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# Porting GNOME to NetBSD

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# Introduction

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# Few words about myself

Name: Dan Cîrnaț

Location: Berlin, Germany

Background: web development, APIs

 NetBSD, GNOME

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# 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

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# 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

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# Porting

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# 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

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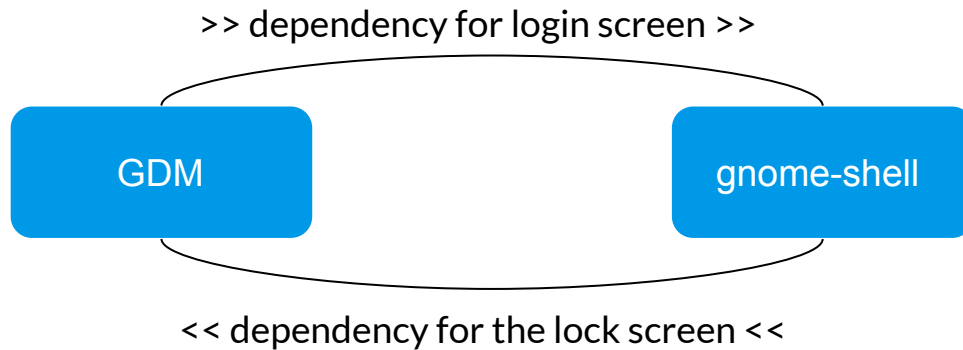
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# GNOME desktop session

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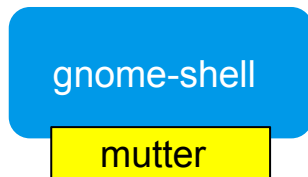
# GNOME Architecture



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

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# Meson build system

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

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

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# PaX MPROTECT

- memory protection restrictions
  - stops writable memory from being executable
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- 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*

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# 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*

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# 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

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# 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)

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**Misc.**

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```
Terminal
localhost$ uname -a
NetBSD localhost 9.2 NetBSD 9.2 (GENERIC) #0: Wed May 12 13:15:55 UTC 2021 mkrepro@mkrepro.NetB
SD.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$
```

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# GNOME docs

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

<https://www.netbsd.org/docs/pkgsrc/gnome.html>

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# Upstream

- [gitlab.freedesktop.org](https://gitlab.freedesktop.org)
- [gitlab.gnome.org](https://gitlab.gnome.org)

^ CI for NetBSD would be very helpful

- [netbsd.org](https://netbsd.org)
  - [pkgsrc.org](https://pkgsrc.org)
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**Thanks to:**

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