An update on the state of Etnaviv
Who's the guy in front?

- Lucas Stach
- Occasional Nouveau contributor in the NV40 days
- Kernel- and graphics developer at Pengutronix
Agenda

- Short introduction graphics stack and SoC hardware
- Current state of Etnaviv
- A look at the future
Linux graphics stack

DDX \(\rightarrow\) DRI2/3 \(\rightarrow\) MESA

libdrm

IOCTL

Kerneldriver (DRM)
SoC graphics

Userspace Stack

Scanout-drm

Render-drm
Why Etnaviv?

- Reverse engineering hardware
- Programming hardware at a very low level
- Allow extensions of the graphics stack
Why Etnaviv?

- Vendor lock-in
- Licencing issues
- Code hidden and not auditable
Why Etnaviv?

- Updating systems non-trivial
- API support missing
- Bugfixes take a long time to arrive
Etnaviv kernel driver

- Low-level hardware init
- Memory management
- Power management
- Synchronization
- Enforcing security
Etnaviv kernel driver

It's in 4.5-rc!
Etnaviv kernel driver

- Replaced fat and obfuscated Vivante kernel driver
- Readable and maintainable code
- 60+ KLOC → 7 KLOC
Etnaviv kernel driver

• More work to do

• Focus shifts to userspace
Etnaviv X.Org driver

- Xf86-video-armada
- 2D acceleration for common operations
- X-Video acceleration
Etnaviv X.Org driver

- Hides complexity of SoC setup

- Provides DRI2
Etnaviv libdrm

- Small layer on top of kernel interfaces
- Provides helpers for command submission
- Stabilization phase (one more API)
Etnaviv MESA driver

• Focus of current activities

• Based on Gallium3D

• Rebasing, Refactoring
Etnaviv MESA driver

- Bugfixing

- 80% Piglit pass rate

- On the running tests...
Where do we go from here?

- Stabilize Userspace for merging
- Improve performance
- Enable more OpenGL features
Where do we go from here?

- Enable Wayland

- How to bootstrap EGL on 2 DRM devices?
Thanks!