

Testing Video4Linux Applications and Drivers

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Utilities



Utilities

- v4l2-compliance: V4L2 compliance driver testing.
- v4l2-ctl: command line Swiss army knife for v4l2.
- qv4l2: Qt test application.
- v4l2-dbg: allows access to `DBG_G_CHIP_INFO`, `DBG_G/S_REGISTER`.
- Core debugging: `'echo 1 >/sys/class/video4linux/video0/debug'`.
 - 1: show ioctl name
 - 2: show arguments as well
- V4L2 support was added to valgrind 3.10.

Utilities: v4l2-compliance

- Started 6 years ago.
- In February tests for streaming were added.
- New drivers must pass the compliance tests.
- Close to 900 tests are performed.
- Covers all 82 V4L2 ioctls except 9 ioctls: the cropping and selection ioctls, the overlay ioctls and the new VIDIOC_QUERY_EXT_CTRL ioctl.
- It is more strict than the V4L2 specification: it assumes drivers use the correct core frameworks which means that there is no excuse to e.g. support VIDIOC_S_CTRL but not VIDIOC_S_EXT_CTRL.
- Always compile from the v4l-utils git repository to get the latest tests.
- Demo!

Utilities: v4l2-ctl and qv4l2

- 'Golden Reference' utilities: v4l2-ctl can control V4L2 devices from the command line, qv4l2 is the Qt4 GUI equivalent.
- Kept in sync with the kernel and support for new V4L2 kernel APIs is always added to these utilities.
- v4l2-ctl is ideal for embedded systems.
- qv4l2 is ideal for interactive testing.
- Demo!

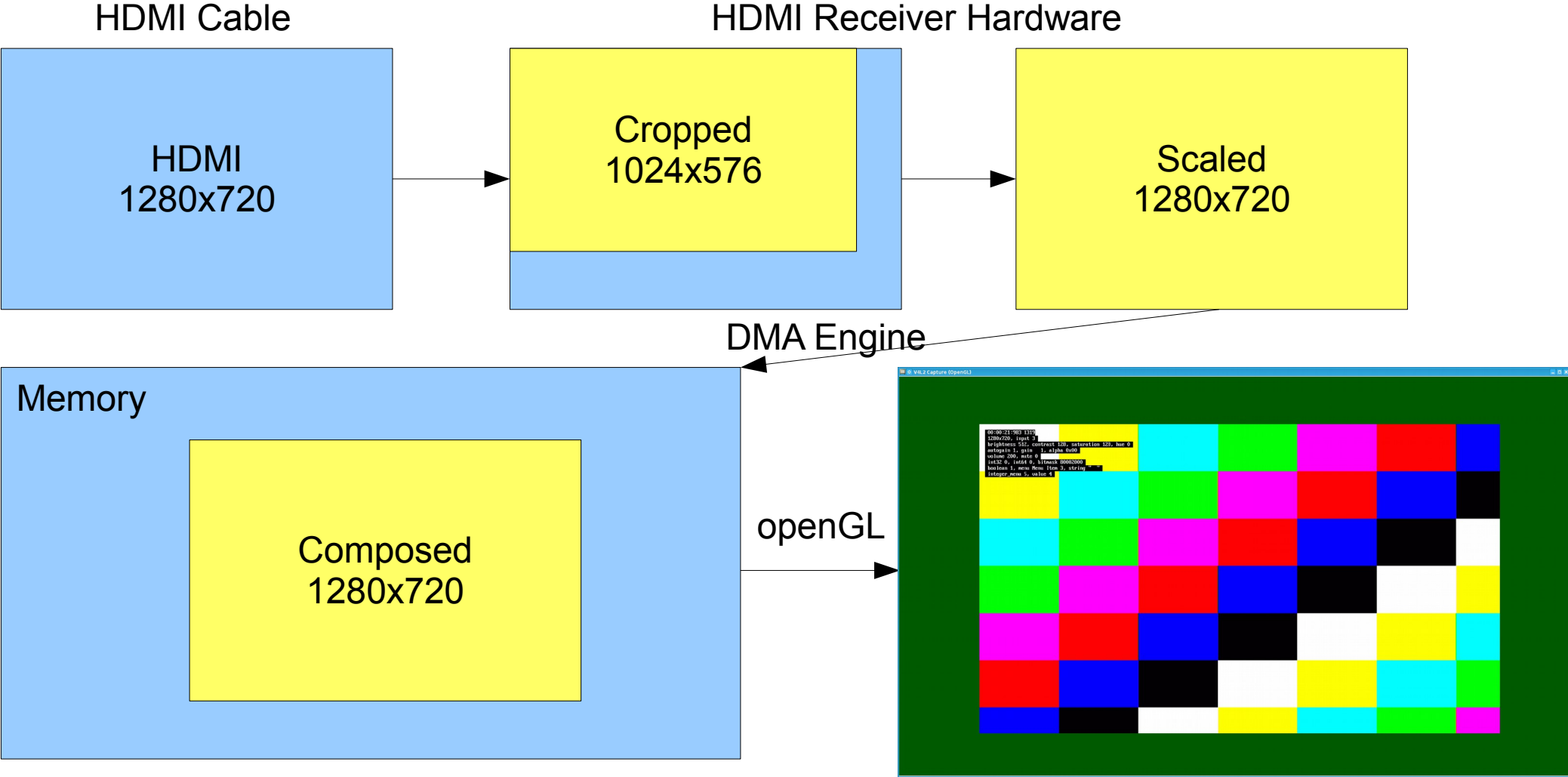
Test Drivers



Test Drivers

- vivi: simple but non-standard video capture. Available for kernels < 3.18.
- mem2mem_testdev: memory-to-memory test driver
- vivid: video capture & output, vbi capture & output, radio receiver & transmitter, software defined radio capture. Closely emulates what 'real' hardware will do. Replaces vivi in kernel 3.18.
- Most V4L2 devices only support a (very) limited subset of the V4L2 API. Without test drivers (or a huge collection of hardware) it is impossible to test your application, but with the vivid driver you can.
- Demo!

Cropping, Scaling and Composing



Resources



Resources

- Linux Media Infrastructure API: <http://linuxtv.org/downloads/v4l-dvb-apis>. Latest version: <http://hverkuil.home.xs4all.nl/spec/media.html>
- Documentation/video4linux/v4l2-framework.txt and v4l2-controls.txt
- include/media/videobuf2-core.h
- Upstream media git repository containing vivid driver: http://git.linuxtv.org/media_tree.git
- Skeleton driver: Documentation/video4linux/v4l2-pci-skeleton.c
- v4l-utils git repository: <http://git.linuxtv.org/v4l-utils.git>
- linux-media mailinglist & irc channel: <http://linuxtv.org/lists.php>

Questions?

