APP Standby

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Introduce

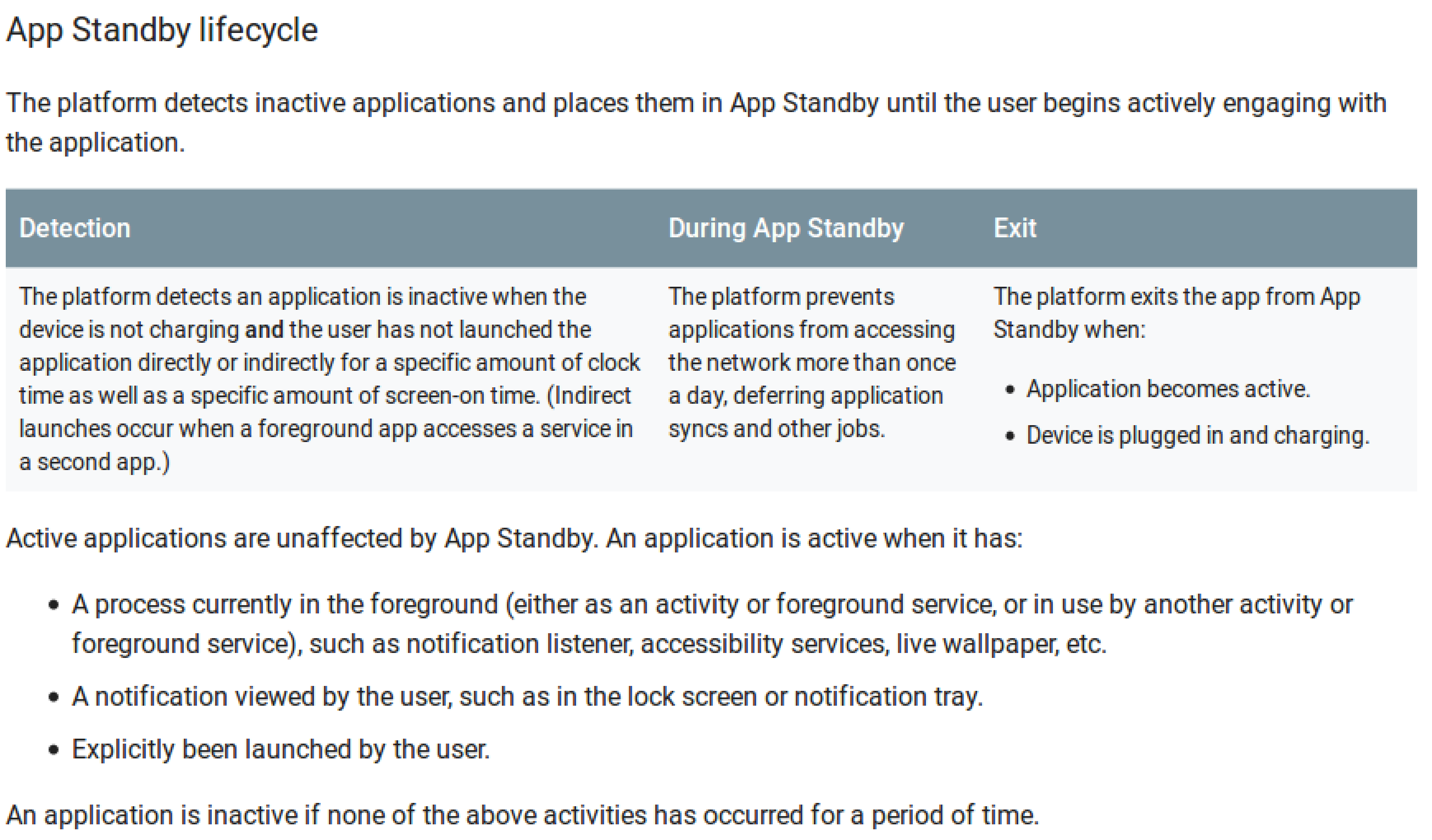
What is AppStandby ?
The platform can place unused applications in App Standby mode,
temporarily restricting network access and deferring syncs and jobs for those applications.

把不用的 app 设置为 standy 模式 , 暂时限制网络访问并延迟这些 app 的作业

App Standby extends battery life by deferring background network activity and jobs for
applications the user is not actively using.

用推迟用户没有主动使用 app 的后台网络访问和作业的方式 , 延长电池的生命周期

Introduce



App Standby lifecycle

The platform detects inactive applications and places them in App Standby until the user begins actively engaging with the application.

Detection	During App Standby	Exit
The platform detects an application is inactive when the device is not charging **and** the user has not launched the application directly or indirectly for a specific amount of clock time as well as a specific amount of screen-on time. (Indirect launches occur when a foreground app accesses a service in a second app.)	The platform prevents applications from accessing the network more than once a day, deferring application syncs and other jobs.	The platform exits the app from App Standby when: • Application becomes active. • Device is plugged in and charging.

Active applications are unaffected by App Standby. An application is active when it has:

- A process currently in the foreground (either as an activity or foreground service, or in use by another activity or foreground service), such as notification listener, accessibility services, live wallpaper, etc.
- A notification viewed by the user, such as in the lock screen or notification tray.
- Explicitly been launched by the user.

An application is inactive if none of the above activities has occurred for a period of time.

Introduce-Command

Some command

```
adb shell dumpsys battery unplug
adb shell dumpsys battery set level 4
adb shell dumpsys battery reset
adb shell dumpsys deviceidle whitelist -com.tencent.mm

adb shell am get-inactive com.tencent.mm
adb shell am set-inactive com.tencent.mm true

adb shell dumpsys usagestats history

adb shell iptables -L fw_standby
adb shell iptables -I INPUT 1 -m owner --uid-owner 10112 -j DROP

adb shell iptables -A INPUT -m owner --uid-owner 10112 -j DROP
adb shell iptables -D INPUT -m owner --uid-owner 10112 -j DROP
adb shell iptables -t filter -A INPUT -j fw_standby
adb shell iptables -t filter -D INPUT -j fw_standby

dumpsys network_management  // 有 chain_rules 及是否 enable(1:return,2:drop)
dumpsys jobscheduler  // 可以查看 jobscheduler 追踪的作业
```

When-In

一些时间值：

```
mAppIdleScreenThresholdMillis = mParser.getLong(KEY_IDLE_DURATION,
        COMPRESS_TIME ? ONE_MINUTE * 4 : 12 * 60 * ONE_MINUTE);
```

亮屏状态 12h 未使用

```
mAppIdleWallclockThresholdMillis = mParser.getLong(KEY_WALLCLOCK_THRESHOLD,
       COMPRESS_TIME ? ONE_MINUTE * 8 : 2L * 24 * 60 * ONE_MINUTE); // 2 days
```

48h 未使用

```
mCheckIdleIntervalMillis = Math.min(mAppIdleScreenThresholdMillis / 4,
       COMPRESS_TIME ? ONE_MINUTE : 8 * 60 * ONE_MINUTE); // 8 hours
```

每隔 3h 检查

```
mAppIdleParoleIntervalMillis = mParser.getLong(KEY_PAROLE_INTERVAL,
       COMPRESS_TIME ? ONE_MINUTE * 10 : 24 * 60 * ONE_MINUTE);
```

每 24h 释放一次

```
mAppIdleParoleDurationMillis = mParser.getLong(KEY_PAROLE_DURATION,
       COMPRESS_TIME ? ONE_MINUTE : 10 * ONE_MINUTE); // 10 minutes
```

每次释放 10m

When-In

哪些应用会进入 idle？

1.appId < Process.FIRST_APPLICATION_UID
　　不是，系统应用
2.packageName.equals("android")
　　不是 ,framework 程序
3.isPowerSaveWhitelistExceptIdleApp
　　不是，白名单程序
4.isActiveDeviceAdmin
　　不是，不可停用或卸载程序
5.isActiveNetworkScorer
　　不是，网络评分程序
6.isBoundWidgetPackage
　　不是，小部件程序
7.isDeviceProvisioningPackage
　　不是，设备配置程序
8.!isAppIdleUnfiltered
　　时间达到要求
9.isCarrierApp
　　不是，可以获取运营商信息的程序

When-Out

When update used time ?

1.MOVE_TO_FOREGROUND
 移动到前台
2.MOVE_TO_BACKGROUND
 移动到后台
3.SYSTEM_INTERACTION
 打开应用
4.USER_INTERACTION
 通知

After updated, will inform listeners if previously idle

Do What

Do what when enter app_idle ?

Listeners:
AppIdleController
NetworkPolicyManagerService

AppIdleController:
1.Update the master list of jobs that the job scheduler is tracking(dumpsys jobscheduler)
setAppNotIdleConstraintSatisfied(false)
2.Notify JobSchedulerService

NetworkPolicyManagerService:
- UpdateRuleForAppIdleUL
  - 把该uid加入fw_standby, 规则为DROP
  - 这样有关于该uid的数据请求就会被丢弃
- UpdateRulesForPowerRestrictionsUL
  - Updates the power-related part of the mUidRules for a given map, and notify external listeners in case of change.

Do What

UpdateRuleForAppIdleUL

把该 uid 加入 fw_standby, 规则为 DROP
这样有关于该 uid 的数据请求就会被丢弃

使用对象：

1. 有网络访问权限的 app(10000~19999 之间的 app)
2.media_uid 1013
3.drm_uid 1019

做什么：

1. 添加 rule 到 fw_standby

   条件：

   1.not in mPowerSaveTempWhitelistAppIds
   2.UidIdle
   3.Uid_not_ForegroundOnRestrictPower(procState>4)

2. 从 fw_standby 移除 rule

   上面三个条件有一个不满足时

Parole

Parole:temporary pardon from being inactive

device_idle 进过一次退出一次 idle 之后 :

- 退出的时候设为 true, 然后开始 24 小时 parole 一次 , 一次为 10min

Do what while paroled?

- AppIdleController
  - setAppNotIdleConstraintSatisfied
  - notify JobSchedulerService
- NetworkmanagementService
  - UpdateRulesForAppIdleParoleUL
    - Disable Chain fw_standby
  - updateRulesForPowerRestrictionsUL

When charged,we think it as paroled.