Old Hardware

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What do we do with old hardware?

Try to run Linux on it of course!

Archaeology

A few weeks ago, I found a neoprene notebook case in my basement. I must have put it down there pre-renovation back in 2018. It was a little heavy, so it had some device inside and I did not remember what it was. When I opened the case, there it was, in all of its glory - The ACER Aspire Switch!

Memories

Back in 2017, I did a talk on this piece of hardware. I will not revisit that talk, but rather give a quick summary and move on.

In short, it is a terrible, badly designed attempt at a tablet that was originally intended for Windows 8. I saw it at Canada Computers (I think) and picked it up as an intersting thing to play with, maybe a simple portable computer for travel.

In case you have not noticed this over the years, I'm always looking for a better travel computer.

The Problem

So it is roughly six years later. I have no power adapter for it, the manual has no power specs, and I have no idea what any passwords are.

Step 1 - Power

I found a website that has product details on all kinds of devices. This device was in their list of products, so I have info. The manual was no help at all.

Table 1. AC ADAPTER Acer Aspire Switch 10 (SW5-015)

INPUT	AC 120/230 V (50/60 Hz)
OUTPUT	18 Watt, 12 V, 1.5 A

Success

I happened to have a few adapters that met the specs, so I could charge it. A full charge took a while, but after about 5 minutes, I could power it on at least.

Yes, it still had Ubuntu from 2016 on it. I also had an account and managed to log in after a couple of tries. I could even sudo.

Wow, was that ever slow.

The Next Step

What to install. This thing has terrible specifications.

Table 2. Acer Aspire Switch 10 (SW5-015)

CPU	Intel Atom Z3735F / 1.33 GHz
CORES	Quad-Core
RAM	2 GB (provided memory is soldered)
RAM TYPE	DDR3L SDRAM @ 1600MHz

Decisions...

So, an updated Ubuntu might work, but 2GB and the very limited storage is an issue.

I did recently read about a few sleeper distros that might be interesting. One was designed to run on a low resource system, Archcraft.

So, I decided to go with that.

How do we do that?

Well, now I need to get into the BIOS and allow it to boot from an external device. That requires me to turn off 'secure boot' and select an alternate. I have no idea why I bothered turning it back on, but I did.

After searching for what keys to press, I discovered I do not remember the password. Luckily, there is a site for this type of thing. A large number of laptops have backdoors that allow you to enter a code to unlock the BIOS access.

Another Success

The process worked for me. I found some code in GitHub that does this process as well and tested it - it works. A quick look at the code shows it is a simple lookup table.

Getting Started

There is a well documented process for getting the system into a mode that allows you to boot from a USB device. The link will be at the end for those interested.

There are three USB ports:

- USB 2.0 on the side of the keyboard

- microUSB 2.0 on the side of the device

- microSD card reader on the side of the device

New Discovery

The microSD card is not a bootable option. I was a little leery of the keyboard port, wondering if it was a slower port than the others. That was a useless concern, as they are all slow! Very slow.

Another Concern

This device has a 64-bit processor, but has a 32-bit UEFI. This has caused difficulties in the past and I was prepared for it to be a problem again.

Pleasant surprise: The Archcraft image has both efi bootloaders and booted properly when I tried it.

Next

Well, it took a moment (slow) to boot, but it did. It brings up a welcome screen and you can start an installer from there. Needless to say, I thought I'd go with the GUI experience this time, as I wanted to see how bad it would be.

You have the option of a TUI or a GUI to install - the Calamares installer is the GUI one. It launched and went through the typical installer questions. Then the waiting began.

Time passed...

It eventually finished and I opened a terminal and got the names of the storage devices. You supposedly need them later. I will check that out after I finish writing this up.

```
~ % lsblk --ascii
NAME           MAJ:MIN RM  SIZE RO TYPE MOUNTPOINTS
mmcblk2        179:0    0 29.1G  0 disk
|-mmcblk2p1    179:1    0    2G  0 part [SWAP]
|-mmcblk2p2    179:2    0 26.6G  0 part /
`-mmcblk2p3    179:3    0  512M  0 part /boot/efi
mmcblk2boot0   179:8    0    4M  1 disk
mmcblk2boot1   179:16   0    4M  1 disk
```

Booting

So, now when you boot, you still have the USB stick installed and may need the bootloader to be installed properly. You interrupt the boot and go to a grub command line by hitting 'c'

The idea here is that since you are in the proper bootloader, you change the boot disk to the newly installed system, set the kernal and ramdisk parameters and boot.

Parameters

Just for the curious. This may have been an unnecessary step, but it was necessary the last time I did this.

```
set root=(hd2,gpt2)
linux /boot/vmlinuz-linux root=/dev/mmcblk2p2
initrd /boot/initramfs-linux.img
boot
```

The bootloader to use in the BIOS as 'trusted' is:

`/boot/efi/EFI/Archcraft/grubia32.efi`

Gotcha's

- After booting, and you get the login window, the user account has a capital letter at the beginning. I do not know why, but it does not affect the login process.

- What does affect it is that the 'keyboard numeric keypad' is active, so if your password uses any of the dual purpose keys, you need to disable that with the Fn-F11 combo.

Boot Movie

This is the boot process…
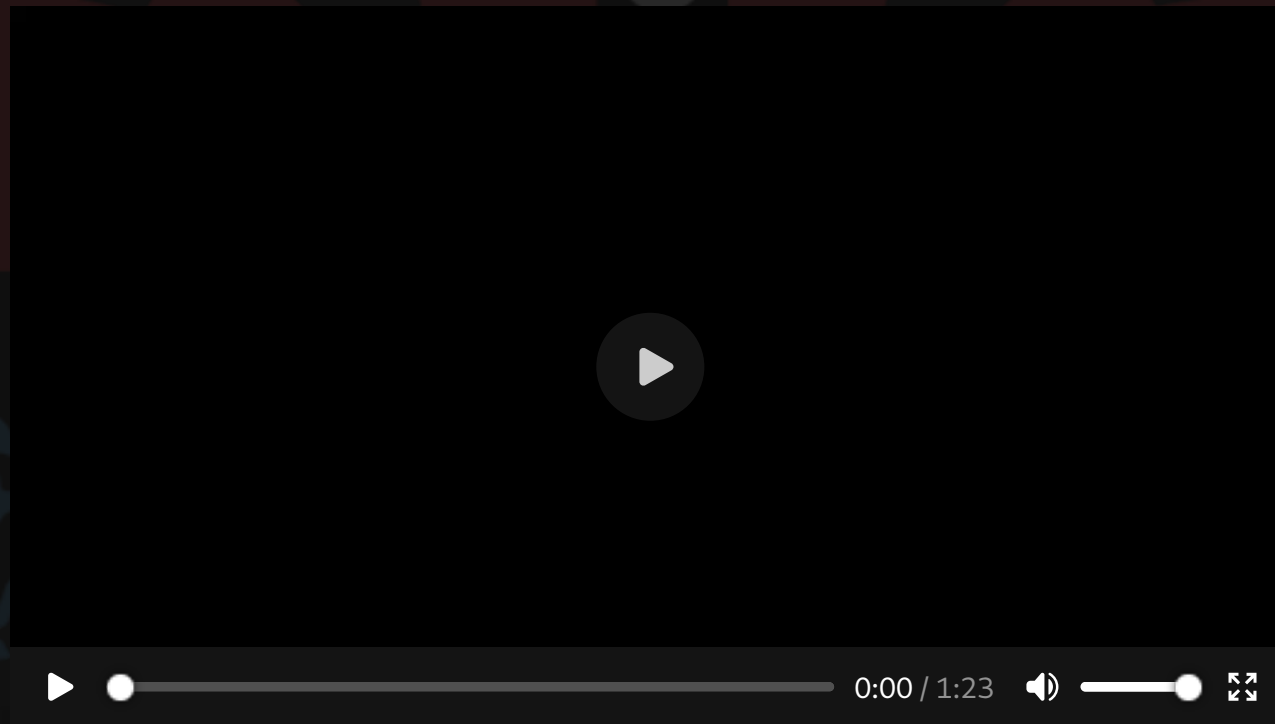
Parting Notes

I had a look and the presentation I did is not on the website. I'll see if I can find it and upload it, as it will complement this one. Several years of perspective and failed dreams probably.

References 1

Penguin Image by vecstock: https://www.freepik.com/free-ai-image/animal-nature-penguins-waddling-icy-coastline-generated-by-ai_40969799.htm

Info on the device: https://www.productindetail.com/pn/acer-aspire-switch-10-sw5-015-11mc

Setting features in the BIOS, see this instructable article: https://www.instructables.com/Linux-Kiosk-Tablet-From-Acer-Aspire-Switch-10-Bayt/

Unlocking the security in the BIOS: https://www.biosbug.com/acer/

References 2

Install Ubuntu on it: https://gist.github.com/franga2000 /2154d09f864894b8fe84

Compile Grub2 from source: https://linuxconfig.org/grub-compile-from-source-on-linux

Distro I chose: https://archcraft.io