





Hawaii

(Maui Project)

Pier Luigi Fiorini - Lead Developer
Maui Project
FOSDEM 2014 - 01/02/2014

Me

- Pier Luigi Fiorini
- qtwayland contributor
- IRC Freenode: plfiorini
- Twitter: @plfiorini
- GooglePlus: +PierLuigiFiorini



What is this stuff?

Hawaii:

- Low footprint Wayland and QtQuick based desktop
- Less dependencies
- Adapt to different devices
- Customizable layouts, easier styling and theming

Maui:

- Small distro: GNU/Linux stack, Qt, Hawaii
- Convenient way to distribute the desktop
- Atomic and safe updates (OSTree)
- Bundles instead of packages
- Focused on Qt

Updates often gets in your way

This is during yum update: the system is in an inconsistent state

```
[plfiorini@localhost ~]$ firefox
(process:6979): GLib-CRITICAL **: g_slice_set_config: assertion 'sys_page_size =
= 0' failed
Error: Platform version '24.0' is not compatible with
minVersion >= 23.0.1
maxVersion <= 23.0.1
[plfiorini@localhost ~]$
```

mauibuild

What it does now

- Written in Python, derived from gnome-ostree
- Base system built from [Yocto](#)
- Builds git repositories listed in a JSON manifest
- Can build continuously
- Outputs different trees: runtime, runtime-debug, devel, devel-debug
- Targets bare metal
- Creates live images

mauibuild

Ideas for the future

- Pick a more complete base system (e.g. Mer, Fedora)
- Build a few things from git sources
- Smoke tests and QA

Updates

- Step 1: fetch updates and apply them atomically
- Step 2: reboot into the updated system

Advantages:

- **If something fails at step 1 you won't reboot into a broken system**
- Updates are atomic, only one reboot
- No need for rescue partitions or BTRFS snapshots
- Ability to reboot into older version in case of regressions
- Same workflow for **upgrades to the new OS release**

Hawaii: philosophy

- Only support Wayland
- Minimalist UI
- Adapt to different devices and form factors
- Modular desktop with components
- Easy styling and theming thanks to QML
- Promote third party applications
- Collaborate with upstream when possible
- Reuse other libraries when possible

Few dependencies

```
libxdamage-1.1.4-1 libxdmcp-1.1.1-1 libxext-1.3.2-1 libxf86vm-4.0.0-1
libxfont-1.4.6-1 libxft-2.3.1-1 libxi-1.7.2-1 libxinerama-1.1.3-1
libxkbfile-1.0.8-1 libxklavier-5.3-1 libxml2-2.9.1-2 libxmu-1.1.2-1
libxpm-3.5.11-1 libxrandr-1.4.2-1 libxrender-0.9.8-1 libxres-1.0.7-1
libxslt-1.1.28-1 libxss-1.2.2-1 libxt-1.1.4-1 libxtst-1.2.2-1 libxv-1.0.10-1
libxxf86vm-1.1.3-1 libzip-0.11.1-1 llum-libs-3.3-1 lm_sensors-3.3.4-1
mariadb-5.5.33.a-1 mariadb-clients-5.5.33.a-1 mcpp-2.7.2-4
media-player-info-19-1 mesa-9.2.1-1 mesa-libgl-9.2.1-1 nepomuk-core-4.11.2-1
nepomuk-widgets-4.11.2-1 nettle-2.7.1-1 nspr-4.10.1-1 opencore-amr-0.1.3-1
openexr-2.0.1-1 openjpeg-1.5.1-1 opus-1.0.3-1 orc-0.4.18-1
oxygen-icons-4.11.2-1 p11-kit-0.20.1-1 pango-1.36.0-1 phonon-1:4.6.0-8
phonon-gstreamer-4.6.3-1 pixman-0.30.2-1 pm-quirks-0.20100619-3 pm-utils-1.4.1-6
polkit-0.112-1 polkit-kde-0.99.0-2 polkit-qt-0.103.0-2 poppler-0.24.2-1
poppler-qt4-0.24.2-1 prison-1.0-2 python-3.3.2-2 python2-2.7.5-2 qca-2.0.3-4
qimageblitz-0.0.6-3 qjson-0.8.1-2 qrencode-3.4.3-1 qt4-4.8.5-2 qtwebkit-2.3.3-1
randrproto-1.4.0-1 raptor-2.0.10-2 rasqal-1:0.9.30-1 recode-3.6-7
recordproto-1.14.2-1 redland-1:1.0.16-2 renderproto-0.11.1-2 rtmpdump-20121230-2
schroedinger-1.0.11-1 scrnsaverproto-1.2.2-1 sdl-1.2.15-3
shared-desktop-ontologies-0.11.0-1 shared-mime-info-1.1-1 smbclient-4.0.10-1
soprano-2.9.4-1 sound-theme-freedesktop-0.8-1 speex-1.2rc1-3 sqlite-3.8.0.2-1
strigi-0.7.8-4 taglib-1.8-1 talloc-2.0.8-2 tdb-1.2.12-1 tevent-0.9.18-1
tidyhtml-1.46-2 ttf-bitstream-vera-1.10-9 udisks2-2.1.1-3 upower-0.9.20-2
usbmuxd-1.0.8-2 v4l-utils-1.0.0-1 videoproto-2.3.2-1 virtuoso-base-1:6.1.7-1
wayland-1.3.0-1 x264-20130702-2 xcb-proto-1.8-2 xcb-util-0.3.9-1
xcb-util-image-0.3.9-1 xcb-util-keysyms-0.3.9-1 xcb-util-renderutil-0.3.8-1
xcb-util-wm-0.3.9-1 xdg-utils-1.1.0.git20130520-1 xerces-c-3.1.1-4
xextproto-7.2.1-1 xf86vidmodeproto-2.3.1-2 xineramaproto-1.2.1-2
xkeyboard-config-2.10.1-1 xorg-bdftopcf-1.0.4-1 xorg-font-util-1.3.0-1
xorg-font-utils-7.6-3 xorg-fonts-encodings-1.0.4-3 xorg-mkfontdir-1.0.7-1
xorg-mkfontscale-1.1.1-1 xorg-xauth-1.0.8-1 xorg-xmessage-1.0.4-1
xorg-xprop-1.2.2-1 xorg-xrandr-1.4.1-1 xorg-xrdb-1.1.0-1 xorg-xset-1.2.3-1
xorg-xsetroot-1.1.1-1 xproto-7.0.24-1 xvidcore-1.3.2-2 kde-meta-kdebase-4.11-3

Total Download Size: 331.77 MiB
Total Installed Size: 1235.85 MiB
```

KDE Frameworks

- Less dependencies (especially with tier 1 libs)
- Code ready to be used, less duplication
- More people involved, more stable code
- Larger userbase

Low memory footprint

Consumes approximately 60:70 MB

Process 24817 - hawaii-desktop-shell

[Summary](#)
[Library Usage](#)
[Totals](#)
[Full Details](#)

Summary

The process **hawaii-desktop-shell** (with pid 24817) is using approximately **63.7 MB** of memory. It is using **58.1 MB** privately, and a further **28.8 MB** that is, or could be, shared with other programs. Dividing up the shared memory between all the processes sharing that memory we get a reduced shared memory usage of **5.6 MB**. Adding that to the private usage, we get the above mentioned total memory footprint of **63.7 MB**.

Library Usage

The memory usage of a process is found by adding up the memory usage of each of its libraries, plus the process's own heap, stack and any other mappings, plus the stack of its 10 threads.

Private	Shared
42496 KB [heap]	4524 KB /opt/qt-git/lib/libQt5V8.so.5.2.0
9440 KB /drm mm object (deleted)	3392 KB /usr/lib/libLLVM-3.2svn.so
2448 KB [stack:24826]	2280 KB /opt/qt-git/lib/libQt5Quick.so.5.2.0
1144 KB /usr/lib/libLLVM-3.2svn.so	2128 KB /opt/qt-git/lib/libQt5Gui.so.5.2.0
324 KB /opt/hawaii/libexec/hawaii-desktop-shell	2056 KB /opt/qt-git/lib/libQt5Core.so.5.2.0

[more](#)

[more](#)

Totals

Private 59468 KB (= 1372 KB clean + 58096 KB dirty)

Shared 29492 KB (= 29492 KB clean + 0 KB dirty)

Rss 88960 KB (= Private + Shared)

Pss 65231 KB (= Private + Shared/Number of Processes)

Convergence

- Single code base
- Different layout for different devices
- QFileSelector and QQmlAbstractUrlInterceptor

Overlay styles

QML

```
import QtQuick 2.0
import Hawaii.Shell.Styles.Base 1.0

OverlayStyle {
    textColor: "white"
    textShadowColor: Qt.rgb(0, 0, 0, 0.7)
    panel: Rectangle {
        border.color: Qt.rgb(0, 0, 0, 0.5)
        gradient: Gradient {
            GradientStop { position: 0.0; color: Qt.rgb(0.13, 0.13, 0.13, 0.7) }
            GradientStop { position: 0.5; color: Qt.rgb(0, 0, 0, 0.7) }
            GradientStop { position: 1.0; color: Qt.rgb(0, 0, 0, 0.7) }
        }
        radius: 6
        antialiasing: true
    }
}
```

Popup style 1/2

QML

```
import QtQuick 2.0
import QtGraphicalEffects 1.0
import Fluid.Ui 1.0
import Hawaii.Shell.Styles.Base 1.0

PopupStyle {
    padding { left: 8; top: 8; right: 8; bottom: 8 }
    panel: Item {
        Rectangle {
            id: border
            anchors { fill: parent; margins: 8 }
            border.color: "#999"
            radius: 6
            gradient: Gradient {
                GradientStop { position: 0.0; color: "#f4f4f4" }
                GradientStop { position: 1.0; color: "#dcdcdc" }
            }
        }
        visible: false
    }
}
```

Popup style 2/2

QML

```
NoiseBackground {
    anchors { fill: parent; margins: 3 }
    gradient: Gradient {
        GradientStop { position: 0.0; color: "#f4f4f4" }
        GradientStop { position: 1.0; color: "#dcdcdc" }
    }
}
}
}
DropShadow {
    anchors.fill: border; source: border
    radius: 8; samples: 16
    fast: true
    spread: 0
    color: Qt.rgb(0, 0, 0, 0.5)
    transparentBorder: true
}
}
}
```

Features on 0.2.0

- Multiple screens support without primary and secondary outputs
- Launcher, Panel and AppChooser on multiple pages
- Background with crossfade effect
- Modal dialogs, overlays and popups
- Multiple workspaces and switcher
- Windows switcher and Exposé-like presentation
- Lock screen
- PolicyKit agent
- Notifications
- Volume control keys
- Grouped indicators and consolidated menu
- Style API 0.1

Features for upcoming version

- Switch between different layouts
- First step towards desktop and mobile convergence
- Customizable layouts
- Loadable elements
- Replaceable components (lock screen, ...)
- More modularization
- Screen saver
- Animated wallpapers
- Workspaces overview
- Dropdown windows
- Weston 1.4 support
- Possibly more core apps: Weather and Cinema

What's next?

- Port SDDM to Wayland
- Improved applications and task management
- Freedesktop.org Notifications 1.2
- More preference modules: keyboard, mouse, screens, ...

How do I get it?

- Sources: github.com/mauios
- AUR packages for Arch Linux
- Binary packages for Arch Linux (x86_64) always updated
- On going effort on Mer
- Fedora: coming soon

What you can do to contribute

- Coding (Qt, QML, C/C++)
- UI, styles and Web design
- Graphics (icon themes and such)
- Wallpapers
- Writing documentation (HIG, wiki, manuals, ...)
- Web site (HTML and CSS)
- Help organizing a community space with forums
- Videos and marketing stuff
- Spread the word
- Donate some money
- Donate hardware, server, hosting
- Sponsor development



Thank You!

Contact information:

g+ plus.google.com/+PierLuigiFiorini

twitter [@plfiorini](https://twitter.com/plfiorini)

www www.maui-project.org

github github.com/plfiorini

