



# TEGRA LINUX DRIVER PACKAGE R21.4

RN\_05071-R21 | July 10, 2015  
Advance Information | Subject to Change

## Release Notes



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# 1.0 ABOUT THIS RELEASE

The NVIDIA® Tegra® Linux Driver Package supports development of platforms running:

- ▶ NVIDIA® Tegra® K1 32 Bit series computer-on-a-chip
- ▶ Linux kernel 3.10.40
- ▶ Git tag for the release: tegra-l4t-r21.4



**Note: This release of Tegra Linux Driver Package R21.4 is a release for: Tegra K1 32 Bit device code-named “Jetson TK1”**

## 1.1 LOGIN CREDENTIALS

The default Jetson TK1 login credentials are:

- ▶ Username: ubuntu
- ▶ Password: ubuntu



**Note: A debug console is available via female-to-female NULL modem cable. The console is not password protected.**

## 1.2 WHAT’S NEW

This release fixes some issues that were found during continued testing and adds/enhances the following feature(s).

- ▶ [1566270] Enabled Tegra system profiler
- ▶ [1644596] Fixed gst-omx compile time errors, added README and source files
- ▶ [1551864] Updated Jetson TK1 pinmux configuration
- ▶ [1542346] Rework of modeswitch/vt-switch handling in X/OpenGL
- ▶ [1487603] xhci firmware cfgtbl and logging enhancements

- ▶ [888312] Enabled and tuned CPU frequency boost on input event
- ▶ [1568275] Adds support for X.org ABI 17, 18 and 19
- ▶ [1649593] Image rotation support documentation
- ▶ [1625262] Improved device tuning on Jetson TK1

## 1.3 TOP ISSUES FIXED SINCE LAST RELEASE

The following issues have been resolved in this release.

### System

- ▶ [200046014] X crashes due to segmentation fault
- ▶ [200081242] System does not wake from Suspend (LP1)
- ▶ [200094751] Issues with loading libcuda.so.1.1
- ▶ [200084665] "No space left on device" error displayed with enough space available on device
- ▶ [200077334] TegraK1 GPU error displays when GPU is locked at a high frequency
- ▶ [200062085] read\_ahead\_kb size of removable SDcards/MicroSDs resets to 128 from 2048 after hotplug, leading to proportional drop in read performance
- ▶ [200040915] "xHCI xhci\_drop\_endpoint called with disabled ep ea70d3c0" error displayed from xhci.c and connection is reset when connecting USB 3.0 hub to Belkin USB 3.0 hub
- ▶ [200036424] System becomes unresponsive when entering Deep Sleep (LP0) when HDMI is disconnected after boot
- ▶ [200032923] While pmu\_destroy is running there is a possibility pmu init is scheduled in a different thread, causing exception
- ▶ [200006918] Incorrect board revision present in major\_revision causing board specific services and settings to be unsuccessful
- ▶ [1640551] Long delays occur in nvmap during boot
- ▶ [1639229] Memory leak and performance degradation occur when changing EGL contexts
- ▶ [1599195] Need correct settings for VBR (constant QP) mode
- ▶ [1596489] No support for null buffers as arguments in glDeleteBuffers()
- ▶ [1581432] Need Tegra WDT FIQ function enabled
- ▶ [1580265] HDMI parent clock frequency calculation incorrect in some cases

### Kernel

- ▶ Added Tegra Profiler support
- ▶ Enabled Watch Dog Timer support
- ▶ Fixed race condition in programming PTC flush registers. This race condition results in PTC flush not happening as intended and can cause either SMMU fault or previous stale mapping access
- ▶ Improved SATA stability

- ▶ Improved vic frequency scaling tuning parameter
- ▶ Modified the way we load nvhost firmware
- ▶ [200057068] Removed invalid gk20a memory allocation error message
- ▶ [200087363] Linux kernel headers include x86 ELF files causing unsuccessful on-board module compilation

## Display

- ▶ [200102860] Display is blank after hot plugging HDMI after boot
- ▶ [1467960] oom-killer invocation occurs with heavy graphical corruption and screen blanking in low memory situations when stress testing screen orientation changes
- ▶ [200080781] Mode setting unsuccessful for some refresh rates
- ▶ [200081502] MSELECT error and kernel exception display during reboot stress testing

## Graphics

- ▶ [200101677] Race condition in omx-il while loading EGL library
- ▶ [1617701] Using EGLImage for fast CPU read/write access on textures and framebuffers causes segmentation fault
- ▶ [200036737] X crashes due to invalid event

## Multimedia

- ▶ [200116564] Audio corruption from first aplay playback after reboot
- ▶ [200107328] Added DRC support in gst-omx 1.0
- ▶ [200106354] Nvgstplayer-1.0 video playback windows (created with URI option) not automatically closed
- ▶ [200102340] Sequential image capture using run time command (j:<count>) with a USB camera is unsuccessful with nvgstcapture-0.10
- ▶ [200100485] Decoding interlace video crashes when POC=2
- ▶ [200100179] Playback of captured video (using H.264 encode and AVI container) is unsuccessful
- ▶ [200099694] No audio heard from nvgstplayer-1.0 playback of 00001.MTS
- ▶ [200098386] Support for resizing and positioning of the overlay screen with gstreamer-1.0 needed
- ▶ [200091380] Playback of low bit-rate WAV audio files with nvgstplayer-0.10 and aplay is unsuccessful
- ▶ [200087353] Need insertion of SPS/PPS at IDR/I frame
- ▶ [1612520] Audio corruption occurs when playing video through some applications
- ▶ [200078535] Multi channel audio file playback with nvgstplayer-0.10 is unsuccessful
- ▶ [200078609] "Creation of video pipeline failed" message displays when stopping and resuming RTSP streams that include both audio and video
- ▶ [200077258] Corruption displayed during playback of video captured with a USB camera with MPEG4 encoder and MP4 container
- ▶ [200071832] Loop-forever functionality is not working in nvgstplayer-1.0
- ▶ [200062801] Audio corruption heard from long-duration MP3 RTSP streaming

- ▶ [200040752] Audio plays through HDMI when audio output device selected is Speakers (tegra-rt5639), after reboot
- ▶ [200025919] Need support for setting width, height and position of window in nvgstplayer
- ▶ [200003429] Multi-channel audio playback through audio receiver via HDMI is not properly rendered
- ▶ [1646878] omxh264dec plugin may cause decode pipeline deadlock
- ▶ [1645989] PEG Decoding to NVMM type yuv needed
- ▶ [1640447] Image rotation support needed
- ▶ [1628974] Memory leak in gstreamer pipeline
- ▶ [1628147] Auto MIPI calibration in V4L2 driver needed
- ▶ [1618581] Nvmap buffer leak occurs in nvgstreamer decode plugin
- ▶ [1611835] Need support for iframeinterval parameter in gst-omx plugin for gstreamer
- ▶ [1503770] USB headset not automatically listed as audio output device in sound settings
- ▶ [1458105] RTSP stream playback unsuccessful
- ▶ [1456080] nvvidconv-1.0 code cleanup and replacement for deprecated implementation
- ▶ [200077151] Fixed caps negotiation in case of nvmm to raw conversion for nvcamerasrc in gst-nvvidconv-1.0
- ▶ [200074271] Segmentation fault occurs when switching to video mode in Nvgstcapture-1.0

## Camera

- ▶ [200111272] No discernable difference between preview and capture with AEROI selected
- ▶ [200081357] Capture with nvgstcapture-1.0 inside a sudo user created directory causes segmentation fault
- ▶ [200080744] No nvgstcapture option to select a specific USB camera when multiple USB camera devices are connected
- ▶ [200081334] Unable to stop image capture with user interrupt on first attempt
- ▶ [200080743] Corruption and grey areas occur in video and image preview and capture at 1280x720 resolution with USB HD camera
- ▶ [200074282] Running out of memory during 25000 image capture stress testing with nvgstcapture-1.0, USB camera, and hdmioverlaysink results in segmentation fault
- ▶ [1581879] Camera timeout occurs with suspend and resume when the lock screen is disabled

## 1.4 JETSON TK1-SPECIFIC RELEASES

For the latest releases and errata for the Jetson TK1 platform, visit (Registered Developer Program membership required):

<http://developer.nvidia.com/jetson-tk1>

## 1.5 SOURCES FOR INCLUDED LINUX DISTRIBUTION PACKAGES

Source files for open-source licensed Linux distribution packages included in the release flashed on Jetson TK 1 as shipped are located in the following directory:

```
./usr/src/
```

You can download updated sources, when available at the following Web site:

<https://developer.nvidia.com/linux-tegra>

## 2.0 KNOWN ISSUES

This section provides details about issues that were discovered during development and QA but not resolved prior to this release of the Tegra Linux Driver Package.

### 2.1 [200080783] X CRASHES DURING XRANDR SCALING

The X server crashes during 4 x 8 xrandr scaling, displaying log messages indicating out-of-memory process.

### 2.2 [200081682] DATA CRC ERRORS DISPLAYED WHEN USING SPECIFIC SD CARDS FOR FILE SYSTEM

Data CRC errors may display when using an “Ultra microSDHC UHS-I 32GB Class 10 Memory Card” for the root file system.

### 2.3 [200081729] ERRORS DISPLAY WHEN OVERRIDING GPU FREQUENCY BEFORE DISPLAY INITIALIZATION

The GPU frequency cannot be overridden until X11 is running.



## 2.4 [200049185] HUE CHANGES IF OBJECT IS CLOSE TO CAMERA LENS

When capturing images with Nvgstcapture-1.0 the hue of the image varies with the proximity of the subject to the camera lens.

## 2.5 [200074125] BUILT-IN SOUND DEVICES NOT LISTED IN SETTINGS WITH HDMI-DVI CONVERTOR CONNECTED

Sound is audible, but built-in sound devices are missing from settings when system is connected to a display with a HDMI-DVI converter.

## 2.6 [1499936] MOVING NAUTILUS WINDOW OVER WORKSPACE SWITCHER CAUSES GUI TO HANG

Dragging a Nautilus window so that it covers or partially covers the workspace switcher causes the desktop GUI to hang.

## 3.0 IMPLEMENTATION NOTES

### 3.1 GSTREAMER 1.0 SUPPORT

This release includes Gstreamer 1.0 support. The Nvgstplayer application defaults to Gstreamer 0.1. To run the 1.0 version, use the full path to the binary.

# 4.0 ABOUT EARLIER RELEASES

## 21.3, 26 FEB 2015

### What's New In this Release

This release fixes some issues that were found during continued testing and adds/enhances the following feature(s).

- ▶ Implemented skip-frames and disable-dpb properties for gst-omx plugin. See *L4T Multimedia User Guide* for more information.
- ▶ Added encoding and scaling support in gst-nvvidconv-1.0. See *L4T Multimedia User Guide* for more information.
- ▶ Tegra watchdog support
- ▶ Enabled ramoops debugging support
- ▶ CSI\_B/CSI\_C support in Tegra V4L2/soc\_camera driver

### Top Issues Fixed Since Last Release

The following issues have been resolved in this release.

#### System

- ▶ [1506870] Unnecessary debug messages from NVAVP kernel code display
- ▶ [1549799] Improved flashing tools compatibility with additional eMMC devices where boot partition size differ from Jetson TK 1
- ▶ [1561360] Intermittent "azx\_get\_response" kernel warning displays during system testing
- ▶ [1582388] Intermittent "kernel\_warning: "hda-intel azx\_get\_response timeout" warning displays during system testing
- ▶ [200015967] The error "gk20a gk20a.0: gk20a\_fifo\_handle\_sched\_error: fifo is waiting for ctx switch for 100 ms,ch = 3" may occur when running WebGL applications

- ▶ [200054390] Support RAM sizes for 4GB or greater in U-Boot
- ▶ [1551864] Updated pinmux for Jetson TK 1 devices
- ▶ [200046876] Resolved memory leak in gst-openmax
- ▶ [200067410] Resolved issues related to use of Tegra-profiler
- ▶ [200072946] Improved system stability during extended reboot stress testing
- ▶ [200020671, 200031813] Improved compatibility with HDMI TVs and resiliency for unsupported modes
- ▶ [1577947, 1435870] Improved stability of gk20a GPU driver
- ▶ [200048667] Removed debug messages when loading VIC firmware
- ▶ [200055546] Resolved gk20a stability issues regarding “gk20a\_pmu\_isr: pmu halt intr not implemented”
- ▶ [200016313] Resolved gk20a stability issues regarding “gk20a\_pmu\_enable\_elpg(): possible elpg refcnt mismatch”
- ▶ [1557711] Enabled devsleep functionality only for mSATA connectors (disable devsleep on Jetson TK 1 SATA). This resolved issues on detection of certain SATA drives
- ▶ [1566598] Improved stability of Jetson TK1 on-board Ethernet

## Camera

- ▶ [200074274] Resolved preview resolution switching with USB cameras in Nvgstcapture-1.0
- ▶ [200063275] Fixed issue with 1080p encoding in Nvgstcapture-0.10
- ▶ [200060263] Corrected preview resolution in Nvgstcapture-0.10
- ▶ [200062376] Changed default preview sink in Nvgstcapture-1.0
- ▶ [200049907] Resolved pauses during video recording specific to USB webcam in Nvgstcapture-0.10
- ▶ [200074237] Resolved cosmetic error messages when using USB cameras in Nvgstcapture-1.0

## Multimedia

- ▶ [200053327] Resolved errors in continuous encoding and decoding in libjpeg-8b hardware acceleration
- ▶ [200067781] Fixed crash in port audio
- ▶ [200045113] Improved H.264 decode latency
- ▶ [1575862, 1576116] Resolved crash in H.264 decoder when video stream contains multiple segments with different resolutions.
- ▶ [200057071] Resolved infrequent error of “X Error of failed request: BadIDChoice” in Nvgstplayer

## Power and Performance

- ▶ [200070160] 792 megahertz (Mhz) BCT needs to be updated has incorrect memory swizzle

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