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Install BSP & Patch via command

I. Introduction:

This Standard Operating Procedure (SOP) provides detailed guidance for installing a custom version of Board Support Package (BSP) and Patch on NVIDIA Jetson platforms. Designed for technicians and users familiar with Linux environments, this SOP covers the entire process from copying and extracting necessary files to flashing the BSP and Patch onto Aetina Jetson Nano/TX2/TX2-NX/NX/AGX Xavier/AGX Orin series product. Instructions are precise and include commands and visual references to ensure a smooth, error-free installation. Adherence to these guidelines is crucial for the successful setup of the custom software on the specified hardware configurations.

II. Version Control Table

Version	Date	Author	Changes Made
1.0	2022-09-20	Chris Luo	Initial SOP Creation
1.1	2024-01-03	Felipe Leiva	Doc Format Change
1.2	2024-01-30	Chris Luo	Content Modified
1.3	2024-04-29	Felipe Leiva	Required Tools update and Procedure enhancements
1.4	2024-05-15	Felipe Leiva	Inclusion of section V. Verification
1.5	2024-07-26	Chris Luo	Add DTS search command for Jetpack 6
1.6	2024-08-23	Chris Luo	Content modified

III. Required Tools/Software

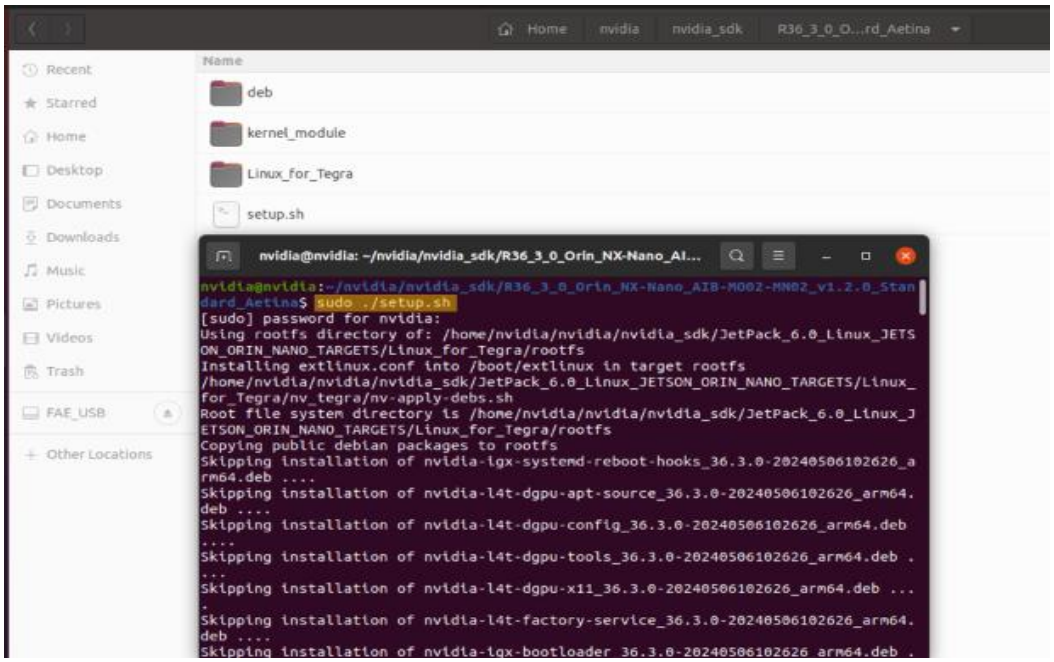
1. JetPack BSP + Aetina Patch
2. Aetina Jetson unit, e.g., AX720/AIB-MX13…etc
3. Host PC with Linux version 18.04 (JP 4.x), 20.04 (JP 5.x) or 22.04 (JP 6.0) (learn more)
4. NVIDIA SDK Manager installed in the Host Linux PC
5. USB-A to USB-C OTG cable for Orin Series or USB-A to Micro-USB OTG cable for older series

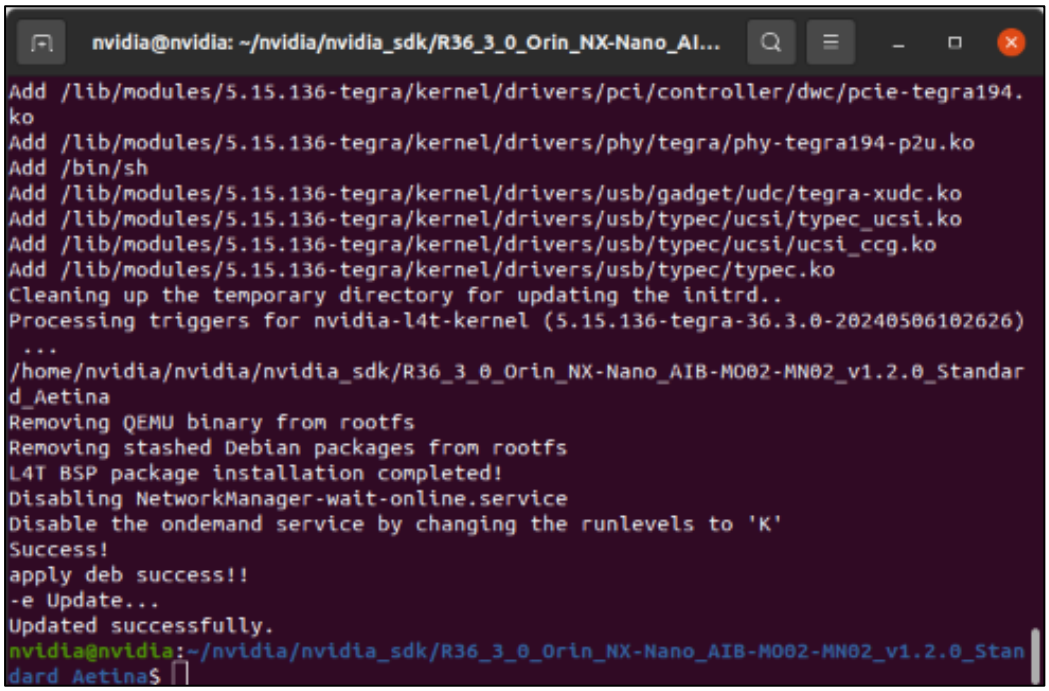
IV. Procedure

1. Connect the USB-A to USB-C or Micro-USB cable from the USB-A port on the **Host Linux PC** to the OTG port on the **Aetina device**.
2. In the **Host Linux PC**, copy the BSP and Patch into the **/home/nvidia/nvidia_sdk** path.
   Note: The path will exist only if the NVIDIA SDK Manager has been used to flash the system at least once.
   The below version and image are just for example, please use the version you want to follow in this guide.

3. Unzip these two files on the path of the **Host Linux PC**.
   BSP use this command: **`sudo tar -xvpzf XXXXXXX.tar.gz -C . --numeric-owner`**
   Patch use this command: **`sudo tar zxvf XXXXXXX.tar.gz`**
   or **`sudo tar -zxvf XXXXXXX.tar.gz`**

4. Enter the Patch file folder and open a terminal window, then enter the command **./setup.sh** to update the patch up to BSP. Please, refer to the pictures below.





5. Please set up the **Aetina device** in recovery mode.

   (**Note:** Ensure that the USB-A to USB-C OTG cable is connected to the Host Linux PC)

   Physical Method (learn more)

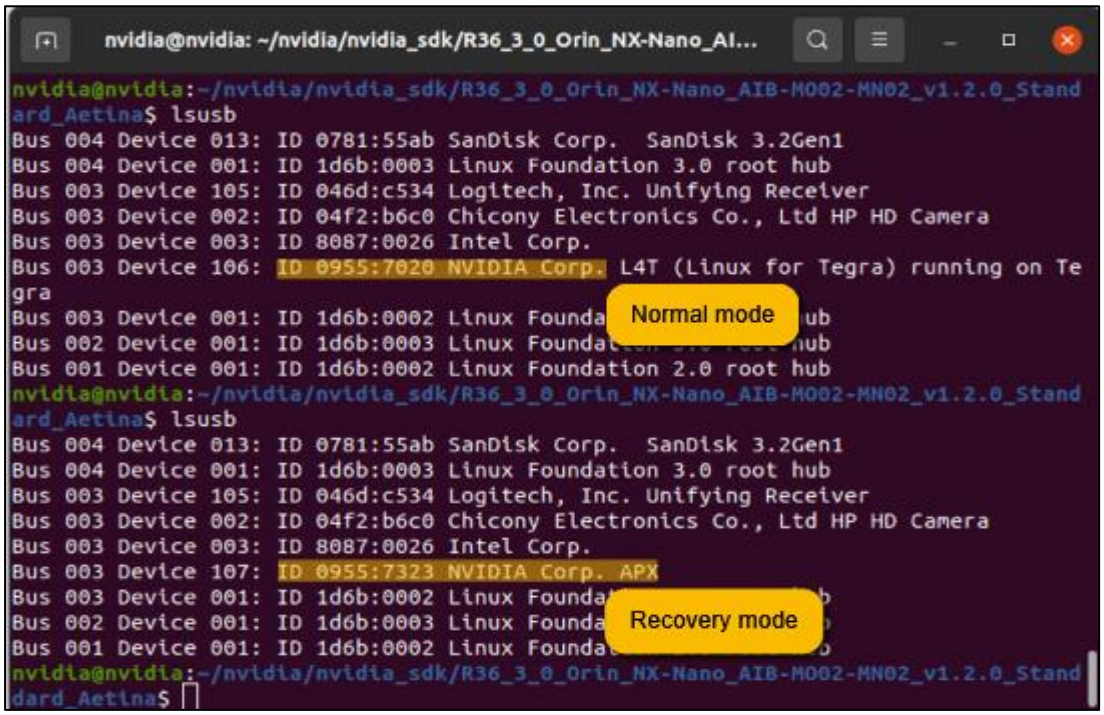
   a. When the **Aetina device** boots up.
   b. Press the reset button, then press the recovery button.
   c. Release the reset button, then release the recovery button.
   d. The device will get into recovery mode.

   Command Method (learn more)

   a. In the **Aetina device,** access the Terminal and issue the command:

      `$ sudo reboot --force forced-recovery`

6. Open the terminal and enter the command: **lsusb** please, refer to the picture below.
   (To check the Nvidia device has connected.)



7. Get into BSP folder **/home/nvidia/nvidia_sdk/Jetpack_4.5…/Linux_for_Tegra**

Open terminal window and enter command **`sudo ./flash.sh jetson-xxxxxxxx mmcblk0p1`** to start installation. Please, refer to the information below and picture.

Jetson Nano: jetson-nano-emmc

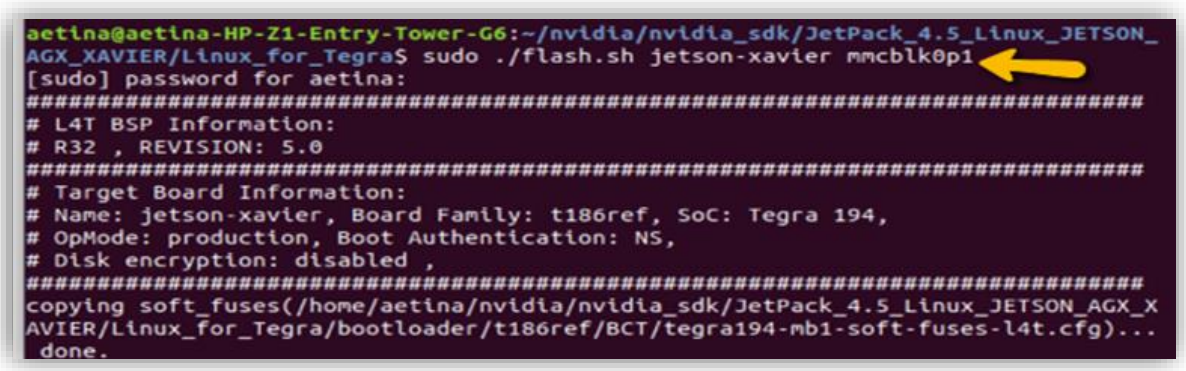
Jetson TX2: jetson-TX2

Jetson TX2-NX: jetson-nx-devkit-tx2-nx

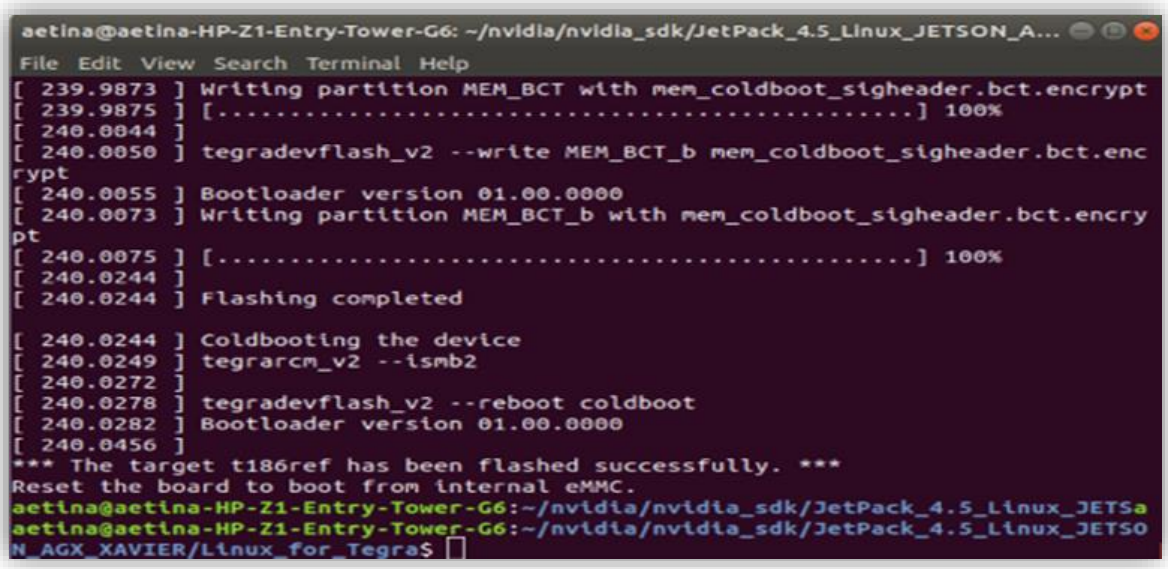
Xavier NX: jetson-xavier-nx-devkit-emmc

Xavier AGX: jetson-xavier

Orin AGX: jetson-agx-orin-devkit



8. When you see the below information shows the flashed successfully, the process is done. Please, refer to the picture below.



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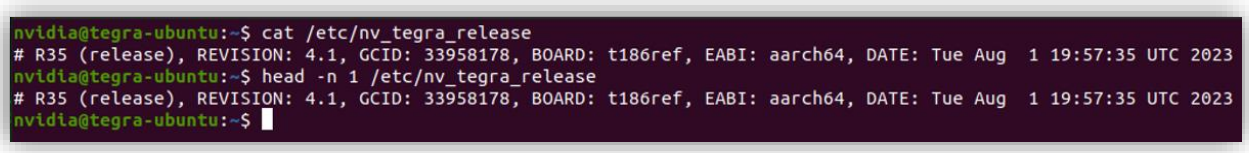
V. Verification

1. **Verify the installation of the Jetpack** (learn more)

Accessing the Terminal through your **Aetina Jetson Unit**, e.g. pressing keys Ctrl + Alt + T, you can issue one of the following commands:

```
$ cat /etc/nv_tegra_release
$ head -n 1 /etc/nv_tegra_release
```

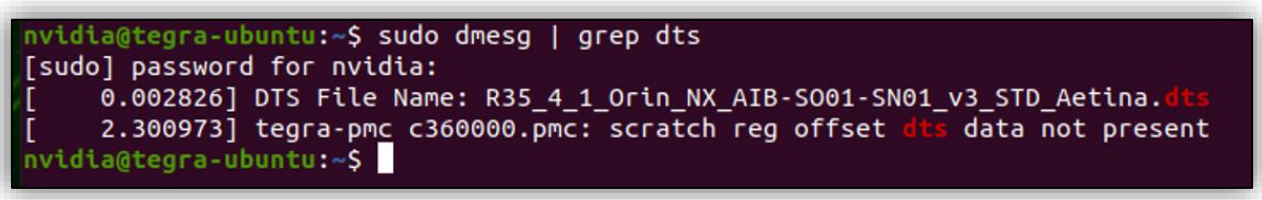


To interpret the release information, e.g. L4T R35.4.1, which refers to Jetpack version 5.1.2, please visit the NVIDIA Jetpack Archive

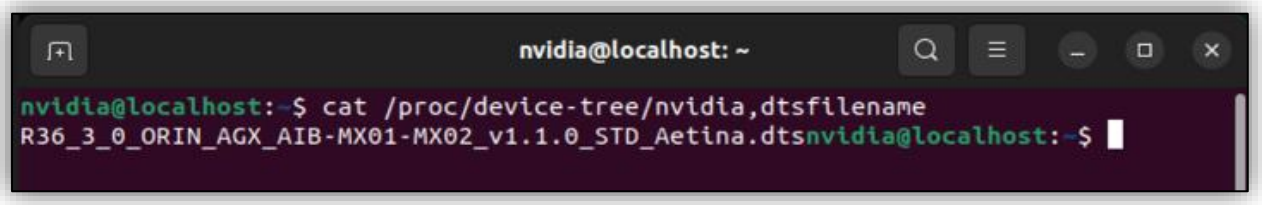
2. **Verify the installation of the Aetina's Patch** (learn more)

Accessing the Terminal through in your **Aetina Jetson Unit**, e.g. pressing keys Ctrl + Alt + T, you can issue the command as soon as you start your unit, after finishing the booting process:

```
$ sudo dmesg | grep dts
```




```
$ cat /proc/device-tree/nvidia,dtsfilename
```



The DTS file name with 'Aetina' at the end indicates that the Patch is loaded on the unit. To verify which Jetpack version the Patch is for, like NVIDIA's version R35.4.1, check the NVIDIA Jetpack Archive