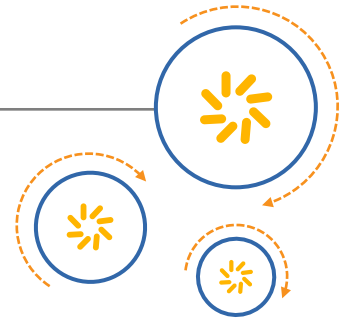




Qualcomm Technologies, Inc.



Power Off Alarm On Android O

Application Note

80-PE473-1 A

September 21, 2017

For additional information or to submit technical questions, go to: <https://createpoint.qti.qualcomm.com>

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Qualcomm Technologies, Inc.
5775 Morehouse Drive
San Diego, CA 92121
U.S.A.

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Revision history

Revision	Date	Description
A	September 2017	Initial release

Qualcomm
2018-11-02 00:42:43 PDT
zk_sw@wingtech.com

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1 Power Off Alarm Design Introduction

In order to not modify aosp framework code, power off alarm design of Android O is changed.

Power Off Alarm Process

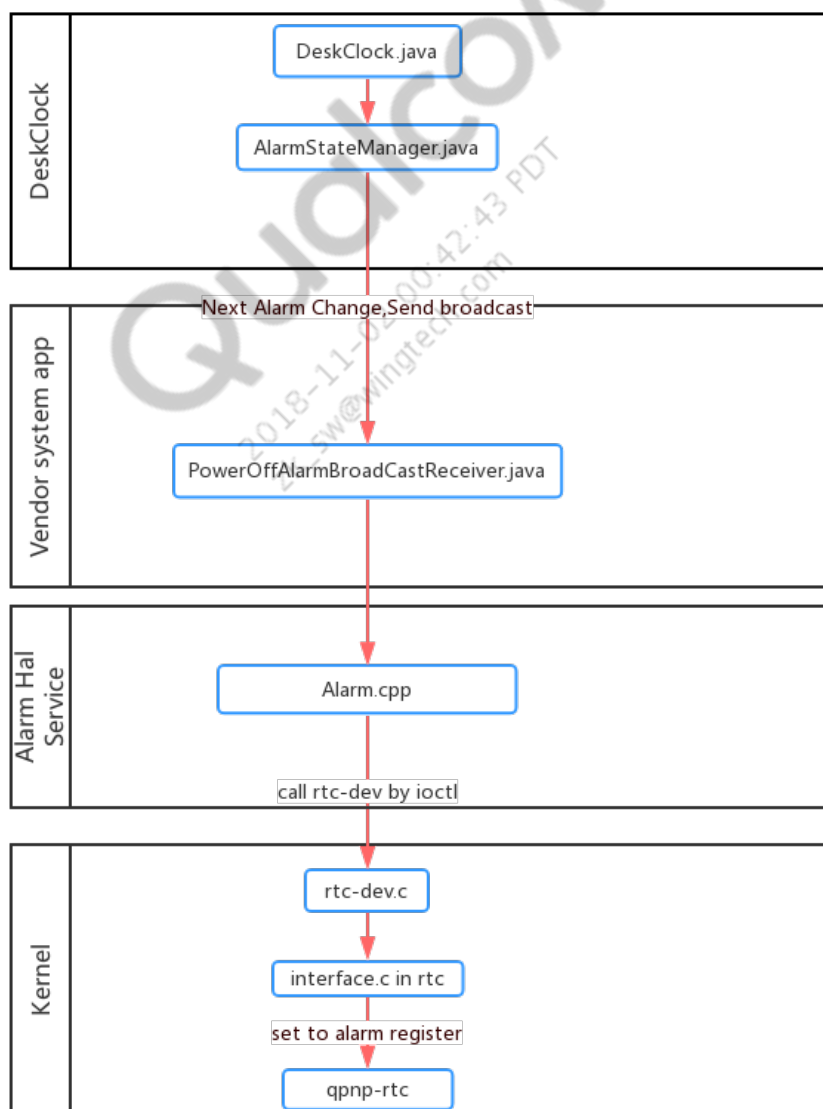


Figure 1-1 Power off alarm process

- PowerOffAlarm app in *vendor/qcom/proprietary/qrdplus/Extension*
Receive set and cancel alarm request from other applications like DeskClock

NOTE: The alarm time which is set to rtc is **one minute** earlier than the real alarm time.

- Alarm Hal Service
Set and Clear rtc alarm via rtc-dev ioctl

1.1 How to set and cancel power off alarm in customers' own apps

```
private static final String ACTION_SET_POWEROFF_ALARM =
    "org.codeaurora.poweroffalarm.action.SET_ALARM";

private static final String ACTION_CANCEL_POWEROFF_ALARM =
    "org.codeaurora.poweroffalarm.action.CANCEL_ALARM";

private static final String POWER_OFF_ALARM_PACKAGE =
    "com.qualcomm.qti.poweroffalarm";
```

Set alarm and cancel alarm:

```
Intent intent = new
Intent(ACTION_SET_POWEROFF_ALARM/ACTION_CANCEL_POWEROFF_ALARM);
intent.setPackage(POWER_OFF_ALARM_PACKAGE);
// alarm time's unit is ms. Format is like"1494220800684".
intent.putExtra("time",alarmTime);
context.sendBroadcast(intent);
```

```
private static void setPowerOffAlarm(Context context, AlarmInstance
instance) {
    LogUtils.i("Set next power off alarm : instance id "+
instance.mId);
    Intent intent = new Intent(ACTION_SET_POWEROFF_ALARM);
    intent.setPackage(POWER_OFF_ALARM_PACKAGE);
    // alarm time's unit is ms. Format is like //"1494220800684".
    intent.putExtra(TIME, instance.getAlarmTime().getTimeInMillis());
    context.sendBroadcast(intent);
}
```

```
private static void cancelPowerOffAlarm(Context context, AlarmInstance
instance) {
```

```

Intent intent = new Intent(ACTION_CANCEL_POWEROFF_ALARM);
// alarm time's unit is ms. Format is like //"1494220800684"
intent.putExtra(TIME, instance.getAlarmTime().getTimeInMillis());
intent.setPackage(POWER_OFF_ALARM_PACKAGE);
context.sendBroadcast(intent);
}

```

1.2 How to check if alarm is set successfully

```

adb root
adb shell cat /proc/driver/rtc

```

The alarm irq will be “Yes”, the delta between alarm time and rtc time is right.

1.3 Power off alarm changes

Table 1-1 Power off alarm changes list

Change ID	Subject	Project
Ice7c5918a849f193be8aa5e6b419e8f570a28fad	Add PowerOffAlarmHandler app to handler power off alarm request	platform/vendor/qcom-proprietary/qrdplus/Extension
I385e5212fd872a99e105cee4dcdff8dc128f70a4	sepolicy : Add policy for hardware alarm service	device/qcom/sepolicy
I91f0c07c1cc0c7aaa04a50bdd777864a85c1ad15	interfaces : Add alarm hardware interface for power off alarm	platform/vendor/qcom-proprietary/interfaces
Ic03f87018e163adf6f6e6013963a497d340fbec7	DeskClock : Add set and cancel power off alarm actions	platform/packages/apps/DeskClock
Ide4d7d72008122b8f0ce5bd8e629b307bf4e6f91	msm8998: Add alarm HAL	platform/vendor/qcom/cobalt
I67b835bd829402c28a692ef30d1cbc70c6bdd0c1	device-vendor.mk: Add hidl power off alarm service	platform/vendor/qcom-proprietary/ship/common

Change ID	Subject	Project
lf841e7309532abb236c68d2ae8486b6e2ef38fd1	msm8998:: Enable power-on alarm feature	platform/vendor/qcom/cobalt

Qualcomm
2018-11-02 00:42:43 PDT
zk_sw@wingtech.com