So You Want to Install Linux?

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Hello

Why This Presentation?

Suggestions from Shaun Browne:

- What computers/platforms are well-suited for installing Linux?
- What distros are best suited to different niches?
- What are the differences between 32/64 bit computing?

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More topic suggestions: https://kwlug.org/node/1269

(You can make a suggestion too!)

. . .

(You can give a presentation, too!)

Who is this guy?

The one that sends the meeting announcements.

- My computers are used/hand-me-downs running Linux
- Computer Recycling at The Working Centre
  - Anybody remember Laptop Rescue Missions?
- Presented a custom linux distro back in Aug 2004 (!?)
- Been supporting end users with Linux for a long time (too long?)

Disclaimers

- I am not an expert.
- I am a dinosaur.
- I prefer easy, practical solutions.
- This presentation is directed towards genuine beginners.
- This presentation is opinionated and not comprehensive.
- This presentation is made of bullet points, as if it was 1998.

Goals

- Provide **nouns** to get you started
- Inspire others to give beginner-friendly presentations
  - Explicitly say the obvious things
- Clarify confusing things
- Crowdsource best practices

Considerations

Why are you doing this?

- Nostalgia for old hardware?
- Bragging rights?
- Learn skills?
- Use a specific tool?
- Make a server?
- Revitalize an old computer?
- Give a friend/family member a computer?

Why are you doing this?

- **Nostalgia?** Emulators? Look for community.
- **Bragging rights?** Go nuts, but don't expect it to be easy.
- **Learn skills?** Virtual installs, bare metal installs
- **Use a specific tool?** Cross-platform build, virtualize, well-supported distros
- **Server?** Upgrade potential, well-supported distros.
- **Revitalize?** Choose well-supported distros. Don't expect miracles.
- **Friends/Family?** Reliability and easy support are key.

Architectures and Support

The Bare Essentials

- Kernel Support for your architecture
- Drivers for your components, peripherals (ISA bus, wifi, video...)
- Programs to run (a "userland" usually provided by a distribution)
- Some way to install Linux (CD? SD Card? Bootable flash drive?)
- Some way to boot Linux

CPU Architecture

Different CPUs require different machine code to run. A CPU type (and sometimes other built-in components) define a *CPU Architecture*

Most common/well-supported:

- 64-bit Intel/AMD (x86_64 / amd64)
- 64-bit ARM (aarch64)
- 32-bit Intel/AMD (i386, i686)

More info: https://puppylinux.com/arch.html

More info: RISC vs CISC

. . .

(Sidenote: This is why FLOSS matters)

32-bit vs 64-bit

- Technically: how many bits used by the CPU natively (the *word size*)
- In practice: how much RAM a computer supports. 32-bit: 4.3GB (sort of). 64-bit: lots.
- 32-bit: Raspberry Pi pre 2.1, Intel/AMD up to Pentium 4
- 64-bit: Raspberry Pi 3+, Intel/AMD from Core 2/Athlon onwards

Unsolicited Advice

Is Virtual Linux Good Enough?

- Windows/MacOS/Linux: Virtualbox
- Android: Termux? Linux Deploy?
- iOS: https://ish.app?
- Windows 10+: Windows Subsystem for Linux (WSL)
- MacOS: Homebrew (not Linux, but close enough)
- ChromeOS: Crostini?

Supporting friends/family

- Install the distro you are most familiar with
- Set up remote support tools (VNC, Jitsi, Teamviewer (ugh), NX, dwservice.net)
- User experience matters!

- Hardware: desktops and laptops (not tablets, phones)

Bottlenecks for Old Computers

1. RAM
2. CPU power
3. Wifi support
4. Graphics support
5. Other driver support

Distros to consider

- The one you are familiar with and can support.
- The ones that support your intended hardware well.

Lighter distros

- https://alpinelinux.org/downloads/
- http://tinycorelinux.net/downloads.html

Weird architecture distros

- https://debian.org/ports : watch out for proprietary drivers (graphics, wifi)
- https://alpinelinux.org/downloads/
- https://netbsd.org/ports/ : Not Linux, not great for desktops?

Getting Help

What advice to trust?

- Stack Exchange, obviously (but mind the age of the answers)
- https://wiki.archlinux.org
- Reddit (yes, really)
- Friends, community members (like KWLUG?)
- Blog posts by nerds

Stay safe!

- Avoid old distros!
- Old hardware can have bugs (eg Spectre)

Misadventures

The Bare Essentials, Revisited

- Kernel Support for your architecture
- Drivers for your components, peripherals (ISA bus, wifi, video. . .)
- Programs to run (a "userland" usually provided by a distribution)
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Kernel Support

- Idea: Install Linux on an ALIX board (retired from pfSense). It has an AMD Geode (i586-class) CPU.
- Reality: Debian dropped support for Pentium 1 and earlier CPUs in 2016.
- Reality: Linux dropped support for 80386 CPUs in 2012 (kernel 3.8).
- Maybe OpenWRT or NetBSD would work, but is it worth it?

Driver Support

- Idea: Use a Pine64 Quartz64 computer as my next desktop.
- Reality: The ARM64 CPU is supported, but there are still incomplete drivers in the kernel.

Driver Support 2

- Idea: Jason wants to use his Apple Silicon Mac Mini
- Reality: He is waiting for Asahi Linux to release so he gets driver support

Finishing Up

Future Talk Ideas

- Weird devices that run Linux
- Linux Installations in the Wild
- Why exactly can't you install Linux on arbitrary Android devices?

- Why aren't Android drivers in the Linux tree?
- What distros are best for specific purposes?
- What best practices are there for supporting friends/family?

Questions and Conversation

- What else do you want to know about installing Linux?
- What other tips and advice do you have?
- What was unclear?

The End

Building this presentation

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pandoc -t revealjs 2022-03-07-install-linux.md -o \
  2022-03-07-install-linux.html --standalone -V theme=night
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