



Mobiliya

Jetson Flashing Guide.

April, 2018

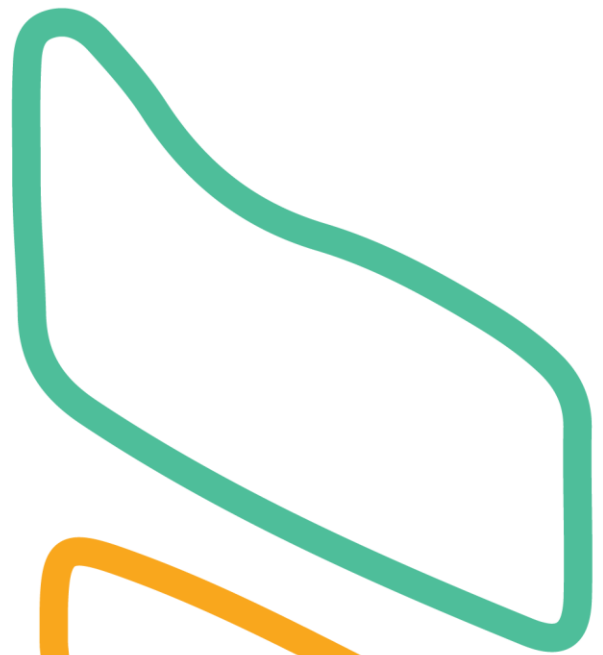


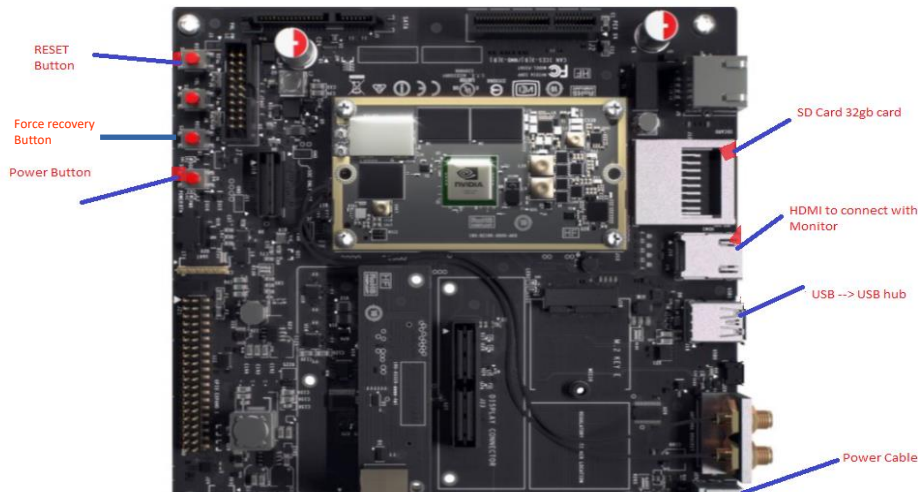
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Introduction

We will flash Nvidia jetson board with Linux based OS.

Please refer following image for Jetson board layout.



Prerequisite

1. Host Ubuntu 16.04 machine with at least 35 GB available disk space
2. Jetson board
3. Micro B USB cable
4. Router
5. 3 LAN cables

Steps

Please follow following steps on host machine.

1. Download Nvidia Jetson **Jetpack** for flashing:

<https://github.com/MobiliyaTechnologies/SecurityAndSurveillance/blob/Jetpack/Setup/installation/JetPack-L4T-3.2.1-linux-x64.run>

2. Create a folder named **jetson_jetpack** for installation of Jetpack libraries in home directory.

3. Place the downloaded JetPack- $\{\text{VERSION}\}$.run (Eg: **JetPack-L4T-3.2.1-linux-x64.run**) file in above folder

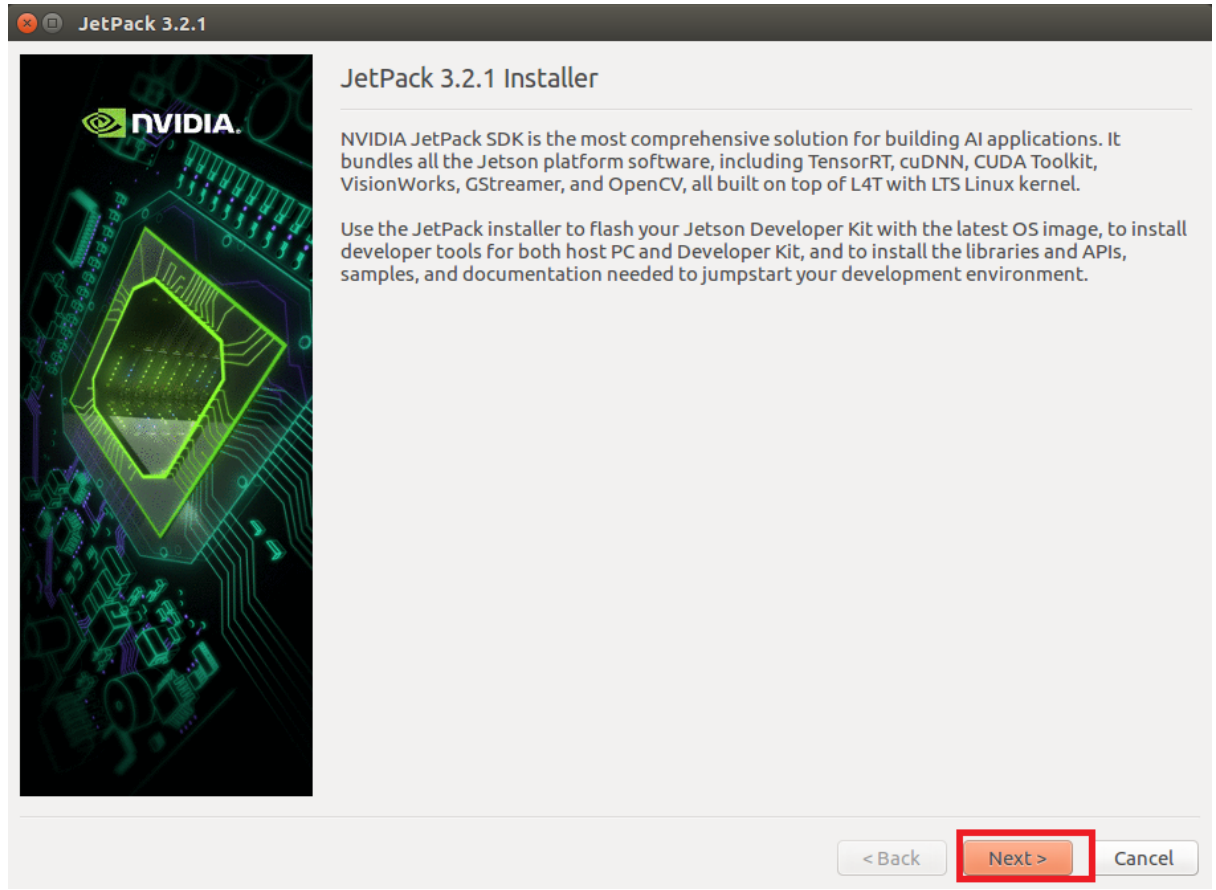
4. Open Terminal(Alt+Ctrl+T). Run -

```
cd jetson_jetpack
```

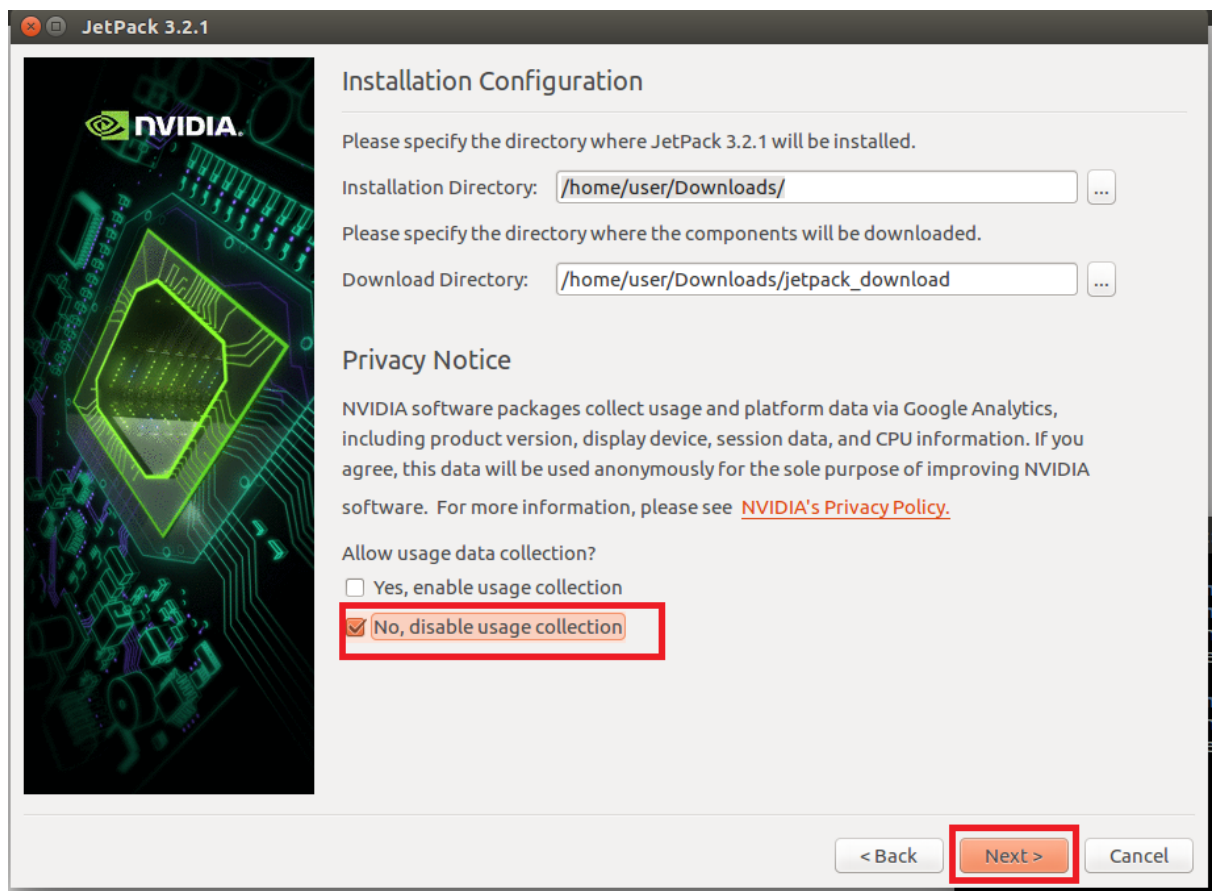
```
chmod +x JetPack-L4T-3.2.1-linux-x64.run
```

5. Run following command in terminal on your host Ubuntu machine.

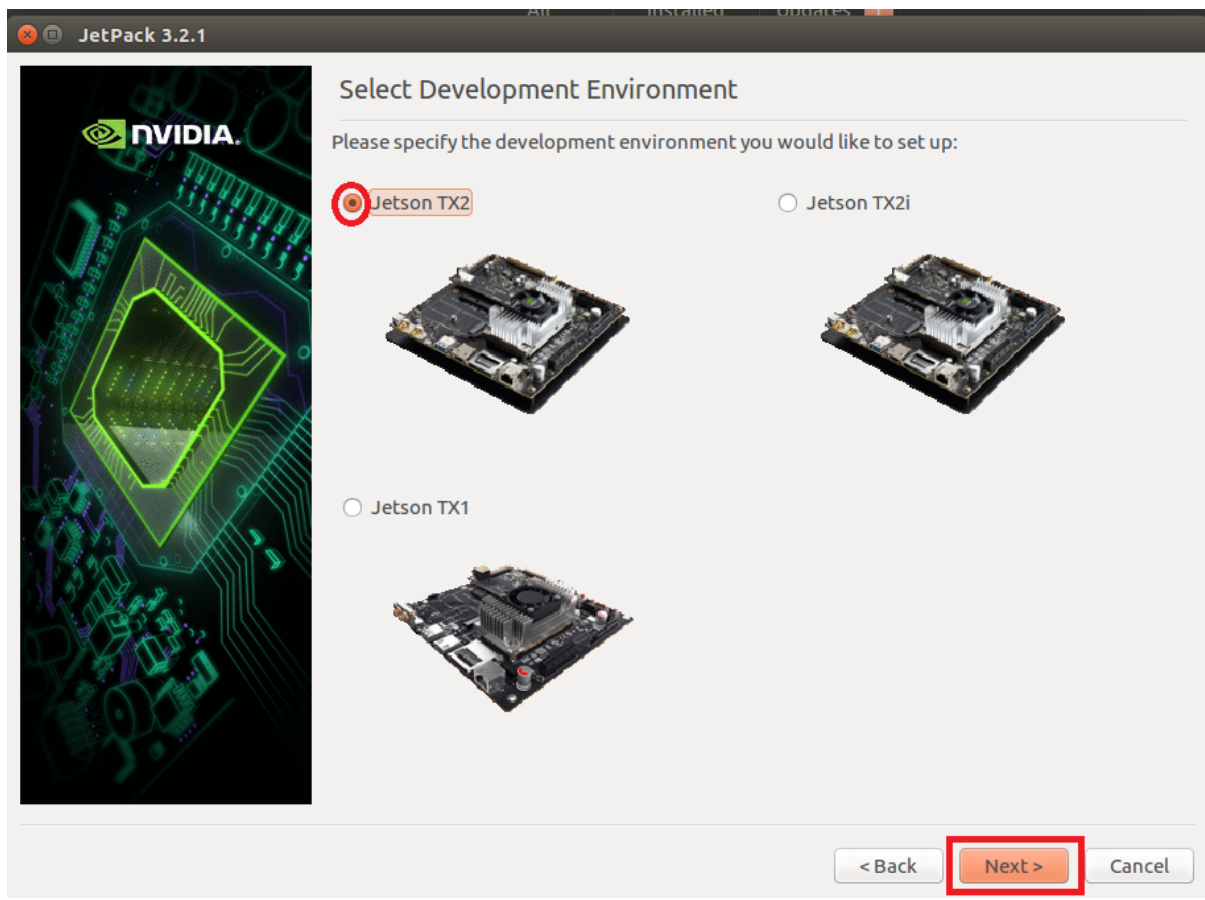
```
./JetPack-L4T-3.2.1-linux-x64.run
```



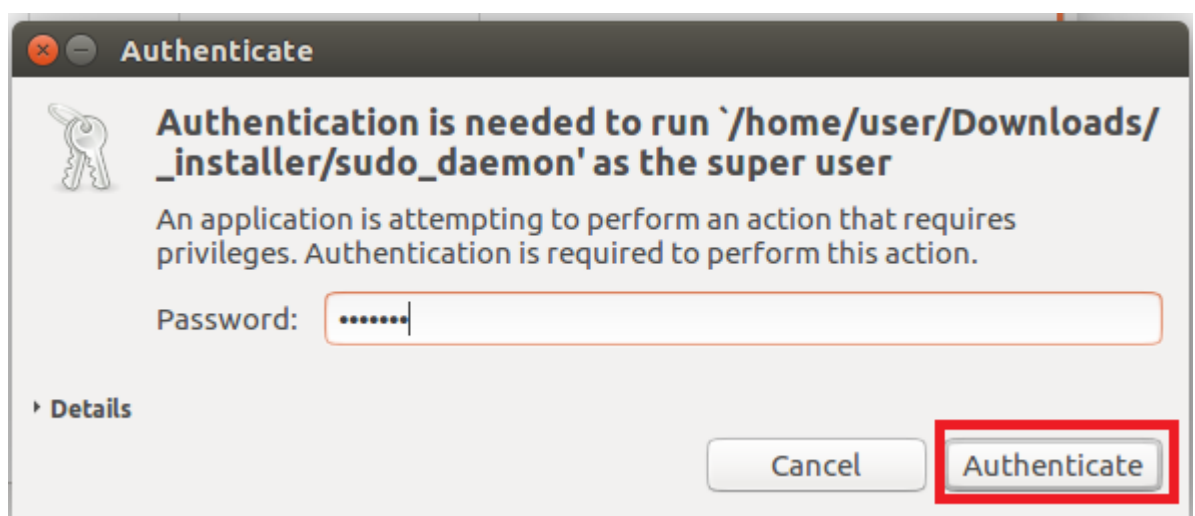
6. Next, the JetPack installer will indicate the installation directory.



7. Select the development environment to setup.

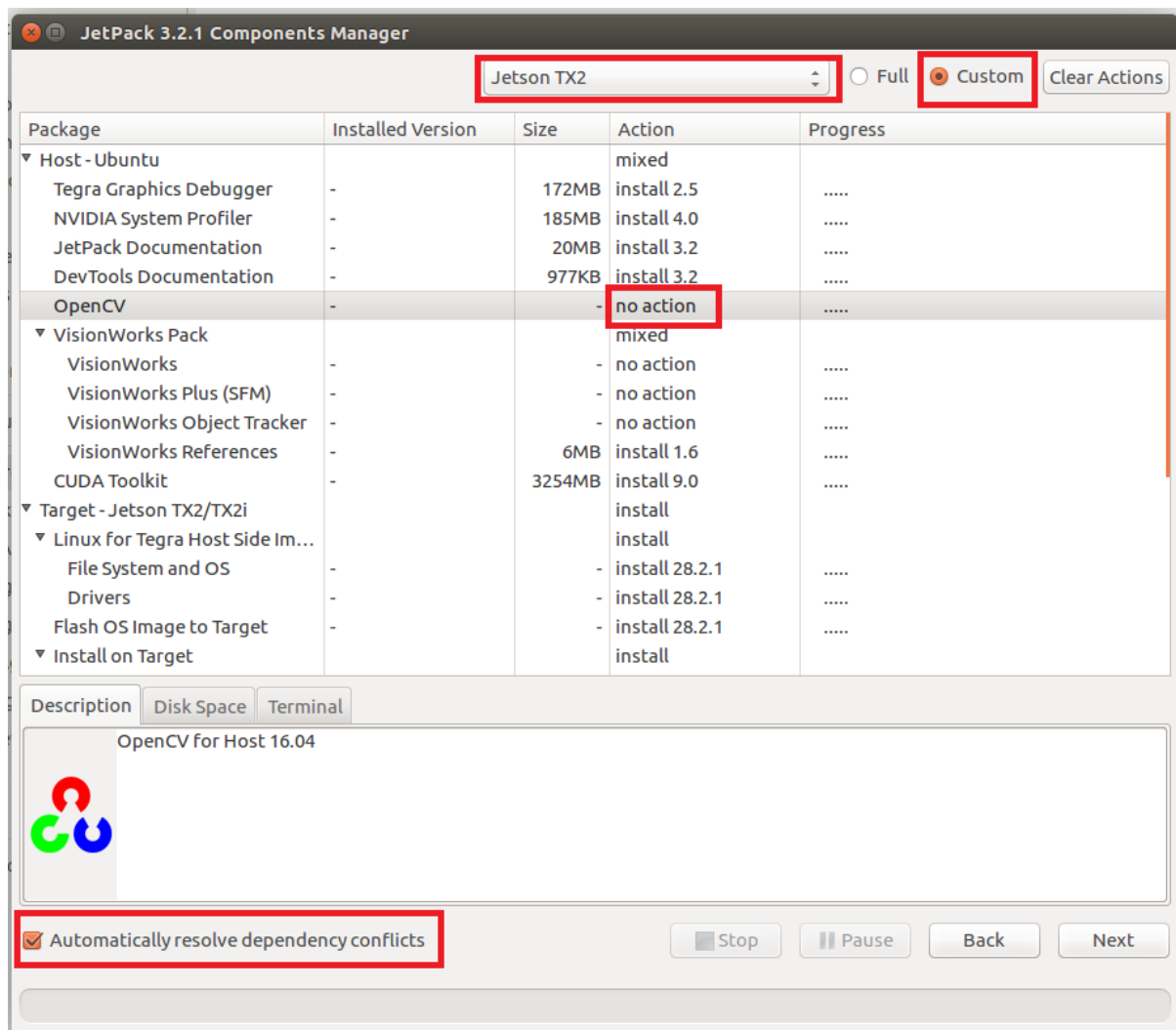


8. The JetPack installer will pop up a window to ask for permission to use during the installation process; you will need to enter your user password(Host machine's password) here.

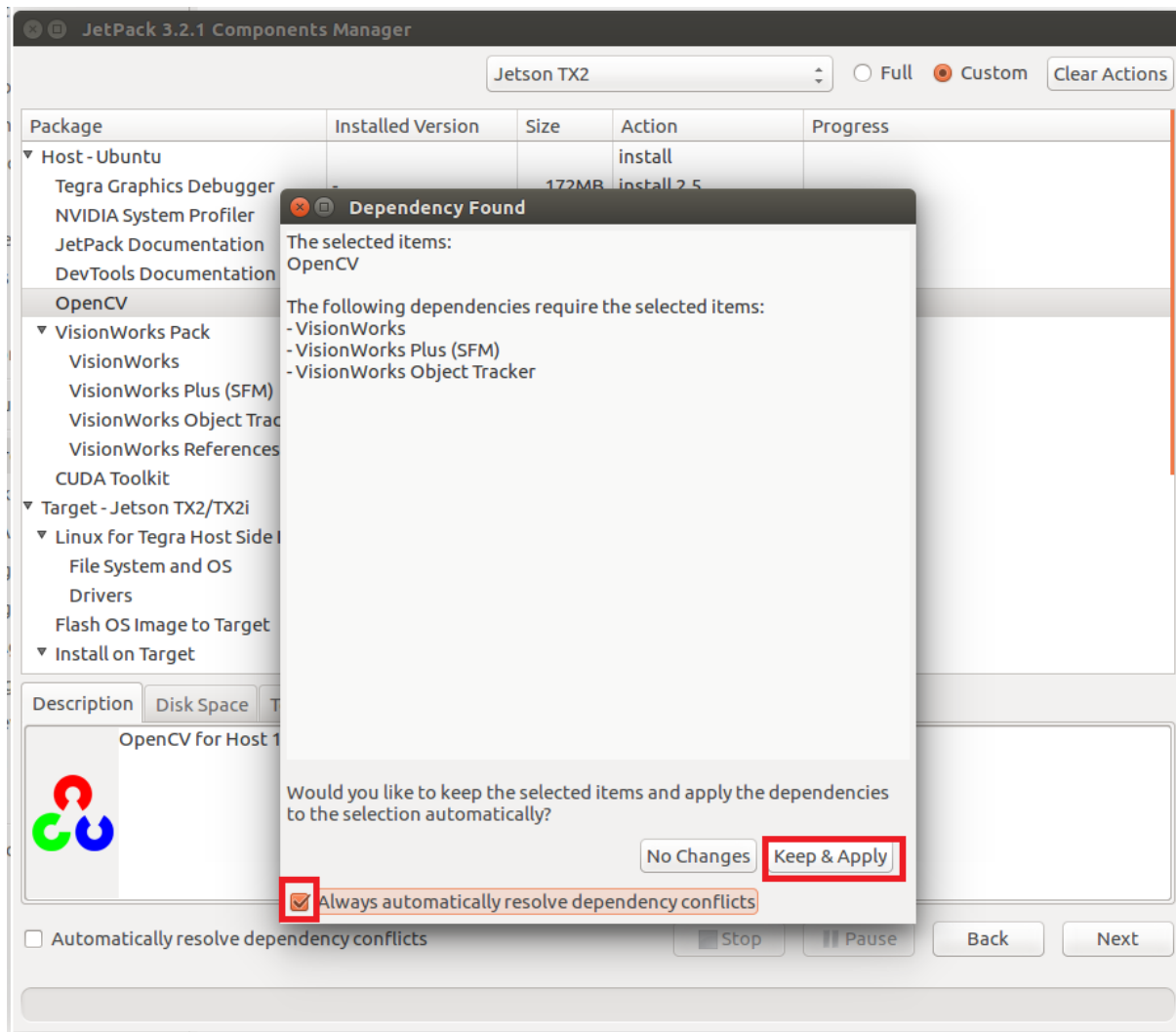


9. Select the **Custom** option for installing the packages on the jetson.

Uncheck OpenCV installation. Select option - no action

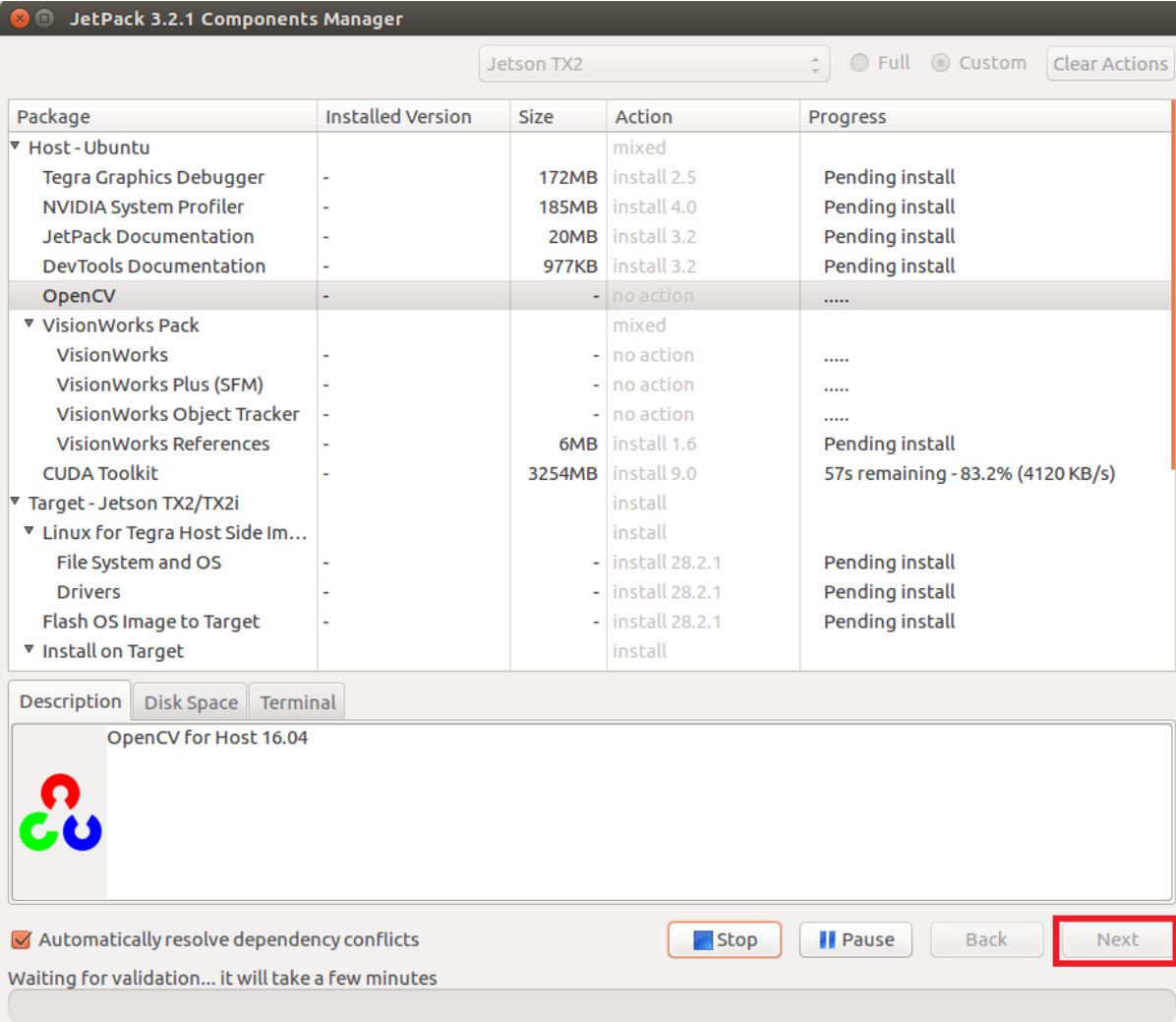


It will pop up one window :



Check **Always Automatically resolve dependency conflicts** and Click **Keep & Apply** above.

Then, Click 'Next'.



JetPack 3.2.1 Components Manager


Jetson TX2

Full Custom Clear Actions

Package	Installed Version	Size	Action	Progress
▼ Host - Ubuntu			mixed	
Tegra Graphics Debugger	-	172MB	install 2.5	Pending install
NVIDIA System Profiler	-	185MB	install 4.0	Pending install
JetPack Documentation	-	20MB	install 3.2	Pending install
DevTools Documentation	-	977KB	install 3.2	Pending install
OpenCV	-	-	no action
▼ VisionWorks Pack			mixed	
VisionWorks	-	-	no action
VisionWorks Plus (SFM)	-	-	no action
VisionWorks Object Tracker	-	-	no action
VisionWorks References	-	6MB	install 1.6	Pending install
CUDA Toolkit	-	3254MB	install 9.0	57s remaining - 83.2% (4120 KB/s)
▼ Target - Jetson TX2/TX2i			install	
▼ Linux for Tegra Host Side Im...			install	
File System and OS	-	-	install 28.2.1	Pending install
Drivers	-	-	install 28.2.1	Pending install
Flash OS Image to Target	-	-	install 28.2.1	Pending install
▼ Install on Target			install	

Description Disk Space Terminal

OpenCV for Host 16.04

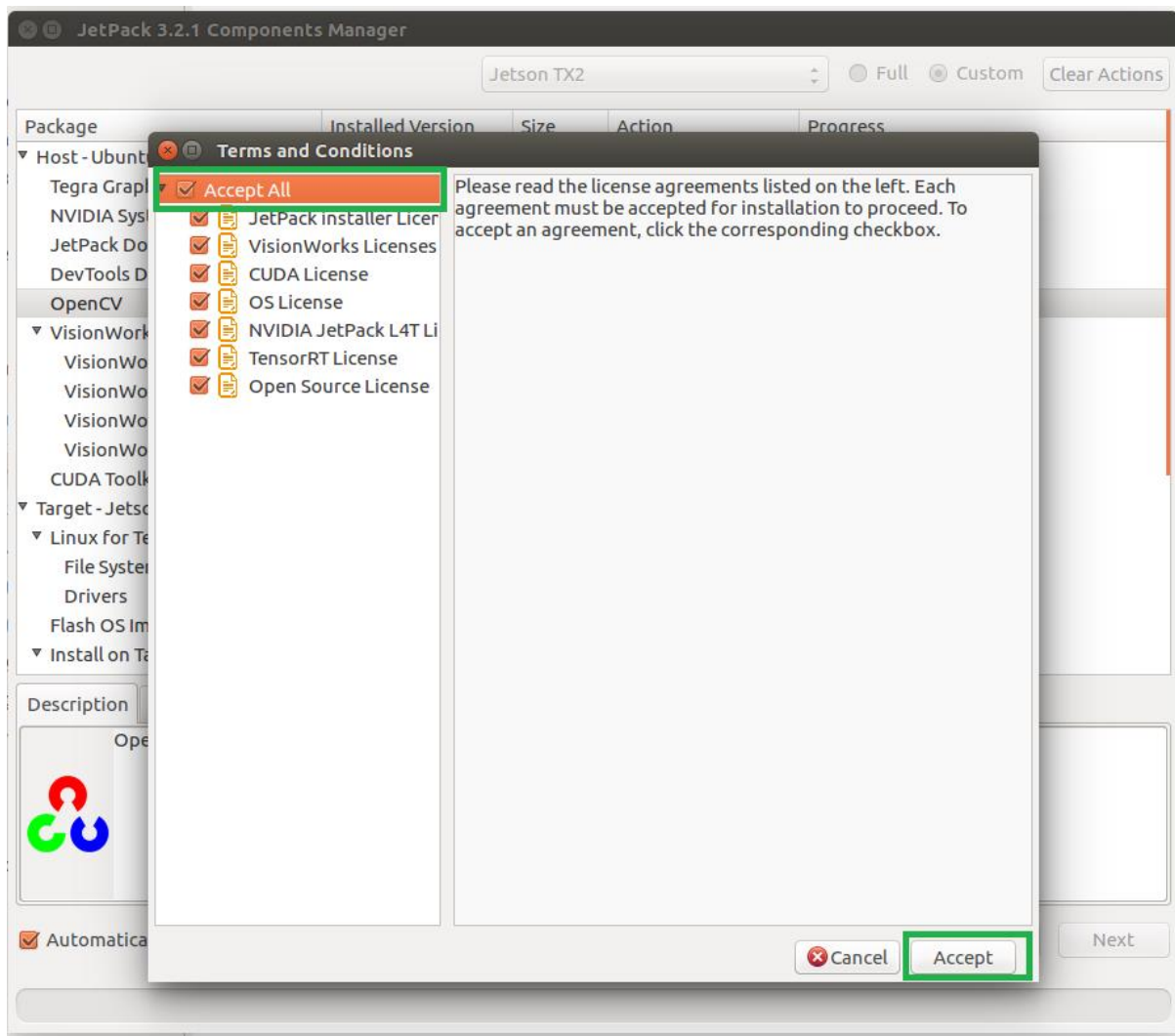


☒ Automatically resolve dependency conflicts

Waiting for validation... it will take a few minutes

Stop Pause Back **Next**

10. Accept all Terms and conditions. Click 'Accept'.



11. The Component Manager will proceed with the installation (~ 20 minutes). Once the host installation steps are completed, click the 'Next' button to continue with the installation of target components. It will look like -

JetPack 3.2.1 Components Manager

Jetson TX2 | Full | Custom | Clear Actions

Package	Installed Version	Size	Action	Progress
▼ Host - Ubuntu			no action	
Tegra Graphics Debugger	2.5	-	no action	Finished installing
NVIDIA System Profiler	4.0	-	no action	Finished installing
JetPack Documentation	3.2	-	no action	Finished installing
DevTools Documentation	3.2	-	no action	Finished installing
OpenCV	-	-	no action
▼ VisionWorks Pack			no action	
VisionWorks	-	-	no action
VisionWorks Plus (SFM)	-	-	no action
VisionWorks Object Tracker	-	-	no action
VisionWorks References	1.6	-	no action	Finished installing
CUDA Toolkit	9.0	-	no action	Finished installing
▼ Target - Jetson TX2/TX2i			mixed	
▼ Linux for Tegra Host Side Im...			mixed	
File System and OS	-	-	install 28.2.1	Installing
Drivers	28.2.1	-	no action	Finished installing
Flash OS Image to Target	-	-	install 28.2.1	Pending install
▼ Install on Target			install	

Description | Disk Space | Terminal

```

/home/user/Downloads/_installer/run_command -c="cd /home/user/Downloads/64_TX
2/Linux_for_Tegra/rootfs/;tar xpf /home/user/Downloads/jetpack_download/Tegra_Li
nux_Sample-Root-Filesystem_R28.2.1_aarch64.tbz2; cd ../; ./apply_binaries.sh" -d
=/home/user/Downloads/_installer/tmp -l=/home/user/Downloads/_installer/logs/64
_TX2//filesystem_tx2.log
  
```

Export Log...

☒ Automatically resolve dependency conflicts

(7/18) Installing File System and OS

Stop | Pause | Back | Next

JetPack 3.2.1

Installing

Host installation is complete.
Installer will continue with target hardware setup.

Completed

Click next to proceed

< Back | **Next >** | Cancel

12. Please refer following setup for flashing jetson.

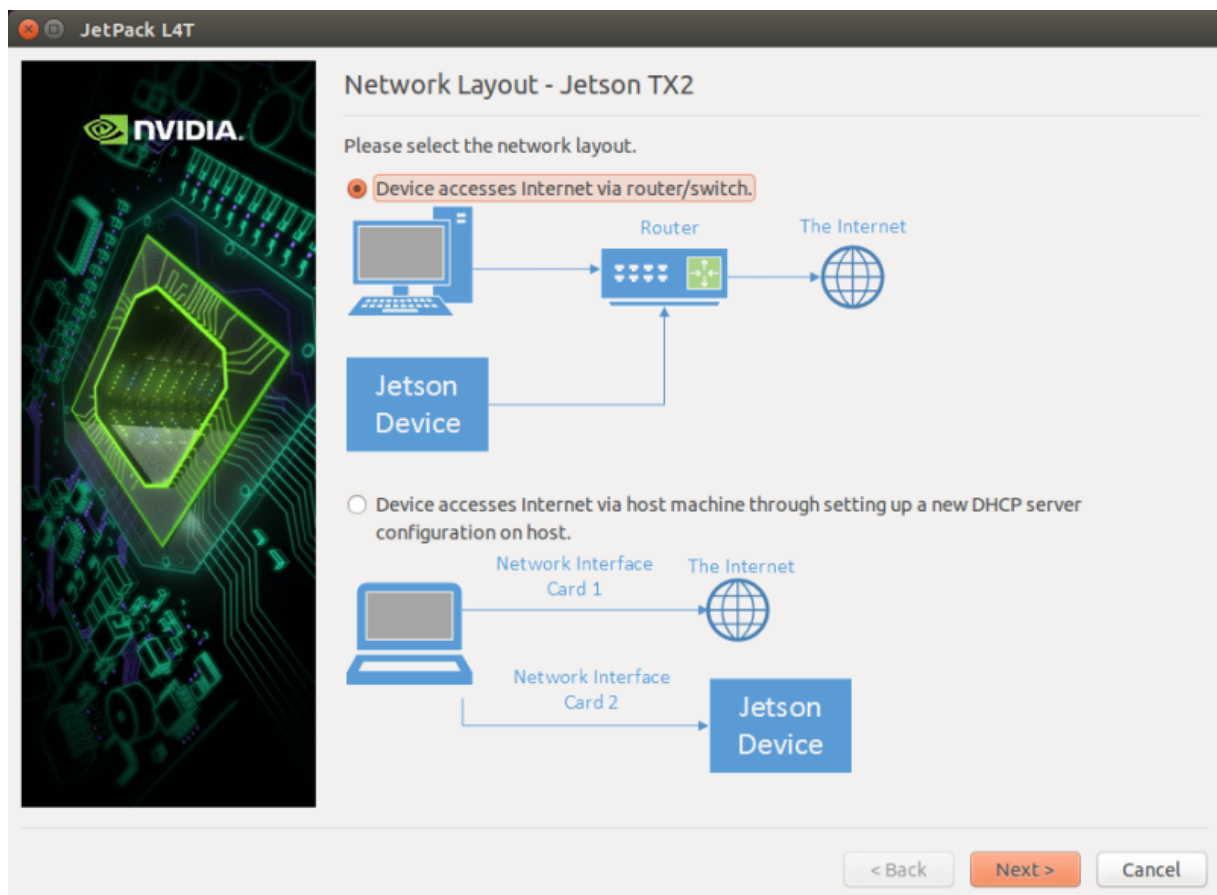
You need a router connected to internet.

Connect Host machine to router via ethernet.

Jetson to the same router via ethernet.

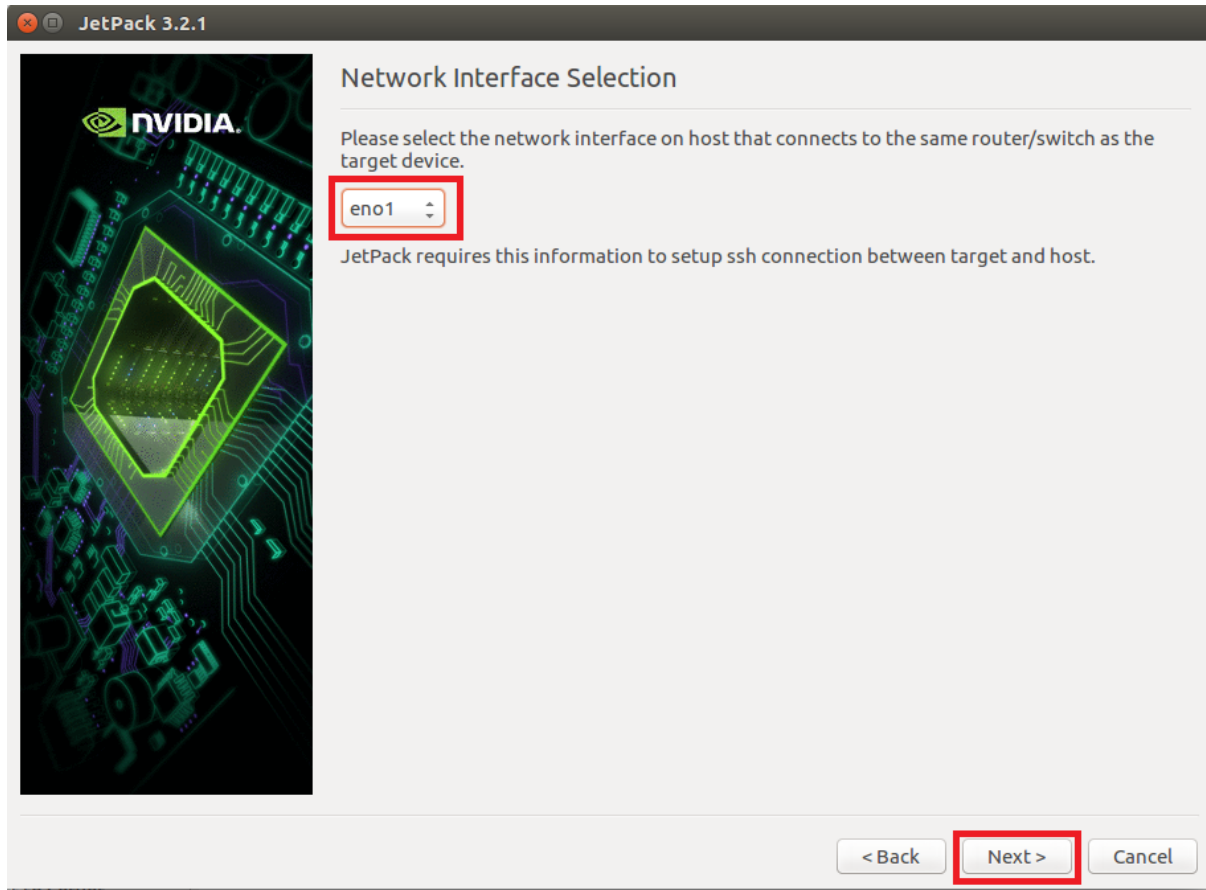
Note: Jetson and Host machine should be in same sub network after this setup and internet connection should be working on host machine(check in browser if needed).

After above setup is done, press <NEXT>



13. If you selected the **Device access Internet via router/switch** layout, you will be asked to select which interface to use for Internet access.

Note: eth0 or ensp0 or eno1 will be displayed as option.

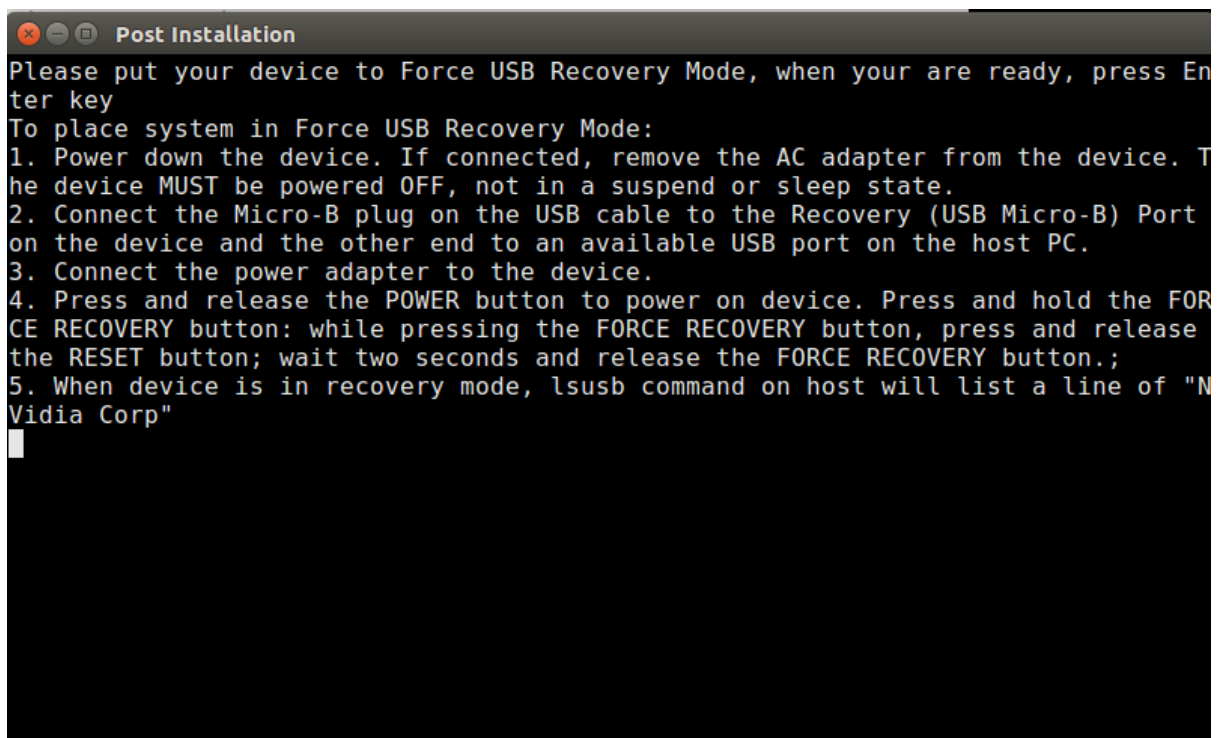


14. A pop-up window will instruct you to put your device into Force USB Recovery Mode, so you can flash the OS.

Refer following diagram for button layout.



Follow the steps from pop up window.



Note: In 5th step, verify that Device with 'Nvidia Corp' is listed in lsusb output. Open another terminal(Alt+Ctrl^T). Run -

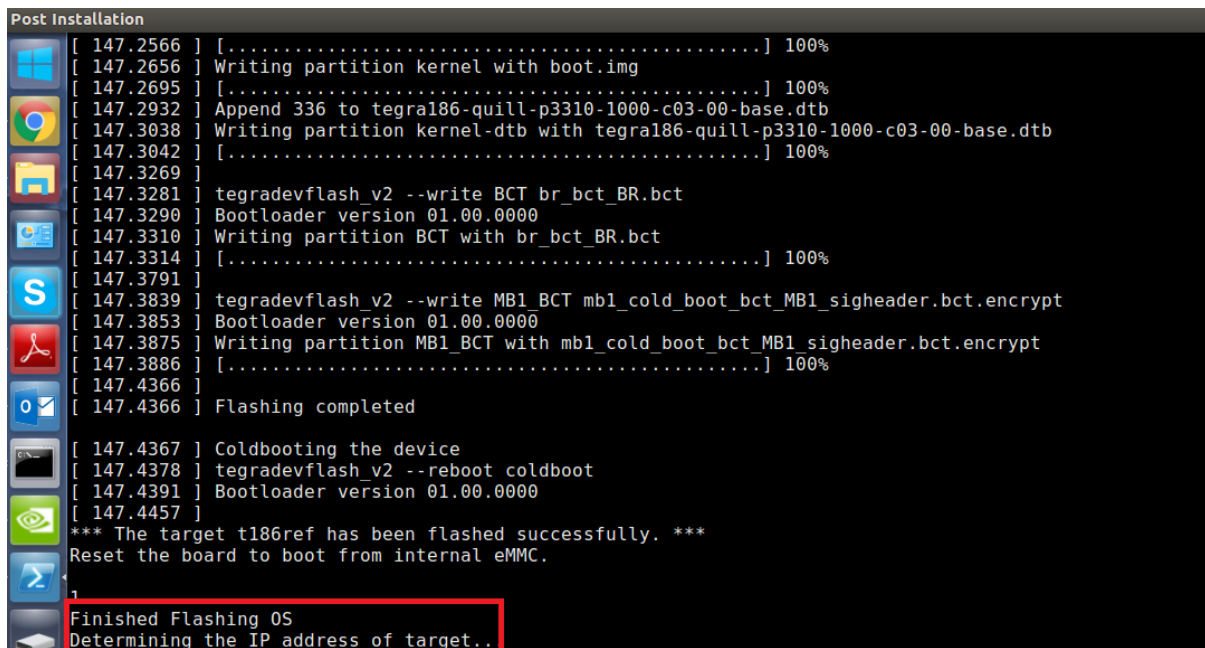
\$lsusb

```
lspramod@pramodP-PC:~/Desktop/jetson_jetpack$ lsusb
Bus 002 Device 002: ID 8087:8000 Intel Corp.
Bus 002 Device 001: ID 1d6b:0002 Linux Foundation 2.0 root hub
Bus 001 Device 002: ID 8087:8008 Intel Corp.
Bus 001 Device 001: ID 1d6b:0002 Linux Foundation 2.0 root hub
Bus 004 Device 001: ID 1d6b:0003 Linux Foundation 3.0 root hub
Bus 003 Device 002: ID 045e:0797 Microsoft Corp. Optical Mouse 200
Bus 003 Device 004: ID 0955:7c18 NVidia Corp.
Bus 003 Device 003: ID 045e:07b9 Microsoft Corp.
Bus 003 Device 001: ID 1d6b:0002 Linux Foundation 2.0 root hub
pramod@pramodP-PC:~/Desktop/jetson_jetpack$
```

Then, press Enter in the Post Installation window.

After this, it will take around 15 minutes.

15. After around 15 minutes , the host will try to identify the IP address of Jetson system. If it **gives up**, enter IP manually.



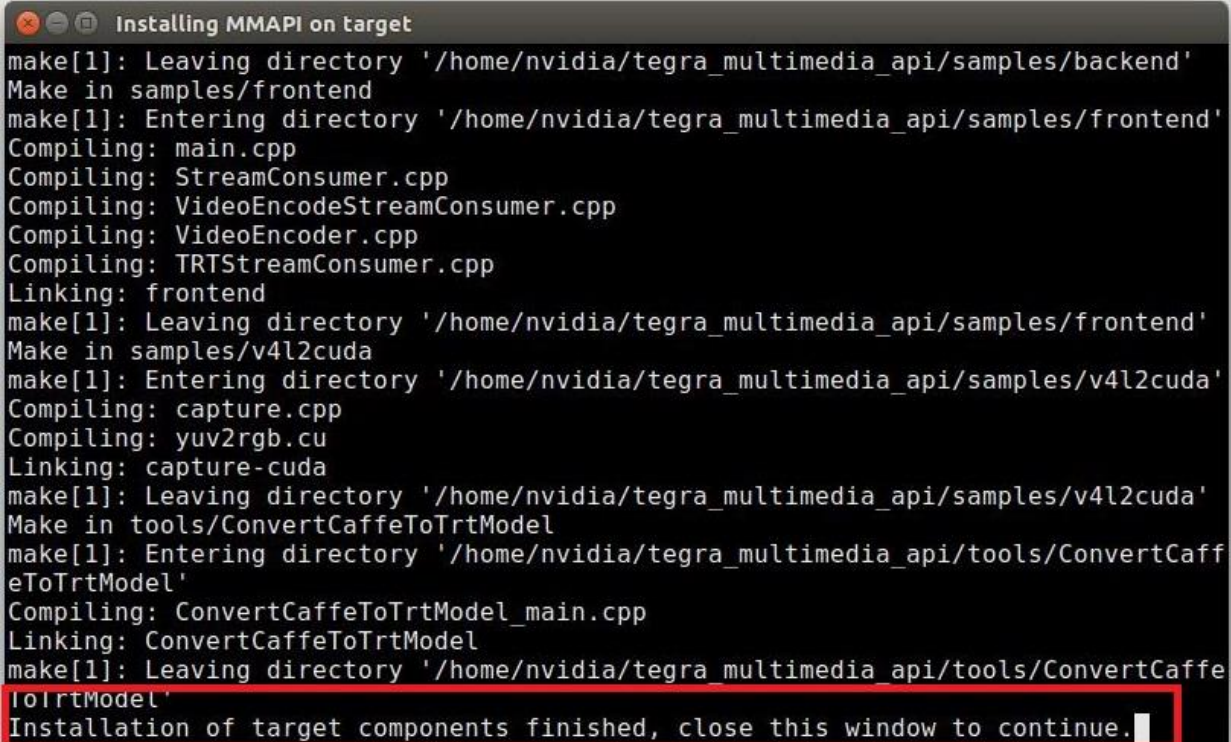
```
Post Installation
[ 147.2566 ] [.....] 100%
[ 147.2656 ] Writing partition kernel with boot.img
[ 147.2695 ] [.....] 100%
[ 147.2932 ] Append 336 to tegra186-quill-p3310-1000-c03-00-base.dtb
[ 147.3038 ] Writing partition kernel-dtb with tegra186-quill-p3310-1000-c03-00-base.dtb
[ 147.3042 ] [.....] 100%
[ 147.3269 ]
[ 147.3281 ] tegradevflash_v2 --write BCT br_bct_BR.bct
[ 147.3290 ] Bootloader version 01.00.0000
[ 147.3310 ] Writing partition BCT with br_bct_BR.bct
[ 147.3314 ] [.....] 100%
[ 147.3791 ]
[ 147.3839 ] tegradevflash_v2 --write MB1_BCT mbl_cold_boot_bct_MB1_sigheader.bct.encrypt
[ 147.3853 ] Bootloader version 01.00.0000
[ 147.3875 ] Writing partition MB1_BCT with mbl_cold_boot_bct_MB1_sigheader.bct.encrypt
[ 147.3886 ] [.....] 100%
[ 147.4366 ]
[ 147.4366 ] Flashing completed
[ 147.4367 ] Coldbooting the device
[ 147.4378 ] tegradevflash_v2 --reboot coldboot
[ 147.4391 ] Bootloader version 01.00.0000
[ 147.4457 ]
*** The target t186ref has been flashed successfully. ***
Reset the board to boot from internal eMMC.
1
Finished Flashing OS
Determining the IP address of target..
```

Note: To know IP of Jetson: Open Terminal on Jetson machine->**ifconfig**. Use HDMI cable to connect monitor/display. Credentials to login nvidia:nvidia

16. After obtaining the IP the host PC will install all the libraries on Jetson device. This will take around 15 minutes.

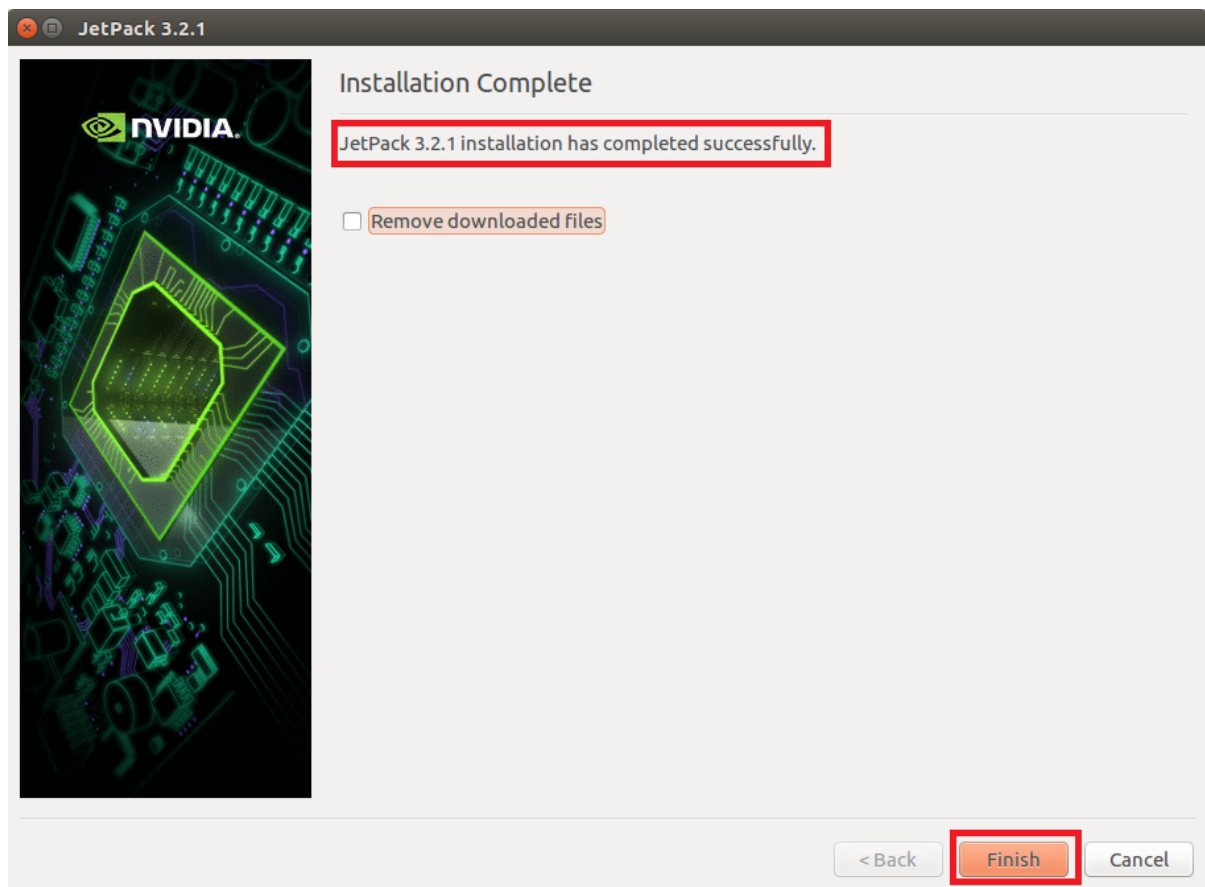
17. After all the processing the host PC will give a 'Done Installation' message. Then Jetson is completely flashed.

18. Please make sure below message is displayed after installation in complete.



```
Installing MMAPi on target
make[1]: Leaving directory '/home/nvidia/tegra_multimedia_api/samples/backend'
Make in samples/frontend
make[1]: Entering directory '/home/nvidia/tegra_multimedia_api/samples/frontend'
Compiling: main.cpp
Compiling: StreamConsumer.cpp
Compiling: VideoEncodeStreamConsumer.cpp
Compiling: VideoEncoder.cpp
Compiling: TRTStreamConsumer.cpp
Linking: frontend
make[1]: Leaving directory '/home/nvidia/tegra_multimedia_api/samples/frontend'
Make in samples/v4l2cuda
make[1]: Entering directory '/home/nvidia/tegra_multimedia_api/samples/v4l2cuda'
Compiling: capture.cpp
Compiling: yuv2rgb.cu
Linking: capture-cuda
make[1]: Leaving directory '/home/nvidia/tegra_multimedia_api/samples/v4l2cuda'
Make in tools/ConvertCaffeToTrtModel
make[1]: Entering directory '/home/nvidia/tegra_multimedia_api/tools/ConvertCaffeToTrtModel'
Compiling: ConvertCaffeToTrtModel_main.cpp
Linking: ConvertCaffeToTrtModel
make[1]: Leaving directory '/home/nvidia/tegra_multimedia_api/tools/ConvertCaffeToTrtModel'
Installation of target components finished, close this window to continue.
```


Also check the following message - saying installation is complete. Click 'Finish'.



19. Connect monitor, keyboard, mouse to jetson for further steps. Login credentials nvidia:nvidia