



# **NVIDIA Clara AGX Developer Kit – Getting Started Guide**

*Release 1.0*

**Nvidia Corporation**

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# Getting Started Guide



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# Chapter 1


## Introduction

The Getting Started Guide for the Clara AGX Developer Kit will guide you through the steps of flashing, setting up, and starting a new Clara AGX system.

### 1.1 Requirements

- Clara AGX System with  provided power cable
- Ubuntu 18.04 host system
-  Standard USB-A to USB-C cable with data enabled

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**Note:**  Some USB-C connectors can interfere with the chassis. In this case, we suggest trimming the base of the connector to ensure proper contact. The cable provided with the unit will work without modification.

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### 1.2 Precautions

- Only connect and disconnect PCIe cards (e.g. miniSAS or dGPU) when the system is powered down.
- Apply extra care when plugging in and removing PCIe cards to avoid stress on the PCIe connectors.
- The rightmost USB connector is USB 2.0 (even if the color of the port is blue). The other two USB connectors are USB 3.0.



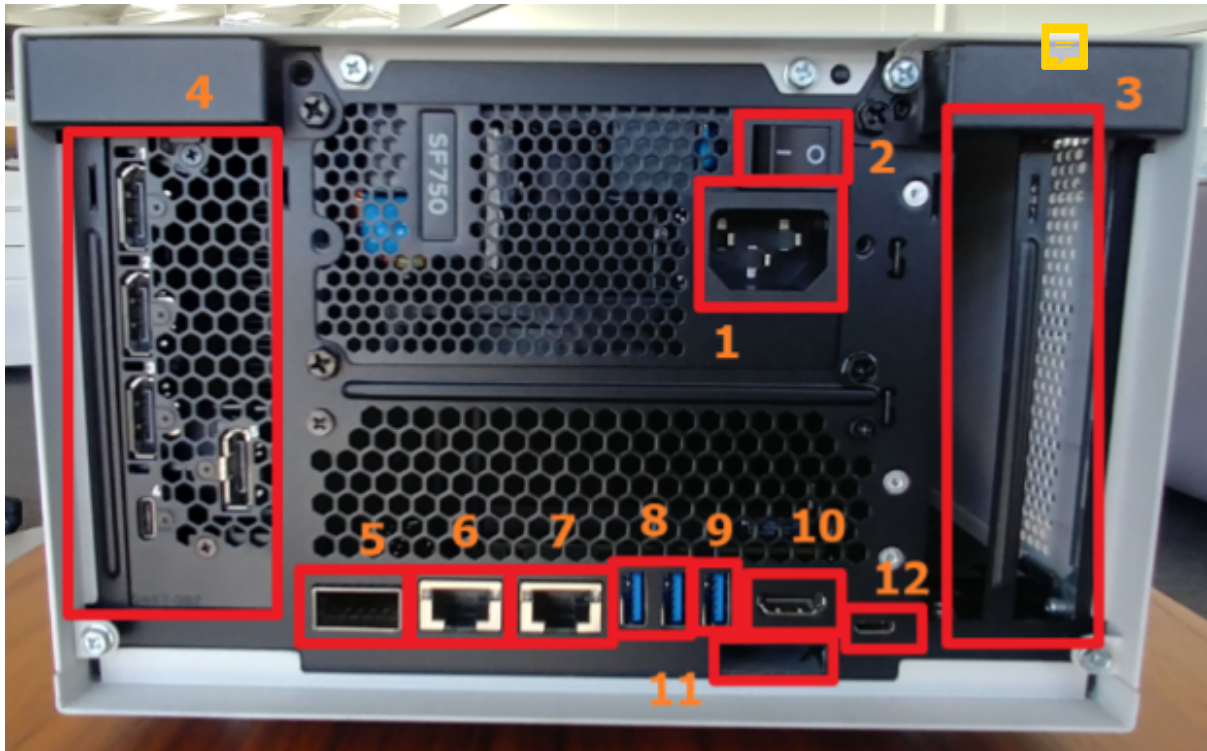
## 1.3 System Overview



### 1.3.1 Main Components

The Clara AGX Developer kit is made of the following major components:

- AGX Xavier 32 GB Module
- Quadro RTX 6000 discrete GPU
- ConnectX-6 IC
- 256GB  Removeable SSD

### 1.3.2 IO and External Interfaces



1.  Power cable connection
2. Power switch
3. PCIe slots for customer cards
4. dGPU: See the [Switching between iGPU and dGPU](#) section below to determine which display output to use.
5. 100 GbE QSFP  Ethernet connector to Mellanox CX6
6. 10 GbE RJ45 Ethernet connector to Mellanox CX6

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**Note:** The 10 GbE RJ45 Ethernet connector only supports 10 GbE speeds.

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7. 1 GbE RJ45 Ethernet connector to Xavier module
8. 2x USB 3.0 ports
9. 1x USB 2.0 port
10. HDMI out: See the [Switching between iGPU and dGPU](#) section below to determine which display output to use
11. HDMI in: Connect instruments that output HDMI to the platform here.
12. Debug USB C port: Connect this to the Linux host system for flashing and serial port connections.



- 13. PCIe slot for customer card to Mellanox
- 14. PCIe slot for customer card, to Xavier Module
- 15. SD card slot
- 16. Recovery button
- 17. Reset button
- 18. Main secondary compartment fan connector (there's an additional system fan inside the chassis)
- 19. Auxiliary fan connector for card fans




- 20. Power button

## Chapter 2

# Steps for Getting Started

### 2.1 Powering up the System

1. Connect all desired peripherals to the system before powering on. 
2. Connect the power cable to the system in the slot labeled (1) in the **IO and External Interfaces** section above.
3. Once the power is connected, press the power button (20) for less than 10 seconds. It should light up with a green light.
4. If you have a display connected, you should see the system booting on it. Please reference the *Switching between iGPU and dGPU* section below to determine which display output to use.

### 2.2 Flashing and Updating the Clara AGX Developer Kit using SDK Manager

Detailed instructions on how to use SDK Manager for component updates for Clara AGX are available [here](#). Ensure you have the latest version of SDKmanager installed on the host system.

Your account needs to be approved for the Clara AGX SDK Early Access program for SDKmanager to be able to flash Clara AGX. Reach out to your main Clara AGX contact at NVIDIA after you apply to be approved. You will need to log out and log in again on SDKmanager for the permissions to take effect.

The default username and password after flashing are “ubuntu” / “ubuntu”.

### 2.3 Switching between iGPU and dGPU

The Clara AGX Developer Kit can use either the Xavier AGX module GPU (iGPU, integrated GPU) or the RTX6000 add-in card GPU (dGPU, discrete GPU). You can only use one type of GPU at a time.

By default, the Clara AGX Developer Kit uses the iGPU. To switch between the iGPU and dGPU, use the “nvgpuswitch.py” script that is included with the clara-agx-tools package (installed by SDK Manager with the Clara AGX SDK, located in /opt/nvidia/clara-agx-sdk/clara-agx-tools/bin).

To view the currently installed drivers and their versions, use the following query command:

```
$ nvgpuswitch.py query iGPU (nvidia-l4t-cuda, 32.5.0-20201012161040)
```

To install the dGPU drivers, use the following `install` command with the dGPU parameter (note that `sudo` must be used to install drivers):

```
$ sudo nvgpuswitch.py install dGPU
```

The `install` command will begin by printing out the list of commands that will be executed as part of the driver install, then will continue to execute those commands. This aids with debugging if any of the commands fail to execute for any reason. The following arguments may also be provided with the `install` command:

```
-d Does a dry run, showing the commands that would be executed by the
    ↪install but does not execute them.
-v Enable verbose output (used with '-d' to describe each of the commands
    ↪that would be run).
-i Run commands interactively (asks before running each command).
-l [LOG] Writes a log of the install to the file 'LOG'.
```

The dGPU driver install may be verified once again using the `query` command:

```
$ nvgpuswitch.py query dGPU (cuda-drivers, 455.32.00-1)
```

After the dGPU drivers have been installed, rebooting the system will complete the switch to the dGPU. At this point the Ubuntu desktop will be output via DisplayPort on the dGPU, so the display cable must be switched from the onboard HDMI (10) to DisplayPort on the dGPU (4).

If at any time you want to switch back to iGPU, use the `install` command with the iGPU parameter:

```
$ sudo nvgpuswitch.py install iGPU
```

After the iGPU drivers have been installed, rebooting the system will complete the switch to the iGPU. At this point the Ubuntu desktop will be output via the onboard HDMI, and so the display cable must be switched from the DisplayPort on the dGPU (4) to the onboard HDMI (10).

The GPU settings will persist through reboots until it is changed again with “`nvgpuswitch.py`”.

## 2.4 Additional Resources

For further documentation, see release notes on the [Early Access portal](#). For further Jetson documentation, see the [L4T documentation](#).