Mesa 3D in an Embedded Context
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About me:

• Working on Linux platforms since 2004, with a background on embedded devices.

• Joined Mesa in 2015, working on performance tools and automation.
About Mesa:

- Community developed, commercially supported implementation of OpenGL and Vulkan APIs
- Multi-platform collaboration by several graphics silicon vendors
- Development model similar to the Linux Kernel
Project links

[Project links are likely discussing the project's homepage, mailing lists, IRC channels, and bug tracking system]
Hardware supported by Mesa

Intel:  https://01.org/linuxgraphics/community/mesa
AMD:  https://www.x.org/wiki/RadeonFeature
Broadcom:  https://github.com/anholt/mesa/wiki/VC4
VMWare:  https://mesa3d.org/vmware-guest.html
Qualcomm Adreno*:  https://github.com/freedreno
Vivante*:  https://github.com/etnaviv
Nvidia*:  https://nouveau.freedesktop.org/wiki/

* not vendor supported
Advantages of a source distribution

- Easy update of kernel and graphics driver
- Valgrind support
- GDB
- Git blame/rebase
- Custom extensions
- Enables you to solve your own integration problems
Intel’s Mesa support is greatly improved in 2017!

- OpenGL 4.5
- GLES3.2
- Vulkan 1.0

https://mesamatrix.net/

“Mesa Saw The Most Commits Last Year Since 2010”
- Phoronix, Jan 1, 2016

“Mesa Development Has Gone Wild This Year”
- Phoronix, Oct 14, 2016
## Modest implementation size

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Other dependencies:
- libvulkan
- libexpat
- libffi
- libm
- libpciaccess
- libwayland-client
- libwayland-server
- libz
- libtxc_dxtn
Open source graphics stacks built on Mesa

- KMS Cube: https://github.com/robclark/kmscube
- Weston / Wayland
  - Yocto: https://01.org/yocto-project
    https://www.yoctoproject.org
  - Tizen: https://www.tizen.org
- Android: https://01.org/android-ia
- ChromeOS / Freon: https://www.chromium.org/chromium-os
- Every GNU/Linux desktop distribution
Mesa Tools

- Mesa environment variables: https://www.mesa3d.org/envvars.html
- Apitrace: http://apitrace.github.io/
- GpuTop: http://www.gputop.com/
- FrameRetrace: https://github.com/janesma/apitrace/wiki/rameretrace-branch
- Grafips: https://github.com/janesma/grafips/wiki
- Renderdoc: https://github.com/baldurk/renderdoc/wiki