
Porting GNOME to NetBSD

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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
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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
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Scope of the Port

Top priority:

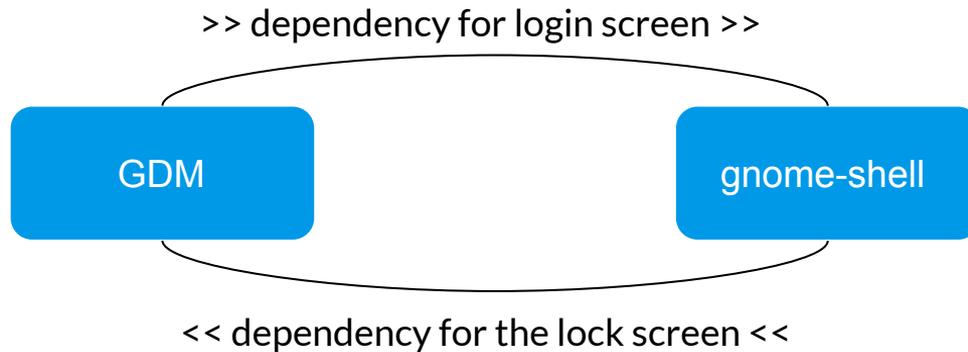
GNOME desktop and platform: gnome-shell, mutter, gdm, gnome-session, gnome-desktop library, gnome-settings-daemon, gnome-control-center

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

GNOME desktop session

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



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

GNOME Architecture



A diagram illustrating the relationship between gnome-shell and mutter. It consists of two overlapping rounded rectangular boxes. The top box is blue and contains the text 'gnome-shell'. The bottom box is yellow and contains the text 'mutter'. The yellow box is positioned directly below the blue box, and they overlap slightly.

gnome-shell

mutter

- 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 ;)
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PAIN POINTS

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
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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](https://blog.netbsd.org/tnf/entry/wayland%20on%20netbsd%20trials%20and%20)

Misc.

```
Terminal
Localhost$ uname -a
NetBSD localhost 9.2 NetBSD 9.2 (GENERIC) #0: Wed May 12 13:15:55 UTC 2021 mkrepro@mkrepro.NetBSD.org:/usr/src/sys/arch/amd64/compile/GENERIC amd64
Localhost$ pkg_info | grep gnome
gnome-tracker-3.0.1nb4 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-autoar-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-3.24.0nb29 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-3.38.0 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
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Thanks to:

- coypu@NetBSD**
 - nia@NetBSD**
 - wiz@NetBSD**
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