NVIDIA Jetson Linux Driver Package

32.5.1 Release Notes

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1.0 About This Release

The NVIDIA® Jetson™ Linux Driver Package (L4T) 32.5.1 release supports development with NVIDIA® Jetson Xavier™ NX, NVIDIA® Jetson Nano™, Jetson AGX Xavier™ series, Jetson™ TX2 series including the recently announced Jetson TX2 NX, and Jetson TX1 modules.

> **Note:** This release's support for Jetson TX2 NX is for developer preview only. Production quality support for Jetson TX2 NX will be available in the next production release. NVIDIA has added support to use the Jetson TX2 NX module on an NVIDIA Jetson Xavier NX Developer Kit Carrier board.

Platform and Release Information

Description	Supported Version
Host machine Linux distribution for flashing software onto Jetson devices.	Ubuntu x64 16.04 or 18.04 (x64 distribution)
Sample rootfs derived from Ubuntu operating system to run on Jetson devices.	Ubuntu 18.04
Supported Linux kernel version.	4.9
Supported ARM architecture.	aarch64
Name of the configuration file used in flashing. *For a complete description of supported platforms and configuration names, see the table "Jetson Modules and Configurations" in the section* Environment Variables *of the* NVIDIA Jetson Linux Developer Guide.	`jetson-xavier-nx-devkit.conf`: Flashes a Jetson Xavier NX Developer Kit module attached to a Jetson Xavier NX Developer Kit reference carrier board. `jetson-xavier-nx-devkit-tx2-nx.conf`: Flashes a Jetson TX2 NX production module attached to a Jetson Xavier NX Developer Kit reference carrier board. `jetson-xavier-nx-devkit-emmc.conf`: Flashes a Jetson Xavier NX production module attached to a Jetson Xavier NX Developer Kit reference carrier board.

Description	Supported Version
	`jetson-nano-devkit.conf`: Flashes a Jetson Nano Developer Kit module (both QSPI-NOR memory and micro SD card) attached to a Jetson Nano Developer Kit reference carrier board. `jetson-nano-devkit-emmc.conf`: Flashes a Jetson Nano production module (both QSPI-NOR and eMMC) attached to a Jetson Nano Developer Kit reference carrier board. `jetson-nano-2gb-devkit.conf`: Flashes a Jetson Nano 2GB Developer Kit module (both QSPI-NOR and micro SD card) attached to a Jetson Nano 2GB Developer Kit reference carrier board. `jetson-agx-xavier-devkit.conf`: Flashes a Jetson AGX Xavier module (32 GB or 16 GB) attached to a Jetson AGX Xavier Developer Kit reference carrier board. `jetson-xavier-devkit-8gb.conf` [1]: Flashes a Jetson AGX Xavier 8GB module attached to a Jetson AGX Xavier Developer Kit reference carrier board. `jetson-xavier-devkit-8gb.conf`: Flashes a Jetson AGX Xavier 8GB module attached to a Jetson AGX Xavier Developer Kit reference carrier board. `jetson-tx2-devkit.conf`: Flashes an original Jetson TX2 module attached to a Jetson TX2 Developer Kit reference carrier board. `jetson-tx2-devkit-tx2i.conf`: Flashes a Jetson TX2i module attached to a Jetson TX2 Developer Kit reference carrier board. `jetson-tx2-devkit-4GB`: Flashes a-Jetson TX2 4GB module attached to a Jetson TX2 Developer Kit reference carrier board. `jetson-tx1-devkit`: Flashes a Jetson TX1 module attached to a Jetson TX2 Developer Kit reference carrier board.

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[1] L4T r32.5 is the last release to support Jetson AGX Xavier 8GB. NVIDIA recommends that new designs use Jetson Xavier NX.

Description	Supported Version
Board names, module names, and revision numbers.	See the Jetson FAQ for a detailed list of Jetson device information.
Release tag name.	tegra-l4t-r32.5.1

1.1   Login Credentials

Starting with Release 32.1, NVIDIA no longer provides a default username and password for log-in. Follow the system prompts at first boot to create your own user credentials.

1.2   Other Resources

For a list of other resources and important facts about L4T may be found on the L4T home page of the NVIDIA developer site.

See also the Related Documentation topic of the Jetson Linux Developer Guide.

1.3   What's New

No new features are introduced in this release, apart from developer preview support for Jetson TX2 NX.

2.0 Known Issues

This section provides details about issues discovered during development and QA but not resolved in this release.

2.1 General System Usability

The following general system usability related issues are noted in this release.

Issue	Description
n/a	This release uses the fan table tuned for the NVIDIA® Jetson Xavier™ NX Developer Kit carrier board to support NVIDIA® Jetson™ TX2 NX. A separate fan table tuned for Jetson TX2 NX will be available in the following production release.
3133035	NVIDIA® Jetson Nano™ 2GB Developer Kit: Memory-intensive sample applications like the NVIDIA® TensorRT™ FasterRCNN INT8 sample (falling back to FP32 and FP16 on this device) do not work.
3227296	Jetson AGX Xavier series with real-time kernel: Crash while running stress utility. For more information, see Stress Utility Failure in the Application Note section Using the L4T Real-Time Kernel Package.
3250026	Jetson AGX Xavier series with real-time kernel: Certain debug configurations can reveal bugs. For more information, see Certain Debug Configurations Can Reveal Bugs in the Application Note section Using the L4T Real-Time Kernel Package.
200581861	NVIDIA® Jetson AGX Xavier™: System crash with when UFS card is hotplugged in and out.
200608901	Jetson AGX Xavier series with real-time kernel: Running a graphics stress test can crash the system. For more information, see Running a Graphics Stress Test Can Yield a Crash in the Application Note section Using the L4T Real-Time Kernel Package.
200608901	Jetson AGX Xavier series with real-time kernel: Tegrastats with CPU hotplug activities can deadlock the system. For more information, see Tegrastats with CPU Hotplug Activities Can Deadlock System in the Application Note section Using the L4T Real-Time Kernel Package.

Issue	Description
200621273	Device space is exhausted during JetPack installation, due to which some JetPack components are not installed successfully. As a workaround, use external storage to perform the install.
200655166	Jetson Nano 2GB Developer Kit: Multiple instances of YouTube streaming in the Chromium browser causes system slowdown.
200663443	Jetson TX2 NX: Slowdown and shutdown thermal thresholds and PWM fan mapping table are not correctly configured.
200702731	Jetson Xavier NX and Jetson AGX Xavier series: Module power consumption increases when running DLA/PVA workload.
200703544	An external network is inaccessible when using a Jetson connected to a Linux host network through USB connection. A workaround is to remove the `dnsmasq` package from the root filesystem.

2.2 Bootloader

The following bootloader related issues are noted in this release.

Issue	Description
200626823	NVIDIA® Jetson Xavier™ NX with configuration `xavier-nx-devkit-emmc` and Jetson AGX Xavier with any configuration: CBoot flags errors instead of warnings while reading an invalid USB card.
200700885	Jetson TX2 NX: Failure to load rootfs from a USB pen drive.

2.3 Camera

The following camera related issues are noted in this release.

Issue	Description
2849439	Jetson AGX Xavier series with lMX274 Dual camera: Flicker banding with incandescent light setting.
200459897	Jetson AGX Xavier series: Blur and image corruption with SLVS-EC sensor.
200517934	Jetson TX2 series: Intermittent noisy corruption with sensormode1: 1920x1080 @10bpp with IMX274 Dual camera.
200611569	Jetson Nano: Running multiple USB cameras simultaneously occasionally causes the average frame rate to drop below 30.

Issue	Description
200637475	Jetson Xavier NX and Jetson AGX Xavier series: Camera Conformance Suite sanity test may fail in the `nvtunerd_host_process` test. This test is used to check tuning tool support on the Jetson platform.
200702005	Jetson TX2 NX: Errors observe running the `argus_camera` public repo sample. Camera support functionality is not affected.

3.0 Top Fixed Issues

This section provides details about issues resolved in this release.

3.1 General System Usability

The following general system usability related issues are resolved in this release.

Issue	Description
2305640	CBoot USB hub support: USB 3.0 and 3.1 do not enumerate properly under some conditions.
3140762	NVIDIA® Jetson Nano™ Developer Kit: When running `oem-config` in headless mode, the first attempt to set up a WiFi connection always fails. *Workaround*: Enter the SSID and password again.
200636668	`tegrastats` does not report rail power.
200654873	Jetson Nano 2GB Developer Kit: System becomes hot to touch when running AI workloads continuously.

3.2 Kernel

The following kernel related issues are noted in this release.

Issue	Description
3174883	NVIDIA® Jetson AGX Xavier™: Intermittent system hang during bootup in the real-time Linux kernel. Workaround: The CPU frequency governor is disabled in the Jetson AGX Xavier power profile for the real-time kernel.

3.3 Multimedia

The following multimedia related issues are noted in this release.

Issue	Description
200594164	NVIDIA® Jetson Xavier™ NX: VLC media player app crashes when user tries to play a video.

4.0 Documentation Corrections

This section describes errors in documentation that were discovered too late to be corrected.

4.1 Security

In topic "Security," section "Secureboot," subsection Disk Encryption, add the following immediately after the heading:

Applies to: Jetson Xavier NX, Jetson AGX Xavier series, and Jetson TX2 series

5.0 Implementation Details

5.1 Video Decoder Instance Selection Planned Deprecation

NVIDIA® Jetson™ Linux Driver Package 32.1 release supports workload scaling across available decoder instances.

To ensure portability of code across product generations, the interfaces for specification of the NVIDIA Video Decoder instance are deprecated in this release.

The interfaces deprecated include:

▶ V4L2 external control ID `V4L2_CID_MPEG_VIDEO_DECODE_INSTANCE`
▶ GStreamer decoder property `dec-instanceId`

5.2 Installing Third Party Libraries May Overwrite L4T Files

Installing third party libraries on the target device may overwrite certain accelerated libraries provided by Jetson Linux:

▶ Weston binaries and libraries
▶ `/usr/share/glvnd/egl_vendor.d/50_mesa.json` (controls whether to enable or disable `glvnd` loading of Mesa libraries)

Jetson Linux provides a boot-time initialization script, `/etc/init/nv.conf`, which corrects this problem. After you install a third-party library, executing this script (by rebooting) corrects the problem if it has occurred.

5.3 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.

5.4 Type-C Devices Unable to Drive DisplayPort

This is Known Issue 2183567.

For DP, Bootloader display polls for at most 1 msec. by default when trying to detect whether HPD has been asserted by the sink. Different Type-C downstream devices connected to the Type-C ports on NVIDIA® Jetson AGX Xavier™ (cables, adapters, hubs, etc) may incur different amounts of latency before they trigger the handshake process needed to drive DP over Type-C.

Workaround: If a seamless display does not come up with the Type-C device you are using, try increasing the HPD_TIMEOUT_MS value in `tegrabl_display_dtb.c`. We recommend increasing the timeout value in 500 msec. increments. Increasing the timeout value guarantees interoperability with a larger variety of devices, but also increases the boot time.

5.5 Instability after GDM Restart

After GDM restart, multiple issues may appear like desktop not coming back (device entering infinite loop of tegradc blank/unblank) or unable to log in.

Workaround: Add this line to `/lib/systemd/system/gdm.service`:

```
ExecStopPost=/bin/loginctl terminate-seat seat0
```

5.6 OpenGL-ES 1.1 Support Not Available

OpenGLES 1.1 support is not present in this release because Canonical did not provide the `libGLESv1_CM.so` library as part of GLVND libraries in Ubuntu 18.04. Any app that is linked with this library cannot run.

Canonical is working on the issue via bug https://bugs.launchpad.net/ubuntu/+source/libglvnd/+bug/1780039.

After the bug is fixed, an updated GLVND package will be available for Ubuntu 18.04 (Bionic). After the update is applied, `libGLESv1_CM.so` will be available and OpenGLES 1.1 support will work as expected without requiring any changes to the Jetson Board Support Package (BSP).

5.7 Khronos Conformance Status

This release supports the following Khronos APIs:

▶ OpenGL-ES 3.2
▶ OpenGL 4.6
▶ Vulkan 1.2

The product is based on a published Khronos specification. It has been submitted to, and is expected to pass, the Khronos Conformance Process. Current conformance status can be found at http://www.khronos.org/conformance.

The CTS test version used to run conformance for each of the APIs is:

▶ OpenGL-ES: 3.2.5.0
▶ OpenGL: 4.6.0.0
▶ Vulkan: 1.2.132

5.8 Visual Profiler Launch Failure Workaround

This is Known Issue 200436049.

To run Visual Profiler on Ubuntu 18.04:

Install the package `openjdk-8-jre`, and

Invoke Visual Profiler with the `-vm` command line option included:

```
nvvp -vm /usr/lib/jvm/java-8-openjdk-amd64/jre/bin/java
```

The `-vm` option is only required if JRE is not included in CUDA Toolkit package and JRE 1.8 is not in the default path.

5.9 EMC Frequency Adjustment for CPU Workload

This note addresses the potential performance drop identified in Known Issue 2419317.

On Jetson AGX Xavier, the EMC frequency for CPU workload is decided by the static CPU-EMC mapping table and the mc_all activity monitor (actmon) driver. The CPU-EMC mapping table decides base minimum EMC frequency based on CPU frequency. The mc_all actmon is responsible for scaling EMC frequency from the base minimum to a higher value proportional to memory bandwidth utilization.

In this release the CPU-EMC mapping table is tuned, that is, the EMC base frequency mapped to CPU frequency has been reduced to optimize power consumption. The tuned CPU-EMC table does not affect performance of the GPU, NVDEC, and NVENC workloads, as each has its own EMC scaling algorithm, but it may affect CPU workload performance, especially when CPU load is high and bandwidth utilization is low. If any such performance drop is observed, the CPU-EMC mapping table can be tuned in this location, based on performance/power requirements:

```
<source>/hardware/nvidia/soc/t19x/kernel-dts/tegra194-soc/tegra194-soc-base.dtsi
```

5.10 GPU Debug and Profiling Tools Must Be Run as Root

By default, GPU debug and profiling tools now require running as root, or launching with the sudo command, to function correctly.

The system administrator can grant privileges to general users if preferred.

5.11 Beta Level Support for HBR3

This release provides beta level support for HBR3 with DisplayPort version 1.4a.

5.12 GStreamer Plugin gst-omx Deprecated

The `gst-omx` plugin is deprecated in Jetson Linux release 32.1, and will be removed in a future release (issue 200420440).

NVIDIA recommends using the `gst-v4l2` plugin for development instead. See the *Accelerated GStreamer User Guide* for usage information.

5.13 Suspending the System from the Command Line

The Jetson Linux sample root filesystem contains and uses systemd. To suspend the system from the command line, enter the command:

```
systemctl suspend
```

In earlier releases of Jetson Linux, you could also use the command `echo mem > /sys/power/state` for this purpose. Do not use this command in Release 32.2 or later. It

suspends the system without coordinating with systemd, which confuses systemd, and can cause systemd to power off the system when the power button is used to resume operation.

5.14 OEM-config Option in Jetson Developer Kits

This note applies to the developer kits for all Jetson modules.

SDK Manager presents the OEM-config option on either the display or the serial console. You must use one of these devices to complete the oem-config setup.

"Display hotplug" does not appear as a setting for the OEM-config option if OEM-config is started on the serial console.

5.15 Increased Kernel Launch Latency on Denver 2 Cores

On the NVIDIA® Jetson™ TX2 series of products, the Denver 2 CPU cores have different performance characteristics than the ARM® Cortex-A57 cores. This may result in workload-dependent performance differences. Consequently, launching CUDA kernels from the Denver 2 cores may result in increased kernel launch latency.

Due to this concern, NVIDIA disables Denver cores by default. To enable the Denver cores, use any one of the following procedures.

To enable the Denver cores for general use (pre-flash)

1. Go to the `Linux_for_Tegra` directory.
    2. Enter this command to modify the environment variable `CMDLINE_ADD` and thereby remove `isolcpus=1-2` from the file `p2771-0000.conf.common`:

    ```
    $ CMDLINE_ADD="console=ttyS0,115200n8 console=tty0 fbcon=map:0
    net.ifnames=0";
    ```

    3. Enter this command to perform a complete flash:

    ```
    $ sudo ./flash.sh jetson-tx2 mmcblk0p1
    ```

After this process is performed Linux will no longer reserve Denver cores. and they will be available to the kernel for scheduling processes.

To enable the Denver cores for general use (post-flash)

1. Go to the directory `/boot/extlinux/`.
   2. Open the fo;e `extlinux.conf` and add `isolcpus=` at the end of the line which begins with `APPEND ${cbootargs}`.

   For example:

   ```
   APPEND ${cbootargs}quiet isolcpus=
   ```

   3. Save and close the file, then reboot.

After you reboot all the CPUs are available to the kernel scheduler.

To enable the Denver cores for a specific application

▶ Enter the commands:

```
$ sudo nvpmodel -m 0
$ taskset <core> <app> &
```

Where:

▶ `<core>` is:

- `0x2` to enable core #1
- `0x4` to enable core #2
- `0x6` to enable both core #1 and #2

▶ `<app>` is the user application for which the core(s) are to be enabled

For more information about the `taskset` command, see the `taskset` Linux manual page.

5.16 Ubuntu tlp Package Conflicts with L4T Flashing Process

The `tlp` package in Ubuntu conflicts with the L4T flashing process. You must do one of the following:

▶ Uninstall the package (run `apt purge tlp`)
▶ Perform this procedure:

   a) Configure the package to not probe Jetson devices.
   b) Place your Jetson device in recovery mode.
   c) Run the `lsusb` command to determine the device's USB vendor and product ID.
   d) Add the following command to `/etc/default/tlp`:

   ```
   $ lsusb|grep -i nvidia
   ```

e) Reboot or restart the tlp service.

Whichever approach you choose, you must also add this line to `/etc/default/tlp`:

```
USB_BLACKLIST="<vendor>:<product>"
```

Where `<vendor>` and `<product>` represent the device's USB vendor ID and product ID.

5.17 Release 32.5.x Nano SD Cards Incompatible with Earlier Releases

An SD card from a Jetson Nano device that has been updated to L4T r32.5 or later cannot be used with a Jetson Nano running r32.4.x. If you encounter this situation, you must either:

▶ Update the Jetson Nano running r32.4.x to r32.5.x using `apt-get update`, or
▶ Download an r32.5.x SD image from the NVIDIA Developer site's Jetson section and write it to the SD card using Etcher.

5.18 LightDM Greeter Changed

From release 32.5, the default LightDM greeter is LightDM GTK+ Greeter.

If you upgrade Jetson Linux to release 32.5.x on a device that uses LightDM, run the following command to install LightDM GTK+ Greeter:

```
$ sudo apt-get install lightdm-gtk-greeter
```

5.19 Using the L4T Real-Time Kernel Package

Applies to: Jetson AGX Xavier series only

Jetson AGX Xavier series processors provide pre-release support for the NVIDIA real-time kernel from release 32.5. This section explains how to install and remove L4T real-time kernel packages on your system through the NVIDIA repository.

> **Note:** The real-time kernel package is provided as pre-release software, and is not intended for production use.

5.19.1 Prequisites and Procedures

The following sections describe prerequisites for installing the real-time kernel and procedures for installing and uninstalling and switching between the real-time kernel and the regular kernel.

Prerequisites

You must upgrade all L4T packages to the same point release version as the real-time kernel.

To install the real-time kernel package

1. Open the `apt` source configuration file in a text editor, for example:

   ```
   $ sudo vi /etc/apt/sources.list.d/nvidia-l4t-apt-source.list
   ```

2. Add a new entry for the `rt-kernel` repo:

   ```
   deb https://repo.download.nvidia.com/jetson/rt-kernel r32.5 main
   ```

3. Enter this command:

   ```
   $ sudo apt update
   ```

4. Install the real-time kernel packages:

   ```
   $ sudo apt install nvidia-l4t-rt-kernel nvidia-l4t-rt-kernel-headers
   ```

5. Reboot

To remove the real-time kernel package

1. Enter this command:

   ```
   $ sudo apt remove nvidia-l4t-rt-kernel nvidia-l4t-rt-kernel-headers
   ```

2. Reboot.

To switch to a different kernel

Once you have installed the real-time kernel on your device, you may want to switch between the real-time kernel image and the original generic kernel image without re-installing or removing kernel packages. You can do this by editing `/boot/extlinux/extlinux.conf` and setting the `DEFAULT` property to specify the kernel you want to boot. Set `DEFAULT` to `real-time` for the real-time kernel, or to primary for the generic kernel.

```
TIMEOUT 30
DEFAULT real-time
```

5.19.2 Known Issues

This section provides detailed information about known issues in the released version of the real-time kernel.

5.19.2.1 Stress Utility Failure

Running the stress utility with the command `stress -c 8 --io 8 --vm 8 --hdd 4` yields the crash shown below due to some stress threads taking longer than the usual time to complete the sync task.

```
[ 1813.814464] INFO: task stress:11510 blocked for more than 120 seconds.
[ 1813.814610]       Not tainted 4.9.201-rt134 #2
[ 1813.814613] "echo 0 > /proc/sys/kernel/hung_task_timeout_secs" disables
this message.
[ 1813.814615] stress          D    0 11510  11504 0x00000008
[ 1813.814616] Call trace:
[ 1813.814617] [<ffffff8008085eac>] __switch_to+0x98/0xb8
[ 1813.814618] [<ffffff8008f23b2c>] __schedule+0x270/0x570
[ 1813.814619] [<ffffff8008f23e74>] schedule+0x48/0xe0
[ 1813.814620] [<ffffff8008f25384>] __rt_mutex_slowlock+0xc4/0x144
[ 1813.814622] [<ffffff8008f2578c>] rt_mutex_slowlock_locked+0xcc/0x1e4
[ 1813.814624] [<ffffff8008f25910>]
rt_mutex_slowlock.constprop.22+0x6c/0xb0
[ 1813.814625] [<ffffff8008f25c70>] rt_mutex_lock_state+0x94/0xc0
[ 1813.814626] [<ffffff8008f25f48>] __down_write_common+0x38/0x140
[ 1813.814627] [<ffffff8008f26148>] __down_write+0x24/0x30
[ 1813.814628] [<ffffff8008f25198>] down_write+0x20/0x2c
[ 1813.814629] [<ffffff8008279a08>] sync_inodes_sb+0x98/0x220
[ 1813.814630] [<ffffff8008280350>] sync_inodes_one_sb+0x28/0x34
[ 1813.814631] [<ffffff80082497d4>] iterate_supers+0x114/0x118
[ 1813.814632] [<ffffff8008280738>] sys_sync+0x44/0xac
[ 1813.814633] [<ffffff8008083100>] el0_svc_naked+0x34/0x38
```

The above crash could be coming from the upstream patch described at https://patchwork.kernel.org/project/linux-fsdevel/patch/20171212163830.GC3919388@devbig577.frc2.facebook.com/. There are several ways to mitigate this:

▶ Revert the patch and recompile the kernel.
▶ Once booted, disable panic due to hung task by entering the command:

```
$ sysctl -w kernel.hung_task_panic=0
```

▶ Once booted, set the hung timeout (unit seconds) to a larger value based on your system load, for example, by entering the command:

```
$ sysctl -w kernel.hung_task_timeout_secs=500
```

This example sets a 500-second allowance window before reporting the crash.

5.19.2.2 Tegrastats with CPU Hotplug Activities Can Deadlock System

Running tegrastats with CPU hotplug activities can deadlock the system, as in this example:

```
[ 1815.893278] INFO: task tegrastats:6930 blocked for more than 120 seconds.
[ 1815.893587]       Not tainted 4.9.201-rt134-tegra #1
[ 1815.893589] "echo 0 > /proc/sys/kernel/hung_task_timeout_secs" disables
this message.
[ 1815.893593] tegrastats      D    0  6930   6929 0x00000000
[ 1815.893594] Call trace:
[ 1815.893595] [<ffffff80080858fc>] __switch_to+0x9c/0xc0
[ 1815.893596] [<ffffff8008f58cec>] __schedule+0x27c/0x598
[ 1815.893597] [<ffffff8008f59050>] schedule+0x48/0xe0
[ 1815.893598] [<ffffff8008f5a754>] rt_spin_lock_slowlock+0x124/0x308
[ 1815.893599] [<ffffff8008f5c9b8>] rt_spin_lock__no_mg+0x48/0x58
[ 1815.893601] [<ffffff80080afabc>] pin_current_cpu+0x94/0x160
[ 1815.893602] [<ffffff80080e3fa8>] migrate_disable+0x60/0xa0
[ 1815.893603] [<ffffff8008f5c9e4>] rt_spin_lock+0x1c/0x60
[ 1815.893604] [<ffffff8008784c98>] __pm_runtime_idle+0x48/0x88
[ 1815.893605] [<ffffff8008aec7bc>] tegra_i2c_xfer+0x534/0x7a8
[ 1815.893606] [<ffffff8008ae3730>] __i2c_transfer+0x128/0x5c0
[ 1815.893607] [<ffffff8008ae3c60>] i2c_transfer+0x98/0x108
[ 1815.893609] [<ffffff8008ae3ec4>] i2c_smbus_xfer_emulated+0x11c/0x520
[ 1815.893610] [<ffffff8008ae4400>] i2c_smbus_xfer+0x138/0x500
[ 1815.893611] [<ffffff8008ae4a74>] i2c_smbus_read_word_data+0x3c/0x58
[ 1815.893612] [<ffffff8008c40248>] __locked_do_conversion+0x70/0xc0
[ 1815.893613] [<ffffff8008c40304>] ina3221_get_channel_power+0x6c/0x108
[ 1815.893615] [<ffffff8008c4061c>] ina3221_read_raw+0x74/0x1b8
[ 1815.893616] [<ffffff8008cc432c>] iio_read_channel_info+0xac/0xb0
[ 1815.893617] [<ffffff8008770ac4>] dev_attr_show+0x3c/0x78
[ 1815.893618] [<ffffff80082e3f70>] sysfs_kf_seq_show+0xc0/0x138
[ 1815.893619] [<ffffff80082e2634>] kernfs_seq_show+0x44/0x50
[ 1815.893620] [<ffffff8008277d28>] seq_read+0xb8/0x478
[ 1815.893622] [<ffffff80082e31cc>] kernfs_fop_read+0x174/0x1f8
[ 1815.893623] [<ffffff800824ad68>] __vfs_read+0x48/0x110
[ 1815.893624] [<ffffff800824bd04>] vfs_read+0x94/0x150
[ 1815.893625] [<ffffff800824d42c>] SyS_read+0x5c/0xc8
[ 1815.893626] [<ffffff8008083100>] el0_svc_naked+0x34/0x38
```

This crash is due to deadlock in the INA3221 driver. One possible mitigation is to disable `ina3221_hotplug_notify` from the driver, located at `drivers/staging/iio/meter/ina3221.c`.

5.19.2.3 Running a Graphics Stress Test Can Yield a Crash

Running a graphics stress test can yield a system crash, as in this example:

```
[ 1453.349597] INFO: task kworker/1:2:11601 blocked for more than 120 seconds.
[ 1453.350767]       Not tainted 4.9.201-rt134-tegra #1
[ 1453.350769] "echo 0 > /proc/sys/kernel/hung_task_timeout_secs" disables
this message.
[ 1453.350773] kworker/1:2     D    0 11601      2 0x00000000
[ 1453.350776] Workqueue: pm pm_runtime_work
[ 1453.350777] Call trace:
[ 1453.350778] [<ffffff80080858fc>] __switch_to+0x9c/0xc0
[ 1453.350780] [<ffffff8008f58cec>] __schedule+0x27c/0x598
[ 1453.350781] [<ffffff8008f59050>] schedule+0x48/0xe0
[ 1453.350783] [<ffffff8008f5a484>] __rt_mutex_slowlock+0xbc/0x170
[ 1453.350784] [<ffffff8008f5aa08>] rt_mutex_slowlock_locked+0xd0/0x210
[ 1453.350786] [<ffffff8008f5abb4>] rt_mutex_slowlock.constprop.8+0x6c/0xb8
[ 1453.350787] [<ffffff8008f5af20>] rt_mutex_lock_state+0x88/0xb8
[ 1453.350789] [<ffffff8008f5b208>] __down_write_common+0x30/0x120
[ 1453.350790] [<ffffff8008f5b3e4>] __down_write+0x24/0x30
[ 1453.350792] [<ffffff8008f5a380>] down_write+0x20/0x30
[ 1453.350793] [<ffffff8000f9bda4>] gk20a_user_init+0x81c/0x908 [nvgpu]
[ 1453.350795] [<ffffff8000f9e60c>] nvgpu_hide_usermode_for_poweroff+0x24/0x30
[nvgpu]
[ 1453.350797] [<ffffff8000fb9b78>]
nvgpu_fecs_trace_init_debugfs+0x2d00/0x31a8 [nvgpu]
[ 1453.350798] [<ffffff8000fbaaa0>] gk20a_busy+0x2c8/0x4f0 [nvgpu]
[ 1453.350800] [<ffffff80087818c4>] pm_generic_runtime_suspend+0x3c/0x58
[ 1453.350801] [<ffffff8008783c34>] __rpm_callback+0x34/0x58
[ 1453.350803] [<ffffff8008783c8c>] rpm_callback+0x34/0x98
[ 1453.350804] [<ffffff80087842d0>] rpm_suspend+0x100/0x608
[ 1453.350806] [<ffffff8008785e08>] pm_runtime_work+0x88/0xc8
[ 1453.350808] [<ffffff80080d086c>] process_one_work+0x1cc/0x4b0
[ 1453.350809] [<ffffff80080d0cb0>] worker_thread+0x160/0x510
[ 1453.350810] [<ffffff80080d737c>] kthread+0xec/0xf0
[ 1453.350812] [<ffffff80080830a0>] ret_from_fork+0x10/0x30
```

No workaround is currently known for this type of crash.

5.19.2.4 Certain Debug Configurations Can Reveal Bugs

Enabling certain debug configurations for the RT kernel can show bugs during kernel boot, as in this example:

```
[   14.730733] BUG: using smp_processor_id() in preemptible [00000000 00000000] code:
systemd/1
[   14.730735] caller is debug_smp_processor_id+0x1c/0x28
[   14.730738] CPU: 1 PID: 1 Comm: systemd Tainted: G        W       4.9.201-rt134+ #1
[   14.730739] Hardware name: Jetson-AGX (DT)
[   14.730740] Call trace:
[   14.730742] [<ffffff800808b8a8>] dump_backtrace+0x0/0x1a8
[   14.730743] [<ffffff800808bec4>] show_stack+0x24/0x30
[   14.730745] [<ffffff800847c2c4>] dump_stack+0x90/0xb4
```

```
[   14.730746] [<ffffff800849c304>] check_preemption_disabled+0x134/0x138
[   14.730748] [<ffffff800849c324>] debug_smp_processor_id+0x1c/0x28
[   14.730749] [<ffffff8008128860>] vprintk_func+0x108/0x240
[   14.730750] [<ffffff80081d492c>] printk+0x60/0x6c
[   14.730752] [<ffffff8008787284>] urandom_read+0x34c/0x350
[   14.730753] [<ffffff80082686b0>] __vfs_read+0x48/0x110
[   14.730755] [<ffffff800826964c>] vfs_read+0x94/0x150
[   14.730756] [<ffffff800826ad74>] SyS_read+0x5c/0xc8
[   14.730758] [<ffffff8008083100>] el0_svc_naked+0x34/0x38
[   14.730759] random: systemd: uninitialized urandom read (16 bytes read)
[   14.731152] systemd[1]: Listening on Journal Socket (/dev/log).
[   14.835330] systemd[1]: Listening on udev Control Socket.
[   14.840772] systemd[1]: Listening on Syslog Socket.
[   14.956268] BUG: using smp_processor_id() in preemptible [00000000 00000000] code:
mount/2613
[   14.956271] caller is debug_smp_processor_id+0x1c/0x28
[   14.956274] CPU: 7 PID: 2613 Comm: mount Tainted: G        W       4.9.201-rt134+ #1
[   14.956275] Hardware name: Jetson-AGX (DT)
[   14.956276] Call trace:
[   14.956278] [<ffffff800808b8a8>] dump_backtrace+0x0/0x1a8
[   14.956280] [<ffffff800808bec4>] show_stack+0x24/0x30
[   14.956281] [<ffffff800847c2c4>] dump_stack+0x90/0xb4
[   14.956282] [<ffffff800849c304>] check_preemption_disabled+0x134/0x138
[   14.956284] [<ffffff800849c324>] debug_smp_processor_id+0x1c/0x28
[   14.956286] [<ffffff8008128860>] vprintk_func+0x108/0x240
[   14.956287] [<ffffff80081d492c>] printk+0x60/0x6c
[   14.956289] [<ffffff800833d630>] __ext4_msg+0x90/0x98
[   14.956290] [<ffffff8008340b60>] ext4_remount+0x390/0x660
[   14.956291] [<ffffff800826ed48>] do_remount_sb2+0xe8/0x240
[   14.956293] [<ffffff80082958f0>] do_mount+0x6b8/0xc48
[   14.956294] [<ffffff800829620c>] SyS_mount+0x74/0x100
[   14.956296] [<ffffff8008083100>] el0_svc_naked+0x34/0x38
[   14.956297] EXT4-fs (mmcblk0p1): re-mounted. Opts: (null)
[   15.250734] tegra-xusb 3610000.xhci: entering ELPG
[   15.255165] tegra-xusb 3610000.xhci: entering ELPG done
[   19.747848] random: crng init done
[   19.750676] random: 7 urandom warning(s) missed due to ratelimiting
[   24.218687] BUG: using smp_processor_id() in preemptible [00000000 00000000] code:
mkdir/5227
[   24.218719] using random self ethernet address
[   24.222717] BUG: using smp_processor_id() in preemptible [00000000 00000000] code:
mkdir/5227
[   24.222750] using random host ethernet address
[   24.763845] BUG: using smp_processor_id() in preemptible [00000000 00000000] code:
mkdir/5368
[   24.766711] BUG: using smp_processor_id() in preemptible [00000000 00000000] code:
mkdir/5368
[   24.771209] BUG: using smp_processor_id() in preemptible [00000000 00000000] code:
mkdir/5371
[   24.771240] using random self ethernet address
[   24.778703] BUG: using smp_processor_id() in preemptible [00000000 00000000] code:
mkdir/5371
```

These bugs can be mitigated by the following `printk` patch:

```
diff --git a/kernel/printk/printk.c b/kernel/printk/printk.c
index 3621337..d4f1172 100644
--- a/kernel/printk/printk.c
+++ b/kernel/printk/printk.c
@@ -1420,7 +1420,7 @@ static int syslog_print_all(char __user *buf, int size, bool clear)
```

```
        if (!text)
            return -ENOMEM;

-       logbuf_lock_irq();
+       raw_spin_lock_irq(&logbuf_lock);
        if (buf) {
            u64 next_seq;
            u64 seq;
@@ -1512,7 +1512,7 @@ static int syslog_print_all(char __user *buf, int size, bool clear)
            clear_idx = log_next_idx;
        }
 out:
-       logbuf_unlock_irq();
+       raw_spin_unlock_irq(&logbuf_lock);

        kfree(text);
        return len;
@@ -2404,8 +2404,7 @@ void console_unlock(void)
            size_t len;
            int level;

-           printk_safe_enter_irqsave(flags);
-           raw_spin_lock(&logbuf_lock);
+           raw_spin_lock_irqsave(&logbuf_lock, flags);
            if (seen_seq != log_next_seq) {
                wake_klogd = true;
                seen_seq = log_next_seq;
@@ -2490,8 +2489,8 @@ void console_unlock(void)
         */
        raw_spin_lock(&logbuf_lock);
        retry = console_seq != log_next_seq;
-       raw_spin_unlock(&logbuf_lock);
-       printk_safe_exit_irqrestore(flags);
+       raw_spin_unlock_irqrestore(&logbuf_lock, flags);
+

        if (retry && console_trylock())
            goto again;
```

6.0 About Earlier Releases

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Known Issues

General System Usability

The following general system usability related issues are noted in this release.

Issue	Description
2305640	CBoot USB hub support: USB 3.0 and 3.1 do not enumerate properly under some conditions.
3133035	Jetson Nano 2GB Developer Kit: Memory-intensive sample applications like the NVIDIA® TensorRT™ FasterRCNN INT8 sample (falling back to FP32 and FP16 on this device) do not work.
3140762	Jetson Nano Developer Kit: When running `oem-config` in headless mode, the first attempt to set up a WiFi connection always fails. *Workaround*: Enter the SSID and password again.
200581861	Jetson AGX Xavier: System crash with when UFS card is hotplugged in and out.
200636668	`tegrastats` does not report rail power.
200654873	Jetson Nano 2GB Developer Kit: System becomes hot to touch when running AI workloads continuously.
200655166	Jetson Nano 2GB Developer Kit: Multiple instances of YouTube streaming in the Chromium browser causes system slowdown.

Bootloader

The following bootloader related issues are noted in this release.

Issue	Description
200626823	Jetson Xavier NX with configuration `xavier-nx-devkit-emmc` and Jetson AGX Xavier with any configuration: CBoot flags errors instead of warnings while reading an invalid USB card.

Camera

The following camera related issues are noted in this release.

Issue	Description
2849439	Jetson AGX Xavier series with lMX274 Dual camera: Flicker banding with incandescent light setting.
200459897	Jetson AGX Xavier series: Blur and image corruption with SLVS-EC sensor.
200517934	Jetson TX2 series: Intermittent noisy corruption with sensormode1: 1920x1080 @10bpp with IMX274 Dual camera.
200611569	Jetson Nano: Running multiple USB cameras simultaneously occasionally causes the average frame rate to drop below 30.
200637475	Jetson NX and Jetson AGX Xavier series: Camera Conformance Suite sanity test may fail in the `nvtunerd_host_process` test. This test is used to check tuning tool support on the Jetson platform.

Kernel

The following kernel related issues are noted in this release.

Issue	Description
3174883	Jetson AGX Xavier: Intermittent system hang during bootup in the real-time Linux kernel. Workaround: The CPU frequency governor is disabled in the Jetson AGX Xavier power profile for the real-time kernel.

Multimedia

The following camera related issues are noted in this release.

Issue	Description
200594164	Jetson Xavier NX: VLC media player app crashes when user tries to play a video.

Top Fixed Issues

General System Usability

The following general system usability related issues are resolved in this release.

Issue	Description
200639494	Jetson TX2 series: A call to `usb_gadget_connect()` crashes the `tegra_xudc` driver.
200639868	Power LED stays on when device enters suspend mode.
200662246	Using the Massflash utility to flash a Jetson module results in bootup failure.
200665217	Jetson Nano 2GB Developer Kit: Volume control in the system tray does not work.
200665226	Jetson Nano 2GB Developer Kit: Launching the Disk Management option in system tools yields the message, "Error: There are no file system which you are allowed to mount or unmount."
200668090	Jetson Nano, Jetson Nano 2GB, and Jetson TX1 with system flashed to SD card: When system is upgraded to JetPack 4.4.1, Ubuntu is upgraded to release 20.04.

Bootloader

The following Bootloader related issues are resolved in this release.

Issue	Description
200668268	Jetson Nano 2GB Developer Kit: Device boots to the Unity GUI by default when an HDMI display is connected in headless mode.
	NVIDIA recommends using LightDM and LXDE as the default display manager and desktop environment for Jetson-Nano-2GB-Development Kit. If you use headless flow in `oem-config`, you can enter this command to switch to LightDM and LXDE as default:
	`sudo dpkg reconfigure lightdm`
	Choose "lightdm" in the dialog, then reboot the device.

Camera

The following camera related issues are resolved in this release.

Issue	Description
200634671	Jetson Xavier NX: Raspberry Pi v2 camera images exhibit bad pixels.
200643475	V4L2 encode in non-blocking mode gets unexpected Ebusy error with user patch installed.
200651918	Multiple instances of released `nvarguscamersrc` for JetPack 4.4 may crash pipelines.

Issue	Description
200661319	GStreamer may lock up with H.264 encoder from `nvarguscamerasrc`.

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Known Issues

This section provides details about issues discovered during development and QA but not resolved in this release.

General System Usability

The following general system usability related issues are noted in this release.

Issue	Description
3133035	Jetson Nano 2GB Developer Kit: Memory-intensive sample applications like the NVIDIA® TensorRT™ FasterRCNN INT8 sample (falling back to FP32 and FP16 on this device) do not work.
3140762	Jetson Nano Developer Kit: When running `oem-config` in headless mode, the first attempt to set up a WiFi connection always fails. *Workaround*: Enter the SSID and password again.
200581861	Jetson AGX Xavier: System crash with when UFS card is hotplugged in and out.
200654873	Jetson Nano 2GB Developer Kit: System becomes hot to touch when running AI workloads continuously.
200655166	Jetson Nano 2GB Developer Kit: Multiple instances of YouTube streaming in the Chromium browser causes system slowdown.
200662246	Using the Massflash utility to flash a Jetson module results in bootup failure.
200665217	Jetson Nano 2GB Developer Kit: Volume control in the system tray does not work.
200665226	Jetson Nano 2GB Developer Kit: Launching the Disk Management option in system tools yields the message, "Error: There are no file system which you are allowed to mount or unmount."
200666054	The original Jetson AGX Xavier (16 GB memory): System restarts immediately when put into SC7 state (deep sleep).
200668090	Jetson Nano, Jetson Nano 2GB, and Jetson TX1 with system flashed to SD card: When system is upgraded to JetPack 4.4.1, Ubuntu is upgraded to release 20.04.

Bootloader

The following bootloader related issues are noted in this release.

Issue	Description
200626823	Jetson Xavier NX with configuration `xavier-nx-devkit-emmc` and Jetson AGX Xavier with any configuration: CBoot flags errors instead of warnings while reading an invalid USB card.
200668268	Jetson Nano 2GB Developer Kit: Device boots to the Unity GUI by default when an HDMI display is connected in headless mode. NVIDIA recommends using LightDM and LXDE as the default display manager and desktop environment for Jetson-Nano-2GB-Development Kit. If you use headless flow in `oem-config`, you can enter this command to switch to LightDM and LXDE as default: `sudo dpkg reconfigure lightdm` Choose "lightdm" in the dialog, then reboot the device.

Camera

The following camera related issues are noted in this release.

Issue	Description
2849439	Jetson AGX Xavier series with lMX274 Dual camera: Flicker banding with incandescent light setting.
200459897	Jetson AGX Xavier series: Blur and image corruption with SLVS-EC sensor.
200517934	Jetson TX2 series: Intermittent noisy corruption with sensormode1: 1920x1080 @10bpp with IMX274 Dual camera.
200611569	Jetson Nano: Running multiple USB cameras simultaneously occasionally causes the average frame rate to drop below 30.

Multimedia

The following camera related issues are noted in this release.

Issue	Description
200594164	Jetson Xavier NX: VLC media player app crashes when user tries to play a video.

Top Fixed Issues

These issues are resolved in this release.

Issues with a <mark>yellow background</mark> are related to matters raised on Jetson forums.

General System Usability

The following general system usability related issues are resolved in this release.

Issue	Description
2831831	Jetson Xavier NX: Audio corruption when Bluetooth® headset is connected to DUT after disconnect.
3121896	JetPack samples directories are not updated in documentation.
3126648	Broken link to *Accelerated GStreamer User Guide*.
200656458	Jetson Nano (P3448-0000 and P3448-0002) with SecureBoot: The `pkc_disable` fuse is programmed to 0x1 with the `-p` option.
200662816	Total memory reported by free --giga is too low in certain conditions.
200665220	Jetson Nano 2GB Developer Kit: The LxMusic application (a simple music player) does not work.

Window Systems

The following camera related issues are resolved in this release.

Issue	Description
200592935	Weston on Jetson Nano: `nvgldemos` app running on a DisplayPort (DP) display gets stuck if DP display is disconnected.

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This section provides details about issues discovered during development and QA but not resolved in this release.

Known Issues

General System Usability

The following general system usability related issues are noted in this release.

Issue	Description
2831831	Jetson Xavier NX: Audio corruption when Bluetooth® headset is connected to DUT after disconnect.
200581861	Jetson AGX Xavier: System crash with CPU SError when UFS card is hotplugged in and out.

Camera

The following camera related issues are noted in this release.

Issue	Description
2849439	Jetson AGX Xavier series with lMX274 Dual camera: Flicker banding with incandescent light setting.
200459897	Jetson AGX Xavier series: Blur and image corruption with SLVS-EC sensor.
200517934	Jetson TX2 series: Intermittent noisy corruption with sensormode1: 1920x1080 @10bpp with IMX274 Dual camera.
200611569	Jetson Nano: Running multiple USB cameras simultaneously occasionally causes the average frame rate to drop below 30.

Multimedia

The following camera related issues are noted in this release.

Issue	Description
200594164	Jetson Xavier NX: VLC media player app crashes when user tries to play a video.

Window Systems

The following camera related issues are noted in this release.

Issue	Description
200592935	Weston on Jetson Nano: `nvgldemos` app running on a DisplayPort (DP) display gets stuck if DP display is disconnected.

Top Fixed Issues

These issues are resolved in this release.

Issues with a <mark>yellow background</mark> are related to matters raised on Jetson forums.

General System Usability

The following general system usability related issues are resolved in this release.

Issue	Description
200600549	"On screen keyboard" function does not activate.
200612061	NVIDIA® Jetson Xavier™ NX, NVIDIA Jetson AGX Xavier™, and NVIDIA Jetson™ TX2: `apply_binaries.sh` script gives an error if Debian package `nvidia-l4t-init deb` has been installed more than twice. The error is caused by the attempt to add the `crypto` and `trusty` groups even though they are already in `etc/group`.

Issue	Description
200618775	NV update engine (`nv_update_engine`) fails when the user runs `saveenv` in U-Boot.
200623676	OTA update to JetPack-4.4 DA reported false failure when update is done on a device with QSPI.

Bootloader

The following bootloader related issues are resolved in this release.

Issue	Description
2926568	NVIDIA Jetson AGX Xavier: In this release the CBO partition (CPUBL-CFG) is made smaller than CBoot was programmed to read. You cannot load `cbo.dtb` to change the CBoot boot options (boot order, TFTP address, etc.).
2950356	Fusing issues with `odm_lock` and `reserved_odm` on Jetson Xavier NX, Jetson AGX Xavier, and Jetson TX2.
3052674	Jetson Xavier and Jetson NX fail to boot after `apt` upgrade to release 32.4.3 from earlier releases. Added August 6, 2020.
3068309	`apt upgrade` on bootloader packages fails on boards flashed with release 32.4.3. Added August 6, 2020.
200604216	Fusing process for Jetson TX2 is not working properly due to a problem with `--SKIPUID` switch.
200614911	Cannot read KEK nodes on Jetson AGX Xavier.
200623006	Repeated failed boot attempts on Jetson Xavier NX after flashing `cpu-bootloader`.

Camera

The following camera related issues are resolved in this release.

Issue	Description
200585128	Noisy corruption with Preview/Capture observed on Jetson Xavier NX with IMX219. Tuning is in progress.

Communications

The following communications related issues are resolved in this release.

Issue	Description
200585410	System error when eth0 is disabled and is re-enabled by software on Xavier NX.
200613752	NVIDIA Jetson Xavier NX: Intel AC8265 dual-band wireless networking adapter does not work.
200621454	Intermittent read/write errors on SD card with Jetson Xavier-NX.

Compute

The following compute related issues are resolved in this release.

Issue	Description
200619952	Cannot build Parsed Tiny Yolo v2 ONNX model (onnxruntime) on NVIDIA® Jetson Nano™.
2851157	VisionWorks fails to install on host.
200608041	Internal error encountered in `elementWise` when running onnx model on DLA.

Graphics

The following graphics related issues are resolved in this release.

Issue	Description
200614164	Wayland fails to start the Weston compositor.

Kernel

The following kernel related issues are resolved in this release.

Issue	Description
200585398	Triggering the kernel watchdog may cause a kernel crash for Jetson Xavier NX.

Multimedia

The following multimedia related issues are resolved in this release.

Issue	Description
200606127	GStreamer Control-rate property (VBR/CBR) has no effect.
2831857	`NvBufferTransform()` does not preserve alpha channel in ARGB-to-ARGB transform.

Issue	Description
200607012	Misleading default interpolation-method in GStreamer `nvvidconv` plugin.
200608857	Colorimetry bt709 is not shown in encoded h264stream.
200628181	Possible memory leak in GStreamer library while quitting DeepStream applications. This is a required update for Deepstream release 5.0. Added August 4, 2020.

Performance

The following performance related issues are resolved in this release.

Issue	Description
200607328	Jetson Xavier NX: When CPU frequency is switched to 1,907,200 KHz, value read from `scaling_cur_freq` is different (1,958,400 MHz).

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Known Issues

General System Usability

The following general system usability related issues are noted in this release.

Issue	Description
2515130	On Jetson Nano, depending on the SD card speed, user may observe slow loading of certain applications such as a generic file editor and image viewer.
200431304	On Jetson AGX Xavier, user cannot ping the IP address 0.0.0.0.
200498221	On Jetson Nano, when connecting to both HDMI™ and DP displays at bootup, login screen may only be visible on HDMI. Once logged in, the NVIDIA logo appears only on DP and is not centered, leaving the HDMI display blank.
200510775	**Applies to**: Jetson AGX Xavier ODMDATA passed from flashing command does not take effect. Only information in the `.conf.common` file is flashed. Do not attempt to modify ODMDATA at flash time with the command line option.
200512675	**Applies to**: Jetson TX2-4GB Pressing the hardware reset button when the board is in SC7 state shuts off system power immediately.

Issue	Description
200526544	**Applies to**: Jetson AGX Xavier Docker command prompt (PS1) contains extra characters. The problem does not occur when connected through SSH. This is a cosmetic issue with no functional impact.
200568353	Failed to connect to Wi-Fi app on the first attempt using OEM-config headless mode.
2664707	**Applies to**: Jetson AGX Xavier 8GB module CPU power may not be optimized when the system enters low power states.
200571269	**Applies to**: Jetson Nano With `OSIDLE_ON` and `h264_1080p_fake_sink`, power regression by ~500 milliwatts compared to the r32.2 release. This is expected as a consequence of the EMC clock value being corrected to fix a display underflow issue.

Camera

The following camera related issues are noted in this release.

Issue	Description
2574909	**Applies to**: Jetson AGX Xavier, Jetson TX2 Sensor pixel clock is not included in any GMSL context. Consequently the SerDes driver cannot update the input/output clock to fit sensor needs. This requirement is specific to MAX9296 DSER in the reference GMSL module, but it applies to any SerDes setup. Currently the MAX9296 DSER driver sets the PHY out clock rate to 1200 MHz (the maximum for a two-lane configuration), which is sufficient the for reference module's needs (two streams at up to 4k at 60 fps). NVIDIA is evaluating a better implementation for a future release, which would set a PHY out clock rate calculated at runtime using the source sensor streams' pixel rates.
200407802	**Applies to**: Jetson AGX Xavier and Jetson TX2 Memory leak is observed when running six-camera setup.
200459897	**Applies to**: Jetson AGX Xavier On Jetson AGX Xavier, Blur and corruption occur in the form of a vertical black stripe of pixels at one side of the image are observed with an SLVS-EC sensor.
200461442	**Applies to**: Jetson AGX Xavier On Jetson AGX Xavier, The Multimedia API front end sample application exhibits a low frame rate when using the IMX185. This is a regression due to VIC frequency dependency.

Issue	Description
200476911	**Applies to**: Jetson AGX Xavier On Jetson AGX Xavier, users cannot use specific cameras that support the "wait until trigger" mechanism. This mechanism is intended to trigger the sensor using an external signal to capture a specified number of frames, then stop streaming until triggered again.
200487673	**Applies to**: Jetson AGX Xavier `argus_bayeraveragemap` and `argus_denoise` sample apps exhibit 96-byte memory leak. The source of the leak is `gtk_init(NULL, NULL)`, called during windows initialization. This is a known open-source leak. As per the second link there is no way to free data allocated using `gtk_init(NULL, NULL)`. https://ubuntuforums.org/archive/index.php/t-1287827.html https://www.mail-archive.com/gtk-list@redhat.com/msg00414.html
200512509	**Applies to**: Jetson AGX Xavier Analog gain is deliberately limited by using a different sensor register to override the manually set analog gain to avoid banding issues in low light conditions. Banding is due to hardware limitations of providing 5V power to the IMX185. This is a hardware issue seen only on Jetson AGX Xavier. The problem should be fixed with an updated IMX185 which doesn't depend on a 5V power supply.
200517934	**Applies to**: Jetson TX2 Noisy corruption is observed intermittently when using `sensormode1` (1920x1080@10bpp) with DualIMX274. The issue can be reproduced by toggling the sensor modes multiple times. It is only seen with `sensormode1`.
200565755	**Applies to**: Jetson AGX Xavier, Jetson TX2, Jetson TX1 Rare occurrences of random segmentation faults during boot if a camera module is connected.
200554232	`DeepStream-app` does not work with more than two USB cameras connected to the device.

Multimedia

The following multimedia related issues are noted in this release.

Issue	Description
2517881	Jetson Linux Driver Package Currently does not support hardware acceleration for VLC Player. To work around this issue, enter this command to run VLC Player with software decoding: ```\n$ vlc --codec=avcodec <filename>\n```

Issue	Description
200575487	In the r32.3.1 release, `unittest_samples` and makefiles are added to the Multimedia API package. `unittest_samples` can be compiled individually, but are not compiled when the top level makefile is run.

Top Fixed Issues

These issues are resolved in this release.

General System Usability

General system usability related resolved issues are as follows:

Issue Number	Description
2011116	Cannot use file system or partition UUIDs to refer to root filesystem in L4T.
2398839	**Applies to**: Jetson AGX Xavier TF-TRT conversion sometimes crashes with no error message. This usually happens when Linux runs out of swap memory, in which case Linux may kill processes to reclaim space. Adding more swap memory may fix this problem.
2658800	NVIDIA Shield controller is not supported.
200507252	Eclipse, installed through the software center, doesn't start on any Jetson platform running Ubuntu software distribution. This is an upstream issue, not an NVIDIA bug. As a workaround, use MSFT Code, or recompile.
200525134	SSH host keys may not be generated on first boot in headless mode (`oem-config`). This failure is reproducible less then 10% of the time. As a workaround, reconfigure the SSH server by entering the command: `$ dpkg-reconfigure --frontend=noninteractive openssh-server`
200527728	Starting with Release 32.2, you can run `oem-config` in headless mode (with no display connected). In headless mode `oem-config` displays a Network Configuration screen, which has no equivalent in GUI mode. Network Configuration calls an external tool, `netcfg`, to configure network settings. `netcfg` is included in the `ubiquity` package. If you choose the option "Do not configure network at this time," hotplug will not work because `eth0` is not configured. The link is present, but the interface must be configured manually.
200529709	**Applies to**: Jetson AGX Xavier SError and CPU CBB Error may occur during hotplug of a UFS card.

Boot

Boot related resolved issues are as follows:

Issue Number	Description
200480903	On Jetson-Xavier, UFS card fails to automount on boot. User can mount UFS devices manually or through the GUI. This was tested with ext4 and vfat formats.
200492423	On all Jetson platforms, using the new OEM configuration, a minor glitch is observed during EULA screen presentation at first boot.

Camera

Camera related resolved issues are as follows:

Issue Number	Description
2583989	**Applies to**: Jetson AGX Xavier When using an IMX290 with different pixel phases for different sensor modes in the device tree, ISP only considers the pixel phase of the first sensor mode. If the first sensor mode outputs GBRG format, the format remains the same for all modes. This issue may be resolved by configuring to the correct pixel format.
200487673	**Applies to**: Jetson AGX Xavier `argus_bayeraveragemap` and `argus_denoise` sample apps exhibit 96-byte memory leak. The source of the leak is `gtk_init(NULL, NULL)`, called during windows initialization. This is a known open-source leak. As per the second link there is no way to free data allocated using `gtk_init(NULL, NULL)`. https://ubuntuforums.org/archive/index.php/t-1287827.html https://www.mail-archive.com/gtk-list@redhat.com/msg00414.html
200504723	**Applies to**: Jetson TX2 `argus_openglbox` application may exhibit an intermittent crash.
200522461	**Applies to**: Jetson Nano IMX219 in full resolution mode incorrectly sensor reports width as 3296 instead of 3280. This leads to an invalid size error in the vi mode because the reported width does not match the real sensor output size.
200552632	Using IMX185 with WDR, AE flickering with outdoor scene and daylight setting on light booth.
200569152	Regression failures observed in the previously passing V4L2 compliance test on the `VIDIOC_TRY_FMT and VIDIOC_S_FMT` ioctls. This is under investigation and will be fixed in the next public release.

Connectivity

Connectivity related resolved issues are as follows:

Issue Number	Description
200510929	**Applies to**: Jetson Nano, Jetson AGX Xavier Audio over Bluetooth using Intel 8265NGW M.2 key is not supported.
200511165	**Applies to**: Jetson TX2 Audio over Bluetooth using the on-board WiFi module is not supported.

CUDA

CUDA related resolved issues are as follows:

Issue	Description
200484129	**Applies to**: Jetson AGX Xavier, Jetson TX2 CudaTools NVprof reports `l2_tex_read_hit_rate` is larger than 100%. This issue will not be fixed as the tool will be deprecated in a future release.

Jetson Developer Kit

Jetson developer kit related resolved issues are as follows:

Issue	Description
2544146	**Applies to**: Jetson Nano Developer Kit The Jetson Nano A02 version of the developer kit hardware cannot boot with Intel 8260 WiFi plugged in. This issue is fixed in the newer B01 version of the hardware.
200525666	In the SD card image released to support the Jetson Nano Developer Kit, the file /etc/nv_tegra_release has been removed.

Multimedia

Multimedia related resolved issues are as follows:

Issue	Description
200532719	**Applies to**: Jetson TX2 `tegra-audio-amx-to-adx.sh` script fails to run.

SDK Manager

SDK Manager related resolved issues are as follows:

Issue	Description
200530642	`The open source bzip2 application, package version 1.0.6-8ubuntu0.1, may exhibit errors when extracting tar files. The package version was released recently for CVE-2019-12900.`
200567596	Using SDK Manager, OpenCV 4.4.1 install on either host or Jetson device fails when OpenCV 3.3.1 is already installed.

Security

Security fixes for this release may be found at:

https://www.nvidia.com/en-us/security/

18 November 2019 — 32.2.3

Known Issues

General System Usability

The following general system usability related issues are noted in this release.

Issue	Description
2515130	On Jetson Nano, depending on the SD card speed, user may observe slow loading of certain applications such as a generic file editor and image viewer.
2398839	**Applies to**: Jetson AGX Xavier TF-TRT conversion sometimes crashes with no error message. This usually happens when Linux runs out of swap memory, in which case Linux may kill processes to reclaim space. **Workaround**: Adding more swap memory may fix this problem.
200431304	On Jetson AGX Xavier, user cannot ping the IP address 0.0.0.0.
200498221	On Jetson Nano, when connecting to both HDMI™ and DP displays at bootup, login screen may only be visible on HDMI. Once logged in, the NVIDIA logo appears only on DP and is not centered, leaving the HDMI display blank.
200507252	Eclipse, installed through the software center, doesn't start on any Jetson platform running Ubuntu software distribution. This is an upstream issue, not an NVIDIA bug. **Workaround**: Use MSFT Code, or recompile.

Issue	Description
200510775	**Applies to**: Jetson AGX Xavier ODMDATA passed from flashing command does not take effect. Only information in the `.conf.common` file is flashed. Do not attempt to modify ODMDATA at flash time with the command line option.
200512675	**Applies to**: Jetson TX2-4GB Pressing the hardware reset button when the board is in SC7 state shuts off system power immediately.
200525134	SSH host keys may not be generated on first boot in headless mode (`oem-config`). This failure is reproducible less then 10% of the time. **Workaround**: Reconfigure the SSH server by entering the command: `$ dpkg-reconfigure --frontend=noninteractive openssh-server`
200526544	**Applies to**: Jetson AGX Xavier Docker command prompt (PS1) contains extra characters. The problem does not occur when connected through SSH. This is a cosmetic issue with no functional impact.
200527728	Starting with Release 32.2, you can run `oem-config` in headless mode (with no display connected). In headless mode `oem-config` displays a Network Configuration screen, which has no equivalent in GUI mode. Network Configuration calls an external tool, `netcfg`, to configure network settings. `netcfg` is included in the `ubiquity` package. If you choose the option "Do not configure network at this time," hotplug will not work because `eth0` is not configured. The link is present, but the interface must be configured manually.
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The following boot related issues are noted in this release.

Issue	Description
200480903	On Jetson-Xavier, UFS card fails to automount on boot. User can mount UFS devices manually or through the GUI.
200492423	A minor glitch is observed when using the new OEM configuration during EULA screen presentation at first boot.

Camera

The following camera related issues are noted in this release.

Issue	Description
2574909	**Applies to**: Jetson AGX Xavier, Jetson TX2 Sensor pixel clock is not included in any GMSL context. Consequently the SerDes driver cannot update the input/output clock to fit sensor needs. This requirement is specific to MAX9296 DSER in the reference GMSL module, but it applies to any SerDes setup. Currently the MAX9296 DSER driver sets the PHY out clock rate to 1200 MHz (the maximum for a two-lane configuration), which is sufficient the for reference module's needs (two streams at up to 4k at 60 fps). NVIDIA is evaluating a better implementation for a future release, which would set a PHY out clock rate calculated at runtime using the source sensor streams' pixel rates.
2583989	**Applies to**: Jetson AGX Xavier When using an IMX290 with different pixel phases for different sensor modes in the device tree, ISP only considers the pixel phase of the first sensor mode. If the first sensor mode outputs GBRG format, the format remains the same for all modes. This issue may be resolved by configuring to the correct pixel format.
200407802	**Applies to**: Jetson AGX Xavier and Jetson TX2 On Jetson TX2 and Jetson AGX Xavier using the six-camera module (E3333), Memory leakage occurs in the `nvargus` daemon using the six-camera module (E3333).
200459897	**Applies to**: Jetson AGX Xavier On Jetson AGX Xavier, Blur and corruption occur in the form of a vertical black stripe of pixels at one side of the image are observed with an SLVS-EC sensor.
200461442	**Applies to**: Jetson AGX Xavier On Jetson AGX Xavier, The Multimedia API front end sample application exhibits a low frame rate when using the IMX185. This is a regression due to VIC frequency dependency.
200476911	**Applies to**: Jetson AGX Xavier On Jetson AGX Xavier, users cannot use specific cameras that support the "wait until trigger" mechanism. This mechanism is intended to trigger the sensor using an external signal to capture a specified number of frames, then stop streaming until triggered again.
200504723	**Applies to**: Jetson TX2 `argus_openglbox` application may exhibit an intermittent crash.

Issue	Description
200512509	**Applies to**: Jetson AGX Xavier Analog gain is deliberately limited by using a different sensor register to override the manually set analog gain to avoid banding issues in low light conditions. Banding is due to hardware limitations of providing 5V power to the IMX185. This is a hardware issue seen only on Jetson AGX Xavier. The problem should be fixed with an updated IMX185 which doesn't depend on a 5V power supply.
200517934	**Applies to**: Jetson TX2 Noisy corruption is observed intermittently when using `sensormode1` (1920x1080@10bpp) with DualIMX274. The issue can be reproduced by toggling the sensor modes multiple times. It is only seen with `sensormode1`.
200522461	**Applies to**: Jetson Nano IMX219 in full resolution mode incorrectly sensor reports width as 3296 instead of 3280. This leads to an invalid size error in the vi mode because the reported width does not match the real sensor output size. As a workaround, change full resolution mode width from 3280 to 3264. This works because the frame stride is a multiple of 64.

Connectivity

The following connective related issues are noted in this release.

Issue	Description
200510929	**Applies to**: Jetson Nano, Jetson AGX Xavier Audio over Bluetooth using Intel 8265NGW M.2 key is not supported.
200511165	**Applies to**: Jetson TX2 Audio over Bluetooth using the on-board WiFi module is not supported.

CUDA

The following CUDA related issues are noted in this release.

Issue	Description
200484129	**Applies to**: Jetson AGX Xavier, Jetson TX2 CudaTools NVprof reports `l2_tex_read_hit_rate` is larger than 100%. This issue will not be fixed as the tool will be deprecated in a future release.

Jetson Developer Kit

The following Jetson developer kit related issues are noted in this release.

Issue	Description
2544146	**Applies to:** Jetson Nano Developer Kit The Jetson Nano A02 version of the developer kit hardware cannot boot with Intel 8260 WiFi plugged in. This issue is fixed in the newer B01 version of the hardware.
200525516	**Applies to:** Jetson Nano Developer Kit The UART can only handle up to 3.3V. Plugging 5V into the UART disables the USB HUB and may damage any devices on the carrier board's 3V3 rail. Damage is particularly likely if a WiFi or Bluetooth module is connected to the M.2E connector.

Multimedia

The following multimedia related issues are noted in this release.

Issue	Description
2517881	Jetson Linux Driver Package Currently does not support hardware acceleration for VLC Player. To work around this issue, enter this command to run VLC Player with software decoding: `$ vlc --codec=avcodec <filename>`
200532719	**Applies to:** Jetson TX2 `tegra-audio-amx-to-adx.sh` script fails to run.

SDK Manager

The following SDK Manager related issues are noted in this release.

Issue	Description

200530642	The open source bzip2 application, package version 1.0.6-8ubuntu0.1, may exhibit errors when extracting tar files. The package version was released recently for CVE-2019-12900.
	
	As a workaround for Ubuntu 18.04, enter this command:
	
	`$ sudo apt install bzip2=1.0.6-8.1 libbz2-1.0=1.0.6-8.1`
	
	As a workaround for Ubuntu 16.04, enter this command:
	
	`$ sudo apt install bzip2=1.0.6-8 libbz2-1.0=1.0.6-8`

Top Fixed Issues

General System Usability

General system usability related resolved issues are as follows:

Issue Number	Description
2421509 2527737 2583497 2661547 200533301 200536979 200537940 200382107 200540611	Add software support for Jetson AGX Xavier 8GB module.
200540898	If nvpmodel service is not present or not started or has failed, `nvpmodel_indicator` crashes instead of failing gracefully.

Camera

Camera related resolved issues are as follows:

Issue Number	Description
2519846	Fix errors observed when Intel Realsense camera is connected to Jetson AGX Xavier.
200540013	Various IP cameras do not work with DeepStream SDK 4.0 on Jetson platforms. To fix the issue, using L4T release 32.2.1 or later with DeepStream release 4.0.1.

Security

Security fixes for this release may be found at:

https://www.nvidia.com/en-us/security/

9 October 2019 — 32.2.2

Known Issues

This section provides details about issues discovered during development and QA but not resolved in this release.

General System Usability

The following general system usability related issues are noted in this release.

Issue	Description
2515130	On Jetson Nano, depending on the SD card speed, user may observe slow loading of certain applications such as a generic file editor and image viewer.
2398839	**Applies to**: Jetson AGX Xavier TF-TRT conversion sometimes crashes with no error message. This usually happens when Linux runs out of swap memory, in which case Linux may kill processes to reclaim space. Adding more swap memory may fix this problem.
200431304	On Jetson AGX Xavier, user cannot ping the IP address 0.0.0.0.
200498221	On Jetson Nano, when connecting to both HDMI™ and DP displays at bootup, login screen may only be visible on HDMI. Once logged in, the NVIDIA logo appears only on DP and is not centered, leaving the HDMI display blank.
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200526544	**Applies to**: Jetson AGX Xavier Docker command prompt (PS1) contains extra characters. The problem does not occur when connected through SSH. This is a cosmetic issue with no functional impact.

Issue	Description
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Issue	Description
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Top Fixed Issues

These issues are resolved in this release.

General System Usability

General system usability related resolved issues are as follows:

Issue Number	Description
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26 August 2019 — 32.2.1

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Connectivity

The following connective related issues are noted in this release.

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The following CUDA related issues are noted in this release.

Issue	Description
200484129	**Applies to**: Jetson AGX Xavier, Jetson TX2 CudaTools NVprof reports `l2_tex_read_hit_rate` is larger than 100%. This issue will not be fixed as the tool will be deprecated in a future release.

Jetson Developer Kit

The following Jetson developer kit related issues are noted in this release.

Issue	Description
2544146	**Applies to**: Jetson Nano Developer Kit The Jetson Nano A02 version of the developer kit hardware cannot boot with Intel 8260 WiFi plugged in. This issue is fixed in the newer B01 version of the hardware.
200525516	**Applies to**: Jetson Nano Developer Kit The UART can only handle up to 3.3V. Plugging 5V into the UART disables the USB HUB and may damage any devices on the carrier board's 3V3 rail. Damage is particularly likely if a WiFi or Bluetooth module is connected to the M.2E connector.

Multimedia

The following multimedia related issues are noted in this release.

Issue	Description
2517881	Jetson Linux Driver Package Currently does not support hardware acceleration for VLC Player. To work around this issue, enter this command to run VLC Player with software decoding: `$ vlc --codec=avcodec <filename>`
200532719	**Applies to**: Jetson TX2 `tegra-audio-amx-to-adx.sh` script fails to run.

SDK Manager

The following SDK Manager related issues are noted in this release.

Issue	Description

200530642	The open source bzip2 application, package version 1.0.6-8ubuntu0.1, may exhibit errors when extracting tar files. The package version was released recently for CVE-2019-12900.
	
	As a workaround for Ubuntu 18.04, enter this command:
	
	`$ sudo apt install bzip2=1.0.6-8.1 libbz2-1.0=1.0.6-8.1`
	
	As a workaround for Ubuntu 16.04, enter this command:
	
	`$ sudo apt install bzip2=1.0.6-8 libbz2-1.0=1.0.6-8`

Top Fixed Issues

General System Usability

General system usability related resolved issues are as follows:

Issue Number	Description
2421509 2527737 2583497 2661547 200533301 200536979 200537940 200382107 200540611	Add software support for Jetson AGX Xavier 8GB module.
200540898	If nvpmodel service is not present or not started or has failed, `nvpmodel_indicator` crashes instead of failing gracefully.

Camera

Camera related resolved issues are as follows:

Issue Number	Description
2519846	Fix errors observed when Intel Realsense camera is connected to Jetson AGX Xavier.
200540013	Various IP cameras do not work with DeepStream SDK 4.0 on Jetson platforms. To fix the issue, using L4T release 32.2.1 with DeepStream release 4.0.1.

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Known Issues

General System Usability

The following general system usability related issues are noted in this release.

Issue	Description
2515130	On Jetson Nano, depending on the SD card speed, user may observe slow loading of certain applications such as a generic file editor and image viewer.
2398839	**Applies to:** Jetson AGX Xavier TF-TRT conversion sometimes crashes with no error message. This usually happens when Linux runs out of swap memory, in which case Linux may kill processes to reclaim space. Adding more swap memory may fix this problem.
200431304	On Jetson AGX Xavier, user cannot ping the IP address 0.0.0.0.
200498221	On Jetson Nano, when connecting to both HDMI and DP displays at bootup, login screen may only be visible on HDMI. Once logged in, the NVIDIA logo appears only on DP and is not centered, leaving the HDMI display blank.
200507252	Eclipse, installed through the software center, doesn't start on any Jetson platform running Ubuntu software distribution. This is an upstream issue, not an NVIDIA bug. As a workaround, use MSFT Code, or recompile.
200510775	**Applies to:** Jetson AGX Xavier ODMDATA passed from flashing command does not take effect. Only information in the `.conf.common` file is flashed. Do not attempt to modify ODMDATA at flash time with the command line option.
200512675	**Applies to:** Jetson TX2-4GB Pressing the hardware reset button when the board is in SC7 state shuts off system power immediately.
200525134	SSH host keys may not be generated on first boot in headless mode (`oem-config`). This failure is reproducible less then 10% of the time. As a workaround, reconfigure the SSH server by entering the command: `$ dpkg-reconfigure --frontend=noninteractive openssh-server`
200526544	**Applies to:** Jetson AGX Xavier Docker command prompt (PS1) contains extra characters. The problem does not occur when connected through SSH. This is a cosmetic issue with no functional impact.

Issue	Description
200527728	Starting with Release 32.2, you can run `oem-config` in headless mode (with no display connected). In headless mode `oem-config` displays a Network Configuration screen, which has no equivalent in GUI mode. Network Configuration calls an external tool, `netcfg`, to configure network settings. `netcfg` is included in the `ubiquity` package. If you choose the option "Do not configure network at this time," hotplug will not work because `eth0` is not configured. The link is present, but the interface must be configured manually.
200529709	**Applies to**: Jetson AGX Xavier SError and CPU CBB Error may occur during hotplug of a UFS card.

Boot

The following boot related issues are noted in this release.

Issue	Description
200480903	On Jetson-Xavier, UFS card fails to automount on boot. User can mount UFS devices manually or through the GUI. This was tested with ext4 and vfat formats.
200492423	On all Jetson platforms, using the new OEM configuration, a minor glitch is observed during EULA screen presentation at first boot.

Camera

The following camera related issues are noted in this release.

Issue	Description
2574909	**Applies to**: Jetson AGX Xavier, Jetson TX2 Sensor pixel clock is not included in any GMSL context. Consequently the SerDes driver cannot update the input/output clock to fit sensor needs. This requirement is specific to MAX9296 DSER in the reference GMSL module, but it applies to any SerDes setup. Currently the MAX9296 DSER driver sets the PHY out clock rate to 1200 MHz (the maximum for a two-lane configuration), which is sufficient the for reference module's needs (two streams at up to 4k at 60 fps). NVIDIA is evaluating a better implementation for a future release, which would set a PHY out clock rate calculated at runtime using the source sensor streams' pixel rates.
2583989	**Applies to**: Jetson AGX Xavier When using an IMX290 with different pixel phases for different sensor modes in the device tree, ISP only considers the pixel phase of the first sensor mode. If the first sensor mode outputs GBRG format, the format remains the same for all modes. This issue may be resolved by configuring to the correct pixel format.

Issue	Description
200407802	**Applies to**: Jetson AGX Xavier and Jetson TX2 On Jetson TX2 and Jetson AGX Xavier using the six-camera module (E3333), Memory leakage occurs in the `nvargus` daemon using the six-camera module (E3333).
200459897	**Applies to**: Jetson AGX Xavier On Jetson AGX Xavier, Blur and corruption occur in the form of a vertical black stripe of pixels at one side of the image are observed with an SLVS-EC sensor.
200461442	**Applies to**: Jetson AGX Xavier On Jetson AGX Xavier, The Multimedia API front end sample application exhibits a low frame rate when using the IMX185. This is a regression due to VIC frequency dependency.
200476911	**Applies to**: Jetson AGX Xavier On Jetson AGX Xavier, users cannot use specific cameras that support the "wait until trigger" mechanism. This mechanism is intended to trigger the sensor using an external signal to capture a specified number of frames, then stop streaming until triggered again.
200487673	**Applies to**: Jetson AGX Xavier `argus_bayeraveragemap` and `argus_denoise` sample apps exhibit 96-byte memory leak. The source of the leak is `gtk_init(NULL, NULL)`, called during windows initialization. This is a known open-source leak. As per the second link there is no way to free data allocated using `gtk_init(NULL, NULL)`. https://ubuntuforums.org/archive/index.php/t-1287827.html https://www.mail-archive.com/gtk-list@redhat.com/msg00414.html
200504723	**Applies to**: Jetson TX2 `argus_openglbox` application may exhibit an intermittent crash.
200512509	**Applies to**: Jetson AGX Xavier Analog gain is deliberately limited by using a different sensor register to override the manually set analog gain to avoid banding issues in low light conditions. Banding is due to hardware limitations of providing 5V power to the IMX185. This is a hardware issue seen only on Jetson AGX Xavier. The problem should be fixed with an updated IMX185 which doesn't depend on a 5V power supply.
200517934	**Applies to**: Jetson TX2 Noisy corruption is observed intermittently when using `sensormode1` (1920x1080@10bpp) with DualIMX274. The issue can be reproduced by toggling the sensor modes multiple times. It is only seen with `sensormode1`.

Issue	Description
200522461	**Applies to**: Jetson Nano
	IMX219 in full resolution mode incorrectly sensor reports width as 3296 instead of 3280. This leads to an invalid size error in the vi mode because the reported width does not match the real sensor output size.
	As a workaround, change full resolution mode width from 3280 to 3264. This works because the frame stride is a multiple of 64.

Connectivity

The following connective related issues are noted in this release.

Issue	Description
200510929	**Applies to**: Jetson Nano, Jetson AGX Xavier
	Audio over Bluetooth using Intel 8265NGW M.2 key is not supported.
200511165	**Applies to**: Jetson TX2
	Audio over Bluetooth using the on-board WiFi module is not supported.

CUDA

The following CUDA related issues are noted in this release.

Issue	Description
200484129	**Applies to**: Jetson AGX Xavier, Jetson TX2
	CudaTools NVprof reports `l2_tex_read_hit_rate` is larger than 100%. This issue will not be fixed as the tool will be deprecated in a future release.

Jetson Developer Kit

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Issue	Description
2544146	**Applies to**: Jetson Nano Developer Kit
	The Jetson Nano A02 version of the developer kit hardware cannot boot with Intel 8260 WiFi plugged in.
	This issue is fixed in the newer B01 version of the hardware.
200525516	**Applies to**: Jetson Nano Developer Kit
	The UART can only handle up to 3.3V. Plugging 5V into the UART disables the USB HUB and may damage any devices on the carrier board's 3V3 rail. Damage is particularly likely if a WiFi or Bluetooth module is connected to the M.2E connector.

Multimedia

The following multimedia related issues are noted in this release.

Issue	Description
2517881	Jetson Linux Driver Package Currently does not support hardware acceleration for VLC Player. To work around this issue, enter this command to run VLC Player with software decoding: `$ vlc --codec=avcodec <filename>`
200532719	**Applies to**: Jetson TX2 `tegra-audio-amx-to-adx.sh` script fails to run.

SDK Manager

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Issue	Description

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	As a workaround for Ubuntu 16.04, enter this command:
	
	`$ sudo apt install bzip2=1.0.6-8 libbz2-1.0=1.0.6-8`

Top Fixed Issues

These issues are resolved in this release.

General System Usability

General system usability related resolved issues are as follows:

Issue Number	Description
2496962	Low-latency audio decode requires customer to set memory and CPU speeds accordingly.

2521704	On Jetson Nano, when a GPIO is released (e.g. using the `sysfs` unexport file, the `cleanup()` function in the `Jetson.GPIO` Python module, or the `gpio_free()` function in the Linux kernel), the kernel configures the pin as a special function (SFIO) rather than as a GPIO input. In some cases, this causes Jetson to drive a signal onto the pin. If another device is also connected to that pin, and is also driving a signal, this causes an electrical conflict, which may damage the hardware. This issue is particularly relevant for the pins on the 40-pin GPIO expansion header.
200495497	Launching a graphics application from Nsight Graphics may fail due to a bug in libglvnd (see https://bugs.launchpad.net/ubuntu/+source/libglvnd/+bug/1816004). When this bug has been fixed by Ubuntu, you can update the library and use Nsight Graphics.
200497890	USB device mode network feature always reports that it is active, even when the USB cable is not plugged in. This causes Jetson's graphical interface to claim that a network connection is active at all times.
200499128	On Jetson TX2, OSidle power consumption is comparatively higher than in public release 28.3.

Boot

Boot related resolved issues are as follows:

Issue Number	Description
2510850	For Jetson AGX Xavier, Secureboot with PKC keys works only if flashing follows immediately after signing. This is due to missing files located inside a temp directory that is cleared if the two actions are not performed back-to-back. To work around the problem, apply the patches described in **"Error! Reference source not found.."**

Camera

Camera related resolved issues are as follows:

Issue Number	Description
200490661	On TX2, the IMX390 dual sensor camera fails to capture simultaneously with both sensors when running two separate applications to capture from CSI/GMSL. Simultaneous capture from a single application is successful.
200502605	With Jetson AGX Xavier and an IMX274 sensor, preview and capture are blurred if one of these modes is configured: • 3840×2160 at 30 frames/second • 1920×1080 at 60 frames/second

Multimedia

Multimedia related resolved issues are as follows:

Issue Number	Description
2524344, 200498151	Jetson Nano currently does not implement power-based throttling. The system may shut down if adapter power capacity is exceeded. This will not happen if the system is used with a validated power adapter that provides adequate power.
200297610	If the user launches an Argus camera with Piecewise Linear WDR sensor mode enabled and changes the AWB mode from Auto to another setting (Incandescent, Fluorescent, etc.), then changes AWB mode back to Auto, preview hangs. This is a corner case and is not handled in this release.
200427796	The new gst-v4l2 decoder has an issue with 10/12-bit HEVC decode. Blueish video observed due to interchanged U and V planes getting read for 8-bit transform. This type of decode works correctly with the legacy OMX-based decoder.
200489184	When using DRM for display, display modes using YUV format are not supported, and are not properly filtered out by the DRM subsystem. To avoid this issue, select RGB modes only, or use X11, which filters out YUV modes correctly.
200490095	On Jetson Nano, raw capture at 4K resolutions using an IMX219 camera exhibits corruption. Capture at 4K resolutions using Argus ("cooked" instead of raw) is functional.
200502065	GST pipeline using camera capture with scaling/color conversion may affect performance. NVIDIA recommends setting the `nvarguscamerasrc` property `maxperf=1` for better performance. For more details, see the "Camera Capture" section of *Accelerated GStreamer User Guide*.
200502136	`nvgstcapture-1.0` has an image encoding issue using the `nvjpegenc` plugin for default YUY2 video capture format for a USB camera. To work around the issue, use the OSS `jpegenc` plugin instead of `nvgstcapture-1.0` for image encoding with a USB camera. To do this, add the command line switch `--image-enc=0` to the `nvgstcapture-1.0` capture command, for example: `$ nvgstcapture-1.0 --camsrc=0 --image-enc=0`
200516907	When using the Multimedia API (MMAPI), certain front-end multicamera samples may fail to run with a "host1x error message." Image corruption or a greenish cast on the preview may occur. This bug may affect all Jetson platforms.

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Known Issues

General System Usability

The following general system usability related issues are noted in this release.

Issue	Description
2515130, 258714	On Jetson Nano, depending on the SD card speed, user may observe slow loading of certain applications such as a generic file editor and image viewer.
2524344, 200498151	Jetson Nano currently does not implement power-based throttling. The system may shut down if adapter power capacity is exceeded. This will not happen if the system is used with a validated power adapter that provides adequate power.
2496962	Low-latency audio decode requires customer to set memory and CPU speeds accordingly.
2521704	On Jetson Nano, when a GPIO is released (e.g. using the `sysfs` unexport file, the `cleanup()` function in the `Jetson.GPIO` Python module, or the `gpio_free()` function in the Linux kernel), the kernel configures the pin as a special function (SFIO) rather than as a GPIO input. In some cases, this causes Jetson to drive a signal onto the pin. If another device is also connected to that pin, and is also driving a signal, this causes an electrical conflict, which may damage the hardware. This issue is particularly relevant for the pins on the 40-pin GPIO expansion header.
200431304	On Jetson AGX Xavier, user cannot ping the IP address 0.0.0.0.
200488963	Nano `/dev/root` device size is restricted to 14 GB when using `flash.sh` to write to an SD card. User cannot create additional partitions on the root device, so any excess space is unavailable.
200492517	On Jetson Nano, system error occurs at `gether_connect+0x80/0x1d8` during SC7 stress. The issue's reproducibility is very low.
200497890	USB device mode network feature always reports that it is active, even when the USB cable is not plugged in. This causes Jetson's graphical interface to claim that a network connection is active at all times.
200498221	On Jetson Nano, when connecting to both HDMI and DP displays at bootup, login screen may only be visible on HDMI. Once logged in, the NVIDIA logo appears only on DP and is not centered, leaving the HDMI display blank.
200499128	On Jetson TX2, OSidle power consumption is comparatively higher than in public release 28.3.

Boot

The following boot related issues are noted in this release.

Issue	Description
2510850	For Jetson AGX Xavier, Secureboot with PKC keys works only if flashing follows immediately after signing. This is due to missing files located inside a temp directory that is cleared if the two actions are not performed back-to-back. To work around the problem, apply the patches described in "**Error! Reference source not found..**"
200471553	On Jetson AGX Xavier, changing boot device order requires reflash. The user cannot change boot order from the command line.
200480903	On Jetson-Xavier, UFS card fails to automount on boot. User can mount UFS devices manually or through the GUI. This was tested with ext4 and vfat formats.
200492423	On all Jetson platforms, using the new OEM configuration, a minor glitch is observed during EULA screen presentation at first boot.

Camera

The following camera related issues are noted in this release.

Issue	Description
200407802	On Jetson TX2 and Jetson AGX Xavier using the six-camera module (E3333), memory leakage occurs in the nvargus daemon.
200459897	On Jetson AGX Xavier, blur and corruption in the form of a vertical black stripe of pixels at one side of the image are observed with an SLVS-EC sensor.
200461442	On Jetson AGX Xavier, the Multimedia API front end sample application exhibits a low frame rate when using the IMX185. This is a regression due to VIC frequency dependency.
200476911	On Jetson AGX Xavier, users cannot use specific cameras that support the "wait until trigger" mechanism. This mechanism is intended to trigger the sensor using an external signal to capture a specified number of frames, then stop streaming until triggered again.
200490050	On Jetson Nano, the hardware de-noise switch `denosiestrength` has less impact than expected.
200490661	On TX2, the IMX390 dual sensor camera fails to capture simultaneously with both sensors when running two separate applications to capture from CSI/GMSL. Simultaneous capture from a single application is successful.

CUDA Samples

The following CUDA samples related issues are noted in this release.

Issue	Description
200500995	If the system date and time are not set correctly after boot, be sure the configured NTP server is accessible from your network.

Multimedia

The following multimedia related issues are noted in this release.

Issue	Description
2517881	Jetson Linux Driver Package currently does not support hardware acceleration for VLC Player. To work around this issue, enter this command to run VLC Player with software decoding: `vlc --codec=avcodec <filename>`
200297610	If the user launches an Argus camera with Piecewise Linear WDR sensor mode enabled and changes the AWB mode from Auto to another setting (Incandescent, Fluorescent, etc.), then changes AWB mode back to Auto, preview hangs. This is a corner case and is not handled in this release.
200427796	The new gst-v4l2 decoder has an issue with 10/12-bit HEVC decode. Blueish video observed due to interchanged U and V planes getting read for 8-bit transform. This type of decode works correctly with the legacy OMX-based decoder.
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200502136	`nvgstcapture-1.0` has an image encoding issue using the `nvjpegenc` plugin for default YUY2 video capture format for a USB camera. To work around the issue, use the OSS `jpegenc` plugin instead of `nvgstcapture-1.0` for image encoding with a USB camera. To do this, add the command line switch `--image-enc=0` to the `nvgstcapture-1.0` capture command, for example: `nvgstcapture-1.0 --camsrc=0 --image-enc=0`

Top Fixed Issues

General System Usability

General system usability related resolved issues are as follows:

Issue Number	Description
200437318	Tegrastats does not save information to a file.
200454955	Kernel PWM fan driver overrides fan setting applied by jetson_clocks.sh.

Camera

Camera related resolved issues are as follows:

Issue Number	Description
200422466	IMX185 sensor not supported in this release.

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Known Issues

General System Usability

The following general system usability related issues are noted in this release.

Issue	Description
2419317	Performance drop due to EMC frequency not set correctly for CPU workload. (See EMC the Implementation Note Frequency Adjustment for CPU Workload.)
200461808	When connecting the Intel IGB PCIE card, CPU errors may occur during system idle.
200436049	Failure to launch NVVP after installing `cuda-repo-ubuntu1804-10-0-local-10.0.96-410.27_1.0-1_amd64.deb`.
200464272	System may fail to enter SC7 state when certain PCIe Network Interface Cards are connected. (Issue was seen with two different NICs, neither of which uses the igb driver). This issue is under investigation.

Camera

The following camera related issues are noted in this release.

Issue	Description
2032213	The maximum value that `getExposureTimeRange()` may return is 400000000.000 (400,000,000 nanoseconds, 400 msec).
200297610	Preview freeze with WDR mode when AWB lock is set and user attempts to change AWB mode to Auto.

200455493	Defog feature of `argus_camera` app is not supported in this release. The following options of `argus_camera` app do not work:
	
	`--defog=ENABLE`
	
	`--defogamount=AMOUNT`
	
	`--defogquality=QUALITY`

200455200	`argus_userautoexposure` app failed to run the sample in DOL WDR modes.
200455287	`argus_userautowhitebalance` app gives greenish preview on high exposure scenes.
200459897	Blur and corruption observed with SLVS-EC sensor.
200443798	VisionWorks `nvx_sample_nvgstcamera_capture` sample application fails to run.

CUDA Samples

The following CUDA samples related issues are noted in this release.

Issue	Description
200448615	Argus CUDA samples crash or hang for CPHY sensor IMX318, possibly due to very high resolution of the sensor. If the resolution is set to less than 4K in EGL stream settings, the sample passes successfully.

Multimedia

The following multimedia related issues are noted in this release.

Issue	Description
200387512	GStreamer based video playback using Wayland not working when Weston is started as an NVIDIA user.

Top Fixed Issues

These issues are resolved in this release.

General System Usability

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Camera

Camera related resolved issues are as follows:

Issue Number	Description
200422466	IMX185 sensor not supported in this release.

15 October 2018 − 31.0.2

Known Issues

General System Usability

The following general system usability related issues are noted in this release.

Issue	Description
2183567	Type-C devices unable to drive DP due to length of delay before handshake begins. *Workaround*: see Type-C Devices Unable to Drive DisplayPort.
200441525	An application to be debugged NVIDIA Developer Tools (CUDA tools, NVIDIA Nsight Systems/Graphics) must be run as the root user, or with root permissions.
2218290	Thermal shutdown reboots system instead of powering off.
200436049	nvvp (Visual Profiler) launch fails after installing `cuda-repo-ubuntu1804-10-0-local-10.0.96-410.27_1.0-1_amd64.deb`.
200442461	VisionWorks SFM sample fails to run; shows black image when launching `nvx_sample_sfm sample`.
200447045	SC7 system suspend/resume may have intermittent resume failures in this release.

Boot

The following boot related issues are noted in this release.

Issue	Description
2305640	CBoot bootloader cannot access USB mass storage devices connected via a USB hub.

Camera

The following camera related issues are noted in this release.

Issue	Description
2258817	Incorrect ISP settings may be applied if camera module is replaced with a module that does not support a unique identifier (fuse ID). (Workaround: manually remove the cached `.bin` files in `/var/nvidia/nvcam/settings`.)
200422466	IMX185 sensor not supported in this release.
200445964	Greenish image capture with `argus_onshot`.
2199266	Temporal noise reduction may cause a slight green tint to images.
200407738	Greenish tint on displayed preview image when running the sample software `argus_userautowhitebalance`.

CUDA

The following CUDA related issues are noted in this release.

Issue	Description
200431121	If a CUDA application calls `malloc()` within a CUDA kernel (device-side `malloc`) while running concurrently with another CUDA or GPU-accelerated graphics application, the application may fail.

Display

The following display related issues are noted in this release.

Issue	Description
2284878	Cannot operate GeChic 1101 display connected through USB-C to USB-A when auto-search mode is enabled.
200404683	Display Port (DP) monitors do not show a bootloader splash screen at boot, and may require a hotplug after boot to display content properly.
200434425	Display driver may produce "Failed to write DPCD data" errors after a display hotplug with certain monitors including Dell U2413 and Dell U2713.

JetPack Installer

The following JetPack Installer related issues are noted in this release.

Issue	Description
2340186	After installation of CUDA 10.0 host packages, the apt package management system may produce "Failed to fetch" messages due to the addition of the arm64 architecture to the apt package repository configuration.

Kernel

The following kernel related issues are noted in this release.

Issue	Description
200443630	Hotplugging a UFS card may cause the Linux kernel to report a CPU SError.
200399574	Using USB devices that are not fully compatible with the USB Gen2 specification may cause kernel error messages like "tegra-xusb 3610000.xhci: Cannot set link state."
2211831	UART serial console using USB to TTL serial cable does not work.

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