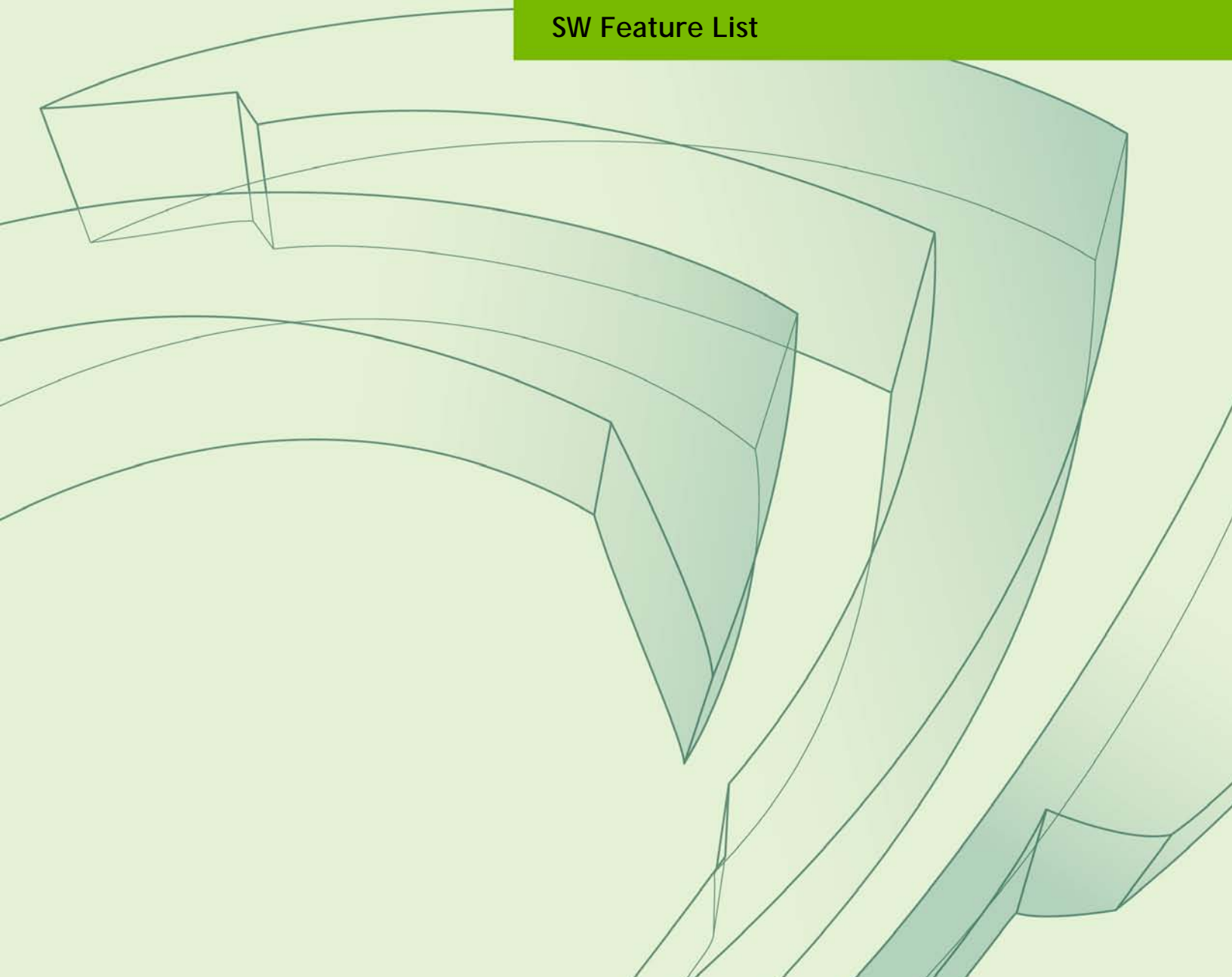




NVIDIA TEGRA LINUX DRIVER PACKAGE R15.BETA RELEASE

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SW Feature List



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TABLE OF CONTENTS

Software Features	5
Linux	6
Graphics and Multimedia	7
Decoders	8
Audio Decoders (Tegra 3/Tegra 2)	8
Image Decoders (Tegra 3/Tegra 2)	8
Video Decoders (Tegra 3 only)	9
Video Decoders (Tegra 2)	10
Encoders	12
Audio Encoders (Tegra 3/Tegra 2)	12
Image Encoders (Tegra 3/Tegra 2)	12
Video Encoders (Tegra 3)	12
Video Encoders (Tegra 2)	12
Container Formats	13
Streaming Protocols	14
Displays	15
Playback	16
Camera	17
Power	18
Boot Loaders	19

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SOFTWARE FEATURES

This document describes the software features expected to be supported with this release of NVIDIA® Tegra® Linux Driver Package, which provides users with a complete package to bring up Linux on certain Tegra devices.

This release supports NVIDIA® Tegra® 3 series: Ventana T3T (code-name Cardhu) and NVIDIA® Tegra® 2 series: Ventana T2T (code-name Ventana). Additional application processors may be supported in a later release.

Note: Always check the *Release Notes* for constraints related to these features.

Read the following sections to learn more about supported features in this release.

- [Linux](#)
- [Graphics and Multimedia](#)
- [Decoders](#)
- [Encoders](#)
- [Container Formats](#)
- [Streaming Protocols](#)
- [Displays](#)
- [Playback](#)
- [Camera](#)
- [Power](#)
- [Boot Loaders](#)

LINUX

Kernel	Notes
Linux Kernel	3.1
Kernel Native Drivers	Notes
Audio	ALSA
External SD card	-
USB	Keyboard/mouse, mass storage device (MSD)
Wi-Fi	Firmware provided separately
Boot Devices	Notes
eMMC	-
External boot media	USB flash devices and hard-drives, SD Cards
Network file-system (NFS) boot	-
Additional Notes	
Unless otherwise noted, all features pertain to Cardhu and Ventana.	

GRAPHICS AND MULTIMEDIA

Media APIs	Notes
EGL 1.4 with EGLImage	-
GStreamer OpenMAX-IL plug-in	Both for playback and A/V capture
Open GL ES path extensions	-
OpenGL ES 1.1	-
OpenGL ES 2.0	For automatic stereo support
OpenMAX IL 1.1 decoding	Planned to be deprecated in a later release
OpenMAX IL 1.1 encoding	Planned to be deprecated in a later release
X11	ABI: 5, 6, 7, 8, 10, 11, 12
X Resize, Rotate and Reflect Extension (RandR) 1.3	-
Additional Notes	
Unless otherwise noted, all features pertain to Cardhu and Ventana.	

DECODERS

Audio Decoders (Tegra 3/Tegra 2)

The features in this table are supported by both Tegra 3 and Tegra 2.

Audio Decode	Profile	Sampling	Bitrate
AAC+	AAC-LC with SBR; mono, stereo, and 2-channel mixing only	Up to 48 kHz	Up to 320 kilobits per second (Kbps)
AAC-LC	Mono, stereo, and 2-channel [5.1]	Up to 48 kHz	Up to 320 Kbps
eAAC+	AAC-LC with SBR+PS; mono, stereo, and 2-channel mixing only	Up to 48 kHz	Up to 320 Kbps
AMR-NB	1 channel	Up to 8 kHz	Up to 12.2 Kbps
AMR-WB	1 channel	Up to 16 kHz	Up to 23.85 Kbps
MP3	2 channel	Up to 48 kHz	Up to 320 Kbps
MPEG-2 (MPEG-1 Layer 2)	2 channel	Up to 48 kHz	Up to 320 Kbps
Vorbis	Ogg Audio	Up to 48 kHz	Up to 256 Kbps
WAV linear PCM	16-bit, 2 channels	Up to 48 kHz	-
WMA 9 Std.	Standard 2-channel	Up to 48 kHz	Up to 384 Kbps
WMA Lossless	Lossless: Up to N1 Profile; WMA 10: 2 channel	Up to 48 kHz	-
WMA Pro LBR 10	M2 Profile; 2 channel [5.1]	Up to 96 kHz	Up to 768 Kbps

Image Decoders (Tegra 3/Tegra 2)

The features in this table are supported by both Tegra 3 and Tegra 2.

Image Decode	Profile	Resolution	Notes
JPEG	Baseline	Up to 20 MP	Gstreamer JPEG decoder supported by default

Video Decoders (Tegra 3 only)

The features in this table are supported by Tegra 3.

Video Decode	Profile and Level	Sampling Frequency and Bit rate/Frame rate	Notes
DivX 4/5/6	1080p HD Profile	Up to 1080p @ 30 fps Up to 10 Mbps	-
DivX 4/5/6	PlusHD	Up to 1080p @ 30 fps Up to 20 Mbps	-
H.263	Baseline Profile 0	Standard H.263 picture formats up to 4CIF @ 30 fps Up to 8 Mbps	Baseline Profile 0 Tools; Also supports custom formats at any resolution
H.264 AVC	Baseline Profile, Main Profile High Profile @ L4.1	Up to 720p @ 60 fps Up to 40 Mbps	-
H.264 AVC	Baseline Profile Main Profile High Profile @ L4.1	Up to 720p @ 60 fps Up to 40 Mbps	-
H.264 AVC	Baseline Profile Main Profile High Profile @ L4.1	Up to 1080i @ 60 fps Up to 40 Mbps	-
H.264 AVC	Baseline Profile Main Profile High Profile @ L4.1	Up to 1140p @ 30 fps Up to 40 Mbps	-
H.264 AVC (SEI)	High Profile	Up to 1080p @ 30 fps Up to 40 Mbps	-
MPEG-2 Video	Main Profile @ High Level	Up to 720p @ 60p Up to 80 Mbps	-
MPEG-2 Video	Main Profile @ High Level	Up to 1080p @ 30p/1080i 60 fps Up to 80 Mbps	-
MPEG-4	Advanced Simple Profile @ L5	Up to 1080p @ 30 fps Up to 10 Mbps	-

Video Decode	Profile and Level	Sampling Frequency and Bit rate/Frame rate	Notes
VC-1/WMV	Simple Profile	Up to 1080p @ 30 fps Up to 45 Mbps	-
VC-1/WMV	Main Profile	Up to 1080p @ 30 fps Up to 45 Mbps	-
VC-1/WMV	Advanced Profile	Up to 1080p @ 30 fps Up to 45 Mbps	-
Xvid	Highdef Profile	Up to 1080p @ 30 fps Up to 10 Mbps	-

Video Decoders (Tegra 2)

The features in this table are supported by Tegra 2.

Video Decode	Profile and Level	Sampling Frequency and Bit rate/Frame rate	Notes
DivX 4/5/6	1080p HD	Up to 1080p 30 fps Up to 10 Mbps	-
H.263	Baseline Profile 0	Standard H.263 formats up to 4CIF 30 fps Up to 8 Mbps peak	Standard H.263 picture formats = SQCIF, QCIF, CIF, 4CIF; Also supports custom formats at any resolution
H.264	Baseline Profile @ L4	Up to 1080p 30 fps Up to 20 Mbps peak	
H.264 Dynamic Resolution Change (DRC)	-	-	AP20 only
H.264	Main Profile @ L2.2	Up to 576i 60 fps Up to 4 Mbps	CABAC; MBAFF; Interlaced
H.264	Main Profile @ L3.1	Up to 720p 30 fps Up to 4 Mbps	CAVLC; With weighted prediction
H.264	Main Profile @ L3.1	Up to 720p 30 fps Up to 5 Mbps	CABAC; CAVLC; No weighted prediction

Video Decode	Profile and Level	Sampling Frequency and Bit rate/Frame rate	Notes
H.264	High Profile @ L2.2	Up to 576i 60 fps Up to 4 Mbps	CABAC; MBAFF; Interlaced
H.264	High Profile @ L3.1	Up to 720p 30 fps Up to 4 Mbps	CAVLC; With weighted prediction
H.264	High Profile @ L3.1	Up to 720p 30 fps Up to 5 Mbps	CAVLC; CABAC; No weighted prediction
MPEG-4	Advanced Simple Profile @ L5	Up to 1080p 30 fps Up to 10 Mbps	-
VC-1	Simple Profile	Up to 1080p 30 fps Up to 10 Mbps	-
VC-1	Main Profile	Up to 1080p 30 fps Up to 10 Mbps	-
VC-1	Advanced Profile	Up to 1080p 30 fps Up to 10 Mbps	-
Xvid	Highdef Profile	Up to 1080p 30 fps Up to 10 Mbps	-

ENCODERS

Audio Encoders (Tegra 3/Tegra 2)

The features in this table are supported by both Tegra 3 and Tegra 2.

Audio Encode	Profile	Resolution	Bit Rates	Notes
AAC-LC	-	-	Up to 320 kbps	-

Image Encoders (Tegra 3/Tegra 2)

The features in this table are supported by both Tegra 3 and Tegra 2.

Image Decode	Profile	Resolution	Bit Rates
JPEG	Exif	Up to 14 MP	Q-100

Video Encoders (Tegra 3)

The features in this table are supported by Tegra 3 only.

Video Encode	Profile and Level	Sampling Frequency and Bit rate/Frame rate	Notes
H.264	Baseline Profile	Up to 1080p 30 fps Up to 20 Mbps	-

Video Encoders (Tegra 2)

The features in this table are supported by Tegra 2 only.

Video Encode	Profile and Level	Sampling Frequency and Bit rate/Frame rate	Notes
H.264	Baseline Profile	Up to 1080p 24 fps Up to 14 Mbps	-

CONTAINER FORMATS

Codes are provided by GStreamer. You can download GStreamer codecs from the gstreamer opensource project at:

<http://gstreamer.freedesktop.org>

Or you can use `apt-get` in the provided Ubuntu-derived sample file system.

Hardware codecs are not included in the base release but can be provided separately under a software license agreement.

STREAMING PROTOCOLS

Streaming protocols are provided by GStreamer. You can download GStreamer codecs from the gstreamer opensource project at:

<http://gstreamer.freedesktop.org>

Or you can use `apt-get` in the provided Ubuntu-derived sample file system.

Hardware codecs are not included in the base release but can be provided separately under a software license agreement.

Protocol	Notes
HTTP 1.0	ASF, AVI, 3GP, MOV, MP3, MP4, WMA, WMV
HTTP 1.1	ASF, AVI, 3GP, MOV, MP3, MP4, WMA, WMV
RTP/RTSP/RTCP	3GP, MP3
SDP (RFC 4566)	3GP

DISPLAYS

General	Notes
HDMI [®]	See the <i>Release Notes</i> for known issues.

PLAYBACK

General	Notes
NvGstPlayer application	-

CAMERA

General	Notes
NvGstCapture application	-

POWER

General	Notes
DVFS	-
Tegra Active Power Management	Notes
Dynamic voltage scaling for core	-
Dynamic voltage scaling for CPU	-
Dynamic frequency scaling for CPU	-
Dynamic frequency scaling for memory controller	-
Dynamic frequency scaling for AVP	-
Dynamic frequency scaling for system buses	-
Low power idle state (LP2)	Cardhu only
Frequency-boosted burst modes	Cardhu only; CPU running at higher frequencies in single-core mode
EDP support	Cardhu only
External temperature sensing	-
CPU hotplug support	Cardhu only
Switch to ULP CPU mode	Cardhu only
Dynamic thermal throttling	Software with hardware fail-safe
DRAM self-refresh	
Ultra-Low Power Standby	Notes
Suspend (LP1)	-
Deep Sleep (LP0)	-
USB Suspend during Deep Sleep	-
Wake with power button and RTC	
Peripheral Power Management	Notes
NVIDIA Pixel Rendering Intensity and Saturation Management (PRISM)	Cardhu only; Display driver
Additional Notes	
Unless otherwise noted, all features pertain to Cardhu and Ventana.	

BOOT LOADERS

General	Notes
Fastboot	Supports booting from USB, SD card, internal memory (eMMC), and network file-system (NFS) boot
U-Boot	Source code available. Supports booting from USB, SD card, internal memory (eMMC), network file-system (NFS) boot, and Trivial File Transfer Protocol (TFTP) boot