Porting GNOME to NetBSD

Dan Cîrnaț <cirnatdan@NetBSD.org>
Introduction
Few words about myself

Name: Dan Cîrnaț

Location: Berlin, Germany

Background: web development, APIs

♥ NetBSD, GNOME
About the talk

- How did the GNOME port start
- What is a GNOME port and how it works on NetBSD
- GNOME architecture
- Pain points: systemd-logind, locales, Wayland
- Upstream. Next steps
How did it start
How did it start

1. Left job before the pandemic
2. Found lots of free time
3. @coypu’s bounty for porting GDM to NetBSD

! very little C programming knowledge
Porting
Stealing from OpenBSD :)  

- Initial work based on OpenBSD ports  
- @ajacoutot  
- OpenBSD ports vs pkgsrc
Scope of the Port

Top priority:

**GNOME desktop and platform**: gnome-shell, mutter, gdm, gnome-session, gnome-desktop library, gnome-settings-daemon, gnome-control-center

Lower priority: **GNOME Core Apps** (nautilus etc.), GNOME Circle Apps
GNOME desktop session

- gnome-session
- gnome-shell
- gnome-settings-daemon
- etc ...
GNOME Architecture

- x11/gnome-shell
- x11/libgdm
- wip/gdm
GNOME Architecture

- gnome-shell and mutter are developed in tandem, mutter used as a DL for gnome-shell
- both must be updated at the same time, tightly coupled

wm/mutter
Meson build system

- most (newer) GNOME packages use meson
- good support for meson in pkgsrc

MESON_ARGS+= -Dsystemd=false
.include "../../devel/meson/build.mk"
PaX MPROTECT

- memory protection restrictions
- stops writable memory from being executable

- gjs => mozjs (spidermonkey) has a JIT
- JIT writes to memory that later is being executed from
- nia fixed spidermonkey to declare mappings properly ;)
systemd-logind (seat management)

- GNOME removed support for ConsoleKit, only supports logind (or logind-compatible servers)
- Using OpenBSD’s patches to re-add ConsoleKit support
- ConsoleKit2 fork continues ConsoleKit development

Possible replacements:
- David MacKay’s InitWare
- Kenny Levensen’s seatd and libseat
PAIN POINTS

per-thread locales

- uselocale, setlocale are frowned upon by NetBSD devs
  (see mailing lists)
  Preferred replacement are the *`print_l` functions.

  Desired: *`gettext_l` functions for localization
What about Wayland?

No Wayland support for GNOME unfortunately :(.

- Porting Wayland compositors is usually difficult
- Wayland reference library and compositor implementations assume Linux kernel APIs
- Some simpler Wayland compositors successfully ported to NetBSD by nia

https://blog.netbsd.org/tnf/entry/wayland_on_netbsd_trials and
Misc.
localhost$ uname -o
NetBSD localhost 9.2 NetBSD 9.2 (GENERIC) #0: Wed May 12 13:15:55 UTC 2021 mkrepro@mkrepro.NetBSD
SD.org:/usr/src/sys/arch/amd64/compile/GENERIC amd64
localhost$ pkg_info | grep gnome
gnome-tracker-3.38.1nb4 Desktop-neutral metadata-based search framework
gnome-settings-daemon-3.38.1nb6 GNOME settings daemon
gnome-doc-utils-0.20.10nb9 Documentation utilities for the GNOME project
gnome-autorotate-0.3.2 GLib wrapper around libarchive
gnome-shell-40.2 Next generation GNOME shell
gnome-session-40.1.1 GNOME3 session management utilities
gnome-online-accounts-3.36.0nb3 Service that allows online accounts to be used with GNOME
gnome-calendar-40.0nb3 Calendar application for GNOME
gnome-icon-theme-3.12.0nb7 Theme consisting of a set of icons for GNOME
gnome-icon-theme-symbolic-3.12.0nb15 Symbolic icons for the GNOME icon sets
gnome-calculator-3.24.8nb9 Desktop calculator for GNOME
gnome-characters-3.34.0nb1 Utility application to find and insert unusual characters
gnome-control-center-40.0 Interface to configure various aspects of the GNOME desktop
gnome-dictionary-3.26.1 GNOME application to look up definitions
gnome-font-viewer-3.34.0 View fonts on your system
gnome-screenshot-3.36.0 Screenshot capture utility for GNOME
gnome-terminal-3.36.2nb1 Terminal emulator for GNOME
 gnome-themes-standard-3.20.2nb15 Default themes for the GNOME desktop
gnome-3.38.1 Meta-package for the GNOME desktop environment
 gnome-backgrounds-40.1 Set of background images for the GNOME Desktop
gnome-desktop3-40.3 GNOME3 desktop-wide documents and libgnome-desktop library
gnome-tracker-miners-3.0.1nb8 Desktop-neutral metadata-based search framework
localhost$
GNOME docs

https://wiki.netbsd.org/GNOME/

https://www.netbsd.org/docs/pkgsrc/gnome.html
Upstream

- gitlab.freedesktop.org
- gitlab.gnome.org
  ^ CI for NetBSD would be very helpful
- netbsd.org
- pkgsrc.org
Thanks to:
- coypu@NetBSD
- nia@NetBSD
- wiz@NetBSD