

Linux in the Ham Shack

David Eddleman K5RNL

What We'll Cover

- This is meant to be a basic, introductory presentation on the use of Linux for someone who knows nothing to little about it and is interested in knowing more.
- Linux is an operating system, so going deep into technical specifics is a long, detailed process that will take far longer than a presentation can give (>1hr).
- This is a mile wide and an inch deep. If you have questions, ask them at the end or contact me (contact details are at the end).
 - Don't be shy, I love to share my knowledge!

Who am I?

- David Eddleman
- K5RNL
- Vice president of CARC
- I've been a Linux sysadmin & infosec professional for almost 20 years.
- Been using Linux since around 2002 when I was introduced to it by a friend and fellow ham, Conrad Lara KG6JEI.
- Member of Infragard (partnership between private sector and FBI/CISA for defense of critical infrastructure assets).

History Lesson

- Starting in the 70s, commercial and government systems were using UNIX, developed by Bell Laboratories and licensed to a number of entities. Some of these were System V, AIX, Solaris, DECUnix/Tru64/HP-UX, IRIX, SCO, etc.
- These were closed source and typically required specialized hardware to run.
 - That meant they were *expensive*!
- In 1991, Linus Torvalds built the Linux Kernel, which is the heart of the operating system, making it freely available under the GNU Public License.
- This was built against commercially available hardware, the x86 platform, as opposed to proprietary hardware like RISC, PPC, SPARC, etc.

What is Linux?

- Linux is an operating system, just like Windows or Mac OSX.
- Linux's main advantage is that it is completely FREE!
 - Why? It's open source.
 - What's open source? It means the source code, or the building blocks for it, is available for anyone to obtain a copy of the code, modify it, and distribute it as they see fit.
 - Linux is largely available under either the GNU Public License or MIT License.
- Because it's open source and freely available, people readily tinker with it and as a result it tends to be lighter weight and more efficient than Windows!
 - This means no/limited bloat from graphical improvements, A"I", etc.
 - Open source also attaches a name to a commit!
 - It has much tighter security controls natively, such as the LUKS disk encryption tool and the integration with the Pretty Good Privacy toolset.

Here's a little proof...

This is a Gateway Solo, model 2500.

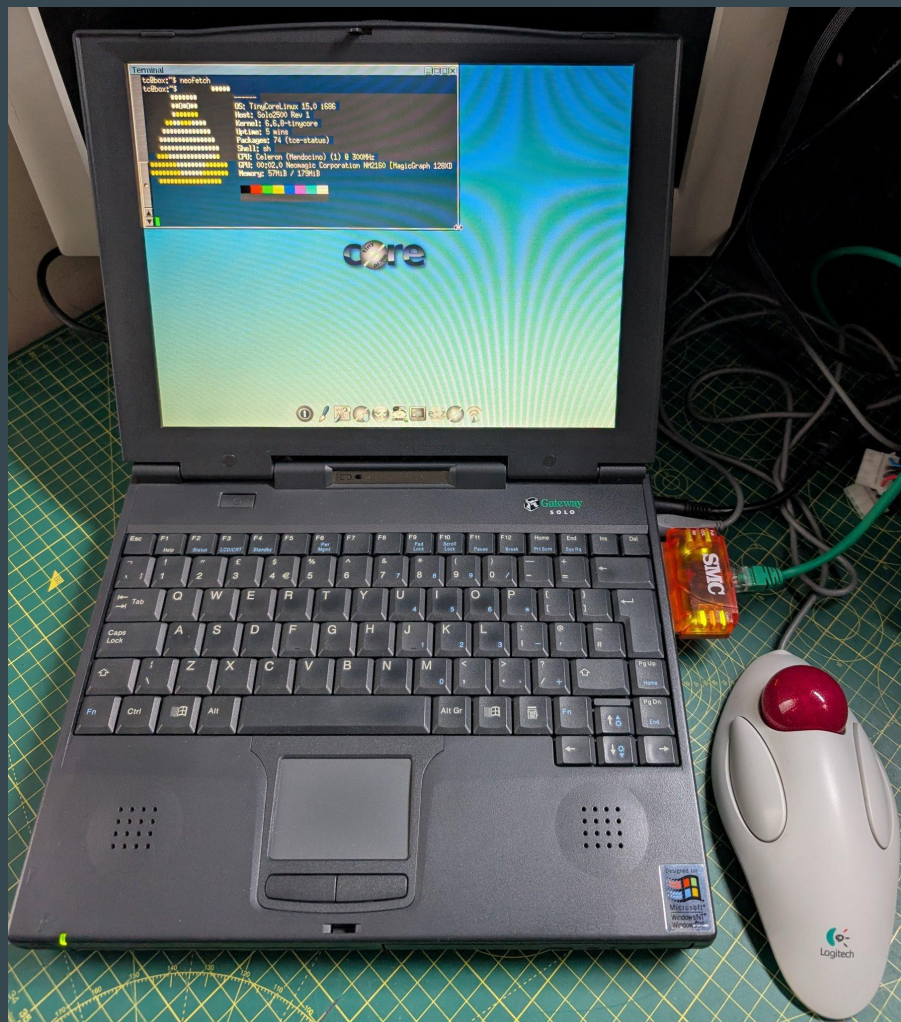
Year of introduction: 1998

CPU: Pentium 300 MHz

Memory: 192 MB RAM

Storage: Unknown (probably 3GB)

All on the TinyCoreLinux distro.



What's a distro?

- You heard in the last slide the mention of “distro”, this is short for *distribution*.
- A distro is just a pre-bundled release of software with a particular fork or version of the kernel.
- Some distros come bundled with or focus around the window manager (how the interface is displayed to you).
- Others are bundled to focus on a particular goal (privacy, encryption, security testing, being immutable, being bleeding-edge, etc.).
- Common ones are Fedora family, Debian, Ubuntu, Arch, Mint, SuSE.
- Many can be ran from a USB stick or DVD, so you can try before you install!
 - This is a good way to experiment and find what works for you before you commit to an install.

Pre-bundled but not immutable!

- Just because a distro comes with certain software doesn't mean you are locked out of others!
- A lot of software built for Linux comes available in a variety of easy-to-install methods like *packages* (.rpm for Redhat-based, .deb for Debian-based, etc.), *Flatpaks*, *AppImages*, or even *Snaps* (for Ubuntu).
- Some common ham examples: wsjtx, fldigi, flrig, chirp, js8call
 - And in many cases there's a substitute:
 - Winlink – pat
 - Echolink – qtel
 - LotW – trustedqsl
 - And more!

Considerations?

- There are things to consider before switching over.
- The big one that you're likely to run into is that Windows applications do not natively run on Linux (just like how they don't run on Mac OSX).
- In most cases you can find something comparable, but it may require re-learning a few things and the quirks of that program.
- In the less and less likely case you can't find for-like software, you can try running the software in an emulator like Wine.
- And in the absolute worst case, you can run it in a virtual machine running Windows.

Where to start?

- As said earlier, many of the popular distros can be installed onto a thumb drive and *live booted*, meaning they run in memory and don't touch your storage.
 - This is a great way to try-before-you-buy and to find out if you like the look and layout.
- Some popular choices are:
 - Ubuntu (user-friendly with a lot of software availability)
 - Xubuntu (Ubuntu that comes with the XFCE window manager, light-weight)
 - Fedora (consumer version of Red Hat with a lot of up-to-date software)
 - arcOS (designed to be booted off of USB, geared towards amateur radio)
 - Knoppix (one of the first live boot distros out there)

How to do it?

- Go to the website of the distribution and download the ISO (a disk image) of the distro you want to try.
- On Windows, you can use a tool like BalenaEtcher or Rufus to “burn” that ISO to a flash drive.
- Usually you just reboot your computer with the flash drive in, you may need to open the boot menu to get it to boot from USB (F2, F8, Delete, on startup).
- When you’re finished, if it’s not for you, remove the USB and reboot – all done!
- You may need to disable Secure Boot to get the install to work, depends upon your distro – check the notes.

Resources

- Google.
 - Chances are high someone has had your problem before.
- Asking around in communities.
 - [Groups.io](#), Reddit, Discord, forums, etc.
 - [Linuxquestions.org](#) is a great resource.
- Join a usergroup.
 - Encourage everyone interested to join the North Texas Linux User Group (NTLUG).
 - We meet every third Saturday at 0900 via Zoom.
 - <https://ntlug.org/mailman/listinfo/discuss> or <https://tinyurl.com/ntlunixgroup>
- Distrowatch
 - [distrowatch.org](#) – great place to see what distributions are trending or what's out there.

Questions?

- k5rnl@arri.net
- david.eddleman@gmail.com

PS: Please let me know if you'd be interested in a guided installation session at some point. We are gathering information about running an Install Party at the LUG!