Setup to run DeepStream samples on Jetson TX2

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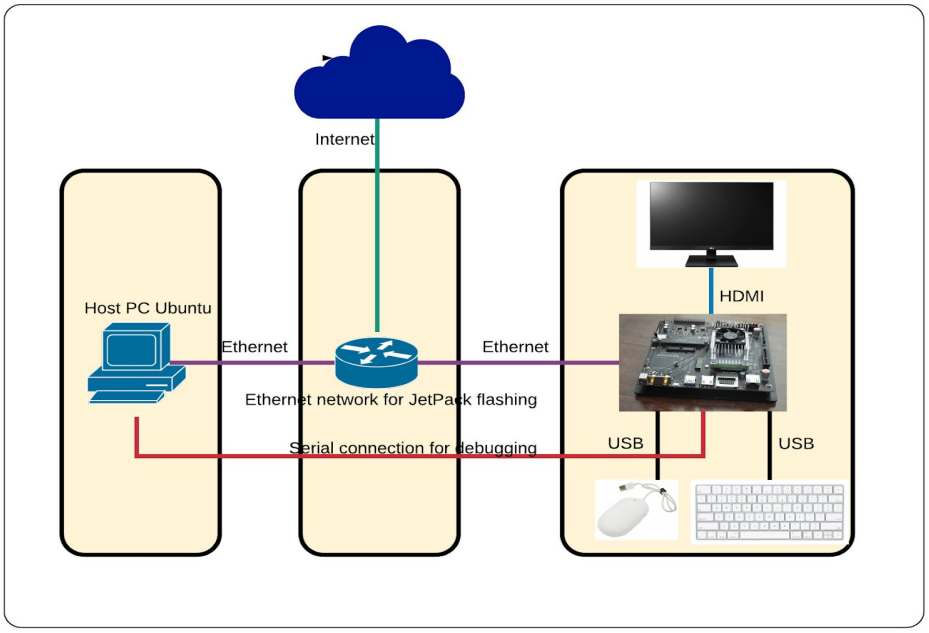
Professor: Kaikai Liu
Revision: 1

Contents

1. INTRODUCTION

Following figure shows the Jetson-TX2 development environment



The Jetson TX2 comes pre-flashed with a Linux environment.. On top of which, JetPack should be installed. JetPack includes host (Ubuntu Desktop) and target (Jetson) development tools, APIs, and packages (OS images, tools, middleware, samples, and documentation) for developing on the NVIDIA Jetson Embedded platform. The components and dependencies required for DeepStream SDK are also installed as a part of JetPack. In this tutorial, Ubuntu 16.04 LTS is used on VMWare WorkStation 14 Player as the Host PC

2. HOST PC SETUP

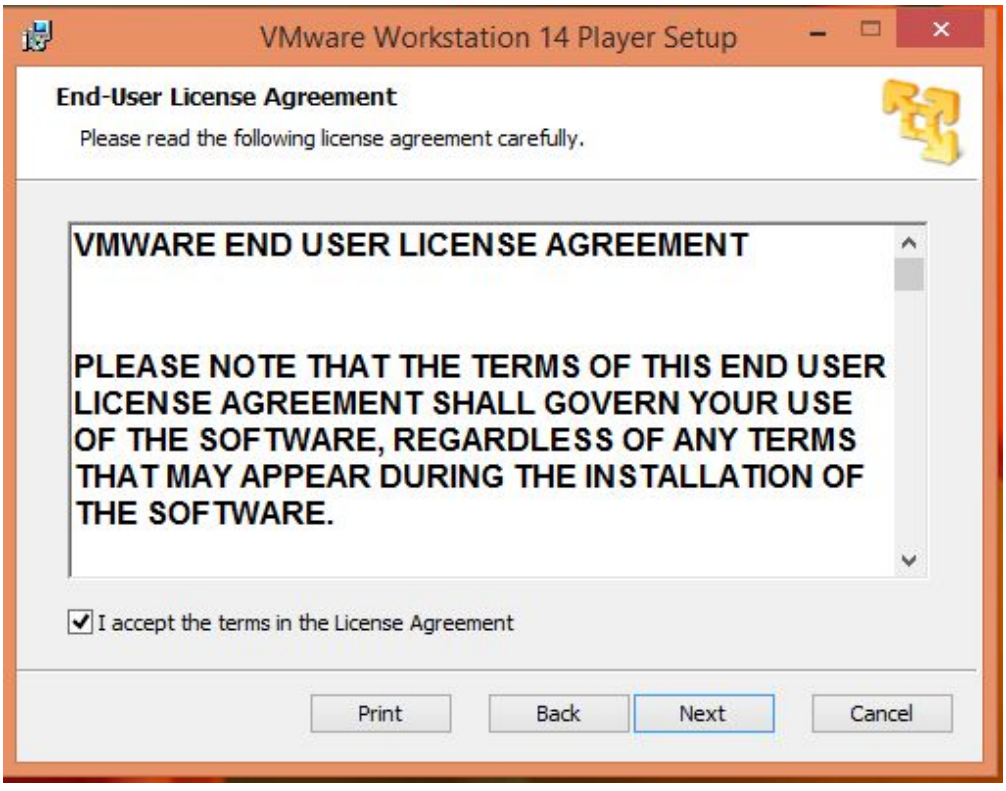
2.1 VMware image

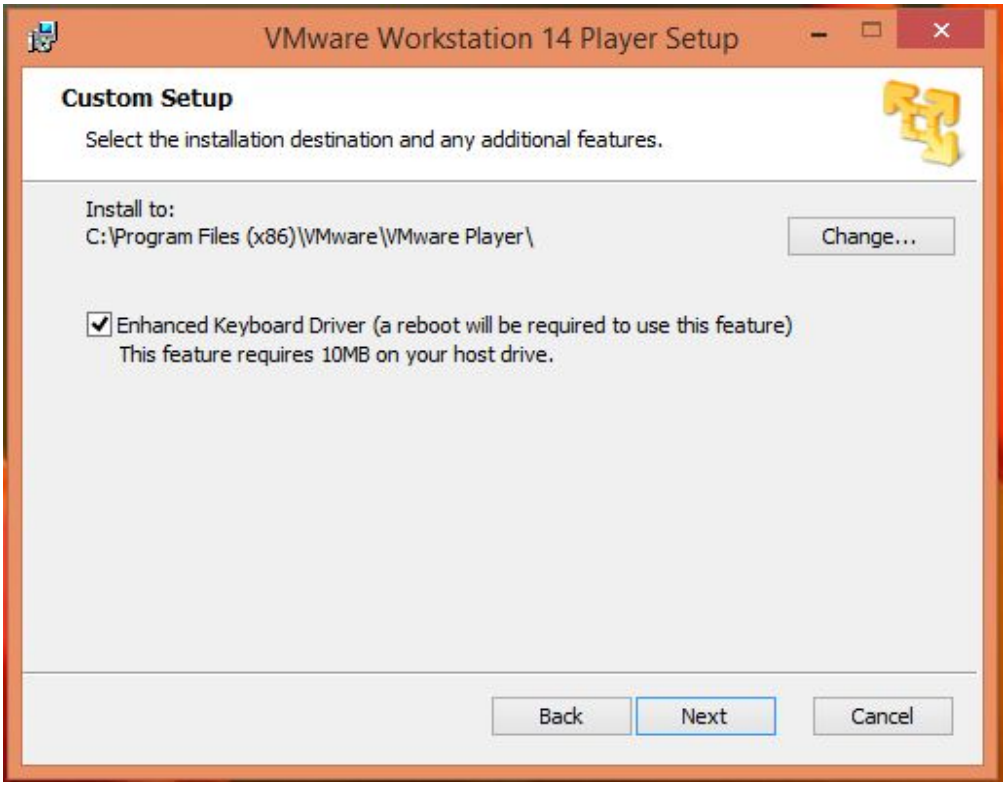
https://drive.google.com/drive/folders/1R4RTHtMpMmQxLIqNvzxfM5d8xJnB7Alg?ogsrc=32

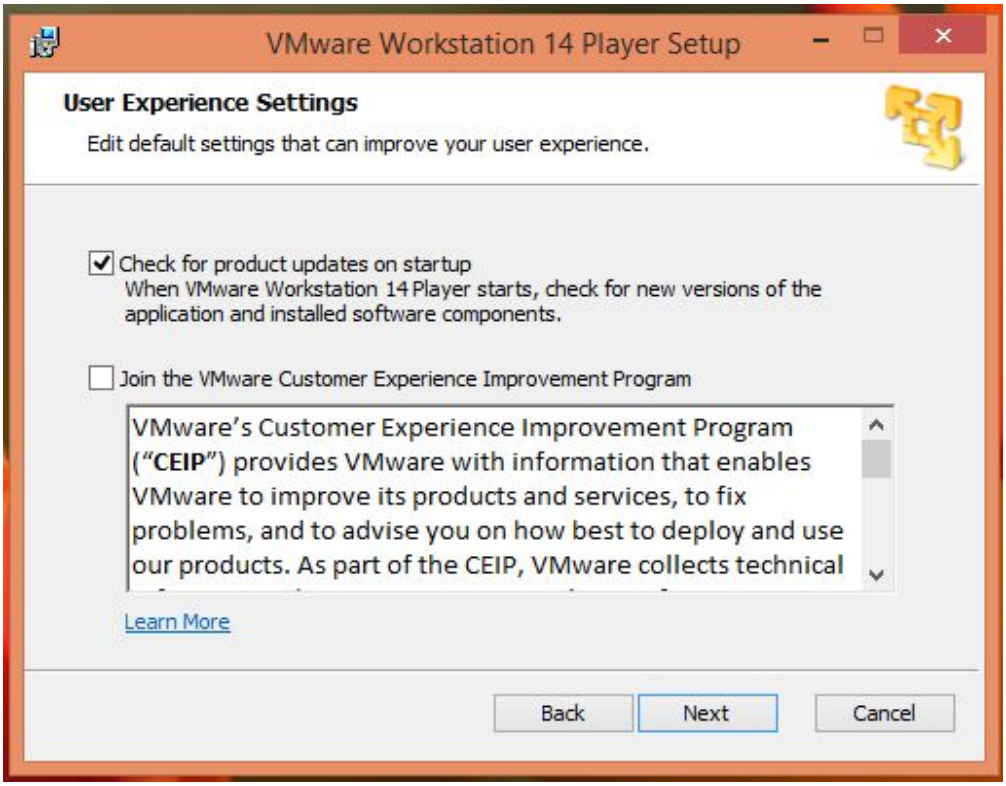
2.2 VMware WorkStation 14 Player installation

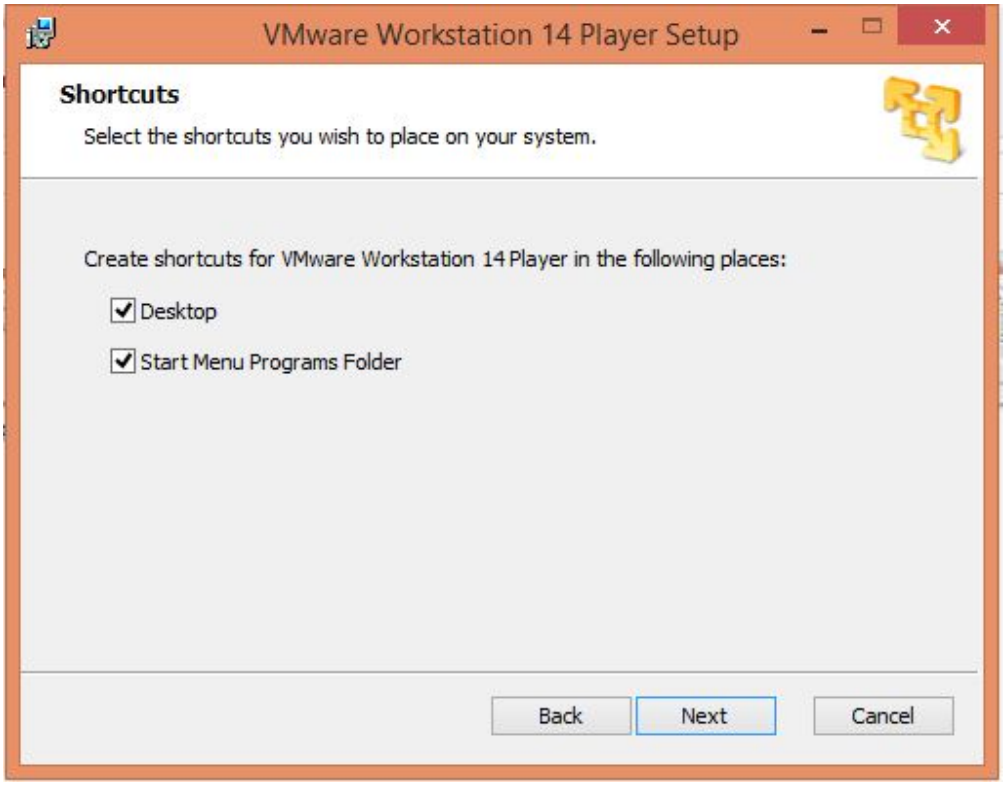
Download the installer from Link and follow the on screen instructions. Following are the installation screenshots for your reference.

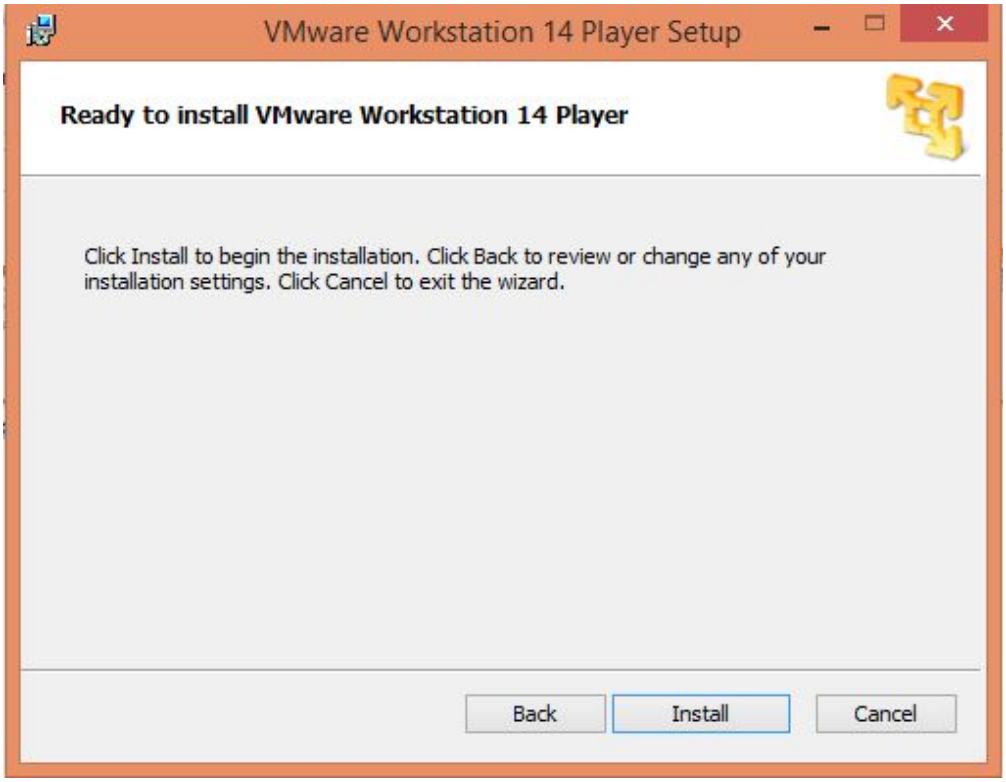

VMware Workstation 14 Player Setup
Welcome to the VMware Workstation 14 Player Setup Wizard
VMWARE 14 WORKSTATION PLAYER
The Setup Wizard will install VMware Workstation 14 Player on your computer. Click Next to continue or Cancel to exit the Setup Wizard.
Copyright 1998-2018 VMware, Inc. All rights reserved. This product is protected by U.S. and international copyright and intellectual property laws. VMware products are covered by one or more patents listed at:
http://www.vmware.com/go/patents
vmware
Next
Cancel

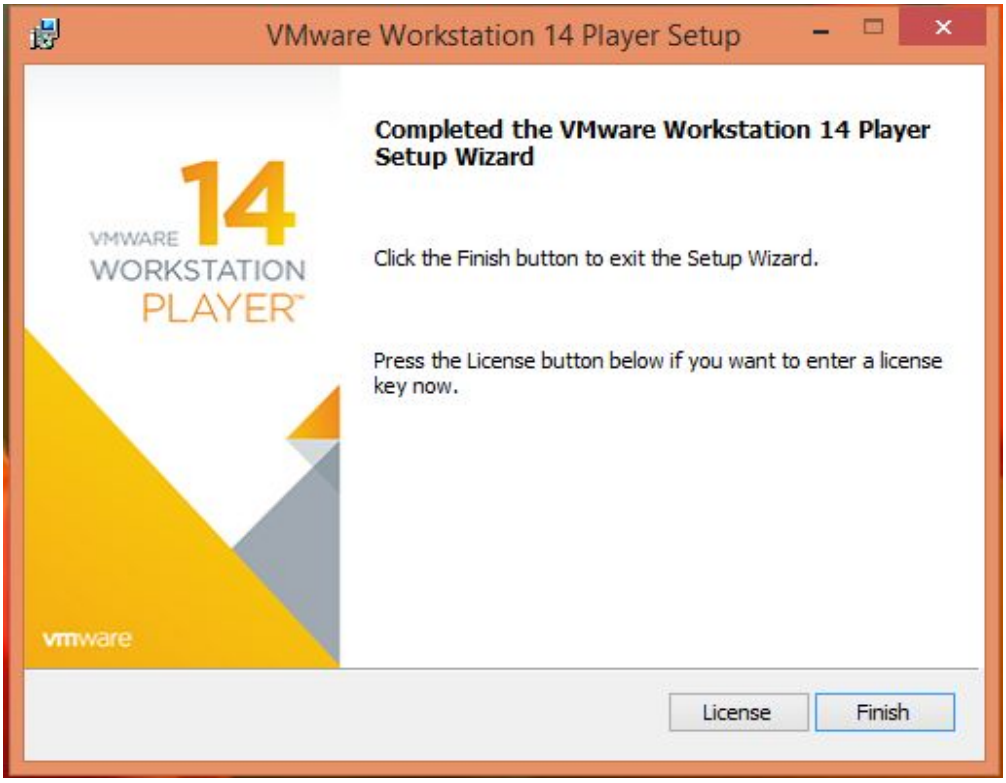

VMware Workstation 14 Player Setup
End-User License Agreement
Please read the following license agreement carefully.
VMWARE END USER LICENSE AGREEMENT
PLEASE NOTE THAT THE TERMS OF THIS END USER LICENSE AGREEMENT SHALL GOVERN YOUR USE OF THE SOFTWARE, REGARDLESS OF ANY TERMS THAT MAY APPEAR DURING THE INSTALLATION OF THE SOFTWARE.
I accept the terms in the License Agreement
Print
Back
Next
Cancel


VMware Workstation 14 Player Setup
Custom Setup
Select the installation destination and any additional features.
Install to:
C:\Program Files (x86)\VMware\VMware Player\
Change...
Enhanced Keyboard Driver (a reboot will be required to use this feature)
This feature requires 10MB on your host drive.
Back
Next
Cancel


VMware Workstation 14 Player Setup
User Experience Settings
Edit default settings that can improve your user experience.
Check for product updates on startup
When VMware Workstation 14 Player starts, check for new versions of the application and installed software components.
Join the VMware Customer Experience Improvement Program
VMware's Customer Experience Improvement Program ("CEIP") provides VMware with information that enables VMware to improve its products and services, to fix problems, and to advise you on how best to deploy and use our products. As part of the CEIP, VMware collects technical
Learn More
Back
Next
Cancel

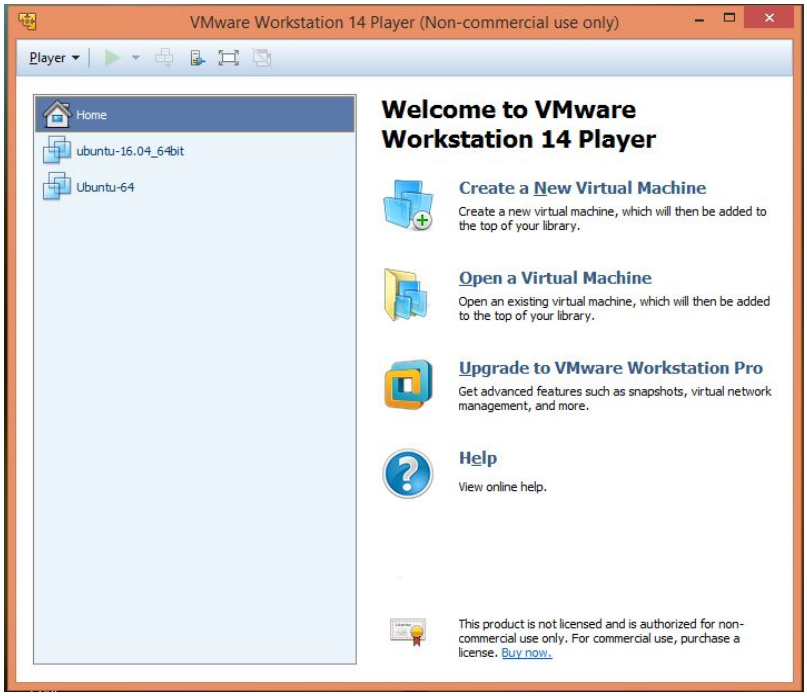

VMware Workstation 14 Player Setup
Shortcuts
Select the shortcuts you wish to place on your system.
Create shortcuts for VMware Workstation 14 Player in the following places:
Desktop
Start Menu Programs Folder
Back
Next
Cancel


VMware Workstation 14 Player Setup
Ready to install VMware Workstation 14 Player
Click Install to begin the installation. Click Back to review or change any of your installation settings. Click Cancel to exit the wizard.
Back
Install
Cancel

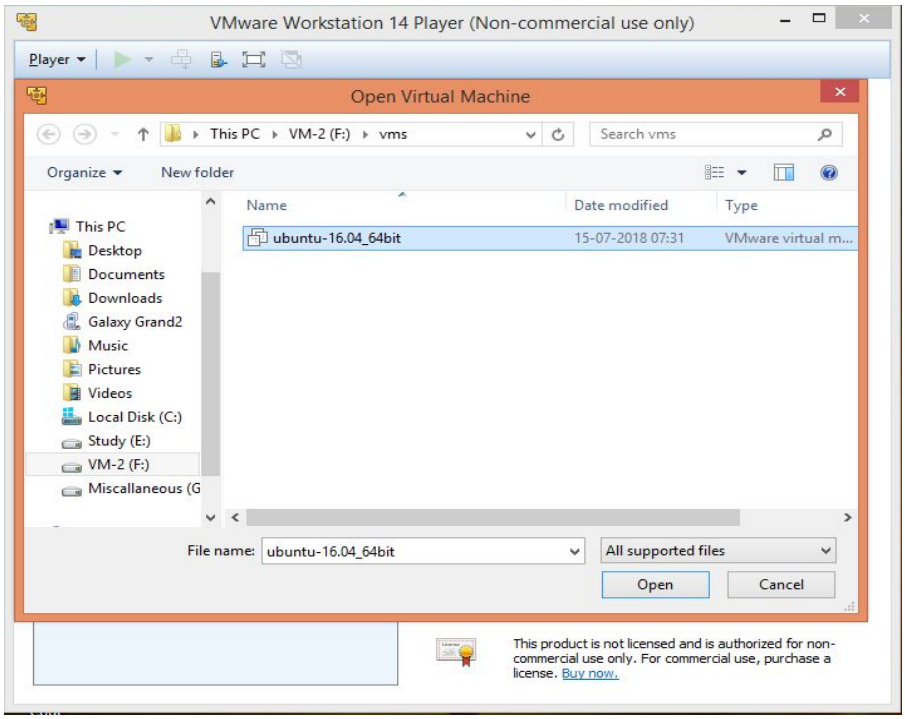


2.3 Starting the Virtual Machine

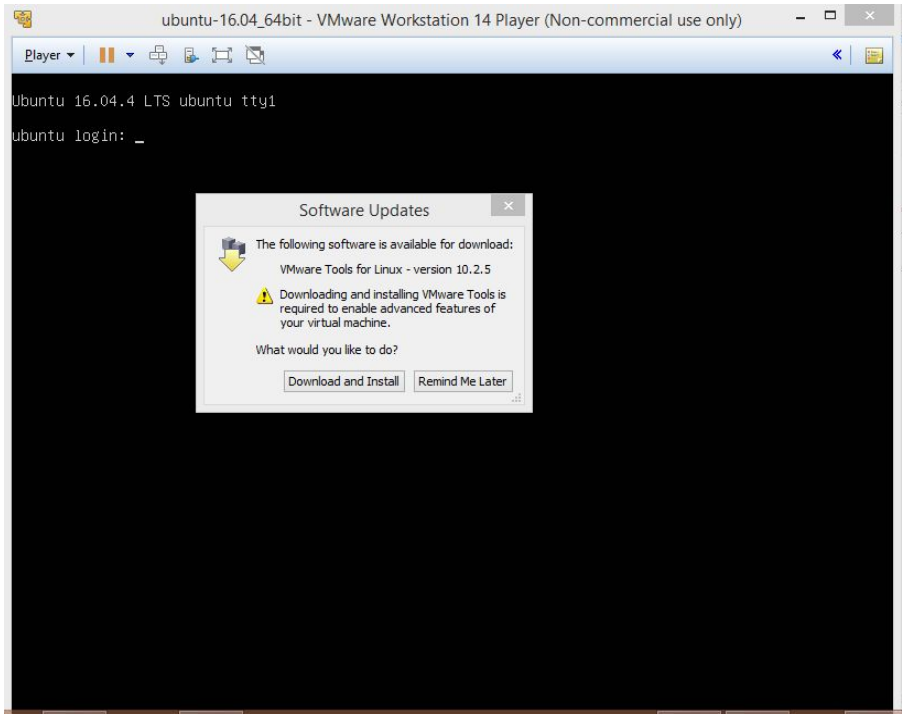
Open VMware player



Browse and load the vmx image



Launch the virtual machine which will prompt for VMware tools installation



3. JETPACK

3.1 JetPack installer

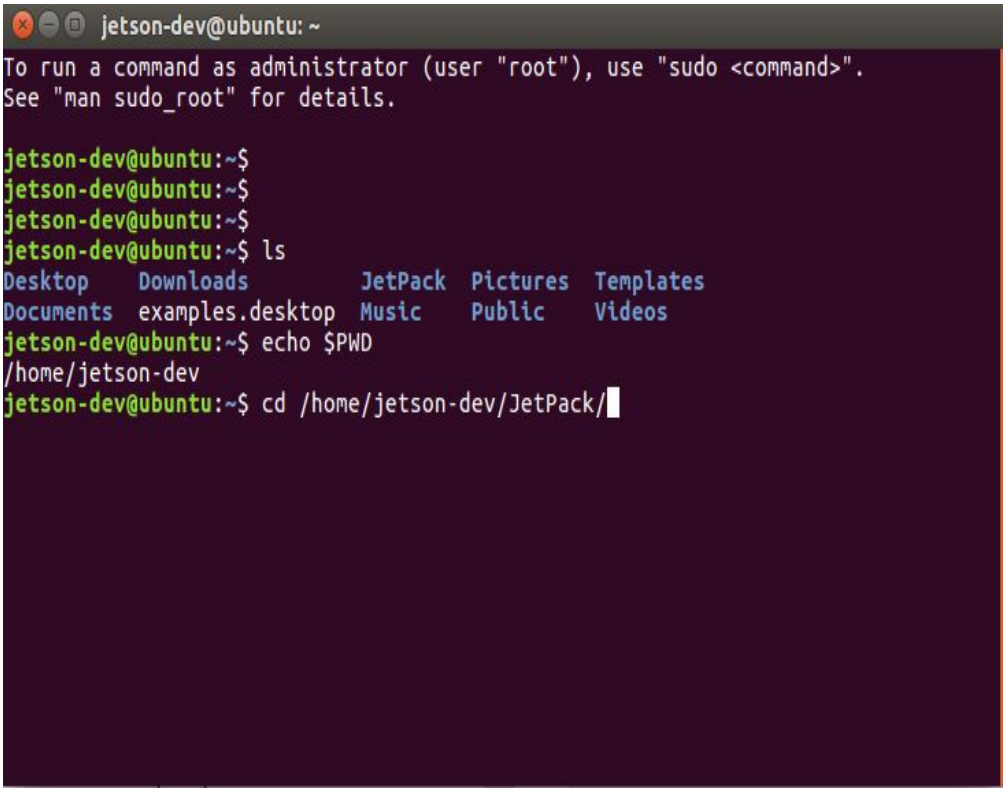
JetPack installer is the software which is responsible for JetPack installation in the host and the target device. This installer is already present in the shared virtual machine. For your reference: https://developer.nvidia.com/embedded/jetpack

3.2 Host-JetsonTX2 Connections

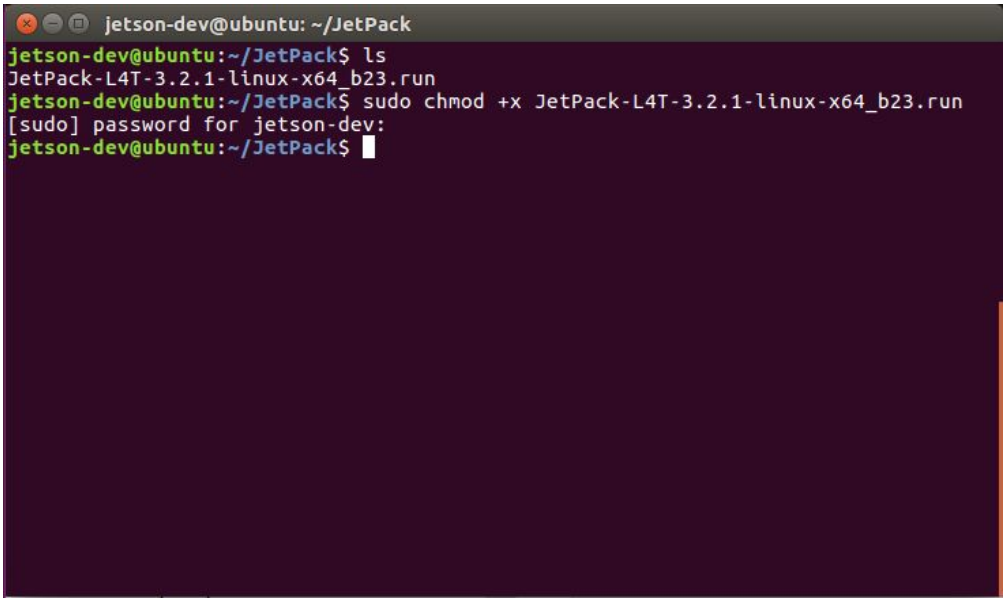
1. Connect the Ethernet Port of Jetson-TX2 to a router (Should be in the same network as your host)
2. Connect USB keyboard and mouse to Jetson-TX2
3. Connect the power cable.
4. Press and release the PWR button twice.
5. Wait for the Ethernet LED to become solid green
6. Connect HDMI cable to display (There are display issues if HDMI cable is connected while boot)

3.3 Host installation

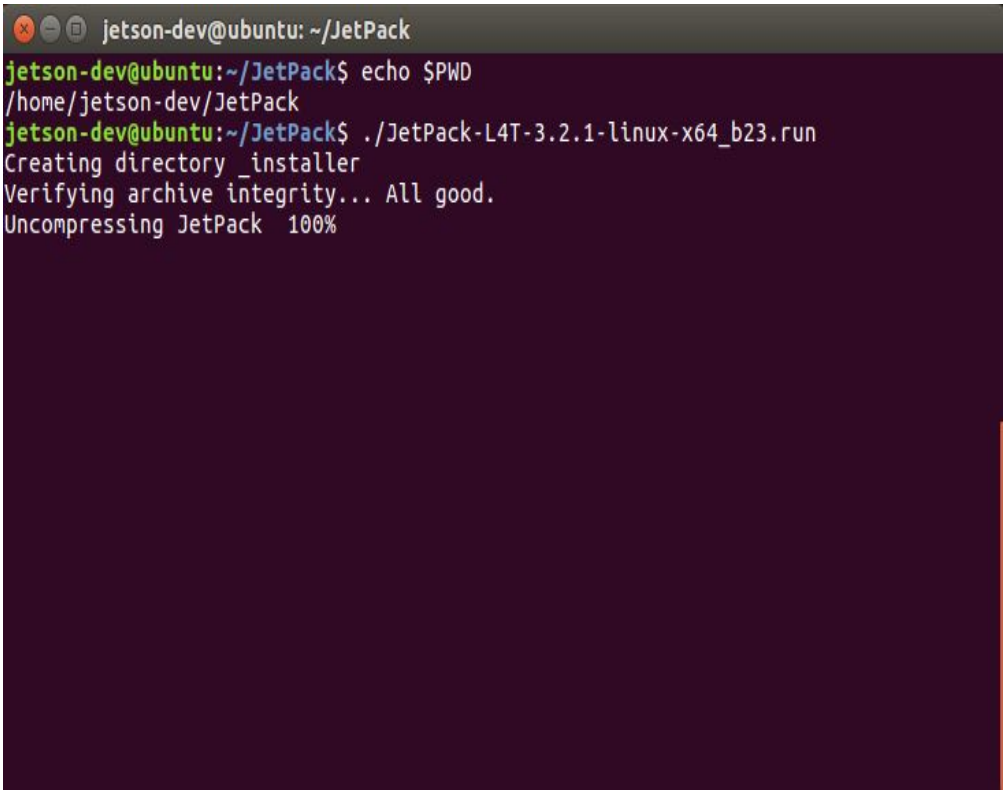
cd /home/jetson-dev/JetPack



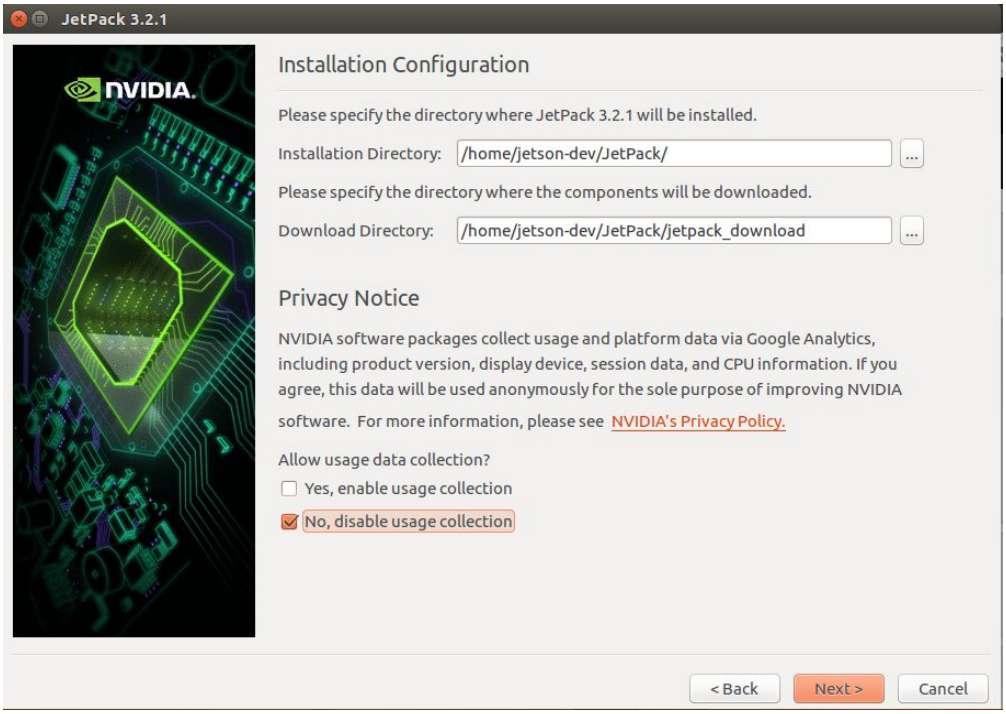
Change the permission of JetPack-L4T-3.2.1-linux-x64_b23.run

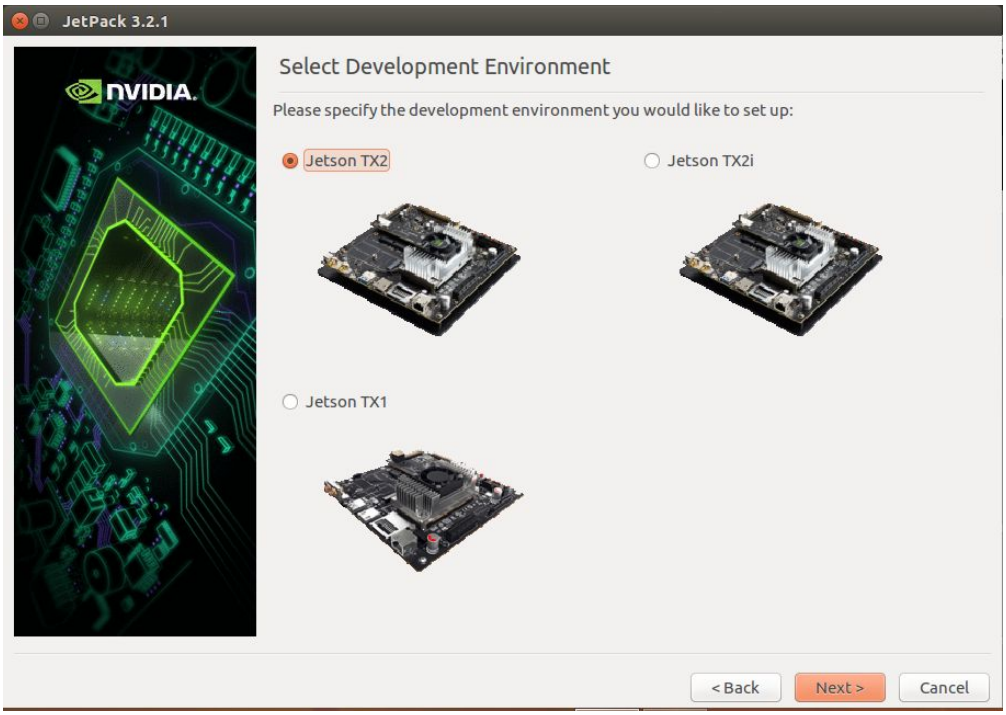


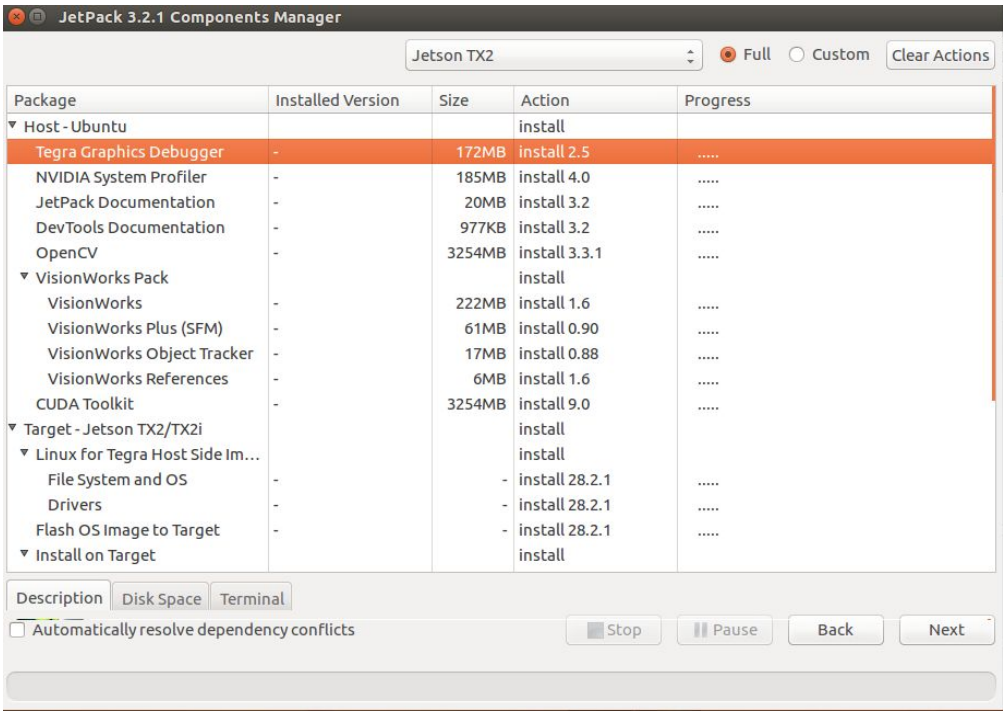
Launch JetPack installer

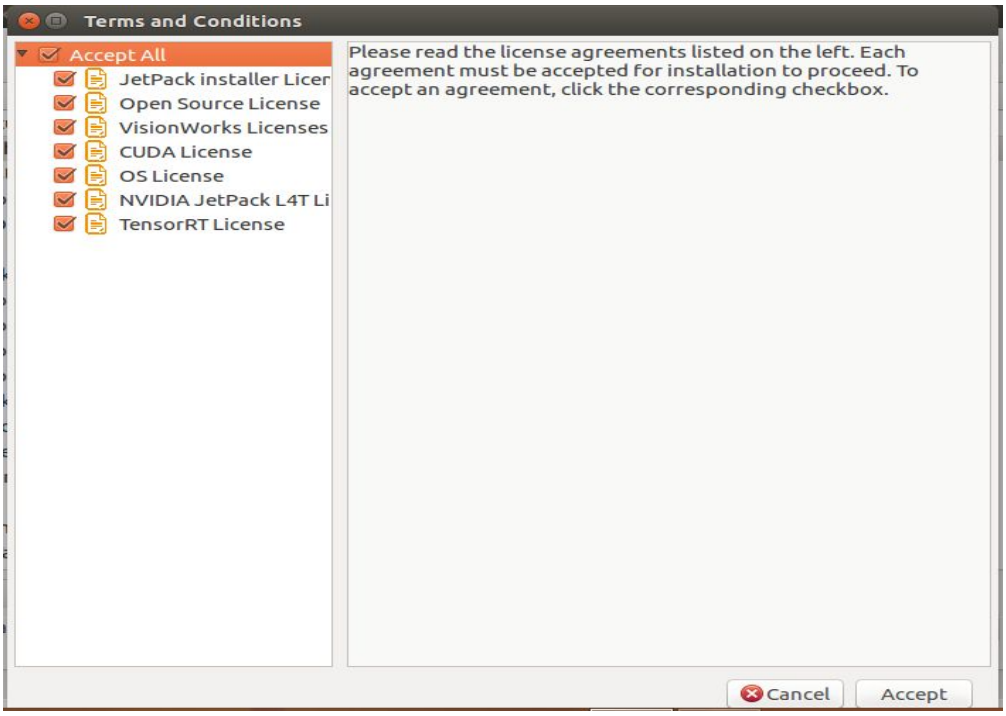


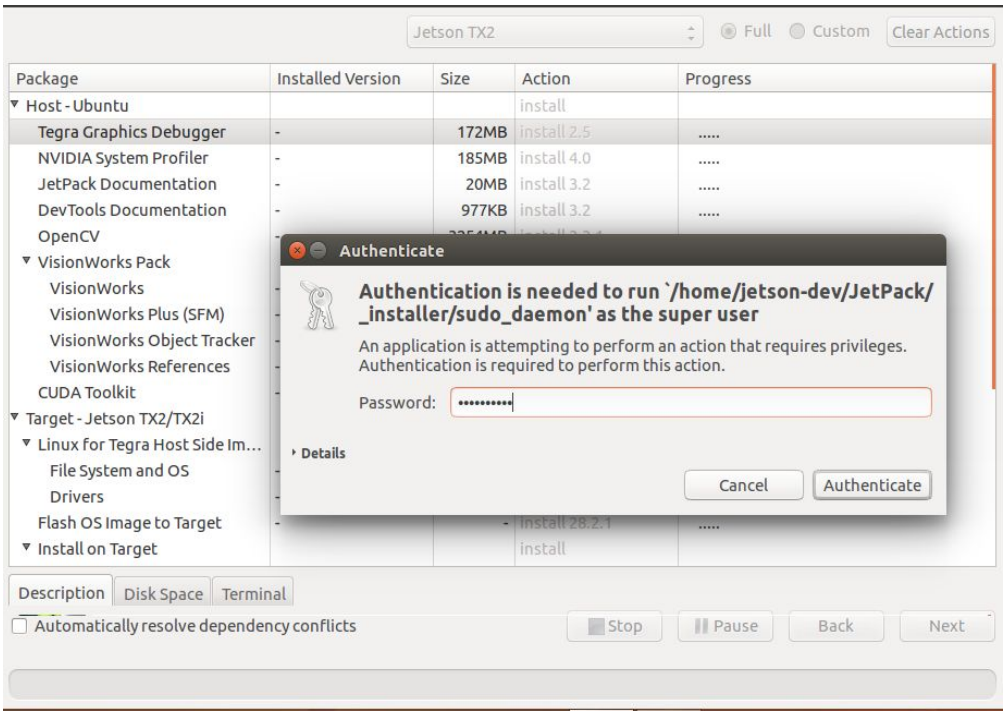
Follow onscreen instructions as shown below

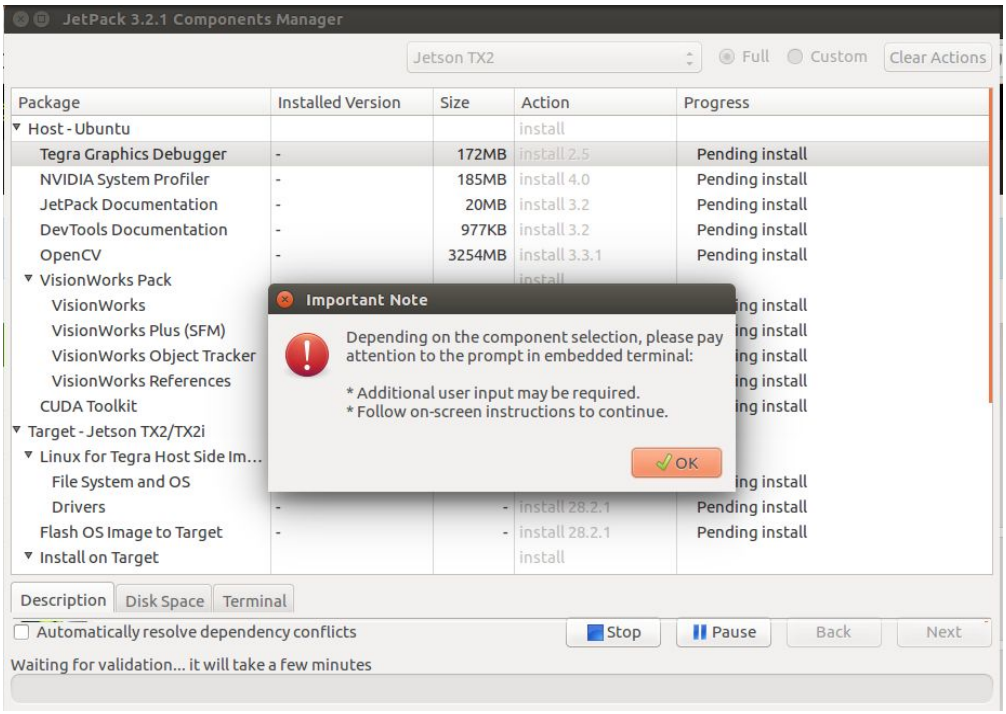


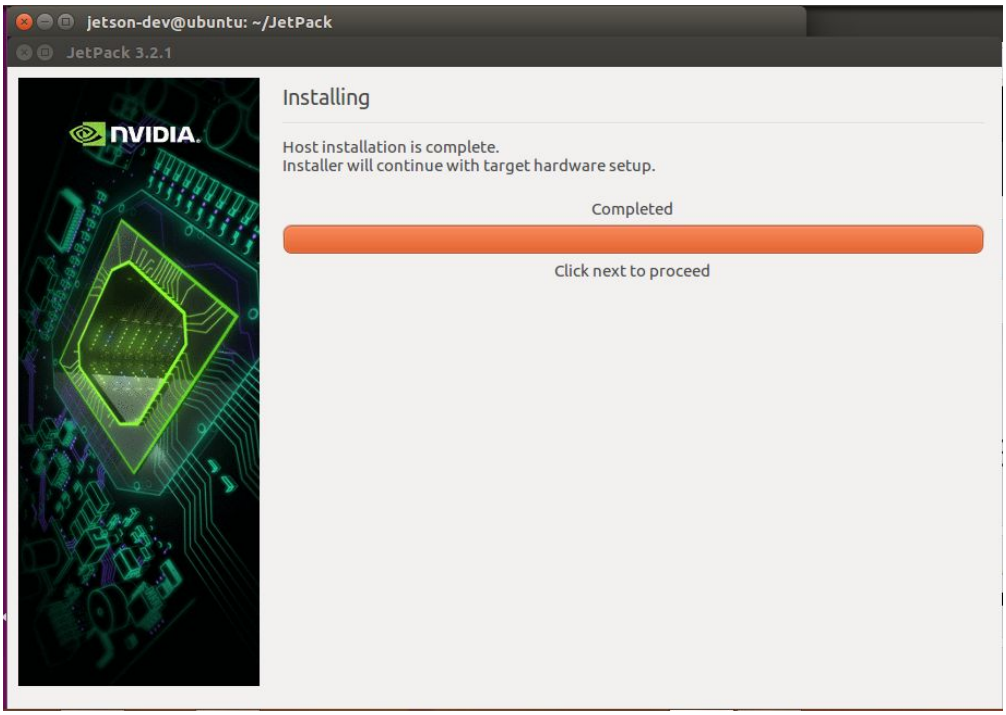

JetPack 3.2.1
NVIDIA.
Select Development Environment
Please specify the development environment you would like to set up:
Jetson TX2
Jetson TX2i
Jetson TX1
< Back
Next >
Cancel


JetPack 3.2.1 Components Manager
Jetson TX2
Full
Custom
Clear Actions
Package
Installed Version
Size
Action
Progress
Host - Ubuntu
install
Tegra Graphics Debugger
-
172MB
install 2.5
.....
NVIDIA System Profiler
-
185MB
install 4.0
.....
JetPack Documentation
-
20MB
install 3.2
.....
DevTools Documentation
-
977KB
install 3.2
.....
OpenCV
-
3254MB
install 3.3.1
.....
VisionWorks Pack
install
VisionWorks
-
222MB
install 1.6
.....
VisionWorks Plus (SFM)
-
61MB
install 0.90
.....
VisionWorks Object Tracker
-
17MB
install 0.88
.....
VisionWorks References
-
6MB
install 1.6
.....
CUDA Toolkit
-
3254MB
install 9.0
.....
Target - Jetson TX2/TX2i
install
Linux for Tegra Host Side Im...
install
File System and OS
-
-
install 28.2.1
.....
Drivers
-
-
install 28.2.1
.....
Flash OS Image to Target
-
-
install 28.2.1
.....
Install on Target
install
Description
Disk Space
Terminal
Automatically resolve dependency conflicts
Stop
Pause
Back
Next


Terms and Conditions
Accept All
JetPack installer Licer
Open Source License
VisionWorks Licenses
CUDA License
OS License
NVIDIA JetPack L4T Li
TensorRT License
Please read the license agreements listed on the left. Each agreement must be accepted for installation to proceed. To accept an agreement, click the corresponding checkbox.
Cancel
Accept


Jetson TX2
Full
Custom
Clear Actions
Package
Installed Version
Size
Action
Progress
Host - Ubuntu
Tegra Graphics Debugger
NVIDIA System Profiler
JetPack Documentation
DevTools Documentation
OpenCV
VisionWorks Pack
VisionWorks
VisionWorks Plus (SFM)
VisionWorks Object Tracker
VisionWorks References
CUDA Toolkit
Target - Jetson TX2/TX2i
Linux for Tegra Host Side Im...
File System and OS
Drivers
Flash OS Image to Target
Install on Target
Authenticate
Authentication is needed to run `/home/jetson-dev/JetPack/_installer/sudo_daemon' as the super user
An application is attempting to perform an action that requires privileges. Authentication is required to perform this action.
Password:
Details
Cancel
Authenticate
Description
Disk Space
Terminal
Automatically resolve dependency conflicts
Stop
Pause
Back
Next

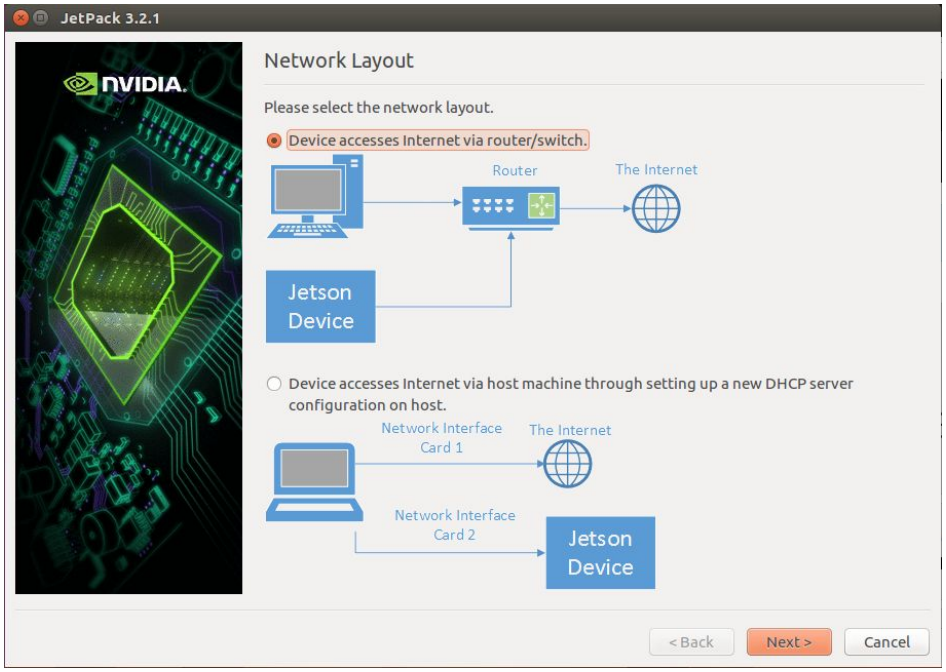

JetPack 3.2.1 Components Manager
Jetson TX2
Full
Custom
Clear Actions
Package
Installed Version
Size
Action
Progress
Host - Ubuntu
Tegra Graphics Debugger
172MB
Pending install
NVIDIA System Profiler
185MB
Pending install
JetPack Documentation
20MB
Pending install
DevTools Documentation
977KB
Pending install
OpenCV
3254MB
Pending install
VisionWorks Pack
VisionWorks
VisionWorks Plus (SFM)
VisionWorks Object Tracker
VisionWorks References
CUDA Toolkit
Target - Jetson TX2/TX2i
Linux for Tegra Host Side Im...
File System and OS
Drivers
Flash OS Image to Target
Pending install
Install on Target
Important Note
Depending on the component selection, please pay attention to the prompt in embedded terminal:
* Additional user input may be required.
* Follow on-screen instructions to continue.
OK
Description
Disk Space
Terminal
Automatically resolve dependency conflicts
Stop
Pause
Back
Next
Waiting for validation... it will take a few minutes


jetson-dev@ubuntu: ~/JetPack
JetPack 3.2.1
NVIDIA
Installing
Host installation is complete.
Installer will continue with target hardware setup.
Completed
Click next to proceed

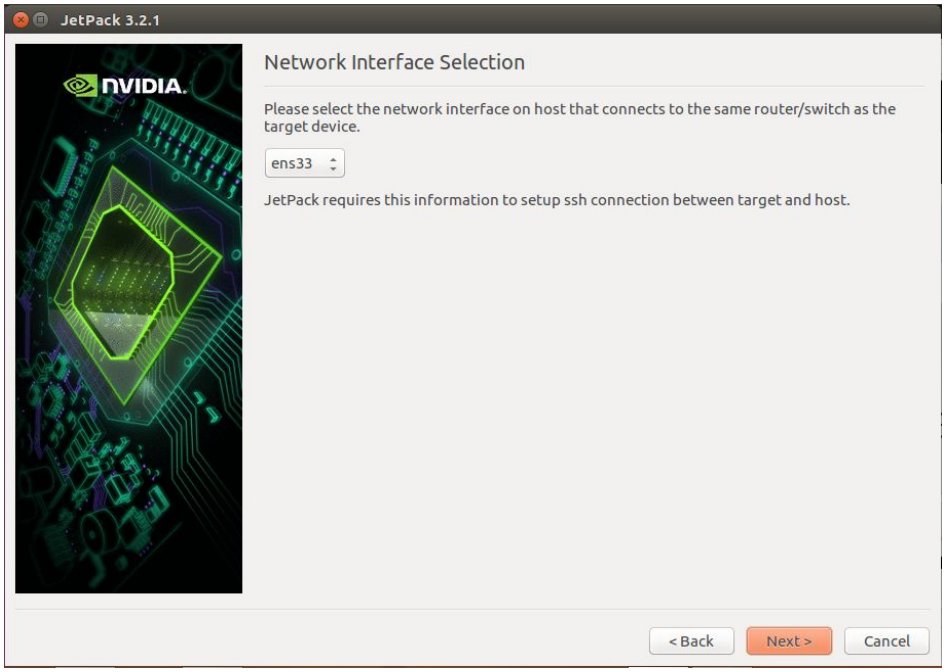
3.3 Target installation

At this point host installation is complete,follow the below instructions for target installation

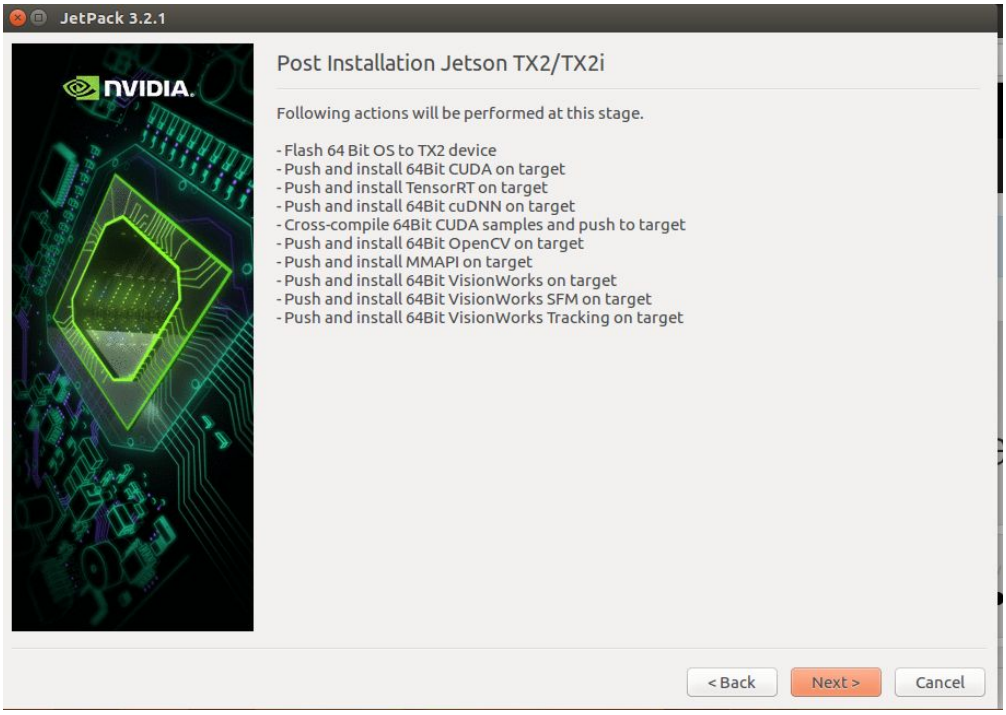
Select the setup



Select the network interface on host which is connected to Jetson TX2's network. If you are using the virtual machine shared in this tutorial, then use the same as mentioned in the below screenshot



Target installation begins

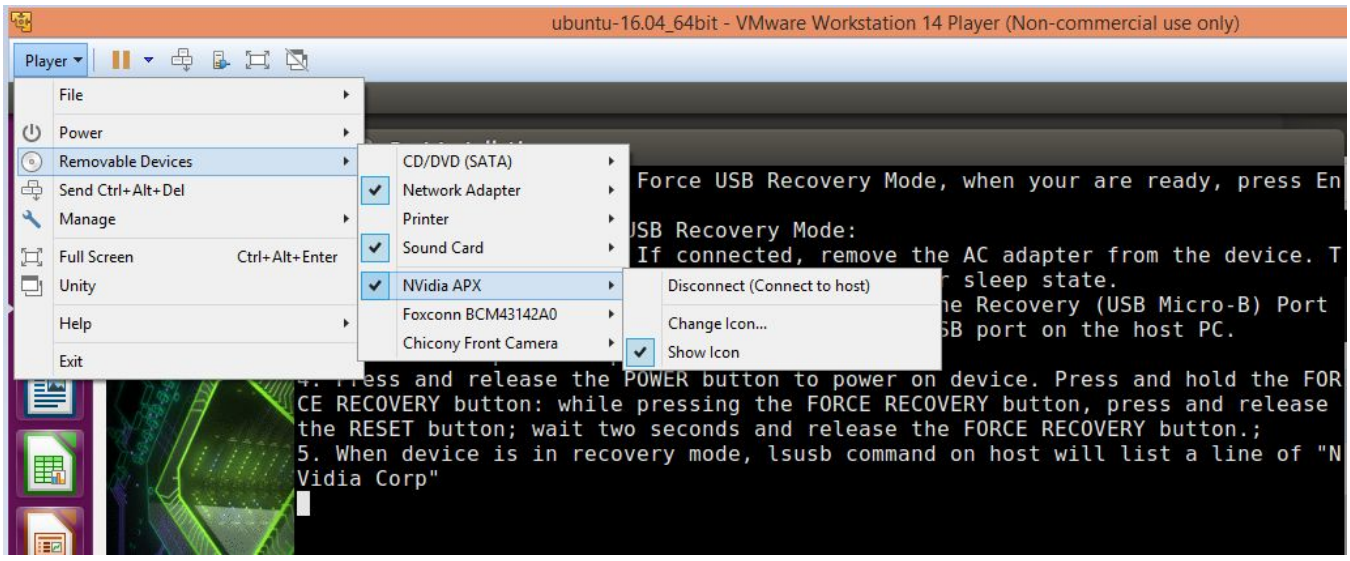


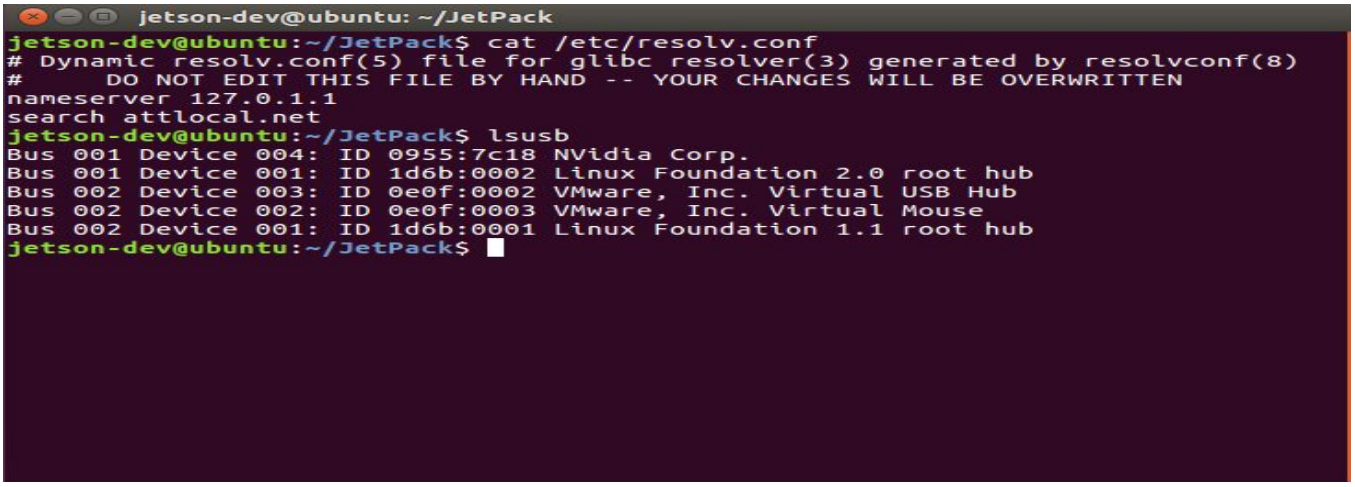
Setup the Jetson TX2 in recovery mode to install the target

Steps to put into recovery, and verify if it is successful

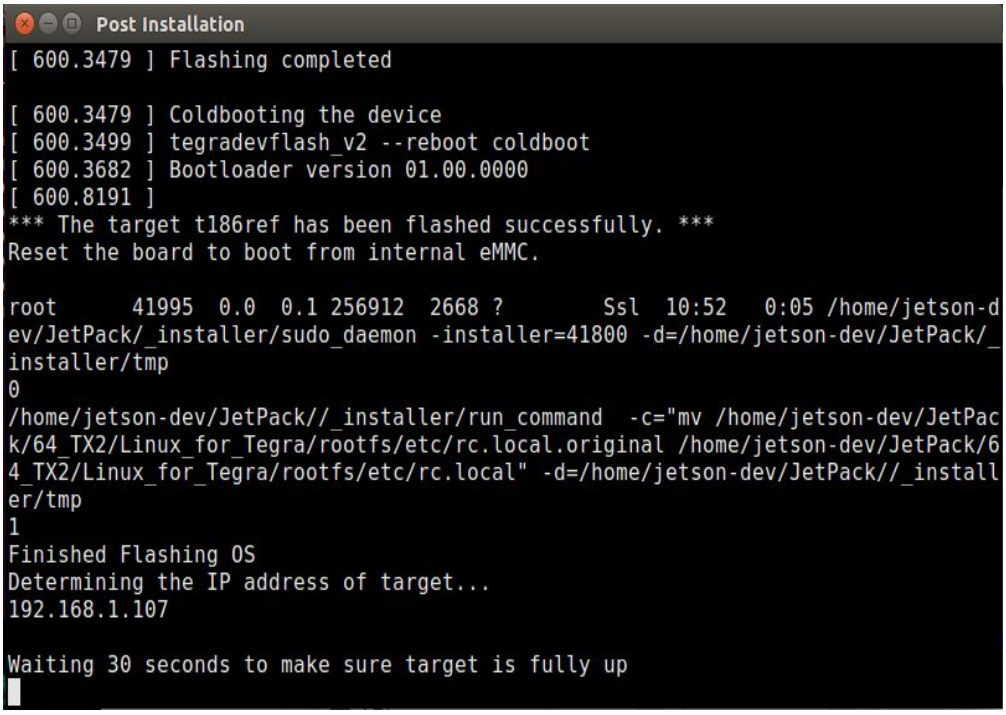
1. Power down, disconnect the power cable from Jetson TX2
2. Connect Micro-B plug on the USB cable to USB-Micro-B port on the device and the other end to an available USB port on the Host PC
3. Disconnect HDMI cable
4. Connect back the power cable.
5. Press and release the power button twice
6. Wait for the Jetson-TX2 to come up (Indicated by Ethernet link LED, it should turn solid green)
7. Press and hold the FORCE RECOVERY button, while the FORCE RECOVERY button is pressed, press and release the RESET button.
8. Wait for two seconds, and release the FORCE RECOVERY button
9. If the Jetson TX2 is in recovery mode, it should be listed as an USB device in the Host PC. It can be verified by typing lsusb in the terminal

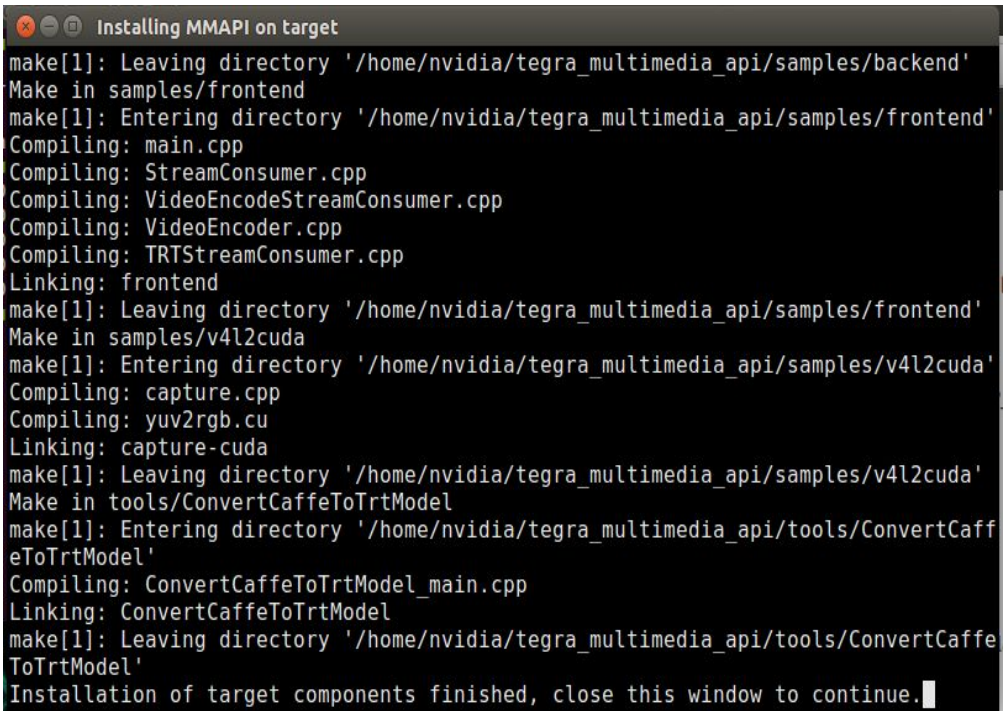
Verifying if USB is connected to the guest OS





Press enter on the XTERM prompt after the Jetson-TX2 is in recovery mode. This will begin the installation on target. Below are the screenshots after the installation of OS and completion of total install. It takes ~20-30 minutes (Depending on your host PC's speed) to reach this screen.





3. RUNNING DEEPSTREAM

1. Open Chrominum browser in the Jetson TX2, and download the DeepStream SDK from https://developer.nvidia.com/deepstream-jetson-download-survey
2. Open terminal
3. mkdir -p /home/nvidia/DeepStream
4. cd /home/nvidia/DeepStream/
5. cp /home/nvidia/Downloads/DeepStream_SDK_on_Jetson_1.5_pre-release.tbz2 .
6. tar -xvf DeepStream_SDK_on_Jetson_1.5_pre-release.tbz2
7. sudo tar xpvf deepstream_sdk_on_jetson.tbz2 -C /
8. sudo tar xpvf deepstream_sdk_on_jetson_models.tbz2 -C /
9. sudo ldconfig
10. nvgstiva-app -c ${HOME}/configs/PGIE-FP16-CarType-CarMake-CarColor.txt
11. Sample output placed at:Link