

---

# 高通用户体验性能优化期刊

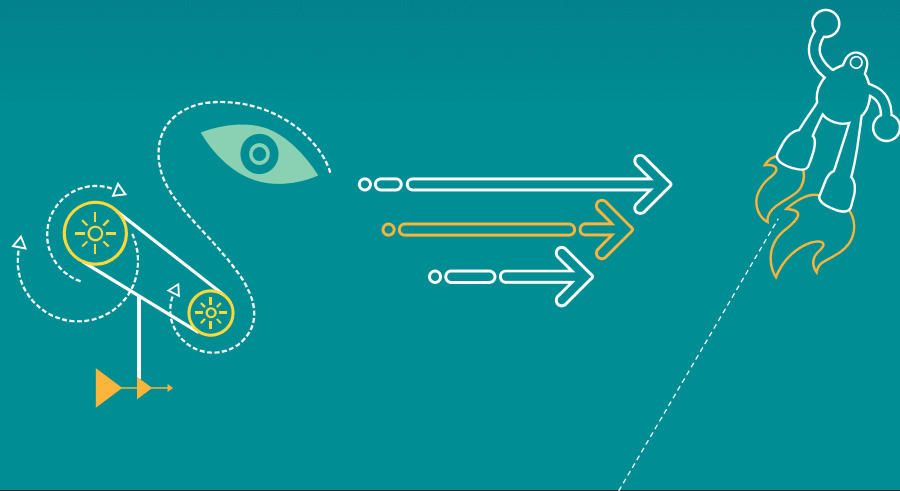
---



Qualcomm Technologies, Inc.

Confidential and Proprietary – Qualcomm Technologies, Inc.

机密和专有信息——高通技术股份有限公司



# Confidential and Proprietary – Qualcomm Technologies, Inc.

---

## Confidential and Proprietary – Qualcomm Technologies, Inc.

**NO PUBLIC DISCLOSURE PERMITTED:** Please report postings of this document on public servers or web sites to: [DocCtrlAgent@qualcomm.com](mailto:DocCtrlAgent@qualcomm.com). **禁止公开：**如在公共服务器或网站上发现本文档，请报告至：[DocCtrlAgent@qualcomm.com](mailto:DocCtrlAgent@qualcomm.com).

**Restricted Distribution:** Not to be distributed to anyone who is not an employee of either Qualcomm or its affiliated without the express approval of Qualcomm's Configuration Management. **限制分发：**未经高通配置管理部门的明示批准，不得发布给任何非高通或高通附属及关联公司员工的人。 Not to be used, copied, reproduced, or modified in whole or in part, nor its contents revealed in any manner to others without the express written permission of Qualcomm Technologies, Inc. 未经高通技术股份有限公司明示的书面允许，不得使用、复印、复制、或修改全部或部分文档，不得以任何形式向他人透露其内容。

The user of this documentation acknowledges and agrees that any Chinese text and/or translation herein shall be for reference purposes only and that in the event of any conflict between the English text and/or version and the Chinese text and/or version, the English text and/or version shall be controlling. 本文档的用户知悉并同意中文文本和/或翻译仅供参考之目的，如英文文本和/或版本和中文文本和/或版本之间存在冲突，以英文文本和/或版本为准。

This document contains confidential and proprietary information and must be shredded when discarded. 未经高通明示的书面允许，不得使用、复印、复制全部或部分文档，不得以任何形式向他人透露其内容。本文档含有高通机密和专有信息，丢弃时必须粉碎销毁。

Qualcomm reserves the right to make changes to the product(s) or information contained herein without notice. No liability is assumed for any damages arising directly or indirectly by their use or application. The information provided in this document is provided on an "as is" basis. 高通保留未经通知即修改本档中提及的产品或信息的权利。本公司对使用或应用本文档所产生的直接或间接损失概不负责。本文档中的信息为基于现状所提供，使用风险由用户自行承担。

Qualcomm is a trademark of QUALCOMM Incorporated, registered in the United States and other countries. All QUALCOMM Incorporated trademarks are used with permission. Other product and brand names may be trademarks or registered trademarks of their respective owners. Qualcomm是高通公司在美国及其它国家注册的商标。所有高通公司的商标皆获得使用许可。其它产品和品牌名称可能为其各自所有者的商标或注册商标。

This technical data may be subject to U.S. and international export, re-export, or transfer ("export") laws. Diversion contrary to U.S. and international law is strictly prohibited. 本文档及所含技术资料可能受美国和国际出口、再出口或转移出口法律的 限制。严禁违反或偏离美国和国际的相关法律。

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

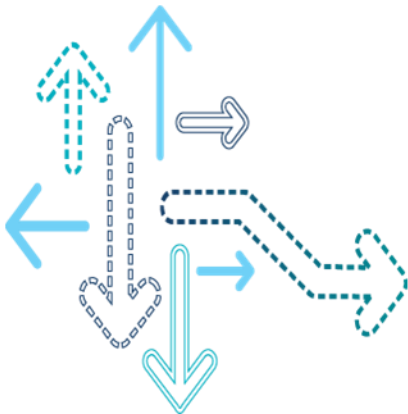
高通技术股份有限公司，美国加利福尼亚州圣地亚哥市莫豪斯路 5775 号，邮编 92121

# Contents

---

- 高通Performance Tuning文档汇总
- Libskia问题分析
- Debug.cpurend.vsync=false可能导致部分应用启动变慢

## 高通Performance Tuning文档汇总



## ❑ Common Performance Debugging Manual

- 80-P0584-1 Common Performance Issues Debugging Guide
- 80-NJ221-1 Android Memory Leak Analysis Guide
- 80-NV303-1 MSM8916 MSM8909 Memory Optimization Guidelines
- 80-NM449-1 Android User Experience Performance Overview Mem Analysis

## ❑ System Performance Debugging

- 80-NF341-1 Enable Bus Profiling A-Family Customer Devices Using Android
- 80-NJ799-1 Enable Bus Profiling MSM8974 Newer Chipset Customer Devices Using Android
- 80-NM328-709 Battery Current Limit and Tuning Overview
- 80-P0907-1 Profile Manager Architecture

## ❑ ART

- 80-P1017-1 Configuring ART for Pre-Optimization

## ❑ Scheduler

- 80-NV396-18 MSM8996 LA APSS CPU Power Mgmt Overview
- 80-NM328-13 MSM8994 LA Heterogeneous Cluster Architecture Programming Overview
- 80-NM846-31 MSM8939LA Heterogen Cluster Arch & Program Overview

## ❑ PerfLock

- 80-NT384-1 Perflock API overview
- 80-NR256-2 MPCTL feature

## ❑ FPS

- 80-NP885-1 Graphics Power Performance Overview
- 80-P0397-1 A Fence Sync Object Overview

## ❑ Android Boot Time measurement

- 80-N9266-1 Android Boot Time Measurement

## ❑ Android M Performance Patch list

- 80-P3936-1 Performance Improvement Patches Android Marshmallow Builds

## ❑ Android L

- 80-NT978-1 Performance Improvement Patches Android Lollipop Builds

## ❑ Android JB

- 80-NF450-2 Performance Improvement Patches Android JB MR2 Builds
- 80-NF450-1 Performance Improvement Patches Android JB MR1 Builds

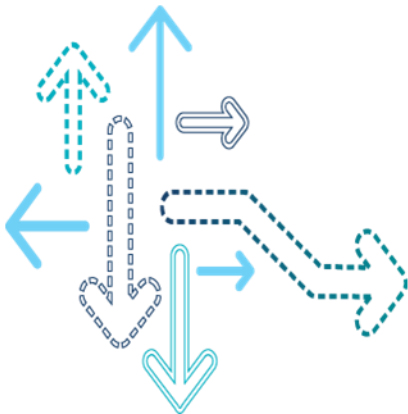
## ❑ Android KK

- 80-NL386-1 Performance Improvement Patches Android Kitkat Builds

## ❑ Android ICS

- 80-NA107-1 Performance Improvement Patches for Android ICS builds

## Libskia问题分析





# Libskia问题分析

- 高通对skia做了很多优化，因此当出现libskia相关问题时，首先要确认是否高通优化引起的，可以通过下面代码来关闭高通优化部分：

```
/external/skia/Android.mk
```

```
ifeq ($(BOARD_USES_QCOM_HARDWARE),true)
```

```
# LOCAL_WHOLE_STATIC_LIBRARIES += libqc-skia
```

```
endif
```

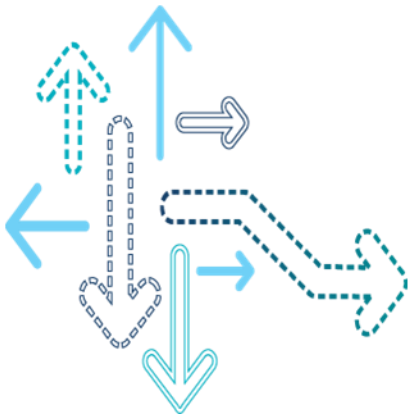
如果上述修改之后，问题消失了，那么可以确定是高通优化部分引起。

- Android M上已知libqc-skia问题如下：

Id	描述	patch
1	[M:CTS] Failures in TransitionDrawableTest and VectorDrawableTest clases	CR 931655
2	某些场景下UI显示异常	CR 931655 CR 936785

---

**Debug.cpurend.vsync=false**可能导致部分应用启动变慢



# Debug.cpurend.vsync=false可能导致部分应用启动变慢

- Description:
  - 在某些qcom android KK/L code中，有一个调试属性debug.cpurend.vsync. 这个属性值是个bool值, 默认值是true. True表示cpu rendering 时与vsync同步，false表示cpu rendering 时不与vsync同步。当这个属性被设置为false时，容易导致某些应用启动变慢。
- Resolution:
  - 这是一个调试属性，直接移除system.prop中debug.cpurend.vsync=false即可。
- Related CR: 867997
- Analysis:
  - 当属性值为false时，cpu rendering时没有与vsync同步, AMS容易在一个vsync周期中多次请求SF合成animation frame，而为了确保每个frame都能被完整显示出去，后请求的frame会被pending到下一个vsync，pending过程中持有锁mWindowMap，导致AMS无法获得锁而被pending，从而导致APP relayout时间变长，启动变慢。这是一个调试属性，直接移除即可。

---

## Questions?

<https://support.cdmatech.com>

