Steps for Flashing Jetson Orin

Contents

Table of Figures

Purpose

The purpose of this document is to outline the steps performed for flashing the Jetson Orin as well as modifying and loading a new kernel on the Jetson.

Tools & Supplies

This section lists the hardware and software tools used.

- Host Desktop:
  - Operating System: Ubuntu
- Jetson AGX Orin Developer Kit (figure obtained from online) [Figure 1]

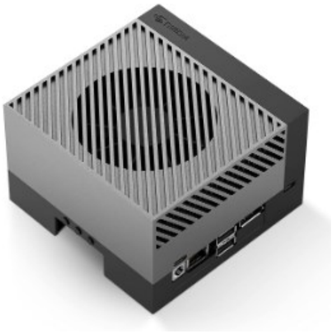


Figure 1 - Jetson AGX Orin Dev Kit

- Jetson Power Supply [Figure 2]
  - Also need a power adaptor cable to plug into an outlet but that is not pictured in the image below

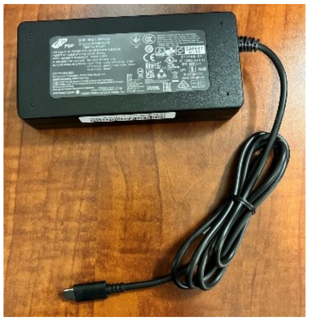


Figure 2 - Jetson Power Supply

- USB Type-A 2.0 to USB Type-C cable (figure obtained from online) [Figure 3]

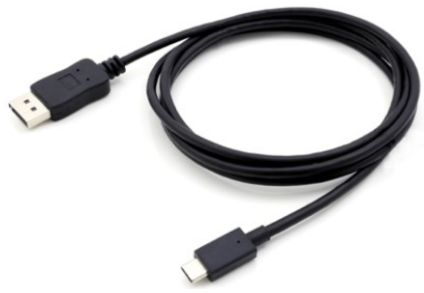


Figure 3 - USB Type A to Type C Cable

- USB Type-A 2.0 to Micro USB Type-B cable (figure obtained from online) [Figure 4]

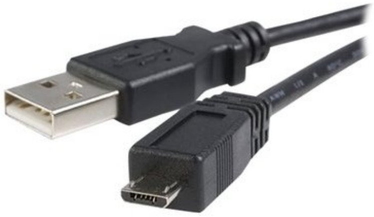


Figure 4 - USB Type A to Micro USB Type-B Cable

- Display Port Cable (for the Jetson) (figure obtained from online) [Figure 5]

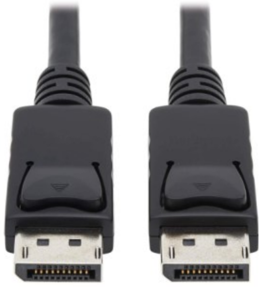


Figure 5 - Display Port Cable

- Two USB Mouse & Keyboard (one for the Jetson & one for the Host desktop)
- Display Cable (for the Host desktop)
- Two RJ45 cable
  - One to connect Host desktop to the network
  - Second to connect Jetson to the Host desktop

Flashing the Jetson

This section outlines the steps performed to flash the Jetson.

1. Connected the Micro USB Type-B end of the cable to the Micro USB port on the Jetson [Figure 6]

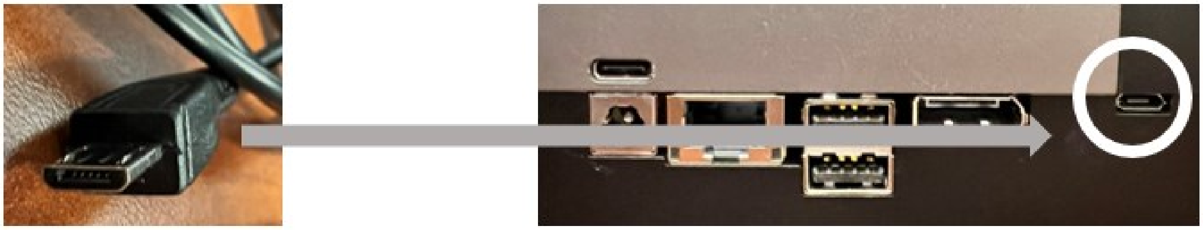


Figure 6 - Connecting Micro USB Type-B Cable to Jetson Micro USB Type-B Port

2. Connected the other end of the Micro USB cable (USB Type-A 2.0) to the Host desktop's USB port
3. Connected the USB Type-C cable to the Jetson's USB Type-C port (designated for flashing) [Figure 7]

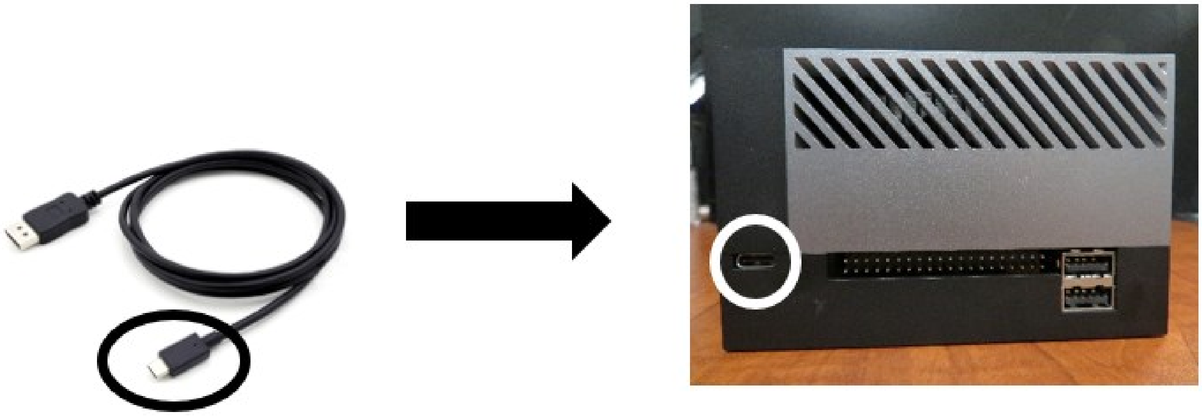


Figure 7 - Connecting USB Type-C to Jetson for Flashing

4. Connected the other end of the USB Type-C cable to the Host desktop's USB port
5. Connected an RJ45 cable to the Jetson and connected the other end to the Host desktop
6. Connected the Jetson to its power supply and connected the power supply to a plug outlet
7. The next set of steps (steps 8 to 34) were performed on the Host desktop
8. Note: Since previously these steps have been performed, the following steps were done first:
    a. Removed the `~/nvidia` folder by entering the command below in the terminal

```
$ sudo rm -rf ~/nvidia
```

b. Removed the ~/Downloads/nvidia folder by entering the command below in the terminal

```
$ sudo rm -rf ~/Downloads/nvidia
```

c. Removed the NVIDIA SDKManager’s database file by entering the command below in the terminal

```
$ rm ~/.nvsdkm/sdkm.db
```

9. Put the Jetson in recovery mode by pushing the “recovery” button then pushing the “restart” button and releasing both at the same time [Figure 8]

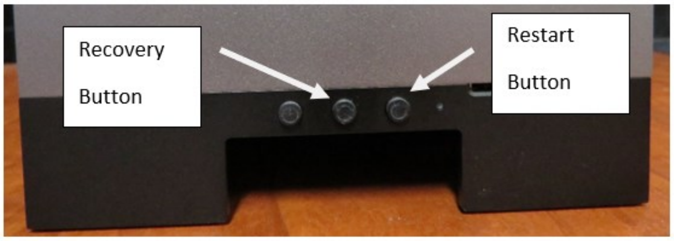


Figure 8 - Recovery & Restart Buttons

10. Entered the command below on the terminal on the Host desktop to confirm the Jetson is in recovery mode, which it was:

```
$ lsusb
```

Result:

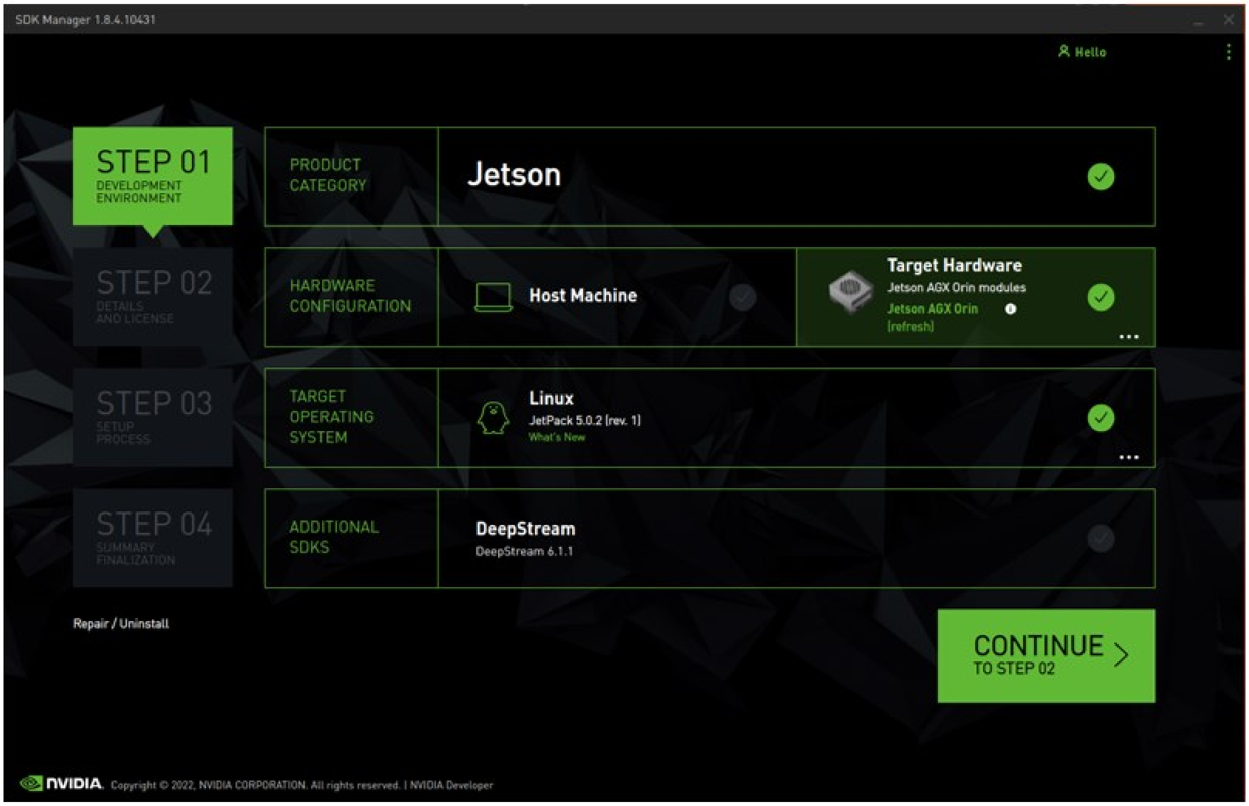
```
Bus 002 Device 002: ID 8087:8000 Intel Corp.
Bus 002 Device 001: ID 1d6b:0002 Linux Foundation 2.0 root hub
Bus 001 Device 002: ID 8087:8008 Intel Corp.
Bus 001 Device 001: ID 1d6b:0002 Linux Foundation 2.0 root hub
Bus 004 Device 002: ID 174c:3074 ASMedia Technology Inc. ASM1074 SuperSpeed hub
Bus 004 Device 001: ID 1d6b:0003 Linux Foundation 3.0 root hub
Bus 003 Device 005: ID 13fe:6000 Kingston Technology Company Inc.
Bus 003 Device 011: ID 046d:c025 Logitech, Inc. MX500 Optical Mouse
Bus 003 Device 010: ID 046d:c31c Logitech, Inc. Keyboard K120
Bus 003 Device 009: ID 1a40:0101 Terminus Technology Inc. Hub
Bus 003 Device 012: ID 0955:7023 NVidia Corp.
Bus 003 Device 003: ID 0b05:17d0 ASUSTek Computer, Inc.
Bus 003 Device 002: ID 174c:2074 ASMedia Technology Inc. ASM1074 High-Speed hub
Bus 003 Device 007: ID 05e3:0723 Genesys Logic, Inc. GL827L SD/MMC/MS Flash Card Reader
Bus 003 Device 001: ID 1d6b:0002 Linux Foundation 2.0 root hub
```

a. NOTE: “NVIDIA” device is found, so the Jetson is in recovery mode

11. Opened the SDKManager application by finding the application and clicking on it [Figure 9]

Figure 9 - SDKManager Icon

12. When opened, a login prompt was seen
13. Logged in with my username (email) and password
14. Then the following window was seen, and selected the following configurations [Figure 10]
    a. Product Category : Selected Jetson
    b. Hardware Configuration : Disabled it
    c. Target Hardware : Enabled and selected JetsonAGX Orin
    d. Target Operating System : Linux JetPack 5.0.2 (rev. 1)
    e. Additional SDKS: Disabled DeepStream 6.1.1



SDK Manager 1.8.4.10431

PRODUCT CATEGORY: Jetson ✓

HARDWARE CONFIGURATION: Host Machine | Target Hardware: Jetson AGX Orin modules, Jetson AGX Orin [refresh] ✓

TARGET OPERATING SYSTEM: Linux, JetPack 5.0.2 [rev. 1] ✓

ADDITIONAL SDKS: DeepStream, DeepStream 6.1.1

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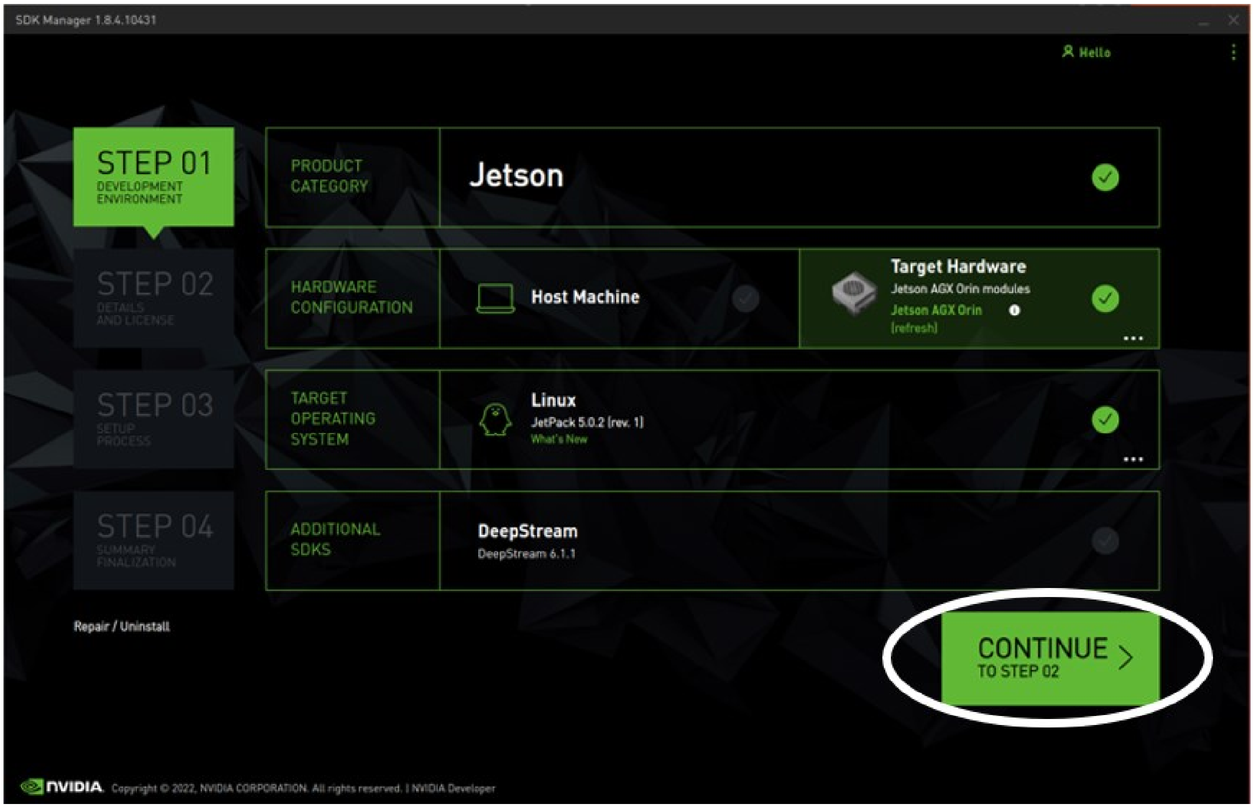
Hello
STEP 01 DEVELOPMENT ENVIRONMENT
STEP 02 DETAILS AND LICENSE
STEP 03 SETUP PROCESS
STEP 04 SUMMARY FINALIZATION
What's New
Repair / Uninstall
CONTINUE TO STEP 02

Figure 10 - SDK Manager (Step 1 Screen)

15. Next clicked “CONTINUE TO STEP 02” (circled in the image below) [Figure 11]



PRODUCT CATEGORY: Jetson

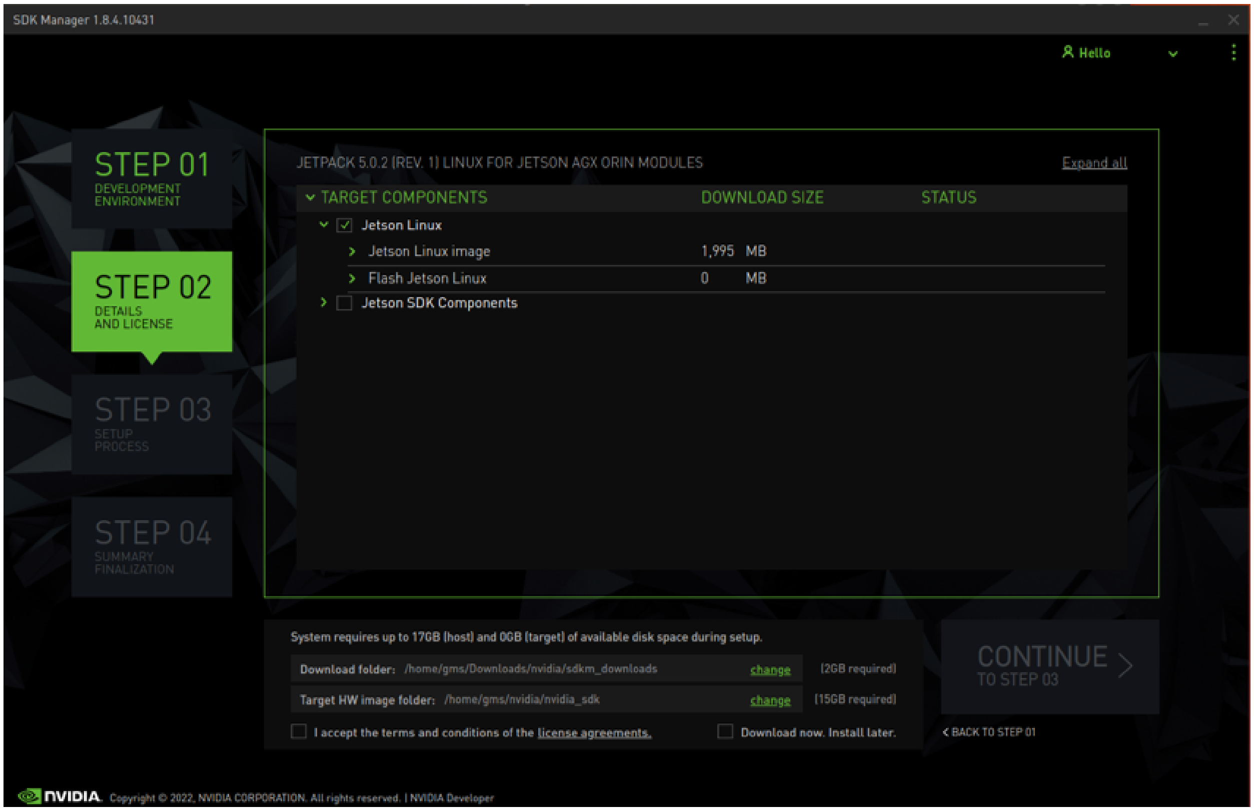
HARDWARE CONFIGURATION: Host Machine; Target Hardware: Jetson AGX Orin modules, Jetson AGX Orin (refresh)

TARGET OPERATING SYSTEM: Linux, JetPack 5.0.2 (rev. 1), What's New

ADDITIONAL SDKS: DeepStream, DeepStream 6.1.1

Figure 11 - CONTINUE TO STEP 02

16. In “STEP 02 DETAILS AND LICENSE” page, the “Jetson SDK Components” was disabled while the “Jetson Linux” was enabled as shown below [Figure 12]



SDK Manager 1.8.4.10431

Hello
STEP 01 DEVELOPMENT ENVIRONMENT
STEP 02 DETAILS AND LICENSE
STEP 03 SETUP PROCESS
STEP 04 SUMMARY FINALIZATION

JETPACK 5.0.2 (REV. 1) LINUX FOR JETSON AGX ORIN MODULES

TARGET COMPONENTS	DOWNLOAD SIZE	STATUS
☑ Jetson Linux		
Jetson Linux image	1,995 MB	
Flash Jetson Linux	0 MB	
□ Jetson SDK Components		

System requires up to 17GB (host) and 0GB (target) of available disk space during setup.

Download folder: /home/gms/Downloads/nvidia/sdkm_downloads change (2GB required)

Target HW image folder: /home/gms/nvidia/nvidia_sdk change (15GB required)

□ I accept the terms and conditions of the license agreements. □ Download now. Install later.

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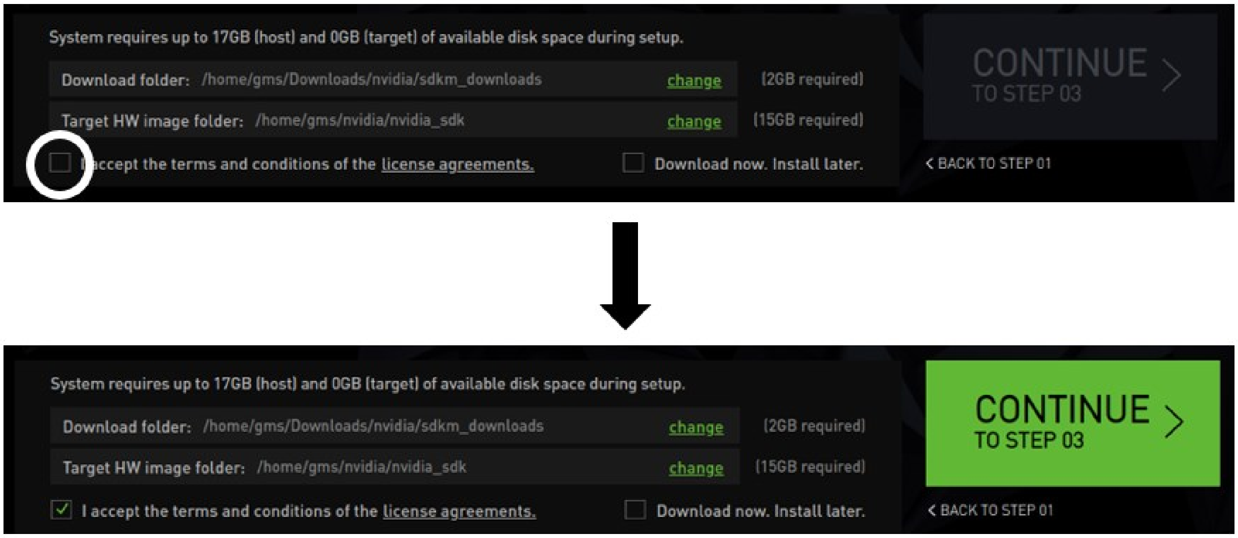
Figure 12 - STEP 02 Configurations Selected

17. Then selected “I accept the terms and conditions of the license agreements” checkbox on the bottom of the screen (circled in the image below) [Figure 13]



System requires up to 17GB (host) and 0GB (target) of available disk space during setup.

Download folder: /home/gms/Downloads/nvidia/sdkm_downloads change (2GB required)

Target HW image folder: /home/gms/nvidia/nvidia_sdk change (15GB required)

□ I accept the terms and conditions of the license agreements. □ Download now. Install later.

System requires up to 17GB (host) and 0GB (target) of available disk space during setup.

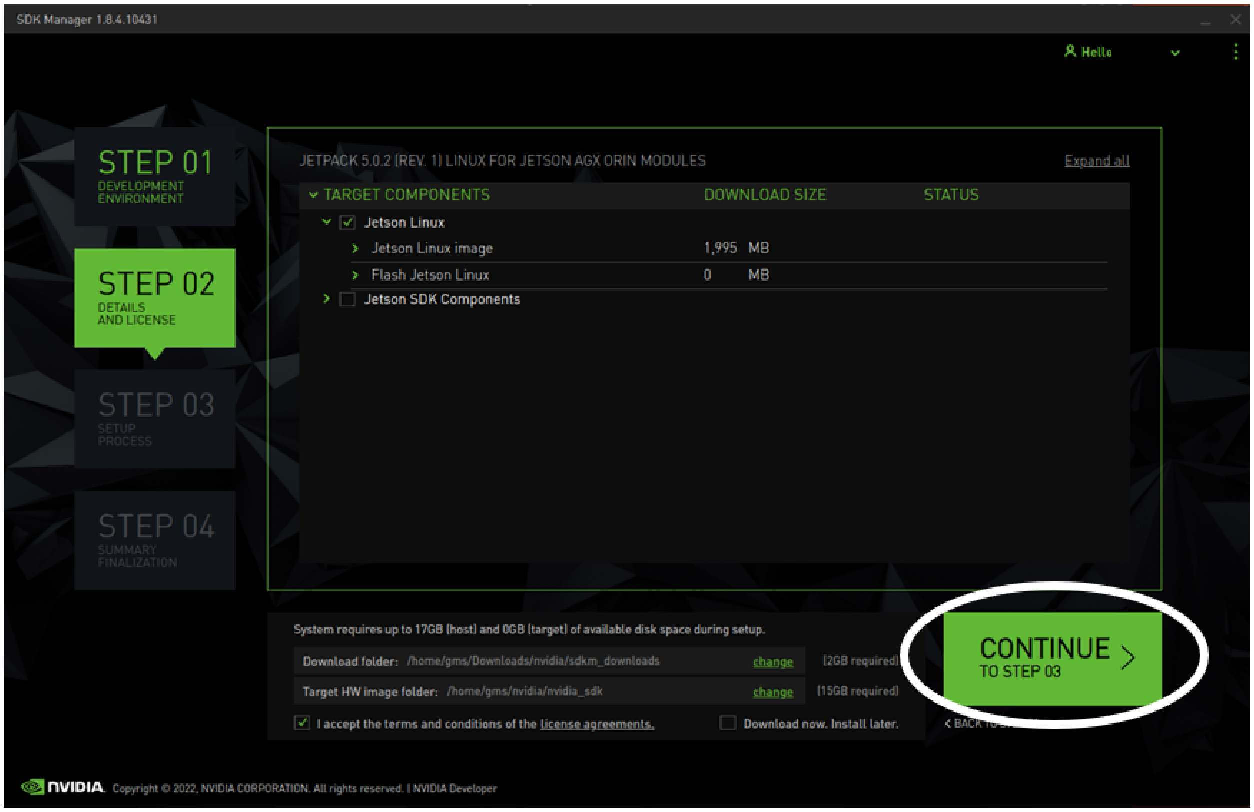
Download folder: /home/gms/Downloads/nvidia/sdkm_downloads change (2GB required)

Target HW image folder: /home/gms/nvidia/nvidia_sdk change (15GB required)

☑ I accept the terms and conditions of the license agreements. □ Download now. Install later.

Figure 13 - Accepting Terms & Conditions

18. Then clicked on the “CONTINUE TO STEP 03” button (circled in the image below) [Figure 14]


SDK Manager 1.8.4.10431
Hello
STEP 01 DEVELOPMENT ENVIRONMENT
STEP 02 DETAILS AND LICENSE
STEP 03 SETUP PROCESS
STEP 04 SUMMARY FINALIZATION
Expand all
CONTINUE TO STEP 03
< BACK TO S…
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JETPACK 5.0.2 (REV. 1) LINUX FOR JETSON AGX ORIN MODULES

TARGET COMPONENTS	DOWNLOAD SIZE	STATUS
☑ Jetson Linux		
Jetson Linux image	1,995 MB	
Flash Jetson Linux	0 MB	
□ Jetson SDK Components		

System requires up to 17GB (host) and 0GB (target) of available disk space during setup.

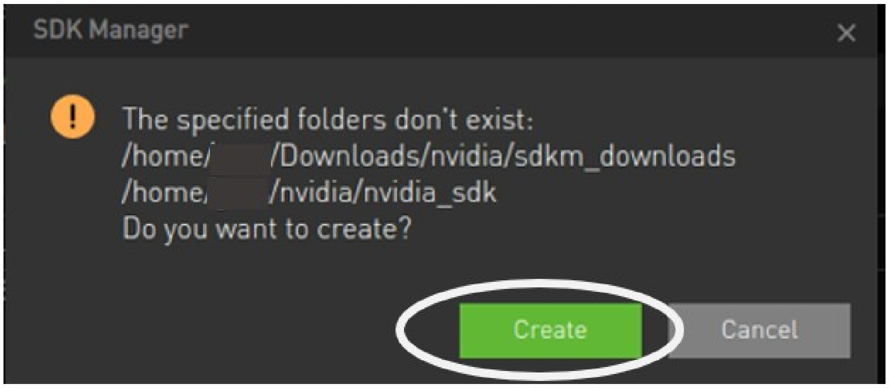
Download folder: /home/gms/Downloads/nvidia/sdkm_downloads change (2GB required)

Target HW image folder: /home/gms/nvidia/nvidia_sdk change (15GB required)

☑ I accept the terms and conditions of the license agreements. □ Download now. Install later.

Figure 14 - CONTINUE TO STEP 03

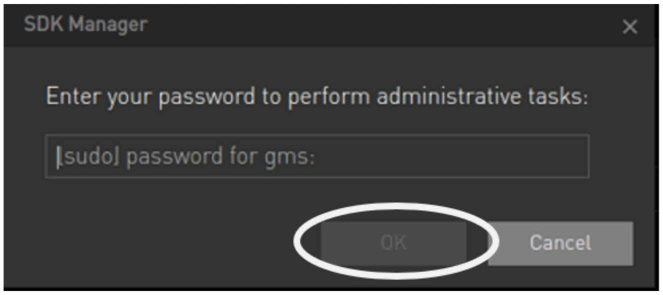
19. The following pop up seen, selected “Create” (circled in the image below) [Figure 15]



The specified folders don't exist:
/home/[redacted]/Downloads/nvidia/sdkm_downloads
/home[redacted]/nvidia/nvidia_sdk
Do you want to create?

Figure 15 - Create Folders

20. Then another popup was displayed requesting for administrative password, entered the password then clicked “OK” (circled in the image below) [Figure 16]
    f. NOTE: The “OK” button turns to light green after entering password in the textbox



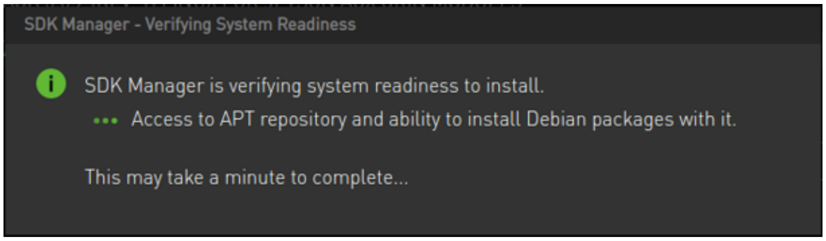
SDK Manager

Enter your password to perform administrative tasks:

[sudo] password for gms:

Figure 16 - Enter Password

21. Then a popup is displayed that wrote “SDK Manager is verifying system readiness to install” [Figure 17]



SDK Manager - Verifying System Readiness

SDK Manager is verifying system readiness to install.

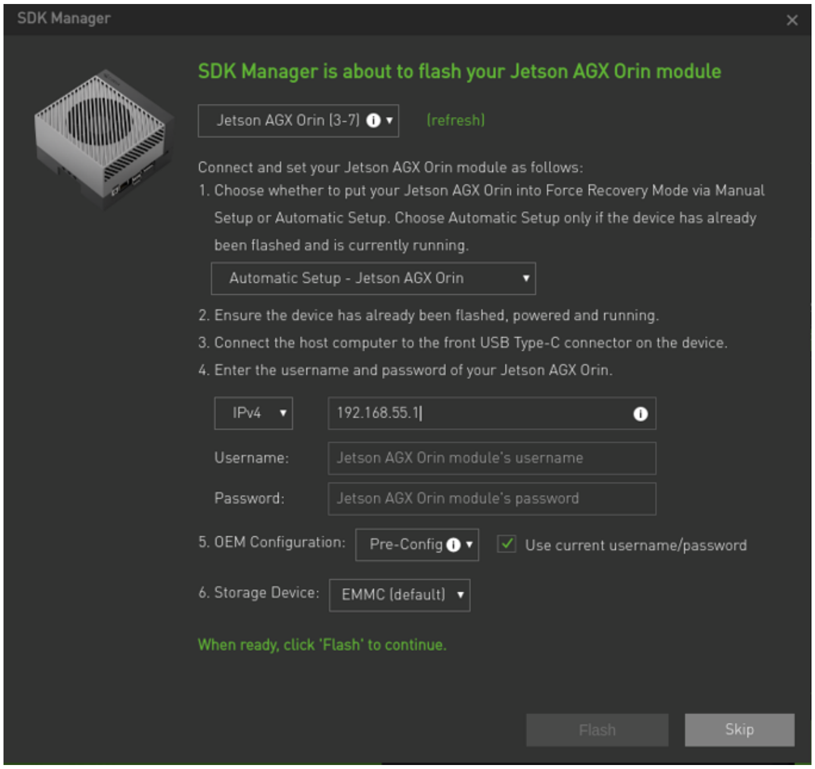
••• Access to APT repository and ability to install Debian packages with it.

This may take a minute to complete...

Figure 17 - Verifying System Readiness to Install

22. After a few minutes, the popup disappeared and progress bars were displayed on the SDKManager’s window on the bottom of the page where the folder paths were
23. Waited for a few minutes (could take about 20-30 depending on host configurations)

24. After a few minutes, the following window was seen stating the SDK Manager is ready to flash the Jetson AGX Orin module [Figure 18]



SDK Manager is about to flash your Jetson AGX Orin module

Jetson AGX Orin (3-7) ▾ (refresh)

Connect and set your Jetson AGX Orin module as follows:

1. Choose whether to put your Jetson AGX Orin into Force Recovery Mode via Manual Setup or Automatic Setup. Choose Automatic Setup only if the device has already been flashed and is currently running.

   Automatic Setup - Jetson AGX Orin ▾

2. Ensure the device has already been flashed, powered and running.
3. Connect the host computer to the front USB Type-C connector on the device.
4. Enter the username and password of your Jetson AGX Orin.

   IPv4 ▾ 192.168.55.1

   Username: Jetson AGX Orin module's username

   Password: Jetson AGX Orin module's password

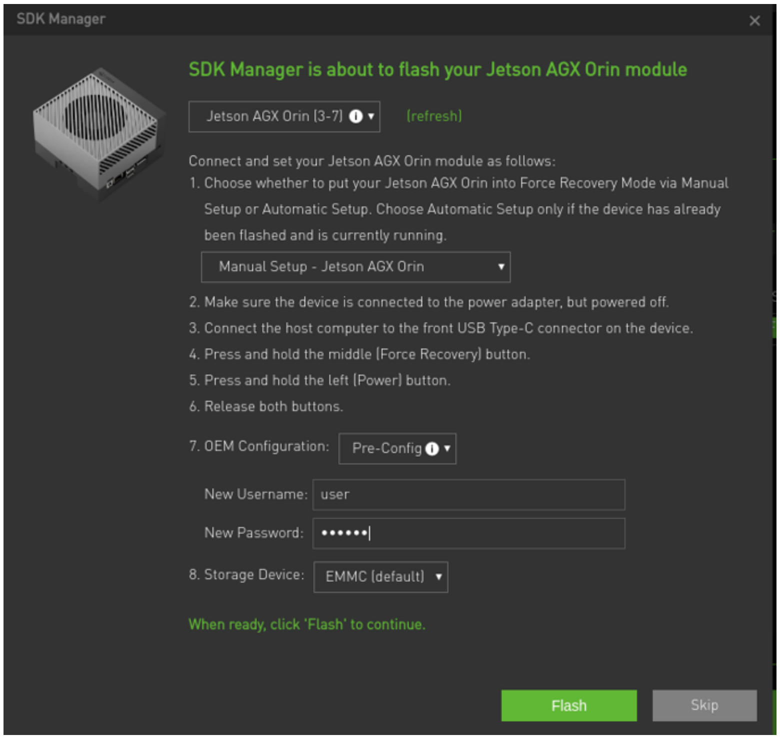
5. OEM Configuration: Pre-Config ▾ ☑ Use current username/password
6. Storage Device: EMMC (default) ▾

When ready, click 'Flash' to continue.

Figure 18 - Jetson Configurations (prior to making modifications)

25. For the setup mode, selected "Manual Setup – Jetson AGX Orin"
26. For the "OEM Configuration", selected "Pre-Config"
27. Entered username and password
28. For the "Storage Device", selected "EMMC (default)"

29. Below is an image of the settings selected listed in steps 25 to 28 [Figure 19]



SDK Manager

SDK Manager is about to flash your Jetson AGX Orin module

Jetson AGX Orin [3-7] (refresh)

Connect and set your Jetson AGX Orin module as follows:

1. Choose whether to put your Jetson AGX Orin into Force Recovery Mode via Manual Setup or Automatic Setup. Choose Automatic Setup only if the device has already been flashed and is currently running.

   Manual Setup - Jetson AGX Orin

2. Make sure the device is connected to the power adapter, but powered off.
3. Connect the host computer to the front USB Type-C connector on the device.
4. Press and hold the middle [Force Recovery] button.
5. Press and hold the left [Power] button.
6. Release both buttons.
7. OEM Configuration: Pre-Config

   New Username: user

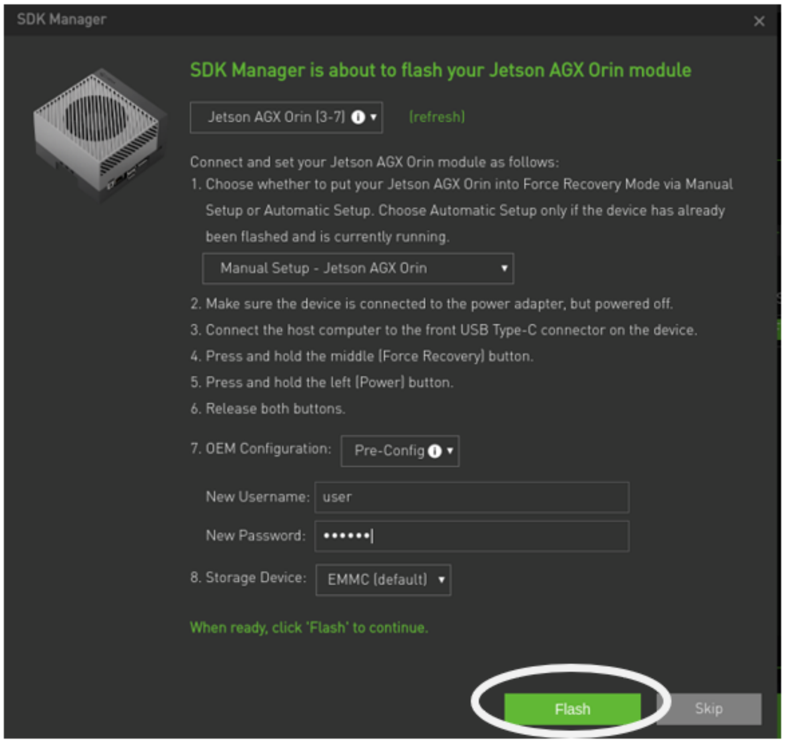
   New Password: ••••••

8. Storage Device: EMMC (default)

When ready, click 'Flash' to continue.

Figure 19 - Jetson Configurations (after making modifications)

30. Once confirmed proper configurations are selected, clicked on “Flash” (circled in the image below) [Figure 20]



SDK Manager is about to flash your Jetson AGX Orin module

Jetson AGX Orin (3-7) ▾ (refresh)

Connect and set your Jetson AGX Orin module as follows:
1. Choose whether to put your Jetson AGX Orin into Force Recovery Mode via Manual Setup or Automatic Setup. Choose Automatic Setup only if the device has already been flashed and is currently running.

Manual Setup - Jetson AGX Orin ▾

2. Make sure the device is connected to the power adapter, but powered off.
3. Connect the host computer to the front USB Type-C connector on the device.
4. Press and hold the middle (Force Recovery) button.
5. Press and hold the left (Power) button.
6. Release both buttons.
7. OEM Configuration: Pre-Config ▾

New Username: user

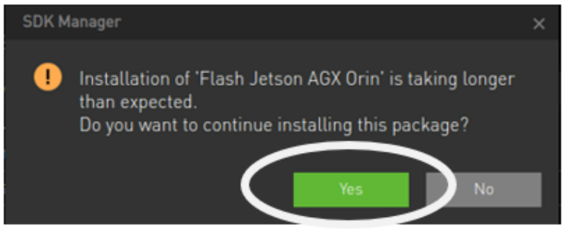
New Password: ••••••

8. Storage Device: EMMC (default) ▾

When ready, click 'Flash' to continue.

Figure 20 - Flash the Jetson

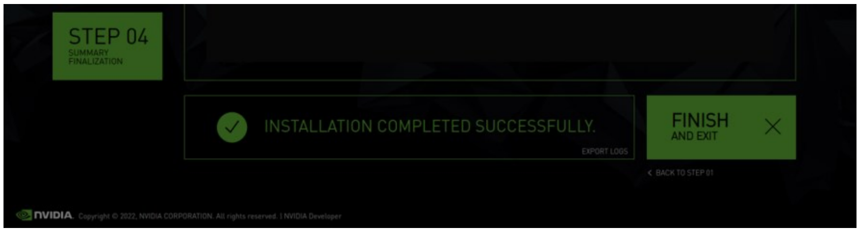
31. NOTE: If a popup is seen stating installation is taking longer than expected, select “Yes” (circled in the image below) [Figure 21]



Installation of 'Flash Jetson AGX Orin' is taking longer than expected.
Do you want to continue installing this package?

Figure 21 - Accepting to Continue Installing Package

32. After a while, the “STEP 04 SUMMARY FINALIZATION” is reached and it stated the installation completed successfully [Figure 22]


STEP 04
SUMMARY
FINALIZATION

INSTALLATION COMPLETED SUCCESSFULLY.

EXPORT LOGS
FINISH
AND EXIT
BACK TO STEP 01
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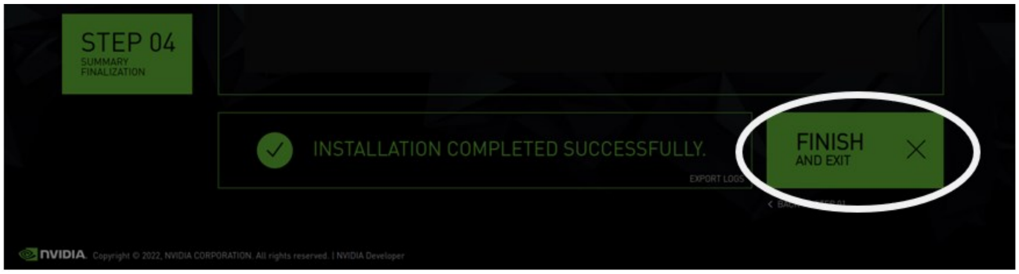
Figure 22 - STEP 04 SUMMARY FINALIZATION

33. Then selected “FINISH AND EXIT” (circled in the image below) [Figure 23]



INSTALLATION COMPLETED SUCCESSFULLY.

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Figure 23 - Finish Installation

Confirming Jetpack is Successfully Installed on the Jetson

On the Jetson, it was confirmed the Jetpack was installed and were able to successfully boot it up and log in to it.

Downloading & Installing Cross Compilation Tools

Followed the instructions in the link below to download, install, and set up the cross compilation tools on the Host desktop:

https://docs.nvidia.com/jetson/archives/r34.1/DeveloperGuide/text/AT/JetsonLinuxToolchain.html

Setting Up Environment Variables

The following steps were performed on the Host desktop to set up the environment variables to be used in the proceeding sections:

1. Entered the commands below on the terminal to set up environment variables:

```
$ export KERNEL_DIR=kernel-5.0
$ export CROSS_COMPILE=/home/user/l4t-gcc/bin/aarch64-buildroot-linux-gnu-
$ export JETPACK=/home/user/nvidia/nvidia_sdk/JetPack_5.0.2_Linux_JETSON_AGX_ORIN_TARGETS/Linux_for_Tegra
$ export KERNEL_OUT=$JETPACK/images
$ export KERNEL_MODULES_OUT=$JETPACK/images/modules
```

Downloading Kernel on the Host

The following steps were performed on the Host desktop to download the kernel:

1. Entered the command below on the terminal to change directory to the JetPack folder:

```
$ cd ${JETPACK}
```

   a. Current folder right now is:

```
~/nvidia/nvidia_sdk/JetPack_5.0.2_Linux_Jetson_AGX_ORIN_TARGETS/Linux_for_Tegra/
```

2. Entered the command below on the terminal to create a folder named "`sources`" and to change directories to it:

```
$ mkdir -p sources && cd sources
```

   a. Current folder right now is:

```
~/nvidia/nvidia_sdk/JetPack_5.0.2_Linux_Jetson_AGX_ORIN_TARGETS/Linux_for_Tegra/sources/
```

3. Entered the command below on the terminal to download the sources from NVIDIA:

```
$ wget https://developer.nvidia.com/embedded/l4t/r35_release_v1.0/sources/public_sources.tbz2
```

4. Entered the command below on the terminal to extract the contents from the `public_sources.tbz2` file:

```
$ tar -xvf public_sources.tbz2 Linux_for_Tegra/source/public/kernel_src.tbz2 --strip-components=3
```

5. Entered the command below on the terminal to extract the contents from the `kernel_src.tbz2` file:

```
$ tar -xvf kernel_src.tbz2
```

Modifying and Building Kernel on the Host

The following steps were performed on the Host desktop to modify and build the kernel:

1. Entered the command below on the terminal to create the `${KERNEL_MODULES_OUT}` folder:

```
$ mkdir -p ${KERNEL_MODULES_OUT}
```

2. Entered the command below on the terminal to change directory to the kernel folder:

```
$ cd ${JETPACK}/sources/kernel/${KERNEL_DIR}
```

   a. Current folder right now is:

```
~/nvidia/nvidia_sdk/JetPack_5.0.2_Linux_Jetson_AGX_ORIN_TARGETS/Linux_for_Tegra/sources/kernel/kernel-5.0
```

3. NOTE: Some websites like the one below

   https://developer.ridgerun.com/wiki/index.php/NVIDIA_Jetson_Orin/JetPack_5.0.2/Compiling_Code/Kernel

   specify to make some changes to fix some errors in the kernel. However, that was not needed for this kernel that was downloaded
4. Next, the `tegra_defconfig` file is modified to include “`CONFIG_SENSOR_LTC2990=y`” in it by entering the command below to open the file
   a. NOTES:
      i. Any text editor of choice could be used here, “`vi`” was used in this case
      ii. Instructions on how to use “`vi`” to modify a file and save/close it is beyond the scope of this document

```
$ vi ./arch/arm64/configs/tegra_defconfig
```

5. Entered the command below on the terminal to create the .config file:

```
$ make ARCH=arm64 O=${KERNEL_OUT} tegra_defconfig
```

   a. NOTE: The log file could be found in the Jetson_Logs_20221026.zip file (log file name is setup_dflt_cnfg.log)
6. Entered the command below on the terminal to create the BSP:

```
$ make ARCH=arm64 O=${KERNEL_OUT} CROSS_COMPILE=${CROSS_COMPILE} -j4
```

   a. NOTE: The log file could be found in the Jetson_Logs_20221026.zip file (log file name is bsp.log)
7. Entered the command below on the terminal to install the modules:

```
$ make ARCH=arm64 O=${KERNEL_OUT} CROSS_COMPILE=${CROSS_COMPILE} INSTALL_MOD_PATH=${KERNEL_MODULES_OUT}
```

   a. NOTE: The log file could be found in the Jetson_Logs_20221026.zip file (log file name is modules_install.log)

8. Entered the commands below on the terminal to create backups of existing files:

```
$ BKUP_DATE=`date “+%Y_%m_%d_%H_%M_%S”`
$ mv ${JETPACK}/kernel/Image{,.${BKUP_DATE}}
$ mv ${JETPACK}/kernel/kernel_supplements.tbz2{,.${BKUP_DATE}}
$ mv ${JETPACK}/kernel/dtb{,.${BKUP_DATE}}
```

9. Entered command below on the terminal to change directory to the `${KERNEL_OUT}` folder:

```
$ cd ${KERNEL_OUT}
```

   a. Current folder right now is:

```
~/nvidia/nvidia_sdk/JetPack_5.0.2_Linux_Jetson_AGX_ORIN_TARGETS/Linux_for_Tegra/images/
```

10. Entered the commands below on the terminal to copy newly created files to the designated locations:

```
$ cp ./arch/arm64/boot/Image ${JETPACK}/kernel
$ cp -r ./arch/arm64/boot/dts/nvidia/ ${JETPACK}/kernel/dtb
```

11. Entered the command below on the terminal to change directory to the `${KERNEL_MODULES_OUT}` folder:

```
$ cd ${KERNEL_MODULES_OUT}
```

   a. Current folder right now is:

```
~/nvidia/nvidia_sdk/JetPack_5.0.2_Linux_Jetson_AGX_ORIN_TARGETS/Linux_for_Tegra/images/modules
```

12. Entered the command below to compress the kernel modules folder:

```
$ tar --owner root --group root -cjf ${JETPACK}/kernel/kernel_supplements.tbz2 lib/modules
```

13. Entered the command below to apply the binaries:

```
$ sudo ./apply_binaries.sh
```

   a. NOTE: The log file could be found in the Jetson_Logs_20221026.zip file (log file name is apply_binaries.log)

Flashing Newly Modified Kernel on to the Jetson

The following steps were performed on the Host desktop to flash the newly modified kernel on the Jetson:

1. Entered the command below to change directory to the location where the flash.sh script is located:

```
$ cd ${JETPACK}
```

    a. Current folder right now is:

```
~/nvidia/nvidia_sdk/JetPack_5.0.2_Linux_Jetson_AGX_ORIN_TARGETS/
```

2. Entered the command below on the terminal to check if the Jetson is in a recovery mode or not, and confirmed it wasn't:

```
$ lsusb
```

Result:

```
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 002: ID 174c:3074 ASMedia Technology Inc. ASM1074 SuperSpeed hub
Bus 004 Device 001: ID 1d6b:0003 Linux Foundation 3.0 root hub
Bus 003 Device 005: ID 13fe:6000 Kingston Technology Company Inc.
Bus 003 Device 008: ID 046d:c025 Logitech, Inc. MX500 Optical Mouse
Bus 003 Device 006: ID 046d:c31c Logitech, Inc. Keyboard K120
Bus 003 Device 004: ID 1a40:0101 Terminus Technology Inc. Hub
Bus 003 Device 003: ID 0b05:17d0 ASUSTek Computer, Inc.
Bus 003 Device 002: ID 174c:2074 ASMedia Technology Inc. ASM1074 High-Speed hub
Bus 003 Device 007: ID 05e3:0723 Genesys Logic, Inc. GL827L SD/MMC/MS Flash Card Reader
Bus 003 Device 001: ID 1d6b:0002 Linux Foundation 2.0 root hub
```

    a. NOTE: No "NVIDIA" device is found, so the Jetson is not in recovery mode

3. Pushed the "recovery" button, then pushed the "restart" button and released both at the same time to place the Jetson in recovery mode

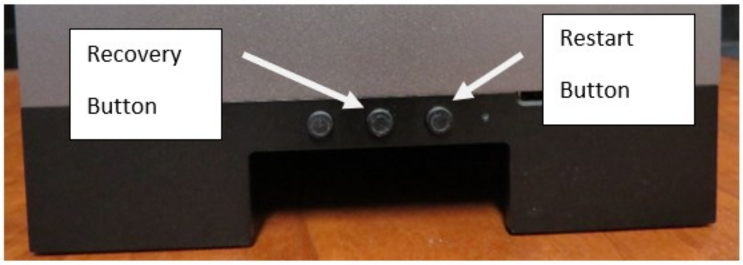

Figure 24 - Recovery & Restart Buttons

4. Entered the command below on the terminal to confirm the Jetson is in recovery mode which it was:

```
$ lsusb
```

Result:

```
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 002: ID 174c:3074 ASMedia Technology Inc. ASM1074 SuperSpeed hub
Bus 004 Device 001: ID 1d6b:0003 Linux Foundation 3.0 root hub
Bus 003 Device 005: ID 13fe:6000 Kingston Technology Company Inc.
Bus 003 Device 011: ID 046d:c025 Logitech, Inc. MX500 Optical Mouse
Bus 003 Device 010: ID 046d:c31c Logitech, Inc. Keyboard K120
Bus 003 Device 009: ID 1a40:0101 Terminus Technology Inc. Hub
Bus 003 Device 012: ID 0955:7023 NVidia Corp.
Bus 003 Device 003: ID 0b05:17d0 ASUSTek Computer, Inc.
Bus 003 Device 002: ID 174c:2074 ASMedia Technology Inc. ASM1074 High-Speed hub
Bus 003 Device 007: ID 05e3:0723 Genesys Logic, Inc. GL827L SD/MMC/MS Flash Card Reader
Bus 003 Device 001: ID 1d6b:0002 Linux Foundation 2.0 root hub
```

   a. NOTE: “NVIDIA” device is found, so the Jetson is in recovery mode

5. Entered the command below on the terminal to flash the kernel on the Jetson:

```
$ sudo ./flash.sh kernel jetson-agx-orin-devkit mmcblk0p1
```

   a.

Complications Faced

Once the kernel completed loading, the following steps were performed:

1. On the Host desktop, opened a terminal window and opened minicom by entering the command below:

```
$ sudo minicom -D /dev/ttyACM0 -8 0b 115200
```

2. When in minicom, hit the enter key on the keyboard a few times which then displayed Linux installation setup prompts
3. Went through the setup prompts (selecting time zone, language, etc.)
4. Once completed, it attempted to boot up but stopped at the following lines in the boot up messages (seen from the serial console on minicom):

```
[   13.838607] using random self ethernet address
[   13.845701] using random host ethernet address
```

   a. NOTE: The log file could be found in the Jetson_Logs_20221026.zip file (log file name is Boot_Up.log)

   i. NOTE: Noticed a kernel panic occur in this log

5. Power cycled the unit, it attempted to boot up and still stopped at the following lines:
   a. NOTE: NVIDIA Splash screen was displayed on the monitor, but after that, the monitor went blank
6. Attempted Step 5 with the following modifications, but still witnessed same issue:
   a. Connected the Jetson to the network
   b. Disconnected RJ45 cable from the Jetson
      i. NOTE: The log file when no RJ45 cable is connected could be found in the Jetson_Logs_20221026.zip file (log file name is Second_Attempt_Boot_Up.log)