

Deepstream 5.1 on a Tesla P4

Made in reference to [Install Deepstream 5.1 in DGPU](#) with a few changes due to compatibility.
Read through entirely before attempting, to get through troubleshooting earlier.
Delicate ecosystem, dependencies will likely need specific versions.

Nvidia Drivers 460

CUDA 11.1

cuDNN 8.1

TensorRT 7.2.3

Deepstream 5.1

NVIDIA Driver Installation

Blacklisted Nouveau Driver:

```
sudo nano /etc/modprobe.d/blacklist-nouveau.conf
sudo update-initramfs -u
sudo reboot
```

Installed NVIDIA Driver 460.32.03:

```
chmod +x NVIDIA-Linux-x86_64-460.32.03.run
sudo apt update
sudo apt install -y build-essential # builds the required compilers gcc and cc
sudo ./NVIDIA-Linux-x86_64-460.32.03.run
```

Handled 32-bit dependencies: (unnecessary)

-But the installer gives you a warning suggesting it

```
sudo dpkg --add-architecture i386
sudo apt update
sudo apt install -y libc6:i386 libstdc++6:i386
sudo apt install -y pkg-config libglvnd-dev
```

Gstreamer

```
sudo apt update
sudo apt install -y \
    libgstreamer1.0-0 \
    gstreamer1.0-plugins-base \
    gstreamer1.0-plugins-good \
    gstreamer1.0-plugins-bad \
    gstreamer1.0-plugins-ugly \
    gstreamer1.0-libav \
    gstreamer1.0-tools \
    gstreamer1.0-x \
    gstreamer1.0-alsa \
    gstreamer1.0-gl

sudo apt-key adv --fetch-keys https://developer.download.nvidia.com/compute/cuda/repos/ubuntu1804/x86_64/3bf863cc.pub
sudo add-apt-repository "deb https://developer.download.nvidia.com/compute/cuda/repos/ubuntu1804/x86_64/ /"

sudo apt install -y \
    gstreamer1.0-nvidia \
    libgstnvvideo1.0 \
    libgstnvinfer1.0
```

CUDA 11.1 Installation

Set up CUDA repository:

```
wget https://developer.download.nvidia.com/compute/cuda/repos/ubuntu1804/x86_64/cuda-ubuntu1804.pin
sudo mv cuda-ubuntu1804.pin /etc/apt/preferences.d/cuda-repository-pin-600
wget https://developer.download.nvidia.com/compute/cuda/11.1.1/local_installers/cuda-repo-ubuntu1804-11-1-local_11.1.1-455.32.00-1_amd64.deb
sudo dpkg -i cuda-repo-ubuntu1804-11-1-local_11.1.1-455.32.00-1_amd64.deb
sudo apt-key add /var/cuda-repo-ubuntu1804-11-1-local/7fa2af80.pub
sudo apt-get update
sudo apt-get -y install cuda
```

Fixed CUDA PATH:

Added to ~/.bashrc:

```
export PATH=/usr/local/cuda-11.1/bin:$PATH
export LD_LIBRARY_PATH=/usr/local/cuda-11.1/lib64:$LD_LIBRARY_PATH
```

cuDNN Installation

- I Installed 8.0.5 at the start but 8.1 was required by deepstream.

Manual installation from .tgz (<https://developer.nvidia.com/rdp/cudnn-archive>):

```
tar -xzf cudnn-11.1-linux-x64-v8.0.5.39.tgz
sudo cp cuda/include/cudnn*.h /usr/local/cuda-11.1/include/
sudo cp cuda/lib64/libcudnn* /usr/local/cuda-11.1/lib64/
sudo chmod a+r /usr/local/cuda-11.1/include/cudnn*.h /usr/local/cuda-11.1/lib64/libcudnn*
```

ORRRRRRRRRR

Deb package installation (<https://developer.nvidia.com/rdp/cudnn-archive>):

```
sudo dpkg -i libcudnn8_8.0.5.39-1+cuda11.1_amd64.deb
sudo dpkg -i libcudnn8-dev_8.0.5.39-1+cuda11.1_amd64.deb
```

TensorRT Installation

Added TensorRT repository (<https://developer.nvidia.com/tensorrt/download>) 7.2.X:

```
sudo dpkg -i nv-tensorrt-repo-ubuntu1804-cuda11.1-trt7.2.3.4-ga-20210226_1-1_amd64.deb
sudo apt-key add /var/nv-tensorrt-repo-${tag}/7fa2af80.pub
sudo apt-get update
sudo apt-get install tensorrt
sudo apt-get install python3-libnvinfer-dev
sudo apt-get install onnx-graphsurgeon
```

librdkafka Installation

Compiled from source:

```
git clone https://github.com/edenhill/librdkafka.git
cd librdkafka
git reset --hard 7101c2310341ab3f4675fc565f64f0967e135a6a
./configure --prefix=/usr/local
make
sudo make install
sudo cp -v /usr/local/lib/librdkafka* /opt/nvidia/deepstream/deepstream-5.1/lib/
```

DeepStream 5.1 Installation

Installed DeepStream:

```
sudo apt-get install ./deepstream-5.1_5.1.0-1_amd64.deb
```

Troubleshooting:

Reinstalled (multiple times)

Fixed GStreamer plugins:

```
sudo apt install --reinstall
gststreamer1.0-plugins-bad
gststreamer1.0-plugins-good
gststreamer1.0-plugins-ugly
```

Tested sample configurations:

```
deepstream-app -c /opt/nvidia/deepstream/deepstream-5.1/samples/configs/deepstream-app/source4_1080p_dec_infer-
resnet_tracker_sgie_tiled_display_int8.txt
```

use sudo nano to tweak parameters

ex: `sudo nano source4_1080p_dec_infer-resnet_tracker_sgie_tiled_display_int8.txt`

Driver Reinstalls:

Multiple purges and reinstalls of NVIDIA drivers (Kept changing from 460 to 470 or 455):

```
sudo apt purge 'nvidia-*'
sudo apt install nvidia-driver-460
```

Verification Commands (Tip: verify often in case dependencies don't get installed properly or get corrupted)

CUDA/cuDNN:

```
nvcc --version
```

Nvidia Drivers:

```
nvidia-smi
```

TensorRT:

```
python3 -c "import tensorrt; print(tensorrt.__version__)"
```

DeepStream:

```
deepstream-app --version
```