Xenocara : status report

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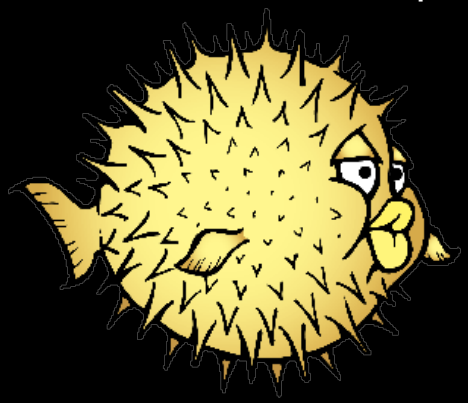
OpenBSD



XDC 2014

Introduction

- OpenBSD: BSD variant, forked from NetBSD in 1996
- multi-platform: i386, amd64, sparc, sparc64, macppc, hppa, alpha, armv7, loongson, sgi, octeon, luna88k, vax,...
- One release every 6 months. 5.6 to be released on Nov. 1st.
- Base system : kernel + libs + utilities + X. Self-hosted.
- ports tree for 3rd party software (Gnome, KDE4, XFCE, Firefox, Chromium, LibreOffice,...)

Xenocara: name of the X sub-tree in OpenBSD's base system.

Current packages versions

Progress since FOSDEM 2013 (last talk on the topic)

- libdrm 2.4.56
- Mesa 10.2.7
- kernel KMS/drm in sync with Linux 3.8 kernel (intel/radeon)
- xorg-server 1.16.1
  - xf86-video-intel 2.99.910
  - x86-video-ati 7.4.0
- other components : mostly current

DRI + Mesa work: Jonathan S. Gray + Mark Kettenis.
Sponsored by M:Tier & the OpenBSD Foundation

Earlier work by Owain G. Ainsworth.

Xenocara specifics

- `hw/xfree86/os-support/bsd/*_video.c` : non x86 architectures support (also lots of them in NetBSD).
- wscons console driver :
  - seamless integration with KMS
  - autoconf/hotplug support for input devices
  - `xf86-input-ws` driver (no kbd support yet)
- X server privilege separation code : main server running without any privileges (and no aperture driver on KMS drivers)
- the CWM window manager + a few extra utilities

MIT-SHM and fd-passing

```
CVSROOT: /cvs
Module name: src
Changes by: kettenis@cvs.openbsd.org 2014/10/03 11:41:00

Modified files:
       sys/sys : mman.h
       sys/uvm : uvm.h uvm_extern.h uvm_fault.c uvm_map.c
                 uvm_mmap.c

Log message:
Introduce __MAP_NOFAULT, a mmap(2) flag that makes sure a mapping will not
cause a SIGSEGV or SIGBUS when a mapped file gets truncated. Access to
pages that are not backed by a file on such a mapping will be replaced by
zero-filled anonymous pages. Makes passing file descriptors of mapped files
usable without having to play tricks with signal handlers.

"steal your mmap flag" deraadt@
```

Allows to get rid of the `SIGBUS` signal handler hack.

Missing parts

- LLVM $\rightarrow$ Gallium
- native TLS $\rightarrow$?
- futexes / inter process posix mutexes $\rightarrow$ xshmfence (DRI3)
- Multi-touch kernel support
- nouveau dri
- systemd...

... and of course Wayland :-)

Future work

- Update to more recent kernel drivers
- LLVM integration
- Get input drivers closer to evdev
- systemd-logind (GSoC project)
- nouveau ?

Difficulties:

- Licensing issues on some KMS drivers (GPL)
- Linux drifting away from the traditional Unix model
- Man power