

# Introduction to pmbootstrap

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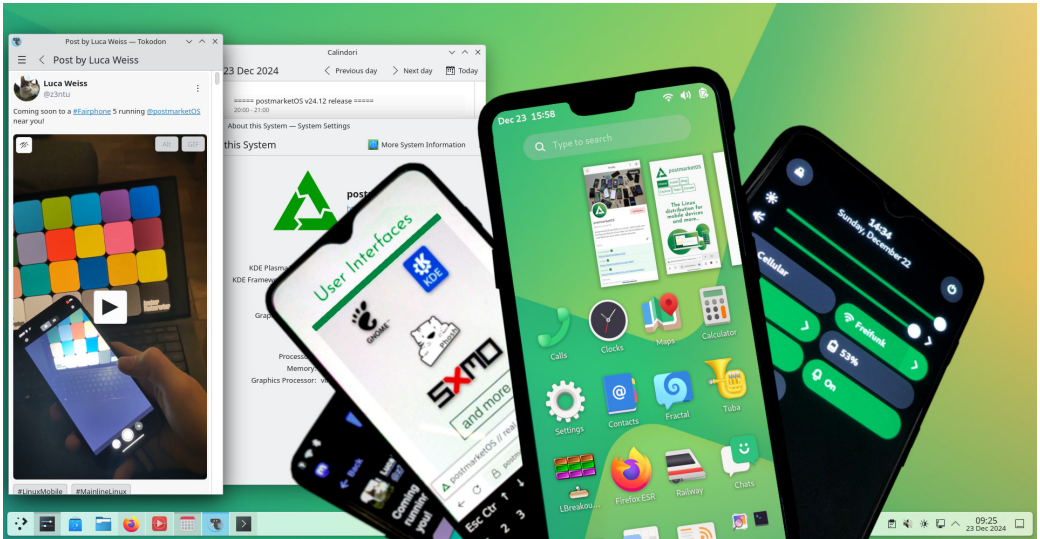
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# How we Started

- ▶ Minimalistic GNU/Linux distributions run fine on ten year old PCs - So lets run a GNU/Linux distribution on phones!
- ▶ Similar projects include: Mobian and Arch Linux ARM
- ▶ Aiming for 10 year life-cycle on smartphones - Mainline-first approach
- ▶ Support for phones, watches, TVs, laptops





# User Interfaces - Other From Factors



# How do I get a Linux distribution on my device?

pmbootstrap! Goal: make postmarketOS development easy, accessible, and fast

- ▶ postmarketOS has over 500 device ports and over 100 devices in stable release
- ▶ Leverages Alpine Linux's minimalism
- ▶ Build packages, images, chroots, packages kernel artifacts, generate new device ports, flash devices, run QEMU, and more!
- ▶ Used by developers, users, CI, and our build infrastructure



# Packaging


```
# Maintainer: Oliver Smith <ollieparanoid@postmarketos.org>
pkgname=hello-world
pkgver=1
pkgrel=6
pkgdesc="hello world program to be built in the testsuite"
url="https://en.wikipedia.org/wiki/%22Hello,_World!%22_program"
arch="all"
license="MIT"
source="main.c Makefile"




build() {
    cd "$srcdir"
    make
}











check() {
    cd "$srcdir"
    printf 'hello, world!\n' > expected
    ./hello-world > real
    diff -q expected real
}

package() {
    install -D -m755 "$srcdir"/hello-world \
        "$pkgdir"/usr/bin/hello-world
}

sha512sums="62385af6a68cd4e0c03b15992bb9f1d20b8d6c8a33724ca2d28629a:
80c32948d3254f5e4f9084d73754824e7d7d7d117770b041a1a13baf056773de265:"
```

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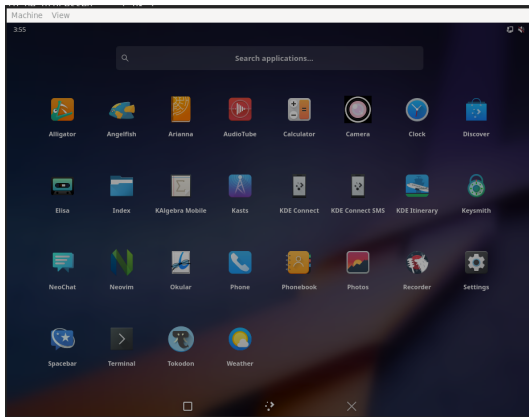
Name	Last commit	Last update
 .ci	.ci/autoupdate.sh: reset ...	4 days ago
 .githubhooks	githubhooks: ignore unstage...	1 month ago
 .gitlab/issue_tem...	gitlab/issue_template: ad...	1 week ago
 .well-known	well-known/funding-ma...	8 hours ago
 cross	cross/ccache-cross-sym...	5 days ago
 device	linux-postmarketos-allwi...	5 hours ago
 extra-repos/syst...	systemd/postmarketos-b...	3 days ago
 main	main/postmarketos-base...	3 days ago
 modem	modem/msm-cros-efs-L...	2 months ago
 temp	extra-repos/systemd/ab...	1 week ago

## pmbootstrap init

- ▶ Work path [/home/anjan/.local/var/pmbootstrap]:
- ▶ Channel [edge]:
- ▶ Vendor [lenovo]:
- ▶ Device codename [21bx]:
- ▶ Username [user]:
- ▶ Provider [iwid]:
- ▶ Available user interfaces (23):
- ▶ User interface [console]:
- ▶ Extra packages [neovim]:
- ▶ Locale [en\_US]:
- ▶ Device hostname (short form, e.g. 'foo') [lenovo-21bx]:
- ▶ Would you like to copy these public keys to the device? (y/n) [y]:
- ▶ Build outdated packages during 'pmbootstrap install'? (y/n) [n]:
- ▶ Zap existing chroots to apply configuration? (y/n) [y]:
- ▶ DONE!

# pmbootstrap qemu

- ▶ `$ pmbootstrap install`
- ▶ `$ pmbootstrap qemu --image-size=2G`





## Remote Building and Sideloading

- ▶ `$ pmbootstrap sideload --host 172.16.42.1 --user user --arch aarch64 package-name`
- ▶ `$ cd ~/.local/var/pmbootstrap/packages/edge python3 -m http.server`

```
~$ cat /etc/apk/repositories  
http://192.168.1.20:8080/  
http://mirror.fcix.net/alpine/v3.21/main  
http://mirror.fcix.net/alpine/v3.21/community
```

# Porting

- ▶ `envkernel.sh` to automate setting up your kernel development environment
- ▶ `pmbootstrap bootimg_analyze` will use the existing android booting to help generate the `pmbootstrap` flasher information
- ▶ `pmbootstrap kconfig` makes it easy to upgrade kernel configs and prevents regressions
- ▶ <https://wiki.postmarketos.org> has a porting guide and lots of information on how linux works on embedded devices!

## Join us!

- ▶ Website: <https://postmarketos.org>
- ▶ Talk sources are on my Website: <https://momi.ca>
- ▶ Talks at FOSDEM:
  - ▶ 16:45 - 16:55 H.2214 Sxmo: A mobile UI for hackers
  - ▶ 18:40 - 19:00 H.2214 postmarketOS: what is it and what's new?
- ▶ Come to our table at FOSDEM!

