TEGRA LINUX DRIVER PACKAGE R28.3

Release Notes

Table of Contents

1.0 About this Release

The NVIDIA® Tegra® Linux Driver Package 28.3 release supports development of platforms running on:

- ▶ NVIDIA® Jetson™ TX1 Developer Kit (P2371-2180)
- ▶ NVIDIA® Jetson™ TX2 Developer Kit (P2771-0000)
- ▶ NVIDIA® Jetson™ TX2i Module (P3489)

The Jetson TX2i module on the Linux for Tegra Board Support Package is provided to support Jetson TX2i, a Jetson TX2 module SKU suitable for industrial environments.

Platform and Release Information

Description	Supported Version
Host machine version for flashing software onto Jetson devices.	Ubuntu 16.04 (amd64 distribution)
Sample rootfs Ubuntu operating system to run on Jetson devices.	Ubuntu 16.04 (arm64 distribution)
Supported Linux kernel version.	4.4.38
Supported ARM architecture.	aarch64
The board/module name, used in flashing and paths in the software.	Jetson TX1: jetson-tx1 Jetson TX2: jetson-tx2 Jetson TX2i: jetson-tx2i
The board/module and revision number.	Jetson TX1: p2371-2180 Jetson TX2: p2771-0000 Jetson TX2i: p3489
The release tag name. Consult the kernel source to identify the tag name at: http://nv-tegra.nvidia.com/gitweb/?p=linux-4.4.git Kernel source are live across several repositories. Consult the topic Kernel Customization > Obtaining the Kernel Sources with Git in the *Development Guide* for details.	tegra-l4t-r28.3

1.1 Login Credentials

The default login credentials are:

▶ Username: `nvidia`
▶ Password: `nvidia`

Note:	For security purposes and for best practices, NVIDIA recommends changing the default password.

2.0 Fixed Issues

2.1.1 Bootloader

Bootloader related resolved issues are as follows.

Issue	Description
200377085	Boot stress fails, and recovery requires re-flashing the device.

2.1.2 Camera

Camera related resolved issues are as follows.

Issue	Description
200244333	Launching argus_camera with --awblock=on causes a black preview and capture image. This is due to an internal color correction matrix that is not populated until after the first frame is run with AWB. **To workaround:** For applications that require fixed gains, use the white balance gain controls instead without requesting lock.
2105560	Image corruption: tearing in camera image data.

2.1.3 Kernel

Kernel related resolved issues are as follows.

Issue	Description
2155277	mkpkc fails while chreating fuse blob with ubuntu 16.04.
2449265	Memory lead in `NvV4l2ElementPlane()` when using `V4L2_MEMORY_MMAP`.

3.0 Implementation Notes

3.1 Jetson TX2i Support

The Jetson TX2i module on the Linux for Tegra Board Support Package is provided to support Jetson TX2i which is a Jetson TX2 module SKU suitable for industrial environments.

The Jetson TX2i module has been supported since the 28.2 release, and will be supported in future releases.

3.2 Docker Support

▶ The kernel in this release is pre-configured to enable Docker.

▶ Docker is unsupported in ARM64, although NVIDIA has added kernel configuration support for dockers, where users can install the docker.io as required, dockers are not officially supported in arm64 architecture. Although, the dockers may be woking properly, the ubuntu launchpad at:

```
https://launchpad.net/ubuntu/xenial/arm64/docker
```

Identifies that the package contains the daemon and client using docker.io on non-amd64 hosts that is not supported. [2033135, 2001213]

3.3 Symlinks May be Overwritten by Installation of Third Party Libraries

Installing third party libraries on the target device may overwrite the accelerated library provided by Linux for Tegra.

For example, installing Mesa EGL may create a `/usr/lib/<arch>/libEGL.so` symlink, overwriting the symlink to the implementation library that should be used instead, `/usr/lib/<arch>/tegra-egl/libEGL.so`.

Linux for Tegra installs a boot-time initialization script `/etc/init/nv.conf`, that corrects typical occurrences, such as with OpenGL, EGL, and X11 GLX libraries. This script runs at boot and corrects typical occurrences.

To workaround

▶ Reboot after installation of packages that install conflicting library symlinks.

3.4 Prerequisite for video_decode_drm Multimedia Sample

`video_decode_drm` is a new sample in the Multimedia API that demonstrates how to render video stream or UI with the NVIDIA® Tegra® Direct Rendering Manager (DRM). [1843440]

Before running the sample, you must ensure the Ubuntu desktop is disabled.

To disable the Ubuntu desktop

1. Execute the command:

```
$ sudo systemctl stop lightdm.service
```

2. If there are two display outputs, unblank the second inactive display, as follows:

```
$ sudo sh -c 'echo 0 > /sys/class/graphics/fb1/blank'
```


3.5 Bluetooth Audio and Conformance Support

Bluetooth audio is disabled in this release to ensure that the bluetooth software stack is conformant in the provided configuration. If additional bluetooth audio profiles are enabled, product conformance may be impacted [200276904].

For compliance information, consult the *Jetson TX1-TX2 OEM Wireless Compliance Guide*.

For information on enabling Bluetooth Audio, see "Bluetooth Device Settings" in *NVIDIA Tegra Linux Driver Package Development Guide.*

3.6 OpenCV4Tegra Deprecated

OpenCV Version 3.3.1, built without GPU hardware acceleration, is provided as a convenience to access basic compute functionality. OpenCV continues to include neon and multi-threading optimizations for Jetson.

OpenCV4Tegra Version 2.4.13 is deprecated as of 28.1 release.

3.7 GStreamer and nvgstcapture Support

Beginning with r28.1, `nvgstcapture` is provided as deprecated. It will be replaced with a basic plugin built around libargus. The basic plugin will provide high-level camera control functionality. Any new applications requiring low-level control must be built using libargus.

3.8 WiFi Support

The software features includes the following supported WiFi modes:

Mode	Description	Jetson TX2
AP	AccessPoint (AP) Infrastructure Mode	Yes
STA	Station Infrastructure Mode	Yes

3.9 HDMI Audio Devices in Audio Settings Application

The HDMI audio output device is not listed for some televisions and monitors including the following:

▶ Samsung TV 1080p LA40M81BM/XTL
▶ LG Flatron W2363D
▶ Samsung UA21ES5000RLXL
▶ LG 25UM65-p

The issue is inconsistent and sometimes occurs on subsequent reboots.

To workaround

▶ If the HDMI audio output device is not listed in audio settings, restart the pulseaudio daemon by killing the running instance as a normal user with the following command:

```
pulseaudio --kill
```

Or register the systemd pulseaudio service to start the pulseaudio daemon at every boot:

```
systemctl --user enable pulseaudio.service
```

> Note: **Do not run pulseaudio as a root user.**

3.10 New Users Must be Added to Video Group

When adding users to the system you must add them to the `video` group for the Linux desktop to appear and function correctly.

3.11 Symlinks Changed by Mesa Installation

Installation of Mesa EGL may create a `/usr/lib/<arch>/libEGL.so` symlink, overwriting the symlink to the implementation library that must be used instead, `/usr/lib/<arch>/tegra-egl/libEGL.so`. This disrupts any client of EGL, including libraries for EGLStreams.

In this release, the symlink is replaced when the system is rebooted, fixing this issue on reboot. Similar workarounds are applied in previous releases for other libraries such as libGL and libglx.

4.0   Known Issues

These known issues apply to Jetson TX2 devices unless otherwise specified.

4.1   Applications and Sample Code

Boot related known issues are as follows.

Issue	Description
2091016	Multimedia API: Profiling information missing with frontend sample.

4.2   Boot

Boot related known issues are as follows.

Issue	Description
200327805	When the L4T kernel enumerates attached USB and SATA storage devices, or if devices are plugged or unplugged from the system, the kernel may assign different names to those devices each time the system boots. Consequently, configuring Jetson to use /dev/sda1 as the root filesystem may not work as expected when multiple USB or SATA storage devices are present, or devices are added or removed.
20037708	Due to a limitation in MB1 for A/B slot redundancy, the system may become inaccessible and require a re-flash of the L4T image to boot properly. This occurs when: • Slots A/B are both good, upon a watchdog timer reset, subsequent boots are launched against the alternate slot. • If you have one slot is corrupted, upon a watchdog timer reset, the system hangs because it is unable to jump to the alternate slot. To workaround: Disable the Tegra Watchdog Timer.
200150755 1809395	SATA Conair SSD does not enumerate as expected. The following error message is displayed:

Issue	Description
	[17.233087] ata1: softreset failed (1st FIS failed)
	[27.243085] ata1: softreset failed (1st FIS failed)
	[62.253086] ata1: softreset failed (1st FIS failed)
	[62.257959] ata1: limiting SATA link speed to 1.5 Gbps
	[67.463156] xhci-tegra 3530000.xhci: can't find firmware
	[67.473082] ata1: softreset failed (device not ready)
	[67.478133] ata1: reset failed, giving up
	To workaround
	Conair SATA drives must be used as storage devices and not boot devices.
N/A	Using NFS boot, the 16.04 Ubuntu desktop does not function correctly on the target.
	To workaround
	• At the target console, execute the command: sudo apt-get install --reinstall ubuntu-desktop unity compiz-core upstart

4.3 Camera

Camera related known issues are as follows.

Issue	Description
200382640	When running the argus_camera application, a memory leak of approximately 30 bytes per second is present.
	This issue is present in the open-source glib library used by the camera application, not within the camera application or camera library. NVIDIA is working with the open source community to address the issue.
	To workaround, consult the patch available at:
	https://github.com/GNOME/glib/blob/master/gio/gpollfilemonitor.c# L148
200358695	When using argus_camera application in 2592x1944 default resolution, many frames are missing in the encode.
	To workaround:
	Set the preview in the argus_camera application to disabled. Or set the preview resolution to be higher than 2592x1944.
1959620 200304835	When running the argus_camera application, a memory leak of ~30 bytes per second is present. This issue is present in the open-source glib library used by the camera application, not within the camera application or camera library.
	NVIDIA is working with the open source community to address this issue. In the interim, use the following patch:
	• Navigate to line #148 for the poll_monitor timeout in the GPOL file monitor file at: https://github.com/GNOME/glib/blob/master/gio/gpollfilemonitor.c#L148 `poll_monitor->timeout = FALSE;`

	• Replace that line with the following if statement:
	`    if (poll_monitor->timeout`
	`      {`
	`        g_source_destroy (poll_monitor->timeout);`

Issue	Description
| | ```
          g_source_unref (poll_monitor->timeout);
          poll_monitor->timeout = NULL;
     }
``` |
200247681	Systems using lens shading correction and dynamic falloff tuning produce an inconsistent response to exposure bracketing due to a rate limitation on the lens shading adaptation. This issue does not affect basic use of exposure bias or systems that do not use lens shading correction.
200301535	Initially, a transient half-black frame is generated when switching between normal and WDR sensor modes with IMX-185. **To workaround:** Drop the first frame after switching modes.
200297610	When launching the argus_camera application with Piecewise Linear WDR sensor mode and changing the AWB mode, the preview hangs. Specifically, this occurs when changing from Auto to other modes such as Incandescent or fluorescent. A fix for this issue is targeted for a subsequent release.
200424487	Profiling information missing with frontend sample.
2032213	The maximum value that `getExposureTimeRange()` may return is 400000000.000 (400,000,000 nanoseconds, 400 msec).

4.4 Communication

Communication related known issues are as follows.

Issue	Description
200327384	WiFi does not function as expected when configured to IBSS mode and encryption is enabled. **To workaround:** Use Open mode.

4.5 CUDA Samples

CUDA related known issues are as follows.

Issue	Description
200370228	GLES CUDA samples are not compiled due to missing header files. There are ways to workaround this issue, depending on your use of Jetpack. **Option #1: To workaround when installing with Jetpack** • Select to install the MM API component. This selection allows you to successfully compile the CUDA samples. **Option #2: To workaround after installing without Jetpack** • Copy the EGL, GLES2, GLES3 and KHR headers from the `~/tegra_multimedia_api/include` folders to `/usr/include`. Do not copy GL headers.

4.6 Display

Display related known issues are as follows.

Issue	Description
200274995	Certain monitors claim support for 4K@60 with YUV 4:2:0 compression. Since display controller does not provide native YUV 4:2:0 support , X driver rejects YUV 4:2:0 modes. Consequently, for these monitors, 4K@60 mode is not listed by xrandr.
200369220	The default resolution for video playback on the display overlay (when not using X11) is set to 720x480p. If you use overlay video playback without setting to a matching resoultion issues may arise. For example, to perform playback 4k overlay stream, the display resolution must be set to 1080p or higher. Before changing the display mode, ensure lightdm is stopped. 1. To blank the display, execute the command: "echo 4 >/sys/class/graphics/fb0/blank" 2. To get a valid mode from the mode list of the monitor, execute the command: "cat /sys/class/graphics/fb0/modes". 3. To set the desired mode, execute the command: "echo "mode from modelist" > /sys/class/graphics/fb0/mode" For example: echo "D:1920x1080p-60" > /sys/class/graphics/fb0/mode 4. To Unblank the display: "echo 0 > /sys/class/graphics/fb0/blank"

4.7 Kernel

Kernel related known issues are as follows.

Issue	Description
1978395	When the L4T kernel is compiled from source, some generated files are written outside the expected output directory. • When the kernel is compiled without using the O= command-line option, all generated files are written within the various kernel source trees. Generated files are created in the same directory as their respective source files. This case works as expected. `When the kernel is compiled using the O= command-line option, some generated files are written outside the specified directory. These generated files are created within a sibling directory of the directory specified in the O= command-line option, for example: $OUT/../nvidia or $OUT/../nvgpu rather than $OUT`  If those path names exist but are not directories, or exist as a directory but contain files unrelated to the kernel build process, this can interfere with the kernel build process. The following error message is one possible symptom.  `mkdir: cannot create directory 'drivers/video/tegra/../../../../display': Not a directory` To workaround, perform one of the following options: • Do not use the O= command-line option. Select an output directory with a parent directory that does not contain any files. For example, assuming that $HOME/kernel-build does not exist or is an empty directory, specify O=$HOME/kernel-build/kernel rather than $HOME/kernel-build.

4.8 System Usability

General system usability related known issues are as follows.

Issue	Description
200394237	Due to a limitation in A/B slot redundancy, the system may become inaccessible if the watchdog timer jumps to the second slot. The device fails to boot because the slot is corrupted turning the device inaccessible.
200307657	Red screen is observed while playing H264/H265 4K video with overlaysink. NVIDIA recommends that you do NOT run X11 with other display clients such as overlaysink, and libdrm applications simultaneously.
200196882	Logging in to GNOME desktop (gnome-shell) is unsuccessful, accompanied by display corruption. NVIDIA recommends using the Unity desktop enabled by default with the Development Kit.

5.0 About Earlier Releases

22 Jul 2018 28.2.1 Release

Known Issues

Applications and Sample Code

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200304835
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	NVIDIA is working with the open source community to address this issue. In the interim, use the following patch:
	
	• Navigate to line #148 for the poll_monitor timeout in the GPOL file monitor file at: https://github.com/GNOME/glib/blob/master/gio/gpollfilemonitor.c#L148
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	• Replace that line with the following if statement:
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	   `  {`
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	   `  }`

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	 Before changing the display mode, ensure lightdm is stopped.
	
	 5. To blank the display, execute the command:
	     "echo 4 >/sys/class/graphics/fb0/blank"
	 6. To get a valid mode from the mode list of the monitor, execute the command:
	     "cat /sys/class/graphics/fb0/modes".
	 7. To set the desired mode, execute the command:
	     "echo "mode from modelist" > /sys/class/graphics/fb0/mode"
	     For example:
	     echo "D:1920x1080p-60" > /sys/class/graphics/fb0/mode
	 8. To Unblank the display:
	     "echo 0 > /sys/class/graphics/fb0/blank"

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200196882	Logging in to GNOME desktop (gnome-shell) is unsuccessful, accompanied by display corruption. NVIDIA recommends using the Unity desktop enabled by default with the Development Kit.

Fixed Issues

Bootloader

Bootloader related resolved issues are as follows.

Issue	Description
1951501	Source code for Cboot is not publicly available.
2024819	NVIDIA® Jetson™ TX2 CBoot does not verify that U-boot is signed, effectively breaking the chain of trust before U-boot and the kernel are loaded.

CUDA

NVIDIA® CUDA® related resolved issues are as follows.

Issue	Description
2058734	CUDA driver does not handle a corrupted JIT cache index file correctly.

Kernel

Kernel related resolved issues are as follows.

Issue	Description
2026151	User cannot load anything larger than 16 MB in the Linux partition.

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Top Fixed Issues

Audio

Audio related resolved issues are as follows.

Issue	Description
2044665	If probing Tegra X1 or X2 RT565x audio machine driver is deferred because a resource is not available, on the next attempt to probe the driver fails and an error message is returned as follows: tegra-snd-t186ref-mobile-rt565x: probe of sound failed with error -16 The error code -16 (or -EBUSY) is returned from tegra_alt_asoc_switch_register() function because it was not unregistered when the probe was initially deferred. This issue is fixed and deferring the probe of these machine drivers is working as expected.
2045523	The rt565x driver no longer crashes when rt565x-playback link is not defined.
1788838	When the Tegra I2S interface is configured for TDM operation using DSP-A or DSP-B formatting, the frame-sync that is generated to indicate the start of the audio data frame is inverted. This is a software configuration issue in the Tegra I2S driver which is incorrectly programming the LRCK_POLARITY field of the I2S Control Register.
2004753	When playing or capturing 32-bit audio on Jetson TX1, the Tegra sound driver incorrectly overrides the data format for the PCM audio samples which forces playback or capture to be 16-bit instead of 32-bit.
2021397	Previously, when using the Tegra X1 I2S3 interface for audio playback or capture, the interface is not enabled. Consequently, audio playback and capture may fail. This issue is now fixed. Audio playback and capture now works on the I2S3 interface.
2020869	The audio route for the Tegra X1 I2S5 interface was not defined in the Linux kernel device-tree. Consequently, it could not be used even though it was available on the Tegra X1 module. However, now the audio route for I2S5 is added and can be used.
2038339	When using ADMAIF9/10 channels for audio playback/capture, the soft-reset of the ADMAIF does not perform as expected. For example, after playback completes, when using either ADMAIF9 or ADMAIF10, an error message is displayed: Starting audio playback via i2s1 from file rec.wav ... Playing WAVE 'rec.wav' : Signed 16 bit Little Endian, Rate 48000 Hz, Stereo|[260.094969] tegra210-ape-admaif tegra210-admaif: Failed at ADMAIF0_TX sw reset Issues causing the error include: • The ADMAIF is reported as 'ADMAIF0' although ADMAIF9/10 is being used. This is an error in the driver which is reporting the wrong ADMAIF ID. • The actual issue is likely caused because the regmap configuration for the ADMAIF register on Jetson TX1 is incorrect. In the function `tegra210_admaif_volatile_reg()`, the ADMAIF registers between offset 0x000 and 0x500 are considered volatile. The problem is that the ADMAIF channel registers for Jetson TX1 actually span 0x000-0x280 (for RX) and 0x300-0x580 (for TX). Consequently, polling volatile registers above address offset 0x500 is fails. These issues are resolved and the soft-reset is verified to be working as expected.

Camera

Camera related resolved issues are as follows.

Issue	Description
200316681	Performance degradations, if there is an aspect ratio mismatch between the requested output resolution and the sensor mode resolution, have been resolved.
	For best results, the output resolution requested by the argus_camera application must match, as close as possible, theaspect ratio of the sensor mode. If there is a mismatch, low performance issues may result such not getting the desired frame rate due to frame drops for preview and video encode usecases with argus_camera.
	For example:
	sensor mode: 3864x2174, aspect ratio 1.77737 output resolution 3840x2160, aspect ratio 1.77777
	Low performance:
	./argus_camera -i --kpi --sensormode=0 --outputsize=3840x2160 --videoformat=h264 --videobitrate=20000000 --framerate=30 --outputpath=/dev/null -v3600 -x
	Good performance:
	./argus_camera -i --kpi --sensormode=0 --outputsize=3864x2174 --videoformat=h264 --videobitrate=20000000 --framerate=30 --outputpath=/dev/null -v3600 -x
1851861	IMX185 WDR: AE has large noticeable steps during transition.
	Fixed ratio (16.0) of long/short exposure results in higher exposure steps available for long exposure may result in noticeable AE steps during transition; specially in High Dynamic Range scenes.
200310602	Sometimes a timeout occurs when launching the camera.
	If the camera is opened or closed in a loop, a crash may be observed after ~100 iterations. The system log shows the following error:
	[35691.253438] host1x 50000000.host1x: nvhost_get_syncpt: failed to find free syncpt.
200225662	Frames drops 1/ Hr for H264/H65 Video Recording.

Clock Frequency

Clock related resolved issues are as follows.

Issue	Description
2020021	Previously, the Tegra X1 clock driver in the Linux kernel was incorrectly limiting the maximum frequency for the I2S interfaces to 24 MHz. This issue is now resolved so that the I2S interface now supports a maximum frequency of 24.576 MHz.

Communication

Communication related resolved issues are as follows.

Issue	Description
200322448 200322528	If WiFi is enabled, the device fails to enter SC7 suspend using "echo mem". **To workaround:** Execute the command. sudo systemctl suspend A ten second delay occurs while unregistering the P2P interface. However, suspend/resume will work as expected.
200273576	UDP downlink performance of the integrated Ethernet controller may be reduced when display is enabled.
1763058	Bluetooth scanning causes Audio corruption in A2DP playback.

CUDA

NVIDIA® CUDA® related resolved issues are as follows.

Issue	Description
200303394	While using the autostep feature of CUDA Debugger (cuda-gdb) on Jetson TX2, the autostep can intermittently miss a MMU FAULT (e.g NULL pointer dereference) and does not report it. This leads to a hang of cuda-gdb.
200369242	In the CUDA toolkit, Native compilation of the cdpLUDecomposition or simpleDevLibCUBLAS CUDA samples using default make command fails due to unsupported compute architecture "SM_35"on CUDA Version 9. sm_35 is not supported for this mobile release, thus the binaries for that architecture are not included. To build the sample for the supported architectures and override the SMs, enter the command: make SMS="53 62"

Display

Display related resolved issues are as follows.

Issue	Description
200274995	Certain monitors claim support for 4K@60 with YUV 4:2:0 compression. Since display controller does not provide native YUV 4:2:0 support , X driver rejects YUV 4:2:0 modes. Consequently, for these monitors, 4K@60 mode is not listed by xrandr.

Graphics

Graphics related resolved issues are as follows.

Issue	Description
200354062	Wayland support is now fully functional as expected.

JetPack

JetPack related resolved issues are as follows.

Issue	Description
200330397	While installing with JetPack installer, an out of space message may occur. Jetpack installation requires 12 GB of free disk space. **To workaround:** 9. Ensure the required disk space is available. 10. Restart the JetPack installer.

Kernel

Kernel related resolved issues are as follows.

Issue	Description

200328365	Suspend-to-Idle state is not supported in Tegra, for example: #echo freeze > /sys/power/state
	
	Use Suspend to RAM instead, for example: echo mem > sys/power/state
	Ubuntu may enter Suspend-to-Idle state when:
	
	1. Selecting system menu >suspend.
	2. Changing power button default action to suspend and then pressing power button to suspend the device.
	3. If autosuspend, when device is inactive, is enabled from System setttings > Power > Suspend when inactive for.
	
	To workaround and prevent Ubuntu from entering Suspend-to-Idle state, add the following configuration to the /etc/systemd/sleep.conf file:
	
	`[Sleep]`
	`SuspendState=mem`

200276225	After flashing the device using Ubuntu 16.04 on the host machine and rebooting, unable to install software applications from the Ubuntu Application Center.
	
	To workaround:
	Change the group ownership from lighdm to messagebus for the following file:
	
	`/usr/lib/dbus-1.0/dbus-daemon-launch-helper`
	
	The commands are as follows:
	
	`$ ls -l /usr/lib/dbus-1.0/dbus-daemon-launch-helper`
	
	`-rwsr-xr-- 1 root lightdm 38824 Jul 12 18:17 /usr/lib/dbus-1.0/dbus-daemon-launch-helper`
	
	`sudo chown root:messagebus /usr/lib/dbus-1.0/dbus-daemon-launch-helper`
	
	`sudo chmod 4754 /usr/lib/dbus-1.0/dbus-daemon-launch-helper`
	
	Note: NVIDIA supports Ubuntu 14.04 as the host operating system.

2003470	The GPU EDP computes a voltage-frequency table used to calculate the maximum permitted frequency for a given power limit. A case has been identified where the computed voltage-frequency table may allow the GPU to operate at a frequency that is too fast for a given power limit.
200275736	After resuming from system-system, audio/video playback may not resume. This has now been fixed and audio/video resumes as expected on exiting system suspend.

Multimedia

Multimedia related resolved issues are as follows.

Issue	Description
200329420	VP9 hardware-accelerated decode is not supported on Jetson TX1, and if requested using GStreamer hardware-accelerated decode plugins results in continuous error messages to the console and GStreamer multimedia pipeline failure. Use software-accelerated GStreamer plugins for VP9.

System Usability

System usability related resolved issues are as follows.

Issue	Description
1877926	When users operate a system between 5.5V - 5.75V, it is recommended to disable OC1 to prevent over-current throttling. **To disable OC1** • Remove the properties that define SOCTHERM_THROT_VEC_OC1 and SOCTHERM_EDP_OC1 from the device. These properties can be found under the /soctherm/throttlectl and /soctherm/edp_oc nodes. For example, in the device tree, these properties may appear as follows: throttlectl_oc1 = <SOCTHERM_THROT_VEC_OC1 7 7 100>; `oc_1 = <SOCTHERM_EDP_OC1 1 SOCTHERM_EDP_OC_MODE_BRIEF 2 3 0 0xffffffff>` .... In this example, throttlectl_oc1 and oc1 properties must be completely removed. These are the properties that define SOCTHERM_THROT_VEC_OC1 and SOCTHERM_EDP_OC1 behavior.
200322307	NVIDIA NSight does not provide an option to compile for SM 6.2 GPU architecture implemented on Jetson TX2. To workaround: 4. Use the Expert setting to add the following option to both NVCC compiler and Linker. -gencode arch=compute_62,code=sm_62 5. In the NVCC Compiler, navigate to Properties -> Settings -> Tool Settings -> NVCC Compiler -> Expert Setting: ${COMMAND} ${FLAGS} -gencode arch=compute_62,code=sm_62 ${OUTPUT_FLAG} ${OUTPUT_PREFIX} ${OUTPUT} ${INPUTS} 6. In the NVCC Linker, navigate to Properties -> Settings -> Tool Settings -> NVCC Linker -> Expert Setting: ${COMMAND} ${FLAGS} -gencode arch=compute_62,code=sm_62 ${OUTPUT_FLAG} ${OUTPUT_PREFIX} ${OUTPUT} ${INPUTS}
200330275	The Jetson TX1 device does not wake up from suspend state with USB peripherals connected to micro USB port using OTG cable (Specific to TX1). To workaround: • Resume device from suspend state using Power on key or use USB peripherals connected to USB type A port.

Issue	Description
200270895	User may be unable to flash the Tegra developer kit using Linux host that runs distribution where the loop device does not exist by default.

Known Issues

Audio

Audio related known issues are as follows.

Issue	Description
2029031	DMIC3 interface does not function as expected on Jetson TX1. The issues identified include: • Audio route for DMIC3 is incomplete and prevents the DMIC interface from being enabled for audio capture. • Maximum frequency for DMIC interfaces is incorrectly set to 12.19MHz instead of 12.288MHz. This prevents some sample rate configurations from working as expected.

Boot

Boot related known issues are as follows.

Issue	Description
200327805	When the L4T kernel enumerates attached USB and SATA storage devices, or if devices are plugged or unplugged from the system, the kernel may assign different names to those devices each time the system boots. Consequently, configuring Jetson to use /dev/sda1 as the root filesystem may not work as expected when multiple USB or SATA storage devices are present, or devices are added or removed.
20037708	Due to a limitation in MB1 for A/B slot redundancy, the system may become inaccessible and require a re-flash of the L4T image to boot properly. This occurs when: • Slots A/B are both good, upon a watchdog timer reset, subsequent boots are launched against the alternate slot. • If you have one slot is corrupted, upon a watchdog timer reset, the system hangs because it is unable to jump to the alternate slot. To workaround: Disable the Tegra Watchdog Timer.
200150755 1809395	SATA Conair SSD does not enumerate as expected. The following error message is displayed: [17.233087] ata1: softreset failed (1st FIS failed) [27.243085] ata1: softreset failed (1st FIS failed) [62.253086] ata1: softreset failed (1st FIS failed) [62.257959] ata1: limiting SATA link speed to 1.5 Gbps [67.463156] xhci-tegra 3530000.xhci: can't find firmware [67.473082] ata1: softreset failed (device not ready) [67.478133] ata1: reset failed, giving up **To workaround** Conair SATA drives must be used as storage devices and not boot devices.
N/A	Using NFS boot, the 16.04 Ubuntu desktop does not function correctly on the target. **To workaround** • At the target console, execute the command: sudo apt-get install --reinstall ubuntu-desktop unity compiz-core upstart
200309057	Cloning the root file system on eMMC using the following command takes significantly longer to complete on Jetson TX1 than on Jetson TX2. sudo ./flash.sh -r -k APP -G app_part.img jetson-tx1 mmcblk0p1

Camera

Camera related known issues are as follows.

Issue	Description
200382640	When running the argus_camera application, a memory leak of approximately 30 bytes per second is present.

Issue	Description
	This issue is present in the open-source glib library used by the camera application, not within the camera application or camera library. NVIDIA is working with the open source community to address the issue.
	To workaround, consult the patch available at:
	https://github.com/GNOME/glib/blob/master/gio/gpollfilemonitor.c# L148
200358695	When using argus_camera application in 2592x1944 default resolution, many frames are missing in the encode.
	To workaround:
	Set the preview in the argus_camera application to disabled. Or set the preview resolution to be higher than 2592x1944.
1959620 200304835	When running the argus_camera application, a memory leak of ~30 bytes per second is present. This issue is present in the open-source glib library used by the camera application, not within the camera application or camera library.
	NVIDIA is working with the open source community to address this issue. In the interim, use the following patch:
	• Navigate to line #148 for the poll_monitor timeout in the GPOL file monitor file at: https://github.com/GNOME/glib/blob/master/gio/gpollfilemonitor.c#L148 `poll_monitor->timeout = FALSE;`
	• Replace that line with the following if statement: ``` if (poll_monitor->timeout) { g_source_destroy (poll_monitor->timeout); g_source_unref (poll_monitor->timeout); poll_monitor->timeout = NULL; } ```
200247681	Systems using lens shading correction and dynamic falloff tuning produce an inconsistent response to exposure bracketing due to a rate limitation on the lens shading adaptation.
	This issue does not affect basic use of exposure bias or systems that do not use lens shading correction.
200301535	Initially, a transient half-black frame is generated when switching between normal and WDR sensor modes with IMX-185.
	To workaround: • Drop the first frame after switching modes.
200297610	When launching the argus_camera application with Piecewise Linear WDR sensor mode and changing the AWB mode, the preview hangs. Specifically, this occurs when changing from Auto to other modes such as Incandescent or fluorescent. A fix for this issue is targeted for a subsequent release.
200244333	Launching argus_camera with --awblock=on causes a black preview and capture image. This is due to an internal color correction matrix that is not populated until after the first frame is run with AWB.
	To workaround: For applications that require fixed gains, use the white balance gain controls instead without requesting lock.

Communication

Communication related known issues are as follows.

Issue	Description
200327384	WiFi does not function as expected when configured to IBSS mode and encryption is enabled. **To workaround:** • Use Open mode.

CUDA Samples

CUDA related known issues are as follows.

Issue	Description
200370228	GLES CUDA samples are not compiled due to missing header files. There are ways to workaround this issue, depending on your use of Jetpack. **Option #1: To workaround when installing with Jetpack** • Select to install the MM API component. This selection allows you to successfully compile the CUDA samples. **Option #2: To workaround after installing without Jetpack** • Copy the EGL, GLES2, GLES3 and KHR headers from the `~/tegra_multimedia_api/include` folders to `/usr/include`. Do not copy GL headers.

Display

Display related known issues are as follows.

Issue	Description
200274995	Certain monitors claim support for 4K@60 with YUV 4:2:0 compression. Since display controller does not provide native YUV 4:2:0 support , X driver rejects YUV 4:2:0 modes. Consequently, for these monitors, 4K@60 mode is not listed by xrandr.
200369220	The default resolution for video playback on the display overlay (when not using X11) is set to 720x480p. If you use overlay video playback without setting to a matching resoultion issues may arise. For example, to perform playback 4k overlay stream, the display resolution must be set to 1080p or higher.
	Before changing the display mode, ensure lightdm is stopped.
	7. To blank the display, execute the command:
	"echo 4 >/sys/class/graphics/fb0/blank"
	8. To get a valid mode from the mode list of the monitor, execute the command:
	"cat /sys/class/graphics/fb0/modes".
	9. To set the desired mode, execute the command:
	"echo "mode from modelist" > /sys/class/graphics/fb0/mode" For example: echo "D:1920x1080p-60" > /sys/class/graphics/fb0/mode
	10. To Unblank the display:
	"echo 0 > /sys/class/graphics/fb0/blank"

Kernel

Kernel related known issues are as follows.

Issue	Description
1978395	When the L4T kernel is compiled from source, some generated files are written outside the expected output directory.
	• When the kernel is compiled without using the O= command-line option, all generated files are written within the various kernel source trees. Generated files are created in the same directory as their respective source files. This case works as expected.
	When the kernel is compiled using the O= command-line option, some generated files are written outside the specified directory. These generated files are created within a sibling directory of the directory specified in the O= command-line option, for example: $OUT/../nvidia or $OUT/../nvgpu rather than $OUT
	If those path names exist but are not directories, or exist as a directory but contain files unrelated to the kernel build process, this can interfere with the kernel build process. The following error message is one possible symptom. mkdir: cannot create directory 'drivers/video/tegra/../../../../display': Not a directory
	To workaround, perform one of the following options:
	• Do not use the O= command-line option.
	• Select an output directory with a parent directory that does not contain any files. For example, assuming that $HOME/kernel-build does not exist or is an empty directory, specify O=$HOME/kernel-build/kernel rather than $HOME/kernel-build.

System Usability

General system usability related known issues are as follows.

Issue	Description
200394237	Due to a limitation in A/B slot redundancy, the system may become inaccessible if the watchdog timer jumps to the second slot. The device fails to boot because the slot is corrupted turning the device inaccessible.
200307657	Red screen is observed while playing H264/H265 4K video with overlaysink. NVIDIA recommends that you do NOT run X11 with other display clients such as overlaysink, and libdrm applications simultaneously.
200196882	Logging in to GNOME desktop (gnome-shell) is unsuccessful, accompanied by display corruption. NVIDIA recommends using the Unity desktop enabled by default with the Development Kit.

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Top Fixed Issues

These fixed issues apply to Jetson TX1 and Jetson TX2 devices unless otherwise specified.

Camera

Camera related fixed issues are as follows.

Issue	Description
200191194	Error messages are displayed when running (successfully) the camera_recording sample application.

Communication

Communication related fixed issues are as follows.

Issue	Description

200308543	The CAN bus driver module auto loading is disabled in this release. To enable and use CAN bus:
	
	 • Manually load the mttcan driver with the command: $ sudo modprobe mttcan
	 To automatically have the CAN bus driver module enabled:
	
	 • Comment the "blacklist mttcan" with the command:
	     $ cat /etc/modprobe.d/blacklist-mttcan.conf
	     #blacklist mttcan

200276812	Unable to hit peak tput for Ch36_VHT80_TCP-UL and Ch36_VHT80_UDP-UL as expected.
1855363	The bcmdhd module cannot be unloaded and reloaded.

Graphics

Graphics related fixed issues are as follows.

Issue	Description
200304360	The Ubuntu home screen becomes blank after changing the resolution from 1440x576 to any other resolution.
200186978	When X server is terminated (e.g., service lightdm stop), non X11 application display is unsuccessful.

Kernel

Kernel related fixed issues are as follows.

Issue	Description
1878690	Shutdown/reboot does not work with realtek Ethernet PCI card.

Multimedia

Multimedia related fixed issues are as follows.

Issue	Description
200277469	The OpenCV4Tegra provided in release 27.1 is not able to compile openCV programs and applications. This is resolved in 28.1 release.

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