The GPD MicroPC

Probably a better title would be…

"Finally a pocket PC that can do things!"

Wait a minute!

Isn't this talk about Lilliputing?

Well, it is. More specifically one particular device but we will touch on others. I do not include wearables, modern phones, or tablets. Modern pocket computers are the idea here.

What is this thing?

A GPD MicroPC

Specifically the GPD MicroPC is a handheld mini Laptop developed and designed by GPD company for industry professionals and various mobile scenarios. It only weighs 440g which has many interfaces. It can perfectly replace traditional notebooks for people that work in the communication, electric power, exploration, mining, archaeology, education training, manufacturing, service chain, call center, business services, public institutions, government military and many more fields.

What is in this thing?

Factory Specifications

GPD Micro PC

OS	Windows 10 Pro, Ubuntu MATE 18.10
Product Positioning	Household intelligent device
Screen size	6 inches
Screen technology	Gorilla Glass 4, Sharp full-fit dazzling screen

Factory Specifications

GPD Micro PC

Pointing device	Touchpad
Resolution	1280x720
Aspect ratio	16:9
PPI	245ppi
View	178°
CPU	Intel Celeron N4100
Core / thread	4/4

Factory Specifications

GPD Micro PC

GPU	Intel UHD Graphics 600
RAM	LPDDR4 8GB
ROM	128GB M.2 SSD, infinite capacity expansion
WI-FI	802.11 a/b/g/n/ac compatible
Bluetooth	4.2

Factory Specifications

GPD Micro PC

Wired LAN	10/100/1000Mbps Ethernet card
RJ45	1
HDMI	1
USB A	3
USB C	1
RS-232	1
Card reader	Micro SDXC slot x1

Factory Specifications

GPD Micro PC

Dimension	153x113x23.5mm
Weight	440g
Heat dissipation	Active
Lanyard hole	Yes
Price	Crowdfunding price ($US): $314, official price: $414

Commentary on the specs

The storage line says infinite capacity expansion, I say not true (at least not yet). The card is a smaller mSATA M.2 NGFF SSD that has to be the 2242 form factor. The largest size SSD I could find in that particular form factor was 512GB. Not bad, but still far from infinite.

Commentary on the specs

The specs also mention Ubuntu and Windows. While I don't really care for Windows, they did provide Windows 10 Pro as opposed to Home edition, so that was a surprise.

GPD is apparently a first class citizen with Canonical, as they had a beta version of 19.04 available early on for the unit. It is fully supported by Cannonical.
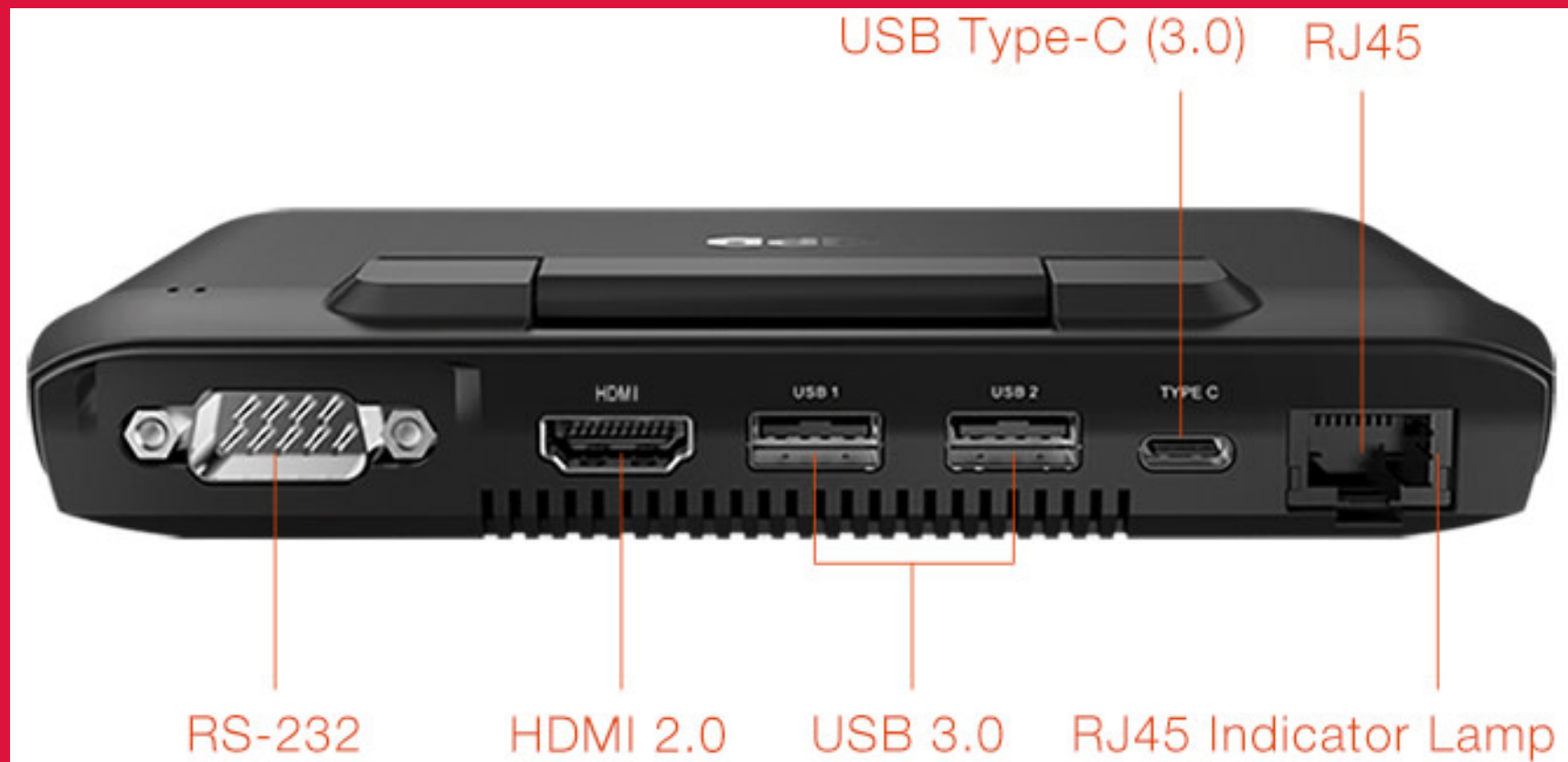
Commentary on the specs

The acid test is that I tried installing Arch on it and it just worked. I have started to expect that for modern hardware, but I was still pleasantly surprised. As a matter of fact, it was one of the easiest installs I have done. We can look at some of that a little further along. Easiest is a flexible term.

Why did I want one?

I have been looking at all of the micro PC units that have come out for years now (decades) and I have owned a lot of them as well. Ultimately, I am looking for something I can use a bit more portably than my notebook computer. This may be close to perfect. I was hoping to use it for this presentation, but I have not plugged it into a large display yet, so I'm not sure I can do that yet.

What does it look like?

Back View

USB Type-C (3.0)   RJ45

RS-232   HDMI 2.0   USB 3.0   RJ45 Indicator Lamp

Top View

Dormancy indicator lamp — Power indicator light

USB 3.0

Micro SDXC

Lanyard hole

Microphone

Headphone Jack

Open View

Right Button

Scroll Wheel

Left Button

Power On / Off

Backlit Keyboard

6 inch

Fan On / Off   TouchPad

What is the first thing I did?

VOID the warranty!

That means I wanted to put more storage inside. Specifically, obtaining the largest supported SSD component and getting the box open without breaking it.

Upgrading the storage

Since I was not interested in using Windows, and I had 8GB RAM to work with, the next logical thing to do was upgrade the storage. As I mentioned earlier, the largest module I could get was 512GB, but that should be enough for now. I can always add an external USB 3.0 disk if it becomes necessary.

HOWTO in pictures

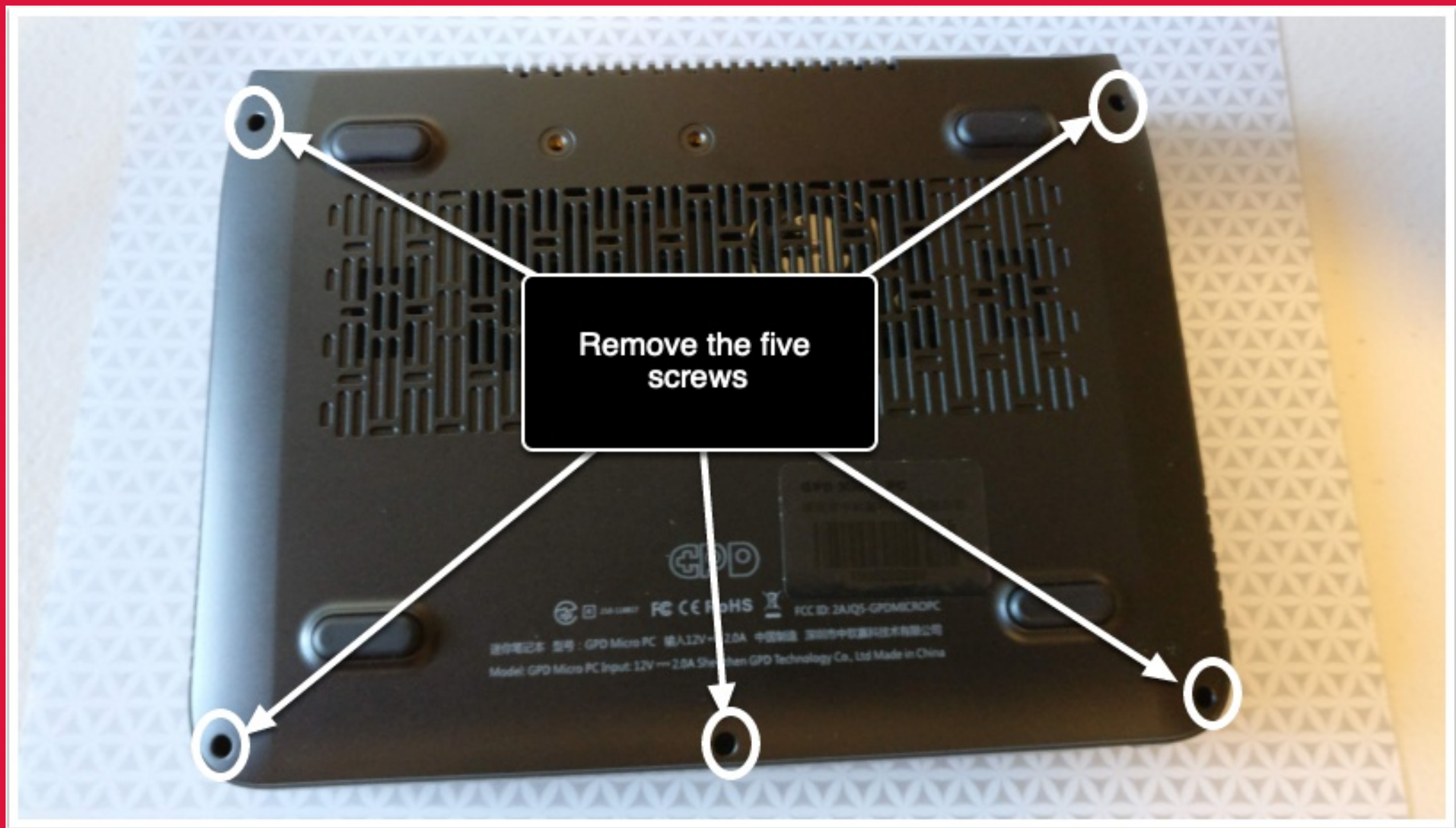# Top, back, left, and right

Just for comparison

Bottom of unit

The part we are interested in.

Removing the bottom

Remove the five screws

Tiny screws!

Prying open the shell
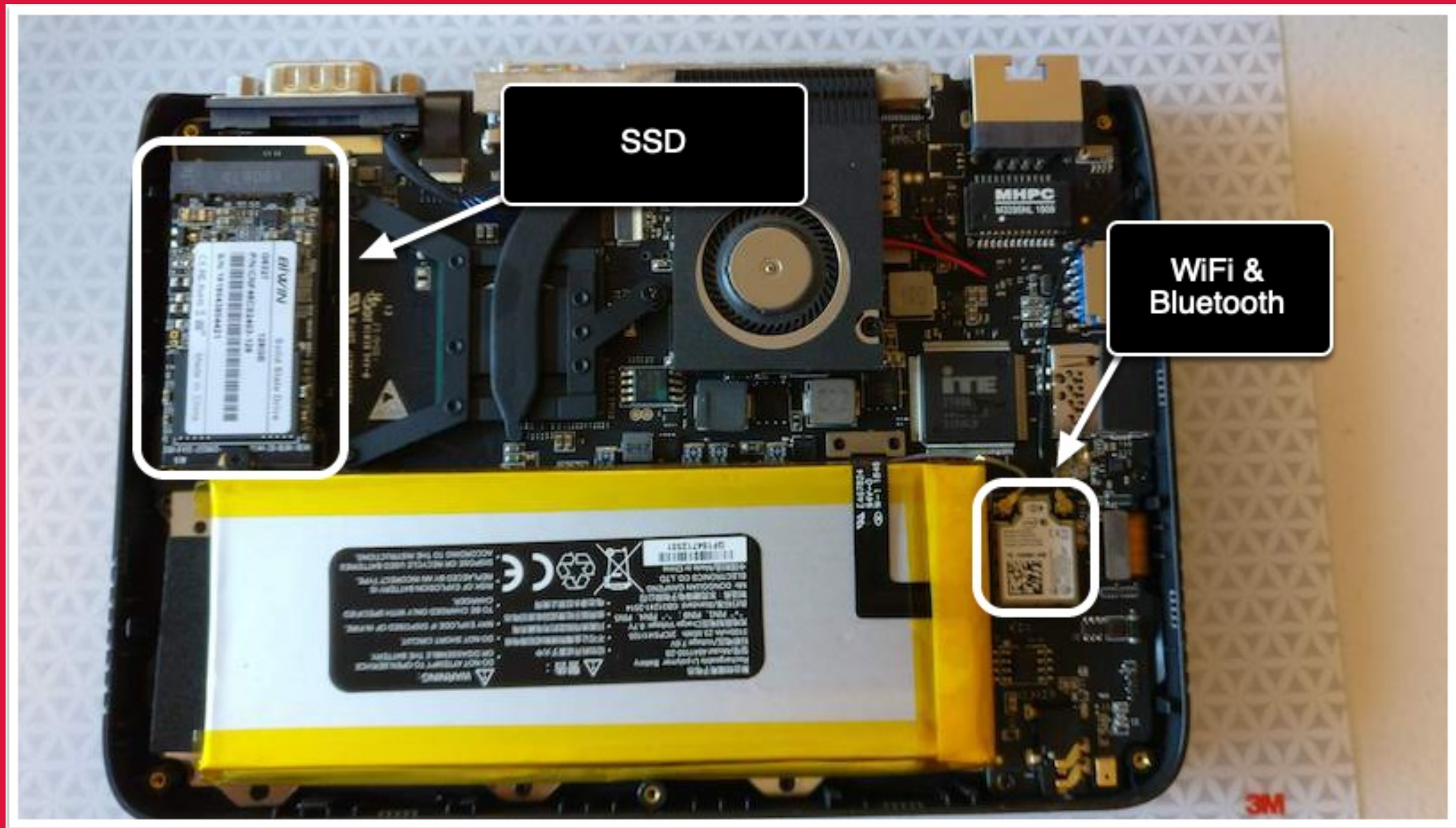
Prying open the shell

Prying tools

Opened case

Removable parts

SSD replaced

New SSD

What use is the old SSD?

Well, it has the original operating system on it, so you could keep it in case you want to use it for something or sell it later

I put mine in an external enclosure.

One of these units

Inserting the old SSD

Securing the old SSD

Done.

It worked!

So now that we have space...

We should install a more usefull Operating System.

Since I already know that Ubuntu is a first class citizen, I can asume that derivatives will also work. This may be false, but I expect that Linux Mint will work just as well.

What did I do?

I decided to try Arch, as the barrier to entry is low and it only installs what I want. Yes, I know Gentoo will probably work, but I don't want to wait a week to get there.

Also, someone had already written a HOWTO for the "fiddly bits"

Obligatory Gentoo reference

For Tug, whom I expect has made a Gentoo comment by now.

Setting up GPD MicroPC for Arch

I based my install on this guide - with a few modifications

GPD MicroPC Dual Boot - Arch / Windows 10 Install Guide

We can go through this and I'll note where I did different things. Anyone interested?

Prerequisites

- GPD MicroPC
- Arch ISO written to USB stick
- Microsoft Windows 10 installer on USB stick
- ability to understand basic linux commands
- patience (and eyesight) to spend a good bit of time looking at small, sideways text

Prerequisites ^{contd.}

- an extra USB drive for the Arch packages (or possibly add them to your Arch USB stick)
    - linux-mainline-5.2rc6-1-x86_64.pkg.tar.gz
    - linux-mainline-docs-5.2rc6-1-x86_64.pkg.tar.gz
    - linux-mainline-headers-5.2rc6-1-x86_64.pkg.tar.gz

Github Interlude

If we want to look through it now or we can look at the end.

GPD MicroPC Dual Boot - Arch / Windows 10 Install Guide
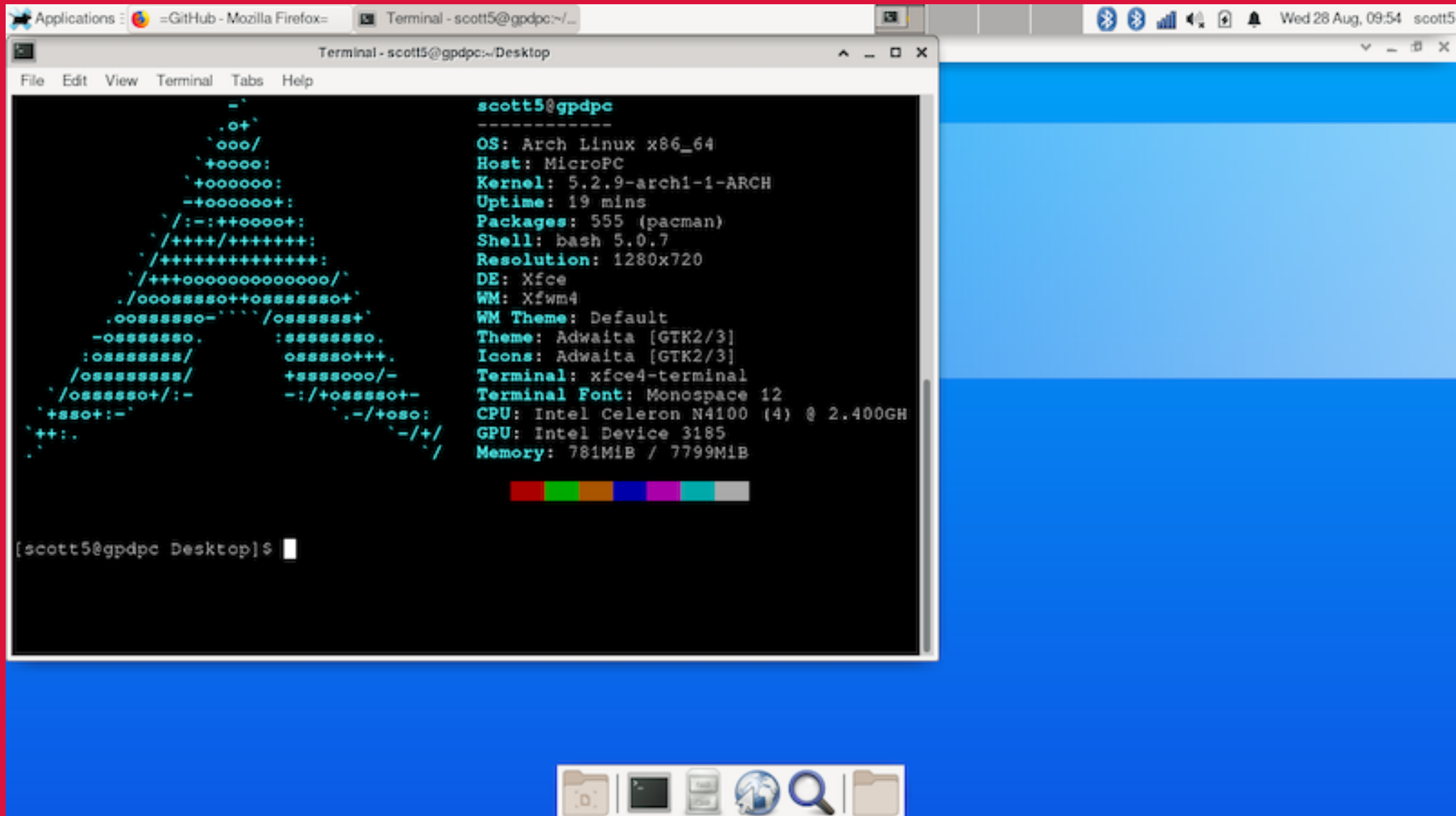
But it still boots to text...

True, and for that we need to add a display manager and a greeter for it. I saw another web page about that, summarized as:

```
$ sudo pacman -S lightdm lightdm-gtk-greeter
$ sudo systemctl enable lightdm
```

Once we are up…

We can open a terminal and run neofetch

Questions?

Future Talk (November 2019)

"Ansible for system configuration"

In which I will provide the entire build of this system, followed with a configuration via ansible.

There will be a github or equivalent location available for anyone who wants the information after the November session.

References

- GPD MicroPC
- Small RaspberryPi system
- Installing Arch on the GPD MicroPC
- How to Set Up the XFCE Desktop Environment on Arch Linux