2021 Year of the Linux Phone?
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2021 Year of the Linux Phone?

A common joke amongst Linux people is that XXXX is the year of the Linux Desktop.

So we've decided to lift that for our presentation.

Options

There are 3 major Linux phones currently available

Pine Phone
Purism Librem5
F(x)tec Pro1-X smartphone
Aquarius BQ (discontinued)

Ubuntu Touch can also run on a bunch of phones as well:
Nexus, Oneplus, Meizu, Pixel 3a - check their website

We both own Pine Phones as we're poor :-(

Quick Pine Phone overview

There are two major versions of the Pinephone available

Base version 2gb ram/16gb storage - $149
Convergence edition 3gb ram/32gb storage/usb-c hub - $199

They are now up to the Beta edition. They have had previous editions: Braveheart, bunch of community editions (UBports, PostmarketOS, Manjaro, KDE, Mobian) - my phone is from the Manjaro edition

Used to be only be available in batches, can order now but you might be waiting a while :-(

Quick Pine Phone overview

Spare parts may be purchased

You can upgrade your 2gb/16gb mainboard to a 3gb/32gb mainboard for $105.00
Replacement batteries are $10
LCD panel with touch screen is $35
Other pieces are available (back cover, usb-c side boards, etc..)

Quick Pine Phone overview

Can turn off hardware via DIP Switches - 6th switch converts headphone into UART serial port

Hardware Switches (Quick Aside)

If you ever see Snowden in an interview on his phone he will always be wearing his earphones.

Why?

He says every time he buys a new phone the first thing he does is that he disconnects the speaker/microphone/camera from his phone. He always has to use a headset with it then for audio.

Think he might like the PinePhone :-)

Quick Pine Phone overview

Hardware Specs

Rear/Front Cameras - 5mp, 2mp
CPU - Quad Core Arm 1.2ghz
Storage 16/32gb eMMC flash memory
Display - 5.95" 720x1440 IPS LCD
802.11 b/g/n 2.4ghz

You're getting a pretty good deal for either $149.00 or $199.00. Not getting an iPhone or Pixel for hundreds off.

Is all Pinephone software Open Source???

Nope.

The Pinephone uses proprietary firmware for the following functions

RTL 8273CS WiFi/Bluetooth
Autofocus for the camera

These are "walled off" and don't have Direct Memory Access (DMA) and communicate through serial protocols, which is why the DIP switches work :-)

Overview

- Can you use one of these as a "real" phone?
- How long does the battery last?
- How is the Linux on them?
- Tips to improve your experience
- What does the future look like for these phones?
- Why not just run Linux on top of Android instead?

Can you use one of these as your phone?

Short answer: "a qualified yes"

- Works fine as a phone - keep in mind some features such as Voice over LTE only work with some carriers
- Texts/SMS - work just fine
- Apps is where things get interesting
  - Nest doesn't work as an app for things like Home/Away
  - RSA Token not available
  - Many other apps work quite well - telegram, authenticator and so on all good
  - Can use epiphany to pin website as app on system

How long does the battery last?

Lasts for two days for me on average with light usage. Keep in mind the pinephone has swappable batteries so you could have several on standby.

Battery life can vary a great deal depending on what distro you're running and what release you're running.

Have had it last from like 6 hours for some early builds up to the current two days. Additional enhancements to kernel are expected to extend battery life again.

How is Linux on them?

There are over 17 Linux distributions available for the pinephone

A few of them

- Mobian - Debian derived
- Manjaro - Manjaro (Arch derived)
- PostmarketOS
- KDE Neon

Others
- Sailfish OS
- LuneOS - webOS

How is Linux on them?

- Distro to distro vary quite a bit

Mobian is pretty much a normal version of Debian customized to work on your phone.

Manjaro is very arch like with a custom UI for the Pinephone

Work pretty well - performance is roughly equivalent to a Raspberry Pi 3b+ or a Pine64

9 Tips to Improve your Experience

- Megi's multi-boot image - try allz the distros
- Find the best distro for you
- Linux Smart Phones - https://www.linuxsmartphones.com
- TuxPhones - https://www.tuxphones.com
- Anbox - Run android apps on Linux
- PinePhone Wiki - https://wiki.pine64.org/wiki/PinePhone
- Don't be afraid
- Ubports is pretty cool but currently based upon Ubuntu 16.04 upgrade is expected soon

Megi's multi-boot image

Megi's multi-boot image contains 15 different pinephone distros to try

Download it from - https://xnux.eu/p-boot-demo/ and put it on a micro-sd card. Boot and see which distro is for you. No muss, no fuss and if you screw up remove the card and you're back to stock

Two things to keep in mind

- Passwords are all "1111"
- The version of the OS might be out of date or a nightly build so might not be quite the same experience you'll get from downloading installing the regular OS

Find the right distro for you

One of the great things about the Pinephone is you're not locked in to any one distribution.

I started with Manjaro - liked it, but kept evaluating others. After trying Mobian which is very Debian like I knew I had found the distro for me. I still try out other distros every now and then.

E.g. there is a port of MeeMo coming out and it might be very nice when it is finished.

https://www.linuxsmartphones.com

LinuxSmartPhones.com is a site ran by the same person who runs liliputing.com another site I highly recommend

Seems to be the best news site for news about Linux on the Smart Phones.

Anbox/WayDroid

Anbox - Android in a Box - https://www.anbox.io

Run android applications on your phone or any linux box

Still an early work getting it to go well on the Pine Phone.
Could be interesting as this might get me the couple of apps
I need to fully cut over to the pinephone
(Nest/RSA/Subway Surfers, etc...)

There is also a new project called WayDroid which is
Android on Wayland. Haven't tried it yet, but it is supposed
to a bit faster. Sounds interesting.

PinePhone Wiki

PinePhone Wiki - https://wiki.pine64.org/wiki/PinePhone

Definitive site for info about the PinePhone

Has a lot of great info - replacing mainboards, datasheets, upgrading firmware etc.

First place to go for information

Don't be Afraid

Don't be Afraid to experiment with the phone. The PinePhone is very hard to brick. You can put an OS on the microsd card boot it and reflash the internal memory pretty easily. By default the pinephone will boot from the SD card :-)

Jumpdrive can be used to more safely flash the OS from a microsd card to the internal drive

YOU theoretically can brick a pinephone, but it is a lot tougher than with a regular phone.

There is also the serial port option which you might be able to use to push an image if everything else fails.

Future Stuff

Pine64 is talking about creating a new version of the PinePhone without the Modem. They are calling it the communicator or PineCom. Hoping to get the price down to like $99 if possible.

There are talks of a PinePhone Pro which would be more powerful and have more memory. Sounds interesting and if that improves Anbox on it might make it my final replacement for my current phone. Also with Convergence might be able to replace your desktop.

There is a project called the PinePhone Keyboard which is a snap on keyboard for the PinePhone which could be pretty darn cool.

Why not just run Linux on Android?

There are some good versions of Linux that you can run on your android phone: UserLand, Andronix and AnLinux are all examples

Some require rooted phones, some don't

You don't really have full control of the phone. You have a lot of limitations. Privacy is not priority one for Android phones.

Isn't bad for playing around but prefer Native Linux.

Summary

Running Linux on a Smart Phone can be quite a chore. Some phones can be hacked and have linux forced on them. Some like PinePhone make it easy.

PinePhone is a pretty good value for the price.

Would love to see Mobian on the Teracube 2e phone because I like the hardware is supported by Teracube 2e (4 year warranty and $59 for replaced screen for around $250). Better specs than the PinePhone as well.

Using my pinephone as my secondary phone, currently.