

Jetson Nano 2GB -

Card Won't Boot - Stuck at the Start Screen/Boot Screen Error Fix Guide:

Hello everyone, I'm Serhan. Here's a short and easy guide to fix the Jetson-stuck-in-the-secure-boot-screen issue.

Let's see the problem and the solution:

1) The Problem

The cause of this problem is a boot issue, which is observed in the Jetson Nano 2GB cards.

The boot problem is caused by corrupt BIOS files that are written on the card by default. This problem prevents the card from booting up, even though it has the right files and equipment.

The card gets stuck in the boot screen, with the following NVIDIA logo:



Hence, just flashing the system ISO to the SD card won't solve the problem. We need to get the card into recovery mode and overwrite the boot files.

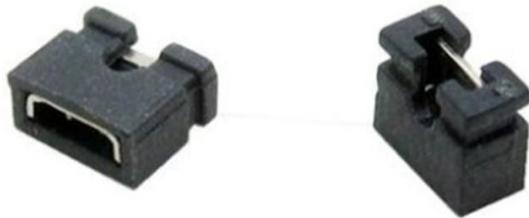
2) Requirements

Before we get started with the fix, it's always good to check if other requirements are satisfied.

This guide requires:

- 1 x Jetson Nano 2GB card
- 1 x Power Supply for the card – USB-C, at least 5V 3A is recommended.
- 1 x microSD Card – UHS-1 32GB minimum; at least 64 GB, high-endurance card recommended.
- 1 x Ubuntu 18.04 host with at least 32 GB **available space** – if you don't have this, you should have a pc running Windows 10/11, see the next part on how to set this up.
- 1 x Jumper Cap (It must be a Jumper Cap, Jumper cables etc. are not useful)

Here's a Jumper Cap for reference:



3) Preparing the Host

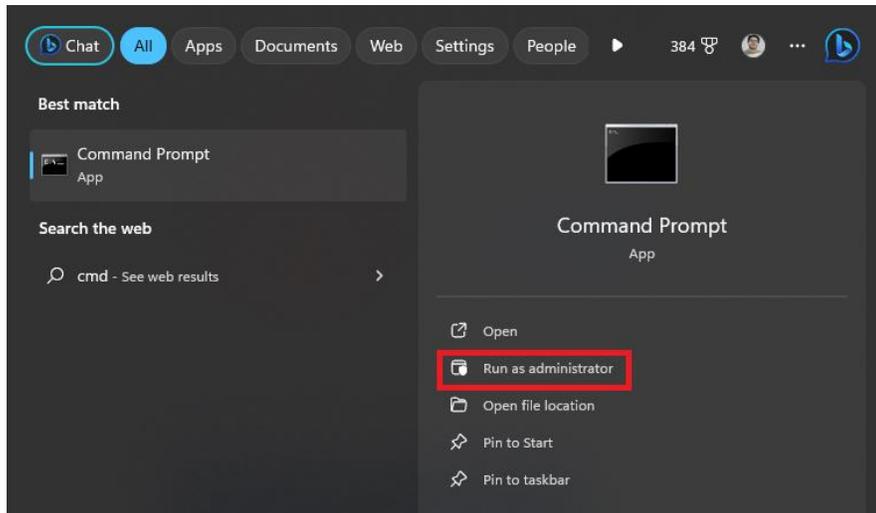
(Skip this part if you already have an Ubuntu 18.04 Host Machine)

Requirements:

- A desktop PC or Laptop which is connected to the power source with at least 40 GB available space.
 - Note that M1&M2-chip MacBook versions won't work with this guide, as we need an AMD64-based processor for the SDK Manager and Ubuntu, ARM is not compatible.
 - The Desktop PC or Laptop must have Windows 10 or 11 installed.
 - Windows 11 is a must if you want to run the GUI application.
 - If you have Windows 10, you'll need to follow the same steps, although from the terminal. I do recommend using a Windows 11 host, as it's exhaustive otherwise.
 - If you insist on using a Windows 10 host, here is the Official NVIDIA Guide on how to use Nvidia SDK Manager from the terminal:
https://docs.nvidia.com/drive/active/5.0.10.3L/nvlib_docs/NVIDIA%20DRIVE%20Linux%20SDK%20Development%20Guide/sdk_mgr/content/sdk_manager/0.9beta8/install_cmd_line.htm?tocpath=Advanced%20Options%7C_____1
- Internet connection

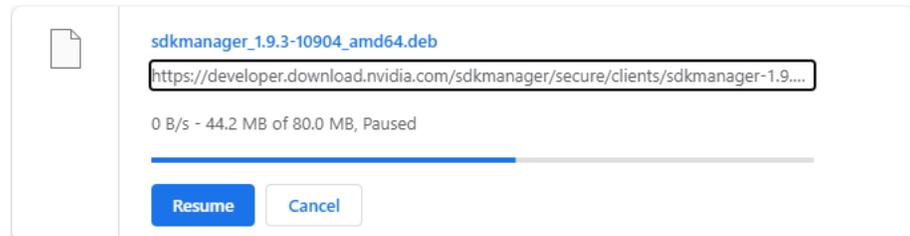
1) Preparing the Windows Subsystem for Linux Environment and Installing the SDK Manager

- Run Windows PowerShell or CMD as administrator.



- Install WSL2 with command “**wsl --install -d <Distribution Name>**” since we’re installing Ubuntu 18.04, the command is: “**wsl --install -d Ubuntu-18.04**”.
- Once you install WSL2, set up your Ubuntu username and password.
- Now, in order to enable Windows Subsystem for Linux to detect Jetson Nano, we’ll need a tool called **USBIPD**. This should be installed on your Windows machine, not Linux. To install this tool:
 - Go to the release page: <https://github.com/dorssel/usbipd-win/releases>
 - Download and install the .msi file.
 - Go to your WSL2 terminal, and run:
 - **sudo apt install linux-tools-generic hwdata**
 - **sudo update-alternatives --install /usr/local/bin/usbip usbip /usr/lib/linux-tools/*-generic/usbip 20**
 - For more information, see: <https://learn.microsoft.com/en-us/windows/wsl/connect-usb>
- Great! Now that you have WSL2, run the commands below to install additional packages:
 - **sudo apt update**
 - **IMPORTANT:** If you see that the packages are not able to be updated by Ubuntu, that is likely an error caused by the time not being synchronized in the system. You can force sync with system clock in the Ubuntu machine, by running this script on the terminal: **sudo hwclock -s**
 - **sudo apt install iputils-ping iproute2 netcat iptables dnsutils network-manager usbutils net-tools python3-yaml dosfstools libgetopt-complete-perl openssh-client binutils xxd cpio udev dmidecode -y**

- Now, to ready the system to flash the NVIDIA USB Device, run these commands:
 - **sudo apt install linux-tools-virtual hwdata**
 - **sudo update-alternatives --install /usr/local/bin/usbip usbip `ls /usr/lib/linux-tools/*/usbip | tail -n1` 20**
- Finally install NVIDIA SDK Manager:
 - If you want to download fully over the terminal (**Recommended**):
 - Get the exact download link for the sdkmanager by starting the download in your Windows computer from [this](#) website and copy the link shown below.



- In the WSL2 terminal, navigate to the directory you'd like to download the file.
 - Run the command: “**wget <copied link>**”- to download the file.
 - After the file is downloaded, update your package database:
 - “**sudo apt update**”.
 - After the file is downloaded, run the installation by the command:
 - “**sudo dpkg -i package.deb >**” where package.deb is the name of the sdkmanager file you downloaded.
 - Resolve all dependencies by running this script in the Ubuntu terminal:
 - sudo apt-get install -f.**
 - If you want to install from a browser download:
 - Install Google Chrome to your WSL2 Ubuntu Host.
 - Download the .deb file from <https://developer.nvidia.com/sdk-manager>
 - Navigate to the directory the file is downloaded.
 - Run the command from the terminal: “**./sdkmanager**”
- Now, run the sdkmanager, by typing the following to the terminal: “**sdkmanager**”.
- If the program has unresolved dependencies and won't launch from the terminal call, run the scripts below from the terminal and try again:
 - **sudo apt update**
 - **sudo apt install libnss3 libatk-bridge2.0-0 libgtk-3-0 libgbm1**
- From the opened GUI window, login to the SDK Manager by scanning the QR Code.
- Congrats! Your SDK Manager is now ready!

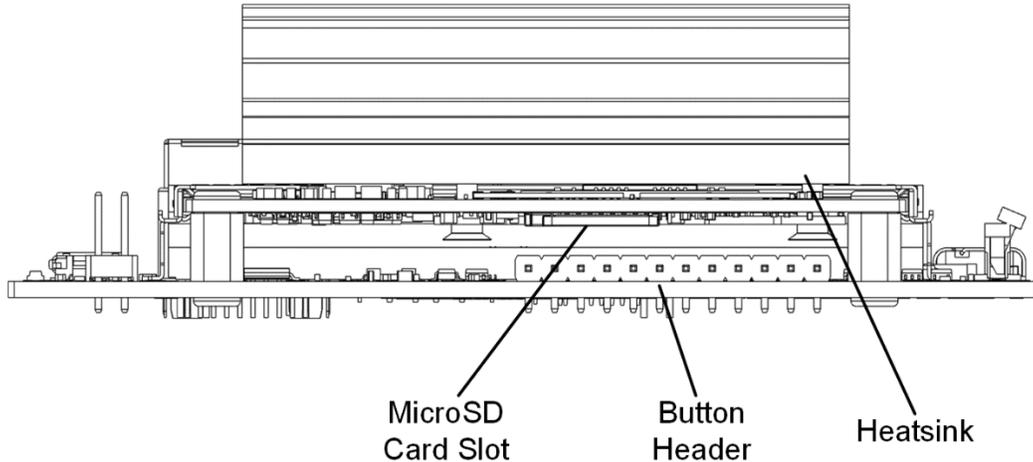
2) Preparing your Jetson Nano 2GB for the SDK Manager

Now, for the computer to detect your card, it needs to be in **recovery mode**.

- Insert an **empty microSD card** into the SD Card slot of your Jetson Nano.

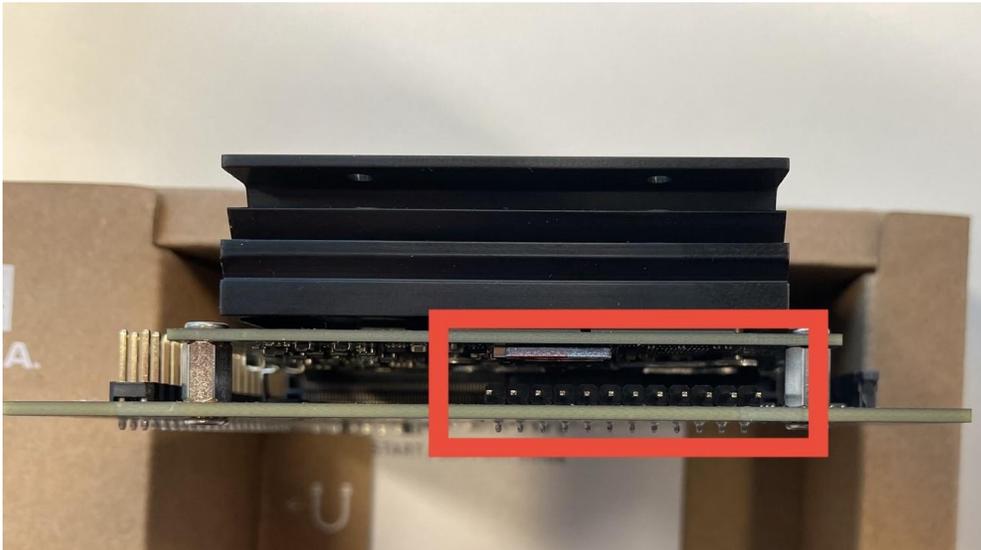
If you can't find the microSD card slot, see the Overview of the Developer Kit:

Rear View



https://developer.nvidia.com/embedded/learn/jetson-nano-2gb-devkit-user-guide#id-JetsonNano2GBDeveloperKitUserGuidevbatuu_v1.0-OverviewoftheDeveloperKit

- Then, on your Jetson Nano, and locate the 12-Pin button header. You will find it below the heatsink, near the SD Card. It's 12 pins as stated. For a clearer reference, see the picture below:



If you still can't see it, see the board layout here:

https://developer.nvidia.com/embedded/learn/jetson-nano-2gb-devkit-user-guide#id-JetsonNano2GBDeveloperKitUserGuidevbatuu_v1.0-CarrierBoardLayout

- Get your Jumper Cap, and short the pins 9 (GND) and 10 (Force Recovery). If you're having trouble finding the pins, see the picture below:



If you still couldn't find it, see the detailed numbering of the pins here:

[https://developer.nvidia.com/embedded/learn/jetson-nano-2gb-devkit-user-guide#id-JetsonNano2GBDeveloperKitUserGuidevbatuu_v1.0-12-PinButtonHeader\(J12\)](https://developer.nvidia.com/embedded/learn/jetson-nano-2gb-devkit-user-guide#id-JetsonNano2GBDeveloperKitUserGuidevbatuu_v1.0-12-PinButtonHeader(J12))

- Here's how your Jetson Nano should look like after this step:



- **IMPORTANT:** You **MUST** use a **Jumper Cap** to short the pins. If you use a Jumper cable, or another way to short the pins, it might not work. Likely because of the resistance of the cables, the Jetson Nano might **NOT** go into recovery mode.
- Power on the card by connecting the adapter.

3) Fix your Jetson Nano already!

- Launch the NVIDIA SDK Manager Application
- Using a micro-USB cable, plug the cable into the computer and plug the micro-USB head into the micro-USB socket on the Jetson Nano.

- **IMPORTANT!** If you are using the WSL2 on Windows as explained in this guide, you'll need to connect the detected device to the Linux Virtual Environment.

To do so:

- Run a Windows PowerShell or CMD terminal **as administrator**.
- Run the command: “**usbipd.exe list**”
- Identify the **BUS ID** of the Jetson Device (Starts with 0955).

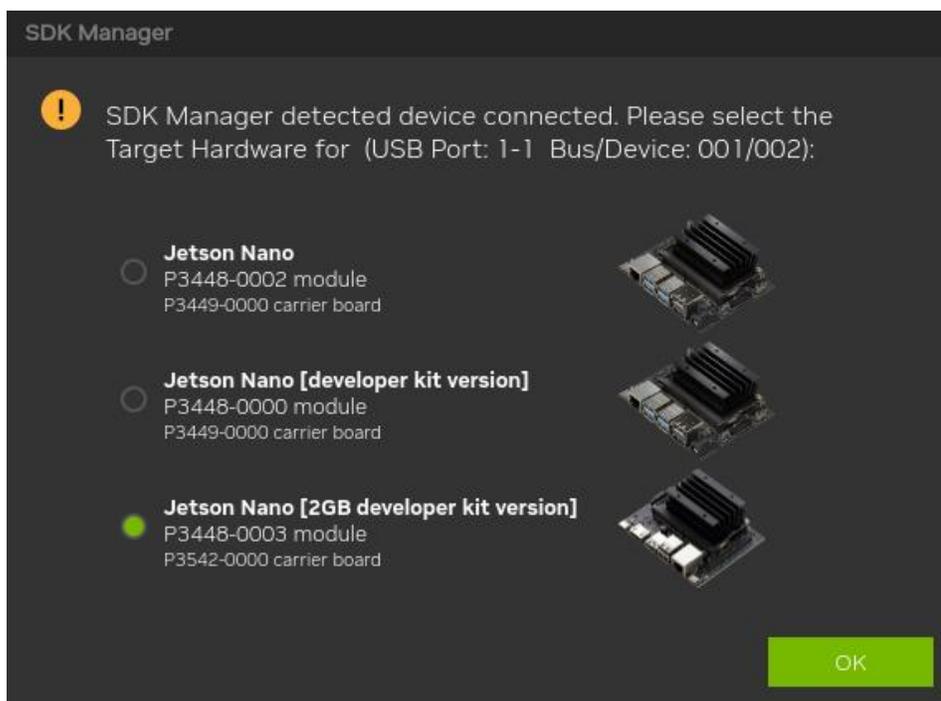
BUSID	VID:PID	DEVICE	STATE
2-1	0955:7f21	APX	Not shared
2-6	13d3:56eb	USB2.0 HD UVC WebCam, USB2.0 IR UVC WebCam, Camera DFU De...	Not shared
2-10	8087:0026	Intel(R) Wireless Bluetooth(R)	Not shared

- Attach the BUS ID to the WSL2 environment by running the command below, replace <BUSID> by the BUS ID you saw:

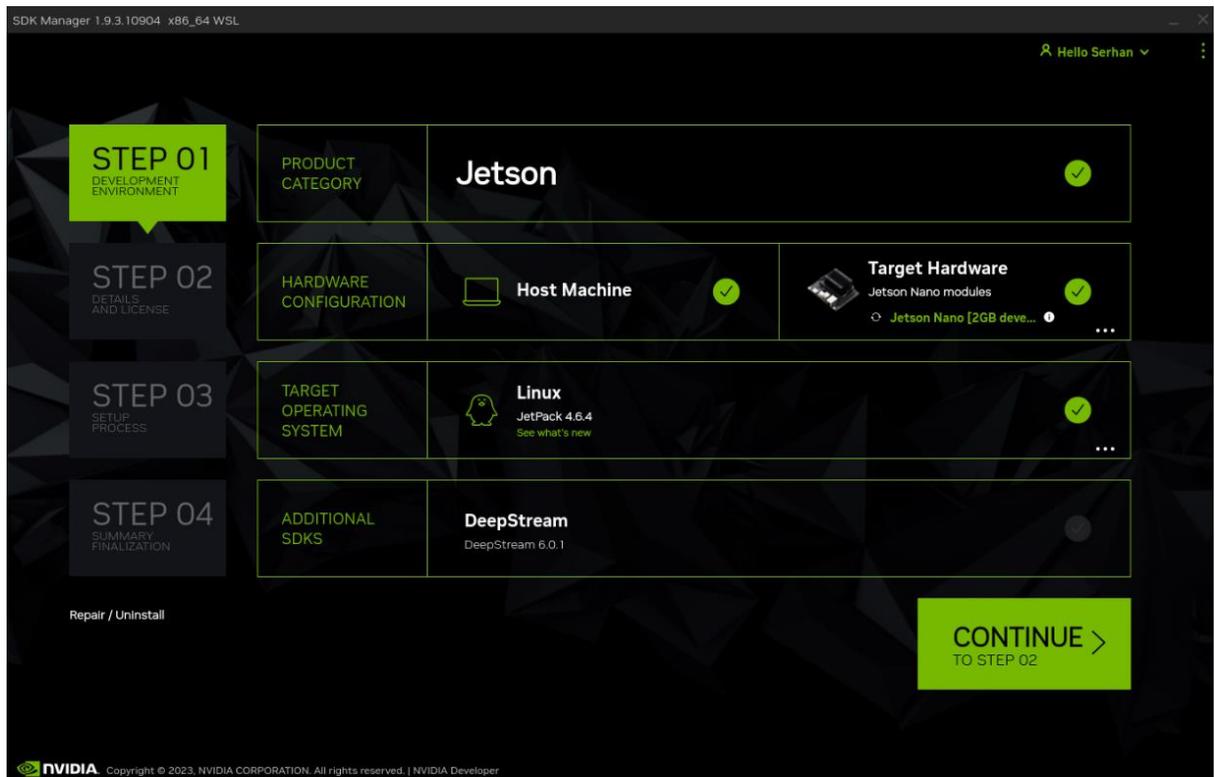
“**usbipd.exe wsl attach --busid <BUSID> --auto-attach --distribution Ubuntu-18.04**”

```
C:\Windows\System32>usbipd.exe wsl attach --busid 2-1 --auto-attach --distribution Ubuntu-18.04
usbipd: info: Starting endless attach loop; press Ctrl+C to quit.
Attached
```

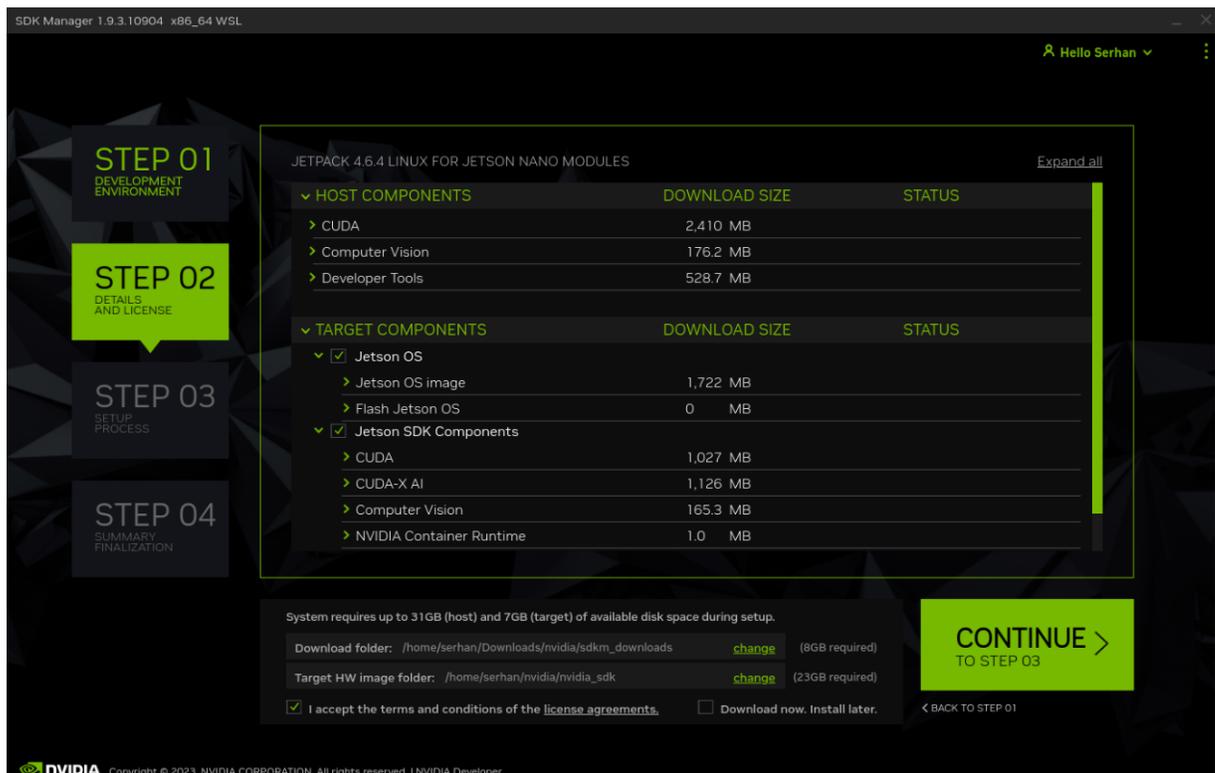
- The terminal tab in which you ran the code **must remain open**, as it will run an endless loop to keep the Jetson Nano device connected.
- NVIDIA SDK Manager will detect your card now. Choose Jetson Nano 2GB Developer Kit.



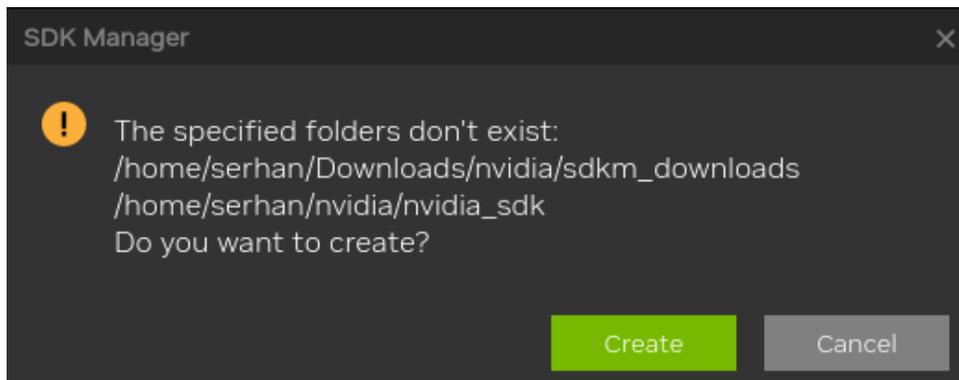
- Ensure that the device is right, your screen should look like this:



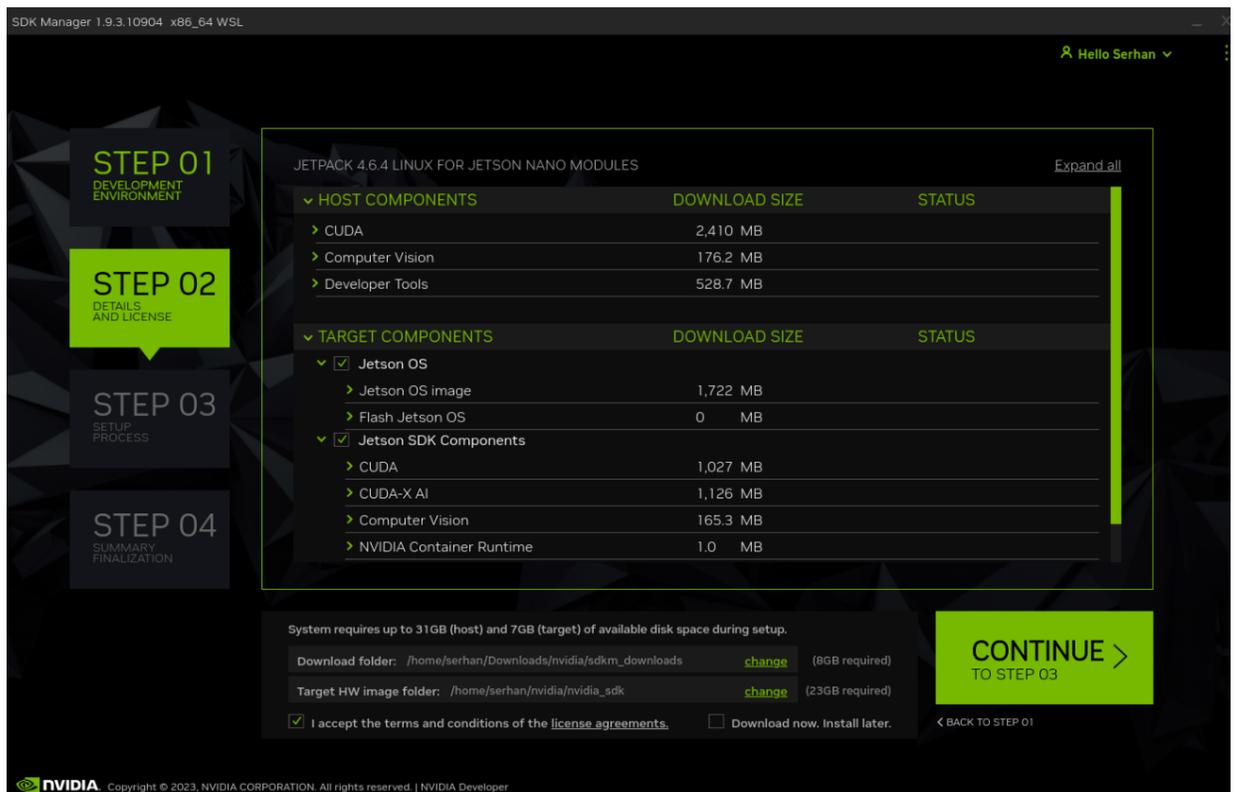
- Move onto Step 2, leave these as default and click on “**Continue**”. (You can choose to download everything first and then install by running the app another time, by clicking on “Download now, install later”.):



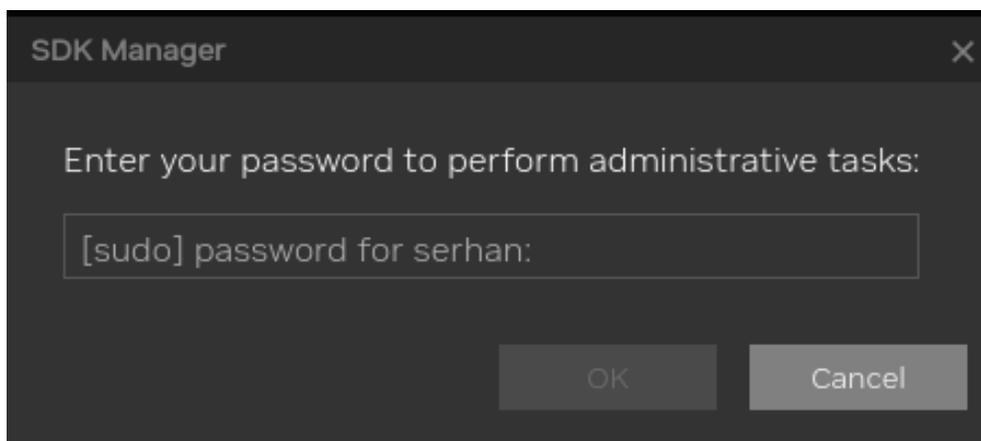
- You will be prompted with this warning if this is your first installation. Click on “**Create**”.



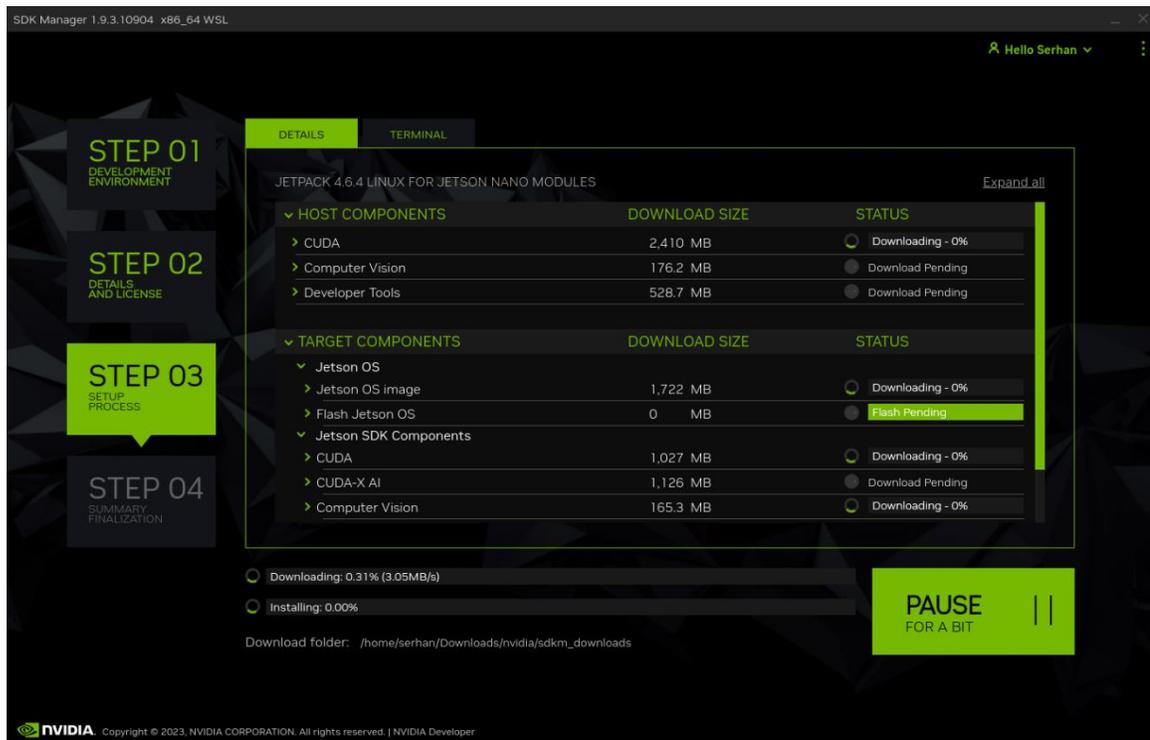
- Now Click on “**Continue**” again:



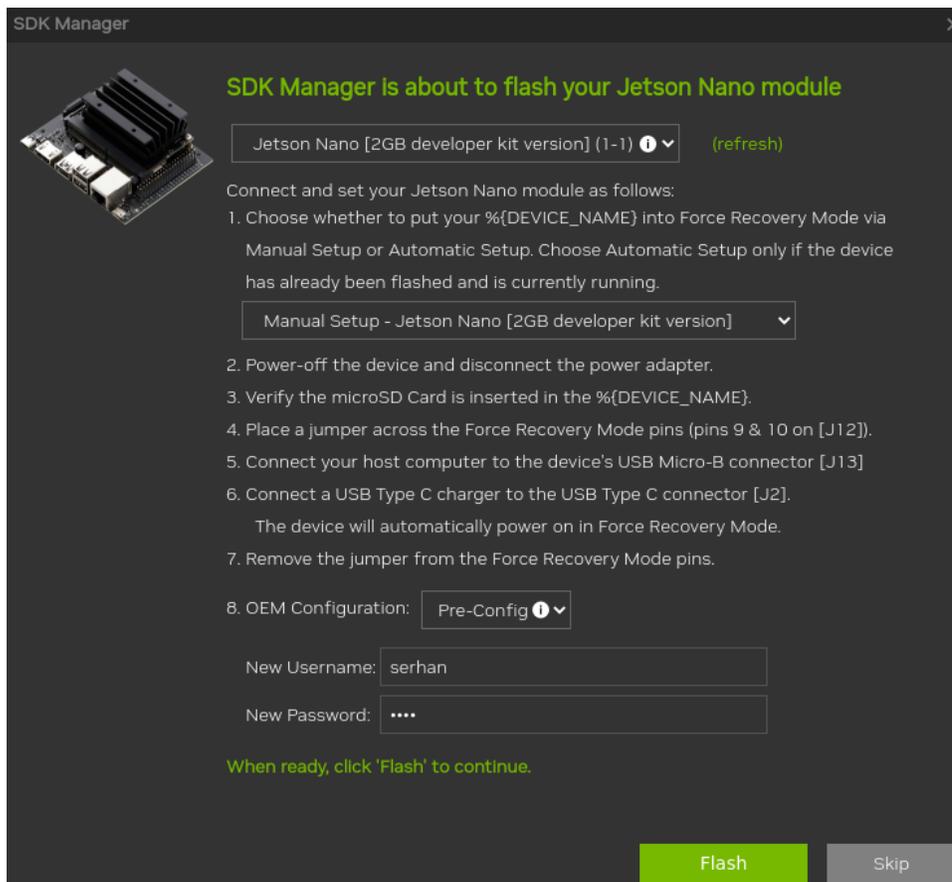
- You will be prompted to enter your password, enter the sudo password here and click “**OK**”:



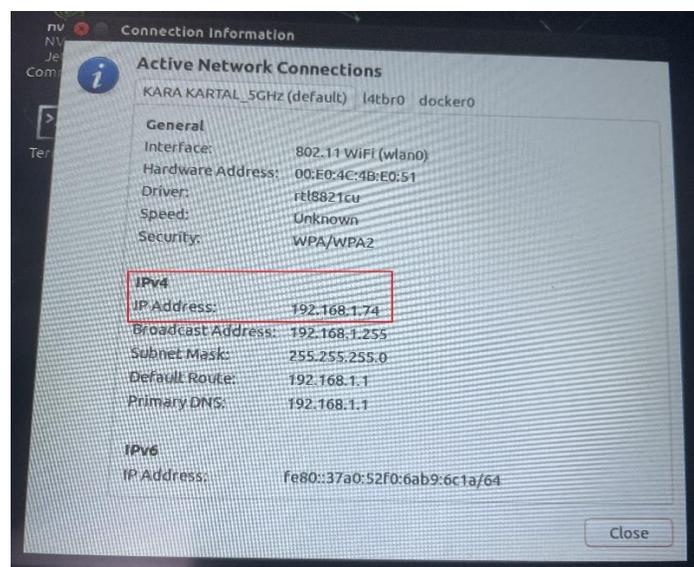
- Now the program will start downloading and installing.



- When the Jetson OS flash is almost done, you will be prompted with this screen. Choose the options as displayed below, and **do not remove** the recovery mode Jumper Cap, as opposed to the description (Try removing only if it fails the first time). Then click “Flash” to continue.

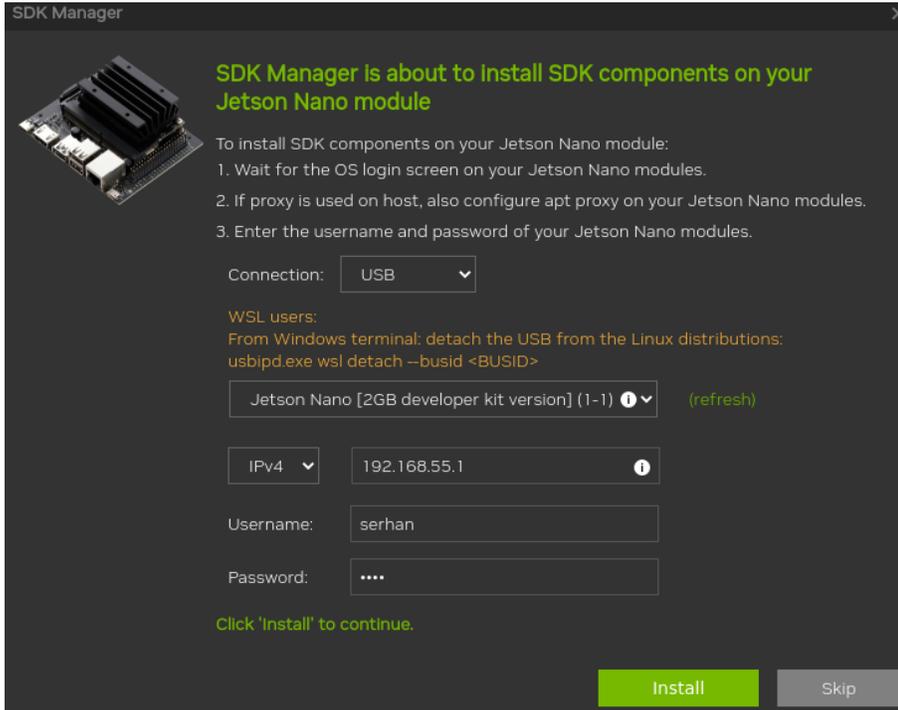


- When the program is ready to install the SDK components on your Jetson Nano, you will be prompted with this screen. Now, follow the steps:
 - First off, disconnect the Jetson from the computer.
 - **IMPORTANT:** If you are using WSL2, firstly you'll need to stop the endless loop in the open terminal with **Ctrl+C** and detach the BUS ID from the WSL2 system from the Windows PowerShell or CMD terminal by running the command: **“usbipd.exe wsl detach –busid <BUSID>”** Where BUSID is the ID from earlier in the setup.
 - Then, unplug the power to the Jetson Nano.
 - Remove the Jumper Cap from the Force Recovery Mode pins.
 - Plug in the network adapter -included in the box-.
 - Now, plug in the power and let your Jetson Nano boot.
 - If you are using a screen, connect the screen to the board.
 - If you are using headless mode, connect the card to your PC again with a Micro-USB cable, and access the serial terminal with PuTTY. See [here](#) for details.
 - Now, log into the system with your username and password.
 - After logging in, **connect to the network your PC is connected to** (to be able to SSH).
 - Now, note down the **IPv4 address** of the connection. To get this, do one of the following:
 - If you are using the Desktop GUI, then click on the Network icon, and click on Connection Information to display the IPv4 address of your default connection.

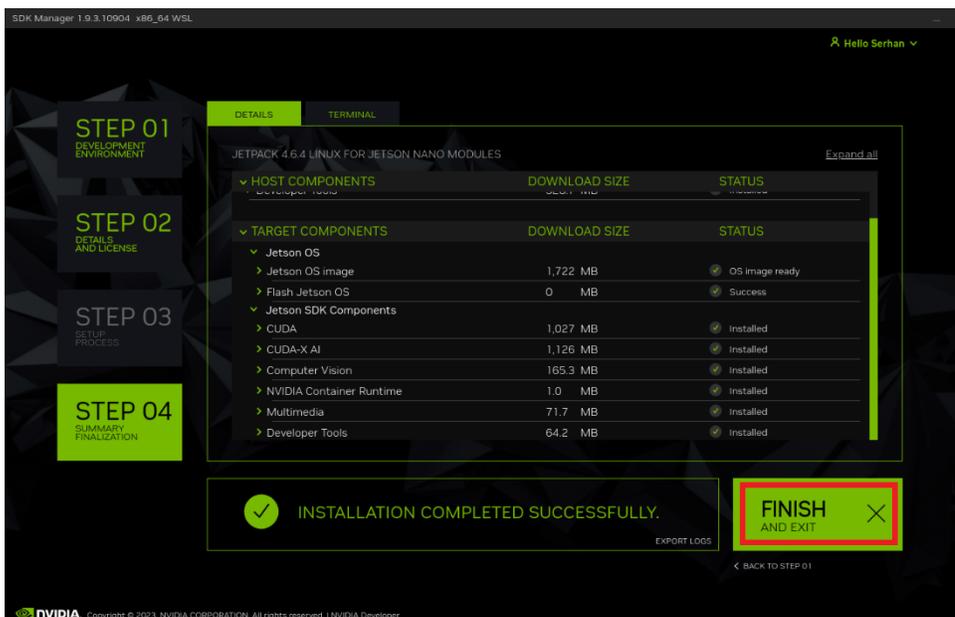


- If you are using the terminal, then run **“ifconfig”** and get the IPv4 address from **‘wlan0’**.
 - Now, connect your Jetson Nano to your PC again. It might not show up in NVIDIA SDK Manager, that’s okay.

- Into the fields, write the IP address we have just gotten, your username and password to enable the program to SSH into the Jetson Nano, and click “**Install**”.
 - As in the picture below, the IP address might be different than what you have written down, that should be replaced.
 - So, in the picture below, the IPv4 address shown as 192.168.55.1 should be replaced with what I noted down in the above section: 192.168.1.74.



- The SDK Manager will now install the SDK Components on the Jetson Nano. Afterwards, click on “**Finish and Exit**”. Congrats! Your job here is done!



Well, it's time to conclude this tutorial!

Here are the **three most important points** of this tutorial that are not mentioned elsewhere:

1. **NEVER GIVE UP, NEVER SURRENDER!** Yes, it's true. From time to time, the SDK Manager behavior on this card may differ. Remember, the most important thing is the **Jetson OS Flash, if you can get through that point once, this means that the card will boot.**
 - a. If you encounter errors before that point, feel free to format the SD Card on the Jetson Nano and start the guide again. You can try downloading everything first at Step 2, and then install by starting the SDK Manager again.
 - b. If you encounter errors after this point for installing additional SDK packages, then **without formatting the SD Card**, you can start the guide again, the program will continue from where it left off. Or you can try closing the guide and installing required packages yourself on the board, as the boot issue will be fixed either way.
 - c. If it's still not fixed, email me at: srhnylmz14@gmail.com and I will do my best to assist you!
2. You need to make sure that the Jetson Nano is in recovery mode! For this, you need to short the pins 9 and 10 -namely, GND and REC- on the 12-pin button header.
3. **You MUST use a Jumper Cap** to short the pins! I have tried lots of other methods, with female/female, female/male and male/male jumper cables in various lengths, long and short and I have tried shorting the pins with old copper wires, none of them works! It's probably related to the current not being able to pass, as the resistance of the cables is probably too high for the Jetson Nano! So, just use a Jumper Cap to short the pins! :)

I hope this fixed your issue as it did mine!

In case it didn't, don't forget to ask in NVIDIA Developer Forums: <https://forums.developer.nvidia.com/>

If you have any questions, or would like to reach me, mail me at: srhnylmz14@gmail.com or see my personal website: <https://serhanyilmaz.org> !

I wish you a great time with your Jetson Nano!

Serhan YILMAZ