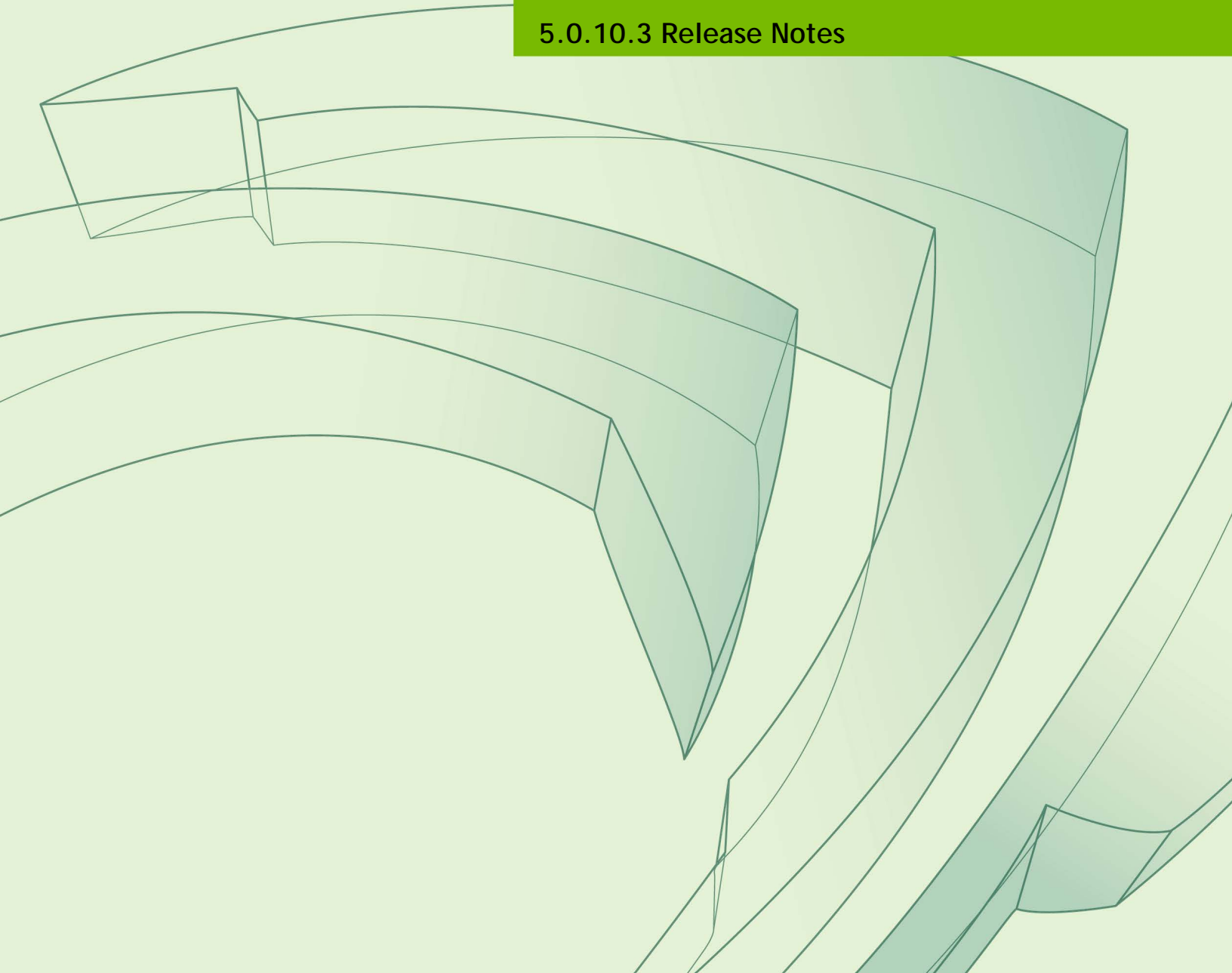




# DRIVE 5.0 FOUNDATION SDK/PDK: DRIVE PX 2 PLATFORM

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## 5.0.10.3 Release Notes



# TABLE OF CONTENTS

<b>1.0</b>	<b>ABOUT THIS RELEASE</b>	<b>3</b>
1.1	What's New	5
1.2	Top Issues Fixed Since Last Release	6
1.3	Contents of this Release	7
1.4	Documentation in This Release	8
1.4.1	Searching for Terms	9
1.4.2	Issues Viewing References Documentation	9
1.4.2.1	References Require ActiveX on Internet Explorer	9
1.4.2.2	Cannot Open PDF Files in Internet Explorer 8	10
1.4.3	Content Applying to Other Releases	10
<b>2.0</b>	<b>IMPLEMENTATION NOTES</b>	<b>11</b>
2.1	Supported Configurations	11
2.2	Device Tree Compiler Binary/Source Incompatibility	11
2.3	Memory Carveout Documentation	12
2.4	Deprecated IVC Attributes	12
<b>3.0</b>	<b>KNOWN ISSUES</b>	<b>13</b>
3.1	AURIX	13
3.2	Flashing	14
3.3	Safety	14
3.4	System	14
3.5	Virtualization	14

# 1.0 ABOUT THIS RELEASE

These *Release Notes* are for the following products:

- ▶ NVIDIA® DRIVE™ 5.0 Foundation Platform Development Kit (PDK) and Software Development Kit (SDK) for NVIDIA DRIVE™ PX 2

These release notes provide information on generic Virtualization and Foundation features. For a list of virtualization features, known issues, and implementation details specific to the various DRIVE 5.0 OS platforms in the current DRIVE 5.0 release, see the *Release Notes* for the corresponding DRIVE 5.0 OS.

## Release Information

The following table describes the attributes of this product release. When you encounter these variables elsewhere in the release notes or in the Development Guide, use the provided value in place of the variable.

Variable	Value	Description
<os>	linux	Designates the target's operating system.
<os_ver_host>	16.04 (64-bit distributions)	Specifies the host Ubuntu operating system version.
<ubuntu_codename>	xenial	Specifies the code name for the host version of Ubuntu.
<release_branch>	embedded/5.0.10.3	Specifies the NVIDIA Git release branch used for the release.
<branch>	5.0.10.3	Specifies the NVIDIA release branch number used for the release.
<build>	12606092	Specifies the build ID.
<product>	drive-t186ref-foundation	Specifies the product name.

## Platform Support with Quality Target

The following table lists the platforms supported in this release at the targeted quality level.

Platform	Quality Target
NVIDIA DRIVE™ PX 2 ACr (P3407-a01)	Beta 3.0
NVIDIA DRIVE™ PX 2 ACh (P2379-C01/C02)	Beta 3.0

## Hardware Information

The following tables describe the hardware attributes of the development platforms for this release. When you encounter these variables, elsewhere in the release notes or in the *Development Guide*, use the provided value in place of the variable.

### NVIDIA DRIVE™ PX 2 ACr (P3407-a01)

Variable	Value	Description
<platform ver>	t186ref	Specifies the platform.
<board>	p3407	Specifies the board name.
<board_and_rev>	p3407-t186	Specifies the board and revision. This information is used in flashing.
<sku_id>	0000	Specifies NVIDIA DRIVE PX 2 ACr. This variable appears in pathnames and may be a component in <sku_info>.
<t-ver> or <t-arch>	186	Specifies the Tegra version of Tegra architecture.

The NVIDIA DRIVE PX 2 ACr (P3407-a01) platform includes NVIDIA P3407 A01 SKU 0000. This board uses the NVIDIA® Tegra® Parker, and also supports:

- ▶ 8 GB LPDDR4, 64 GB eMMC, and 64 MB QSPI NOR memory
- ▶ Display output:
  - 1 mini-HDMI 2.0
- ▶ 8 GMSL camera inputs
- ▶ USB 2.0/3.0 Host ports
- ▶ Tegra – 2x CAN
- ▶ AURIX – 2x CAN, 2x LIN, and 2x Flex Ray

### NVIDIA DRIVE™ PX 2 ACh (P2379-C01/C02)

Variable	Value	Description
<platform ver>	t186ref	Specifies the platform.
<board>	p2379	Specifies the board name.

Variable	Value	Description
<board_and_rev>	p2379c01-t186a p2379c01-t186b	Specifies the board and revision. This information is used in flashing.  The first expression is for flashing Tegra A; and the second is for flashing Tegra B.
<sku_id>	See list below	Specifies the P2379 SKU. This variable appears in pathnames and may be a component in <SKUINFO>.
<SKUINFO>	699-62379-0000-400	Identifies each variable component for a board. This value is used when flashing the board with the -z option. Check the label on your board to verify this value.
<t-ver> or <t-arch>	186	Specifies the Tegra version of Tegra architecture.

The NVIDIA DRIVE PX 2 ACh (P2379-C01/C02) platform (as opposed to PCB) SKUs include:

- ▶ P2379-C01 SKU 1001
- ▶ P2379-C02 SKU 1001
- ▶ P2379-C02 SKU 2001
- ▶ P2379-C02 SKU 2002
- ▶ P2379-C02 SKU 2121
- ▶ P2379-C02 SKU 2124

This board uses the NVIDIA® Tegra® Parker, and also supports:

- ▶ 8 GB LPDDR4, 64 GB eMMC, and 64 MB QSPI NOR memory per Tegra
- ▶ Display outputs:
  - 1 HDMI 2.0 per Tegra (2 total)
  - 1 DSI/FPDLink III (shared)
  - 1 HDMI/GMSL (shared)
- ▶ 12 GMSL camera inputs
- ▶ USB 2.0/3.0 Host ports
- ▶ Tegra – 1x CAN
- ▶ AURIX – 6x CAN, 4xLIN, and 2xFlexray ports
- ▶ NVIDIA P2779 Adapter Board to give access to Tegra and AURIX JTAG

## 1.1 WHAT'S NEW

- ▶ Use SDK Manager for updates.

## 1.2 TOP ISSUES FIXED SINCE LAST RELEASE

### AURIX

The following Aurix related issues are resolved in this release.

NVIDIA Bug Number	Description
200438266	Issue with Aurix Firmware version name with respect to branch.
200439179	Aurix "setip" command fails to retain changed IP after issuing aurixreset on the target system.

### Bootloader

The following bootloader related issues are resolved in this release.

NVIDIA Bug Number	Description
2099759	Bootburn should not erase emmc unconditionally.

### Flashing

The following flashing related issues are resolved in this release.

NVIDIA Bug Number	Description
200433852	Error spews "bootburn_sequencer.sh: line 350: [: missing `]" observed while doing parallel flashing target system.
200340914	Parallel flash fails when AURIX console is released before timeout (20 seconds).

### System

The following system related issues are resolved in this release.

NVIDIA Bug Number	Description
200418079	testing_client tests fail intermittently.

### Virtualization

The following Virtualization related issues are resolved in this release.

NVIDIA Bug Number	Description
200400149	Intermittently target system stuck to boot while issuing reboot command in loop.
200382219	Issuing "shutdown -h now" command error seen "Fatal programming error: mutex already held" on tegra console.
200264246	Polling for watchdog timeout starts the watchdog timer.
200374910	testMultiTSG subtest fails on running nvgpu_sched_threads.

## 1.3 CONTENTS OF THIS RELEASE

This release includes SDK installer files archived in 7Zip files and additional platform-specific run files. Replace the <branch> and <build> variables below with the values shown in Section 1.0 above.

This release also includes SDK Manager installer files. For installation instructions see the SDK Manager documentation.

### SDK Releases

- ▶ The DRIVE 5.0 Linux and DRIVE 5.0 Foundation Development Guides and References are in this ZIP. For guidance on installing the documentation, see [To access the References content](#) in these notes.

```
NVIDIA_DRIVE_5.0_Linux_DPX_PDK_References.zip
```

- ▶ The following is the Foundation SDK installer run file:

```
drive-t186ref-foundation-<branch>-<build>-release.run
```

- ▶ The following is the Open Source SDK tools installer run file:

```
drive-t186ref-foundation-<branch>-<build>-toolchain.run
```

- ▶ The following is the Open Source code installer run file:

```
drive-t186ref-foundation-oss-src.run
```

- ▶ AURIX firmware is available for the NVIDIA DRIVE PX 2 platform in the following files:

Ach:

```
drive-t186ref-foundation-<branch>-<build>-p2379specific.run
```

Acr:

```
drive-t186ref-foundation-<branch>-<build>-p3407specific.run
```

## 1.4 DOCUMENTATION IN THIS RELEASE

The following lists the documentation included in this release.

- ▶ NVIDIA\_DRIVE\_5.0\_Foundation\_DPX2\_Release\_Notes\_5.0.10.3.pdf

This document.

In the SDK release, the document is available at <https://developer.nvidia.com/drive/>. Go to the Download folder.

- ▶ NVIDIA\_DRIVE\_5.0\_Linux\_DPX\_SDK\_References.zip

The ZIP file that contains HTML-based API documentation, the *Development Guide*, and as needed additional PDF documents including open-source and 3<sup>rd</sup> party license information.

- ▶ drive-t186ref-foundation-<branch>-<build>-oss-src.run

The RUN file that contains HTML-based Open Source licensing information and source rebuild instructions.

- ▶ drive-t186ref-foundation/ubuntu-rootfs-licenses.txt

The TXT file that contains the full text of the common licenses of the Ubuntu 14.04 root file system (based on ubuntu-core).

- ▶ EB-DrivePX\_Software\_User\_Guide\_DPX2.pdf

*DRIVE PX 2 ACh: Elektrobit DrivePX Software User Guide*, located in DPX2-P2379-EB-V4.02.04\_release.zip.

*Acr: Elektrobit DrivePX Software User Guide*, located in DPX2-P3407-EB-V4.02.04\_release.zip.

- ▶ EB-DrivePX-BSL\_Users\_Guide.pdf

*DRIVE PX 2 ACh: Elektrobit DrivePX BSL Users Guide*, located in DPX2-P2379-EB-V4.02.04\_release.zip.

*DRIVE PX 2 ACr: Elektrobit DrivePX BSL Users Guide*, located in DPX2-P3407-EB-V4.02.04\_release.zip.

- ▶ DPX2-P2379-EB-V4.02.04\_release.zip



AURIX firmware for *DRIVE PX 2 Ach* is located on the host in the directory  
<install\_dir>/drive-t186ref-foundation/.

- ▶ DPX2-P3407-EB-V4.02.04\_release.zip

AURIX firmware for *DRIVE PX 2 ACr* is located on the host in the directory  
<install\_dir>/drive-t186ref-foundation/.

### To access the *References* content in the SDK release

1. Expand the `NVIDIA_DRIVE_5.0_Linux_DPX_SDK_References.zip` file.
2. Click the following HTML file to open the documentation page:

```
Start_DRIVE_5.0_Docs.html
```

The references open in your default browser, and all documents are accessible from within the same browser window.

## 1.4.1 Searching for Terms

You can search the *Development Guide* for a term by entering it in the Search field at the upper-right of the guide window. By default, you can search for whole words that are longer than two characters. By enclosing a term in asterisks (\*), you can also find the term embedded in longer strings, even if the term is less than three characters.

For information on searching for APIs, see the Welcome page in the *API Reference*.

## 1.4.2 Issues Viewing References Documentation

Browser-related issues can affect your ability to view the *References* and *Development Guide* in this release.

### 1.4.2.1 References Require ActiveX on Internet Explorer

The following message can appear when you open the *References* or *Development Guide* on Internet Explorer:

```
Internet Explorer restricted this webpage from running scripts or ActiveX controls.
```

This message is due to Internet Explorer security restrictions that require approval to execute scripts and ActiveX and the *Development Guide's* use of JavaScript and ActiveX controls to provide navigation and search features.

#### To workaround

In response to the Internet Explorer message, select the Allow blocked content button.

### 1.4.2.2 Cannot Open PDF Files in Internet Explorer 8

The following message can appear when you try to open PDF files in Internet Explorer 8.

```
Internet Explorer has stopped working. A problem caused the program to stop working correctly. Windows will close the program and notify you if a solution is available.
```

#### To workaround

1. Close your web browser.
2. Start Acrobat or Adobe Reader.
3. In the Edit tab, select Preferences.
4. Select Internet in the list on the left.
5. Deselect Display PDF in Browser.
6. Restart Internet Explorer.

### 1.4.3 Content Applying to Other Releases

Some content in the documentation may not apply to this DRIVE 5.0 Foundation release. We use the term **Applies to:** when specifying release-specific content. In those cases, be sure to follow the procedures for your release.

# 2.0 IMPLEMENTATION NOTES

This section provides additional implementation and support information specific to this release.

## 2.1 SUPPORTED CONFIGURATIONS

Release 5.0.10.3 of NVIDIA DRIVE 5.0 Foundation Software Development Kit for NVIDIA DRIVE PX 2 supports only the single Linux guest VM and Hypervisor configuration, and must be flashed accordingly. See the *Development Guide* for flashing instructions.

## 2.2 DEVICE TREE COMPILER BINARY/SOURCE INCOMPATIBILITY

The device tree compiler (DTC) binary version is 1.4.0, but the source packaged version is 1.3.0.

The locations of the binary and source are:

- ▶ Binary: <top>/drive-t186ref-foundation/utils/dtc/dtc
- ▶ Source: <top>/drive-t186ref-foundation\_src/3rdparty\_dtc\_src.tgz

Where <top> is the host directory where you installed the SDK and Foundation release.

If you want the 1.4.0 DTC source, you can get it from:

```
git://git.kernel.org/pub/scm/utils/dtc/dtc.git/
```

You can clone this repository with the following command:

```
git clone --branch v1.4.0 git://git.kernel.org/pub/scm/utils/dtc/dtc.git/
```

## 2.3 MEMORY CARVEOUT DOCUMENTATION

Memory carveout allocations are documented in the *Development Guides* for DRIVE 5.0 Linux. Memory carveout allocations for QNX are documented in a separate Application Note. No documentation for memory carveouts in DRIVE 5.0 Android is available at this time.

## 2.4 DEPRECATED IVC ATTRIBUTES

The platform `config.h`, which is part of the partition configuration table (PCT), contains fields that configure inter-VM communication (IVC) queues and mempools. The deprecated IVC sub-fields are (per [2051864]):

```
.ivc = {  
    .mem_size = SZ_4MB,  
    .irq_start = 320,  
    .irq_size = 24,  
    ....  
};
```

Including:

- ▶ Setting `mem_size` has no effect.
- ▶ Setting `irq_start` and/or `irq_size` may result in a failure to boot.

**To work around**

Remove or comment out these lines from the partition configuration tables.

## 3.0 KNOWN ISSUES

This section provides details about issues that were discovered during development and QA but not resolved prior to this release. In the following table, a check mark (✓) appears in the New or Past columns, meaning:

<b>New</b>	Indicates issues found in this release.
<b>Past</b>	Indicates issues present in (and continuing to be present in) the last release for NVIDIA DRIVE PX 2.

### 3.1 AURIX

The following AURIX related issues are noted in this release.

Issue Number	Issue	New	Past
200352896	Aurix to Tegra SW PTP sync : Tegra lags 35seconds by Aurix	✓	
200330224	AurixOTA is failing with tegra A IP changed to non-default value	✓	
1794817	The aurix_flash tool intermittently fails to mount on the target system.	✓	
200406310	Ping to AURIX fails from Tegra while experimenting with ping of different sizes. Later, ping -I eth0.200 10.42.0.146 itself doesn't work, and AURIX hangs.		✓
200307066	CAN-FD is not supported on AURIX.		✓
200296700	Performance issue in Fast EasyCAN.		✓
200246011	Tegrawr on Tegra B (AURIX) is communicating to Tegra A instead of Tegra B (regression).		✓

## 3.2 FLASHING

The following flashing-related issue was noted in this release.

Issue Number	Issue	New	Past
200447452	create_bsp_images.sh script is failing to generate images on the first run	☐✓	

## 3.3 SAFETY

The following safety-related issue was noted in this release.

Issue Number	Issue	New	Past
200418097	SDL tests fail on Tegra A during SCE boot sequence on fused target.	☐✓	
200445880	Observing call trace while inserting module "tcrypt.ko" with mode=10	☐✓	

## 3.4 SYSTEM

The following system-related issues were noted in this release.

Issue Number	Issue	New	Past
200403050	Tegra RCM driver is not installed when hot-plugged. There is a yellow bang on the device.		✓
200306757	System hang with "i2c: pio xfer timed out addr" and "bpmp_trywait() wait_for_completion_timeout" prints while running nvmipp_raw and gears in loop.		✓

## 3.5 VIRTUALIZATION

The following virtualization-related issues were noted in this release.

Issue Number	Issue	New	Past
200264489	Running the watchdog daemon causes IVC error messages to display on the console.		✓
200353605	"irq: type mismatch, failed to map hwirq" errors in boot spews.		✓

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