The cafe_ccic driver

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Introduction

"cafe_ccic" is a driver for the Marvell 88ALP01 "cafe" CMOS camera controller. This is the controller found in first-generation OLPC systems, and this driver was written with support from the OLPC project.

Current status: the core driver works. It can generate data in YUV422, RGB565, and RGB444 formats. (Anybody looking at the code will see RGB32 as well, but that is a debugging aid which will be removed shortly). VGA and QVGA modes work; CIF is there but the colors remain funky. Only the OV7670 sensor is known to work with this controller at this time.

To try it out: either of these commands will work:

System Message: WARNING/2 (`D:\onboarding-resources\sample-onboarding-resources\linux-master\Documentation\admin-guide\media\[linux-master][Documentation][admin-guide][media]cafe_ccic.rst`, line 23)

Cannot analyze code. No Pygments lexer found for "none".

```
.. code-block:: none

    $ mplayer tv:// -tv driver=v4l2:width=640:height=480 -nosound
    $ mplayer tv:// -tv driver=v4l2:width=640:height=480:outfmt=bgr16 -nosound
```

The "xawtv" utility also works; gqcam does not, for unknown reasons.

Load time options

There are a few load-time options, most of which can be changed after loading via sysfs as well:

- alloc_bufs_at_load: Normally, the driver will not allocate any DMA buffers until the time comes to transfer data. If this option is set, then worst-case-sized buffers will be allocated at module load time. This option nails down the memory for the life of the module, but perhaps decreases the chances of an allocation failure later on.
- dma_buf_size: The size of DMA buffers to allocate. Note that this option is only consulted for load-time allocation; when buffers are allocated at run time, they will be sized appropriately for the current camera settings.
- n_dma_bufs: The controller can cycle through either two or three DMA buffers. Normally, the driver tries to use three buffers; on faster systems, however, it will work well with only two.
- min_buffers: The minimum number of streaming I/O buffers that the driver will consent to work with. Default is one, but, on slower systems, better behavior with mplayer can be achieved by setting to a higher value (like six).
- max_buffers: The maximum number of streaming I/O buffers; default is ten. That number was carefully picked out of a hat and should not be assumed to actually mean much of anything.
- flip: If this boolean parameter is set, the sensor will be instructed to invert the video image. Whether it makes sense is determined by how your particular camera is mounted.