



lock contention in PackageManager (main system_server thread slowdown)

+1

Hotlists (2)

Mark as Duplicate



Comments (4) Dependencies Duplicates (0) Blocking (0) Resources (3)

Infeasible

Bug

P3

+ Add Hotlist



STATUS UPDATE No update yet.

Edit



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

There is lock synchronization contention in PackageManagerService that can severely affect the main system_server thread during package installation phases:

- getServiceInfo** is called frequently from the **main** thread, getting blocked on **mLock**: [https://cs.android.com/android/platform/superproject/+master:frameworks/base/services/core/java/](https://cs.android.com/android/platform/superproject/+master/frameworks/base/services/core/java/)
- commitPackagesLocked** is expensive function on background thread (ServiceThread) that holds **mLock** (additionally, under under mInstall lock) [https://cs.android.com/android/platform/superproject/+master:frameworks/base/services/core/java/](https://cs.android.com/android/platform/superproject/+master/frameworks/base/services/core/java/)
- Other expensive functions also use the same lock: updateSettings, writeSettings..

I am working on a fork of Android and for us, it is apparent after OTA, when multiple packages get updates/post installed etc. Sometimes this results in severe slowness causing apps ANRs in repro

Repro

For a single step adb install <...>.

System slowdown will not be apparent from a single install but one can easily confirm that `getServiceInfo` blocks on the main thread waiting on installations. One would need to add a trace or

// custom log timing getServiceInfo before and after synchronization 1259 1259 W PackageManager: getServiceInfo enter: 331 ms

systrace pm data points (single adb install on a happy idle device):

```
commitPackages 352.355 ms
updateSettings 350.155 ms
writeSettings 262.501 ms
```

System_server traces from bugreports During user perceptible slowness, the following system_server traces (android 10 source but this contention is not resolved in latest):

```
Cmd line: system_server
..
"main" prio=5 tid=1 Blocked
  | group="main" sCount=1 dsCount=0 flags=1 obj=0x7302bcb0 self=0x7efb615c00
  | sysTid=1261 nice=-2 cgrp=default sched=0/0 handle=0x7efcb7ded0
  | state=S schedstat=( 4658899486 1612364641 14625 ) utm=337 stm=128 core=1 HZ=100
  | stack=0x7ffa6ce000-0x7ffa6d0000 stackSize=8192KB
  | held mutexes=

at com.android.server.pm.PackageManagerService.getServiceInfo(PackageManagerService.java:5498)
- waiting to lock <0x03935483> (a android.util.ArrayMap) held by thread 34

at com.android.server.job.JobSchedulerService.isComponentUsable(JobSchedulerService.java:2334)
at com.android.server.job.JobSchedulerService.areComponentsInPlaceLocked(JobSchedulerService.java:2397)
at com.android.server.job.controllers.StateController.wouldBeReadyWithConstraintLocked(StateController.java:130)
at com.android.server.job.controllers.TimeController.evaluateStateLocked(TimeController.java:188)
at com.android.server.job.JobSchedulerService.evaluateControllerStatesLocked(JobSchedulerService.java:2360)
at com.android.server.job.JobSchedulerService.access$900(JobSchedulerService.java:137)
at com.android.server.job.JobSchedulerService$MaybeReadyJobQueueFunctor.accept(JobSchedulerService.java:2076)
at com.android.server.job.JobSchedulerService$MaybeReadyJobQueueFunctor.accept(JobSchedulerService.java:2022)
at com.android.server.job.JobStore$JobSet.forEachJob(JobStore.java:1244)
at com.android.server.job.JobStore.forEachJob(JobStore.java:301)
at com.android.server.job.JobSchedulerService.maybeQueueReadyJobsForExecutionLocked(JobSchedulerService.java:2127)
at com.android.server.job.JobSchedulerService.access$600(JobSchedulerService.java:137)
at com.android.server.job.JobSchedulerService$JobHandler.handleMessage(JobSchedulerService.java:1881)
- locked <0x0ccd0b00> (a java.lang.Object)
at android.os.Handler.dispatchMessage(Handler.java:107)
at android.os.Looper.loop(Looper.java:214)
at com.android.server.SystemServer.run(SystemServer.java:549)
at com.android.server.SystemServer.main(SystemServer.java:357)
at java.lang.reflect.Method.invoke(Native method)
at com.android.internal.os.RuntimeInit$MethodAndArgsCaller.run(RuntimeInit.java:561)
at com.android.internal.os.ZygoteInit.main(ZygoteInit.java:913)

"PackageManager" prio=5 tid=34 Native
  | group="main" sCount=1 dsCount=0 flags=1 obj=0x13e01468 self=0x7e0eabf800
  | sysTid=1319 nice=10 cgrp=default sched=0/0 handle=0x7df945fd50
  | state=S schedstat=( 571429311 134550354 376 ) utm=37 stm=20 core=6 HZ=100
  | stack=0x7df935d000-0x7df935f000 stackSize=1039KB
  | held mutexes=
kernel: (couldn't read /proc/self/task/1319/stack)
native: #00 pc 000000000008033c /apex/com.android.runtime/lib64/bionic/libc.so (syscall+28)
```

```
native: #01 pc 00000000014c1f4 /apex/com.android.runtime/lib64/libart.so (art::ConditionVariable::WaitHoldingLocks(art::Thread*)+148)
native: #02 pc 00000000003cf570 /apex/com.android.runtime/lib64/libart.so (art::JNI::ReleaseIntArrayElements(_JNIEnv*, _jintArray*, int*, int)+464)
native: #03 pc 000000000002ab74 /apex/com.android.runtime/lib64/libjavacore.so (NativeConverter_encode(_JNIEnv*, _jclass*, long, _jcharArray*, int, _jbyte
at libcore.icu.NativeConverter.encode(Native method)
at java.nio.charset.CharsetEncoderICU.encodeLoop(CharsetEncoderICU.java:172)
at java.nio.charset.CharsetEncoder.encode(CharsetEncoder.java:598)
at com.android.internal.util.FastXmlSerializer.flush(FastXmlSerializer.java:262)
at com.android.internal.util.FastXmlSerializer.append(FastXmlSerializer.java:112)
at com.android.internal.util.FastXmlSerializer.append(FastXmlSerializer.java:139)
at com.android.internal.util.FastXmlSerializer.attribute(FastXmlSerializer.java:193)
at com.android.server.pm.Settings.writePermissionsLPr(Settings.java:2197)
at com.android.server.pm.Settings.writePackageLPr(Settings.java:2858)
at com.android.server.pm.Settings.writeLPr(Settings.java:2443)
at com.android.server.pm.PackageManagerService.updateSettingsInternalLI(PackageManagerService.java:16447)
- locked <0x03935483> (a android.util.ArrayMap)
at com.android.server.pm.PackageManagerService.updateSettingsLI(PackageManagerService.java:16348)
at com.android.server.pm.PackageManagerService.commitPackagesLocked(PackageManagerService.java:17057)
at com.android.server.pm.PackageManagerService.installPackagesLI(PackageManagerService.java:17193)
- locked <0x03935483> (a android.util.ArrayMap)
at com.android.server.pm.PackageManagerService.installPackagesTracedLI(PackageManagerService.java:16468)
at com.android.server.pm.PackageManagerService.lambda$processInstallRequestsAsync$14$PackageManagerService(PackageManagerService.java:14713)
- locked <0x0b19ed71> (a java.lang.Object)
at com.android.server.pm.-$$Lambda$PackageManagerService$6_Yp7BSB4TgrtWSoFlODKgHIvZY.run(lambda:-1)
at android.os.Handler.handleCallback(Handler.java:883)
at android.os.Handler.dispatchMessage(Handler.java:100)
at android.os.Looper.loop(Looper.java:214)
at android.os.HandlerThread.run(HandlerThread.java:67)
at com.android.server.ServiceThread.run(ServiceThread.java:44)
```

✓ Links (3)

🔗 Links (3)

"getServiceInfo is called frequently from the main thread, getting blocked on mLock: [https://cs.android.com/android/platform/superproject/+/master:frameworks/base/services/core/java/com/andr](https://cs.android.com/android/platform/superproject/+/master/frameworks/base/services/core/java/com/andr)
" ...d is expensive function on background thread (ServiceThread) that holds mLock (additionally, under under mInstall lock) <https://cs.android.com/android/platform/superproject/+/master:frameworks/base/services/core/java/com/andr>
"For steps to capture a bug report, please refer: <https://developer.android.com/studio/debug/bug-report#bugreportdevice>"

COMMENTS

 **vi...@google.com** <vi...@google.com>
Assigned to vi...@google.com.

 **vi...@google.com** <vi...@google.com> [#2](#)

Thank you for reporting this issue. For us to further investigate this issue, please provide the following additional information:

Android full bug report (to be captured after reproducing the issue)
For steps to capture a bug report, please refer: <https://developer.android.com/studio/debug/bug-report#bugreportdevice>

Screen record of the issue (if possible)
Please capture screen record or video of the issue using following steps:
adb shell screenrecord /sdcard/video.mp4
Subsequently use following command to pull the recorded file:
adb pull /sdcard/video.mp4
Attach the file to this issue.

Capture the issue in a screenshot
Press the volume down and power buttons simultaneously. The image will appear in the picture gallery. Attach the screenshot image to this issue.

Note: Please avoid uploading directly to the issue using attachments. Please upload to google drive and share the folder to android-bugreport@google.com, then share the link here.

 **vi...@google.com** <vi...@google.com> [#3](#)

Please share the details requested in [comment #2](#) to proceed further.

 **vi...@google.com** <vi...@google.com> [#4](#)

Status: Won't Fix (Infeasible)

We are closing this issue as we don't have enough actionable information. If you are still facing this problem, please open new issue and add the relevant information along with reference to