2NOR01 Quick Start

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i. Overview

The following describes two methods for adding the DTB and configuring the settings of 2NOR01 on NVIDIA Jetson Orin OS.

Note: When using the second method, eth2 will not work due to the absence of the "p3767.conf.common" file.

Once you have completed the first two items, you can use the 'How to Test' function.

ii. Put 2NOR01 config and dtb file from the host computer (Ubuntu 20.4.6)

1. Download & Install NVIDIA SDK Manager https://developer.nvidia.com/sdk-manager

SDK Manager

Everything You Need to Set Up Your Development Environment

NVIDIA SDK Manager provides an end-to-end development environment setup solution for NVIDIA's Jetson, Holoscan, Rivermax, DeepStream, Aerial Research Cloud (ARC-OTA), Ethernet Switch, RAPIDS, DRIVE and DOCA SDKs for both host and target devices.

Download NVIDIA SDK Manager 2.1.0



2. Flash the NVIDIA operating software (use JetPack 5.1.2)(1) Switch 2NOR01 into Force Recovery Mode

Connect your Linux host computer to the appropriate USB port on your 2NOR01 (USB typeC)

For 2NOR01:

1.Ensure that your 2NOR01 is powered off, and a 32GB or larger NVME card is inserted .

2.Enable Force Recovery Mode by placing a jumper across SWP1 , located on the edge of the carrier board up the Jetson module.

3.Connect the 2NOR01's power adapter . The 2NOR01 powers on automatically and enters Force Recovery mode.

4. Remove the jumper from SWP1

For other 2NOR01 that have hardware buttons:

- 1. Ensure that the developer kit is powered off.
- 2. Press and hold down the Force Recovery button.
- 3. Press, then release the Power button.
- 4. Release the Force Recovery button.

Note: To Determine Whether the Developer Kit Is in Force Recovery Mode Open a terminal window on your host computer and enter command" Isusb". The Jetson module is in Force Recovery Mode if you see the message: For example: Orin NX 8GB

Bus 001 Device 058: ID 0955:7423 NVIDIA Corp

- (2) Open SDK Manager and Flash OS
- STEP 01:

SDK Mana	ger 2.1.0.11660 x86_64					A Helio Chunhua 🗸	_ ×
R	STEP 01 DEVELOPMENT ENVIRONMENT	PRODUCT CATEGORY	Jetson	a	uto detect	>	
	STEP 02 DETAILS AND LICENSE	SYSTEM CONFIGURATION	Host Machine Ubuntu 2004 - x86_64	9	Jetsen Orin NX BGB	• •	
	STEP 03	SDK VERSION	JetPack 5.1.2 See what's new	1		e	
	STEP 04	ADDITIONAL SDKS	DeepStream DeepStream 6.3			•	
'	Repair / Uninstall				CON TO STEP		
📀 nvii	DIA. Copyright © 2024, NVIDIA COR	PORATION, All rights reserved. NVI	DIA Developer		100		

Note: If the host is unable to recognize the CPU board via USB, a message"Could not detect a board" will be displayed. At this time, you can reconnect and disconnect the USB cable to check if the device is in Force Recovery Mode.



SDK Manag	ger 2.1.0.11698 x86_64		IRIIMICIRIIMINE PROTICEPINEND E 4 3 FIRITO	_ X
				A Hello CHUNHUA V
	STEP 01	JETPACK 6.0 (REV. 2) LINUX FOR JETSON ORIN NANO		Expand all
	ENVIRONMENT			STATUS
		> CUDA	3,914 MB	Installed
		> NvSci	0.5 MB	Opdate Available
	STEP 02	> Computer Vision	83.9 MB	Installed
	DETAILS AND LICENSE	> Developer Tools	736.4 MB	Installed
				STATUS
	STED 03	🗸 🗹 Jetson Linux		
		Jetson Linux image	2,349 MB	OS image ready
		> V Flash Jetson Linux		
		Jetson Runtime Components	40 10	
		Additional Setups	4.0 MB	Develoaded
S. Ka	SIEP 04	CUDA X-AL Puntime	1,574 MB	Downloaded
			1,574 MB	Bowneaded
		System requires up to 11GB (host) and OGB (target) of available	disk space during setup.	
		Download folder: /home/test/nvidia_download	change (1GB required)	
		Target HW image folder: /home/test/nvidia/nvidia sdk	change (10GB required)	TO STEP 03
		I accent the terms and conditions of the license agreeme	nte Download now Install later	K BACK TO STEP 01
		- raccapt the terms and conditions of the license agreeme	Bownioad now. Install later.	
📀 nvid	DIA. Copyright © 2024, NVIDIA CORPO	ORATION. All rights reserved. NVIDIA Developer		

STEP 02: Uncheck Jetson Runtime Components

STEP 03: Flash

SDK Manager 2.1.0.11660 x86_64		_ × _
STEP 01 DEVELOPMENT ENVIRONMENT SDK Manager		× Expand all
STEP 02 DETAILS AND LICENSE	SDK Manager Is about to flash your Jetson Orin NX module Selected device: Jetson Orin NX BGB (1-6) • (refresh) Connect and set your Jetson Orin NX module as follows: 1. OEM Configuration: Runtime • •	6 ed ed ed
STEP 03 SETUP PROCESS	 Storage Device: NVMe Note: You may need to manually change the device boot order after flashing when there are multiple choices on your device. When ready, click 'Flash' to continue. 	S age ready Pending
SUMMARY SUMMARY FINALIZATION	Al Runtime 1,416 MB	Install Pending
Oownload complexity	ted successfully	
 Installing: 33:339 Download folder: / 	ome/test/nvidia_download	PAUSE
STATION. All right © 2024, NVIDIA CORPORATION. All rights research		

SDK Manag	ger 2.1.0.11660 x86_64	A POR -	Connection failed Activation of network connection I	failed	_
					A Hello CHUNHUA イ
	STEP 01	DETAILS			
	DEVELOPMENT ENVIRONMENT	JETPACK 5.1.3 LINUX FOR JETSON ORIN NX N	IODULES		Expand all
		✓TARGET COMPONENTS	DOWNLOAD SIZE		
		Jetson Linux	2177 MD		
	STEP 02	Jetson Linux image	2,177 MB	OS image re	ady
	DETAILS AND LICENSE	Flash Jetson Linux	0 MB	 Success 	
		> CUDA Runtime	1.435 MB	Installed	
		> CUDA X-Al Runtime	1.416 MB	Installed	
		> Computer Vision Runtime	61.3 MB	Installed	
	STEP US	NVIDIA Container Runtime	2.6 MB	Installed	
		> Multimedia	71.5 MB	 Installed 	
		 Jetson SDK Components 			
		> CUDA	1,435 MB	 Installed 	
1	STEP 04	> CUDA-X AI	1,416 MB	 Installed 	
	SUMMARY FINALIZATION	Computer Vision	50.3 MB	Installed	
		INSTALLATION COM	PLETED SUCCESSFULLY.	FI	NISH $ imes$
				ANE XPORT LOGS) EXIT
				< BACK TO S	STEP 01

3.	Replace 2NOR01 's config and dtb file to Linux_for_Tegra	
	(1) 2NOR01's p3767.conf.common	
	Replace 2NOR01 's p3767.conf.common to Linux_for_Tegra.	
	This setting is related to eth2 (I226IT)	
	For example :	
	sudo cp -v p3767.conf.common	į
	/\$HOME/JetPack_5.1.2_Linux_JETSON_ORIN_NANO_TARGETS/Linux_for_Tegra/	ł
	p3767.conf.common	

(2) 2NOR01's DTB File

For Orin Nano example: unzip nvidia_dtb.zip sudo cp –v dtb/ tegra234-p3767-0003-p3768-0000-a0.dtb /\$HOME/JetPack_5.1.2_Linux_JETSON_ORIN_NANO_TARGETS/Linux_for_Tegra/k ernel/dtb

For Orin NX example: unzip nvidia_dtb.zip sudo cp –v dtb/ tegra234-p3767-0001-p3768-0000-a0.dtb /\$HOME/JetPack_5.1.2_Linux_JETSON_ORIN_NANO_TARGETS/Linux_for_Tegra/k ernel/dtb

4. Flash OS again through command

Switch 2NOR01 into Force Recovery Mode again, use l4t_initrd_flash.sh to flash OS

For example : (Orin Nano / Orin NX)

sudo ./tools/kernel_flash/l4t_initrd_flash.sh --external-device nvme0n1p1 \

-c tools/kernel_flash/flash_l4t_external.xml -p "-c

bootloader/t186ref/cfg/flash_t234_qspi.xml" \

--showlogs --network usb0 jetson-orin-nano-devkit internal

iii. Put 2NOR01's dtb file to device

After downloading the DTB file from LexWiki, follow the steps below http://tprd.info/lexwiki/index.php/MB:2NOR01

ORIN_NANO boot dtb

https://drive.google.com/file/d/1E6s2Kc-YnL_pJmzxT82KOdms6b-IHXKH/view?usp=sharing

ORIN_NX boot dtb

https://drive.google.com/file/d/1Aatg27d1OM3t2_6jz5VbtkmYwsbdcWAB/view?usp=sharing

□ Step 1 :Copy dtb to /boot folder on the 2NOR01

for example : sudo cp -v kernel_tegra234-p3767-0003-p3768-0000-a0-user-custom-lex.dtb /boot/ kernel_tegra234-p3767-0003-p3768-0000-a0-user-custom-lex.dtb

?

Step 2 : Modify extlinux.conf and Create new LABEL gedit /boot/extlinux/extlinux.conf save file and reboot

Activities 🛛 Gedit 🔹 八 30 16:31 •		15W 🛃
Open - A extlinux.conf		
2. Change DEFAULT LABEL name		
LABEL primary MENU LABEL primary kernel LINUX /boot/Image FOT /boot/Atb/kernel_tegra234-p3767-0003-p3768-0000-a0.dtb TINTTD /boot/initd' LAPEPD S(tchotargs) root=PARTUDI0=66dfleef-le0a-d11f-bof5-87493f00a2ed rw rootwait rootfstype=ext4 mminit_le firmware fbcon-massion enc.jifmaese0 mospectre bhb	oglevel=4 console=ttyTCU0,115200 console=ttyAMA0,115200 f;	irmware_class.path=/etc,
<pre>15 # when testing a custom kernel, it is recommended that you create a backup of 16 # the original kernel, and ad a new entry to this file so that the device can 17 fallack to the original kernel. To do this: 18 1, Nake a backup of the original kernel 19 sudo cr./boot/Image/boot/Image.backup</pre>		
22 # 2, Copy your custom kernel into /boot/Image 23 # 1. C	Copy and Create new LABEL	
22 # 4. 26 # 4. Rebot 27 28 LABEL backup kernel 30 # LINUK /bob/Tamope backup 31 # UNIK /bob/Tamope backup 32 # LINUK /bob/Tamope backup 33 # LINUK /bob/Tamope backup 33 # JNITPO /bob/Tamope backup 33 # JNITPO /bob/Tamope backup	$\overline{\mathbf{Q}}$	
24 AdEL LEX 10 HENU LABL lex kernel 1 LINUX /boot/Image 1 F07 /boot/krenel_tegra234-p3767-0003-p3768-0009-a0-user-custom-lex.dtb 1 F07 /boot/krenel_tegra234-p3767-0003-p3768-0009-a0-user-custom-lex.dtb 1 AdPEDED 5(cbootarg3) root=PARTNUID=66/12ef-1=00-411f-b6f5-87493f00a2ed rw rootwait rootfstype=ext4 mminit_lr 1 Amware Tboommappio net.1fameser onspectre bio	oglevel=4 console=ttyTCU0,115200 console=ttyAMA0,115200 f:	irmware_class.path=/etc,
	Plain Text 👻 Tab Widi	th: 8 👻 🛛 Ln 23, Col 2

If successful, you can see the LEX_IO option in the boot me



iv. How to Test

Next, we can do other verifications

1. TPM



2. SPI (spidev)

```
test@test-desktop:~/Factory_Tools$ sudo modprobe spidev
[sudo] password for test:
test@test-desktop:~/Factory_Tools$ ls /dev/spidev*
/dev/spidev0.0 /dev/spidev0.1
test@test-desktop:~/Factory_Tools$ ]
```

3. i2c1 / i2c2 (use PW407)

root@test-desktop:/home/test# i2cdetect -y 7	
Warning: Can't use SMBus Quick Write command, will skip some addr	esses
0123456789abcdef	
00:	
10:	
20:	
30: 37 222	
40:	
50: 5f	
60:	
70:	
root@test-desktop:/home/test# i2cdetect -v 1	
Warning: Can't use SMBus Ouick Write command, will skip some addr	esses
0 1 2 3 4 5 6 7 8 9 a b c d e f	
00:	
10:	
20:	
30: i2c1	
40:	
50: 5f	
60:	
70:	
root@test-desktop:/home/test# 🗌	

4. CANBUS

5. CA1

Q	Settings	Ξ	Sound 🙁
0	Network		System Volume
*	Bluetooth		
Ģ	Background		••
Ð	Appearance		Over-Amplification
Û	Notifications		Allows raising the volume above 100%. This can result in a loss of audio quality; it is better to increase application volume settings, if possible.
Q	Search		Volume Levels
	Applications	\rangle	System Sounds
8	Privacy	\rangle	
	Online Accounts		Output
∝°	Sharing		Output Device (Unitek Y-24 Test
л	Sound		
•	Power		Balance
Ş	Displays		
Ü	Mouse & Touchpad		Input
	Keyboard Shortcuts		Input Device Microphone - Audio Adapter (Unitek Y-247A)
٥	Printers		Volume
õ	Removable Media		North

6. MIPI Camera - CAM1-IMX477 and CAM2-IMX219



7. eth2



Note: eth2 needs to modify the "p3767.conf.common", so just replacing dtb cannot make eth2 work.

/JetPack_5.1.2_Linux_JETSON_ORIN_NANO_TARGETS/Linux_for_Tegra/p3767. conf.common

ODMDATA="gbe-uphy-config-9,hsstp-lane-map-3,hsio-uphy-config-0";