## Device Tree Overlay

/boot/config.txt is some sort of file that is used during boot.

If you use ‘dtoverlay=arducam‘ instead of ‘dtoverlay=imx519’ then the libcamera-still stops working.

Dtoveraly stand for Device Tree Overlay and has something to do with loading hardware devices during boot

<https://raspberrypi.stackexchange.com/questions/132328/is-dtoverlay-a-general-linux-concept-or-rpi-specific>

<https://www.kernel.org/doc/Documentation/devicetree/overlay-notes.txt>

## Stream

This is something about ustreamer (don’t know what this is). There is a comment that talks about the Media Controller API that was introduced to linux kernels sometime in 2021.

<https://github.com/pikvm/ustreamer/issues/139>

“*Yes, the driver of IMX519 is now in the kernel space, but it only supports outputting RAW Bayer format, most software does not support it, and the Bayer format image has not undergone any processing, it is not suitable for human eye viewing. So we use libcamera to Access it, libcamera will get the RAW Bayer format and do ISP processing.  
If you still want to use the video node to access it, maybe v4l2loopback can do it:*[*2.2. Create a virtual video node 41*](https://www.arducam.com/docs/cameras-for-raspberry-pi/pivariety/how-to-access-and-program-the-pivariety-camera-using-command-line-python-opencv-and-gstreamer/#22-create-a-virtual-video-node-access-by-python)”

<https://forum.arducam.com/t/imx519-and-uv4l/2317>

<https://forum.arducam.com/t/setup-imx519-with-any-raspberry-pi-os/2702/8>

Remember the thing with enabling Glamour graphics acceleration

<https://raspberrypi.stackexchange.com/questions/135364/libcamera-stack-does-not-work-with-bullseye>

When you take a picture with libcamera:

[5:10:13.192698391] [3803]  **INFO Camera camera\_manager.cpp:293** libcamera v0.0.0+3897-c3c878a9

[5:10:13.218072000] [3807]  **WARN CameraSensorProperties camera\_sensor\_properties.cpp:174** No static properties available for 'imx519'

[5:10:13.218151062] [3807]  **WARN CameraSensorProperties camera\_sensor\_properties.cpp:176** Please consider updating the camera sensor properties database

[5:10:13.265343703] [3807]  **WARN RPI raspberrypi.cpp:1280** Mismatch between Unicam and CamHelper for embedded data usage!

[5:10:13.266412243] [3807] **ERROR DelayedControls delayed\_controls.cpp:87** Delay request for control id 0x009a090a but control is not exposed by device /dev/v4l-subdev0

[5:10:13.266716357] [3807]  **INFO RPI raspberrypi.cpp:1404** Registered camera /base/soc/i2c0mux/i2c@1/imx519@1a to Unicam device /dev/media3 and ISP device /dev/media0

[5:10:13.267606720] [3803]  **INFO Camera camera.cpp:1035** configuring streams: (0) 2328x1748-YUV420

[5:10:13.268203438] [3807]  **INFO RPI raspberrypi.cpp:765** Sensor: /base/soc/i2c0mux/i2c@1/imx519@1a - Selected sensor format: 2328x1748-SRGGB10\_1X10 - Selected unicam format: 2328x1748-pRAA

[5:10:14.538130092] [3803]  **INFO Camera camera.cpp:1035** configuring streams: (0) 4656x3496-YUV420 (1) 4656x3496-SRGGB10\_CSI2P

[5:10:14.539679569] [3807]  **INFO RPI raspberrypi.cpp:765** Sensor: /base/soc/i2c0mux/i2c@1/imx519@1a - Selected sensor format: 4656x3496-SRGGB10\_1X10 - Selected unicam format: 4656x3496-pRAA

“*In the new Debian 11, Bullseye, you can only capture live video with a streaming framework, like GStreamer or FFmpeg.* ”

<https://github.com/Qengineering/Libcamera-OpenCV-RPi-Bullseye-64OS>

<https://github.com/mad4ms/python-opencv-gstreamer-examples>

<https://sahilchachra.medium.com/all-you-want-to-get-started-with-gstreamer-in-python-2276d9ed548e>

WORKS:

gst-launch-1.0 libcamerasrc ! 'video/x-raw,width=3840,height=2400,framerate=5/1' ! glimagesink

<https://forum.arducam.com/t/gstreamer-does-not-work-with-high-resolutions/3260>

I followed this to build opencv from source, but modified according to gst version issue below

<https://linuxize.com/post/how-to-install-opencv-on-raspberry-pi/>

This pointed out that opencv use gst-launch0.1 by default while I’ve installed gst-launch\_1.0.

<https://stackoverflow.com/questions/54095699/install-gstreamer-support-for-opencv-python-package>

I had problems with python looking at another opencv version to my built version. I’m not quite sure what solved it, but deleting and reinstalling probably had something to do with it.