00.015 1555 1612 D PowerManagerService: WakeLock[0]:PARTIAL_WAKE_LOCK 'MainActivity' ACQ=-15m48s817ms LONG (uid=10118 pid=11206 mPackageName=com.qualcomm.qsensorlog)

01-14 13:12:00.015 1555 1612 D PowerManagerService: WakeLock[1]:PARTIAL_WAKE_LOCK '*alarm*' ACQ=-6ms (uid=1000 pid=1555 mPackageName=android ws=WorkSource{1000})

//Release WakeLock

01-14 13:13:00.010 1555 1612 D PowerManagerService: Dump WakeLock: mLocks.size=1:

01-14 13:13:00.010 1555 1612 D PowerManagerService: WakeLock[0]:PARTIAL_WAKE_LOCK '*alarm*' ACQ=-2ms (uid=1000 pid=1555 mPackageName=android ws=WorkSource{1000})

3. Native code acquire WakeLock:

01-14 13:20:43.065 710 852 E IPowerManager: acquireWakeLock flags 1, tag AudioMix, packageName audioserver

01-14 13:20:43.116 710 852 D IPowerManager: #00 pc 00001f2b /system/lib/libpowermanager.so (android::BpPowerManager::acquireWakeLock(int, android::sp<android::IBinder> const&, android::String16 const&, android::String16 const&, bool)+134)

01-14 13:20:43.116 710 852 D IPowerManager: #01 pc 000197d7 /system/lib/libaudioflinger.so (android::AudioFlinger::ThreadBase::acquireWakeLock_l()+106)

01-14 13:20:43.116 710 852 D IPowerManager: #02 pc 00029a03 /system/lib/libaudioflinger.so (android::AudioFlinger::PlaybackThread::acquireWakeLock_l()+18)

01-14 13:20:43.117 710 852 D IPowerManager: #03 pc 00029ced /system/lib/libaudioflinger.so (android::AudioFlinger::MixerThread::acquireWakeLock_l()+4)

01-14 13:20:43.117 710 852 D IPowerManager: #04 pc 0001e145 /system/lib/libaudioflinger.so (android::AudioFlinger::PlaybackThread::threadLoop()+1780)

01-14 13:20:43.117 710 852 D IPowerManager: #05 pc 0000c6af /system/lib/libutils.so (android::Thread::_threadLoop(void*)+202)

01-14 13:20:43.117 710 852 D IPowerManager: #06 pc 00072131 /system/lib/libc.so (__pthread_start(void*)+22)

01-14 13:20:43.117 710 852 D IPowerManager: #07 pc 0001e005 /system/lib/libc.so (__start_thread+24)

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