

Scope of this document

The default settings of NVIDIA® Jetson Nano, TX1, TX2, and Xavier provide low power consumption and medium performance. This document describes how to optimize the settings for high performance with Allied Vision USB3 Vision and GigE Vision cameras.

Recommended preparations

Upgrading JetPack

We recommend using the latest JetPack version. JetPack and its Install Guide are available at <https://developer.nvidia.com/embedded/downloads>.

When the JetPack installation is finished, update and upgrade your system:

```
sudo apt-get update && sudo apt-get upgrade
```

Installing Vimba for ARM

We recommend installing our Vimba for ARM SDK, or at least the included Vimba Viewer application. Vimba is available at <https://www.alliedvision.com/en/products/software.html>.

Optimizing CPU usage and power management

NVIDIA provides detailed information on clock and power management:

- Go to NVIDIA's L4T Development Guide: <https://docs.nvidia.com/jetson/archives/>
- In the Guide for your L4T version, go to:
 - Clock Frequency and Power Management
 - Power Management for ... (select the chapter for your Jetson board)
 - Clock and Voltage Management

All Jetson boards and all L4T versions: To optimize CPU usage and power management for best performance, run `jetson_clocks.sh`. Its location and available options depend on the L4T version and the Jetson board, please find information in NVIDIA's documentation mentioned earlier.

For many L4T versions, you can use:

```
# TX1 and TX2: Deactivate all power saving features and enable all ARM Cortex-A57 CPUs
sudo /usr/bin/jetson_clocks

# TX2 and Xavier: Enable all CPUs
sudo /usr/nvpmode1 -m 0
```

TX2 and Xavier: If you use the nvpmode1 GUI, please select Power Mode 0:MAXN

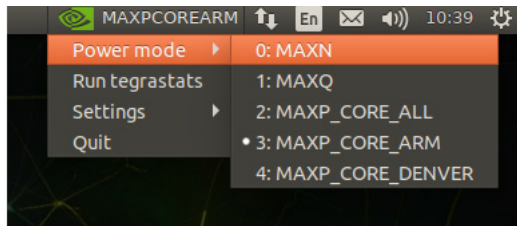


Figure 1: TX2 and Xavier nvpmode1 GUI

Optimizing the settings for USB cameras

Increasing the USBFS buffer size

By default, the USBFS buffer size is 16 MB. This value is too low for image sizes > 2 MB or high frame rates. To increase the USBFS buffer size:

```
# Check the USBFS buffer size
cat /sys/module/usbcore/parameters/usbfs_memory_mb

# Increase the buffer size until the next reboot
sudo sh -c 'echo 1000 > /sys/module/usbcore/parameters/usbfs_memory_mb'

# Increase the buffer size permanently:
# Open the file /boot/extlinux/extlinux.conf and add to the APPEND line:
usbcore.usbfs_memory_mb=1000

# Reboot the system
```

Optimizing the settings for GigE cameras

Setting the MTU of the internal host adapter

Set the MTU of the internal host adapter, assuming the camera is connected to Ethernet port *eth0*:

```
# TX1
sudo ifconfig eth0 mtu 7750

# TX2
sudo ifconfig eth0 mtu 9000
```

Increasing the OS receive buffer size

If your use case requires high bandwidth, we recommend increasing the OS receive buffer size:

```
# TX1 and TX2
# These settings affect all types of connections on the system
sudo sysctl -w net.core.rmem_max=33554432
sudo sysctl -w net.core.wmem_max=33554432
sudo sysctl -w net.core.rmem_default=33554432
sudo sysctl -w net.core.wmem_default=33554432
```

Now your system is set up for best performance.

Optimizing camera features

The optimal settings for the camera features depend on the camera model and use case. You are welcome to contact our Technical Support team, we are happy to assist you.



Contact us

Contact our Technical Support team:

<https://www.alliedvision.com/en/support/contact-support-and-repair.html>

Contact Sales or general inquiries:

<https://www.alliedvision.com/en/meta-header/contact.html>

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