

# Linux Desktops & Chromebooks

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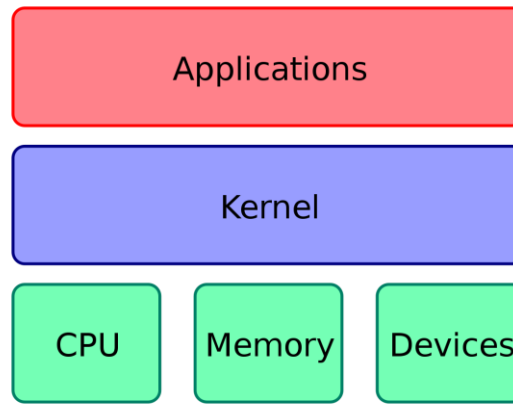
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# Agenda

- What is Linux?
- What is a Linux Distribution?
- How can I run Linux Distributions?
- Demo time!
- What is a Chromebook?
- What is ChromeOS?
- Demo time!

*Ask questions at any time – even interrupt!  
The more interactive the better for all!*

# What is Linux...



- Linux is an operating system **kernel** created by Linus Torvalds
- Originally to be called 'Freax', an FTP admin at Helsinki University of Technology called the initial folder 'Linux' and the rest is history
- Most Linux based OS's are based on GNU/Linux
- GNU (GNU's Not Unix!) is from the Free Software Foundation
- A set of tools to form a working OS on top of the Linux kernel
- Often referred to as a distribution...





# What is a Linux distribution (aka distro's)...characteristics:

- Generally opinionated collection of tools to make a running Linux OS, including:
  - package (applications) management (apt, yum, rpm, snap, flatpack etc)
  - Kernel build approach (specific modules included or not)
  - Specific window manager flavour (GNOME, KDE, Xfce etc)
  - Unique theming approach including provision of bespoke tools, icons, wallpapers, fonts, applications etc.
- There are many 100's of distributions, but they can almost all trace their roots back to these three:



**debian**



**Red Hat**



**slackware**  
linux

For home/casual use, generally approachable distributions are:



Fedora  
(based on Redhat)



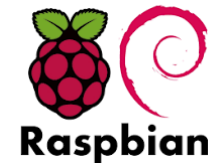
Ubuntu  
(based on Debian)



Linux Mint  
(based on Ubuntu)

There are clearly many *many* others – cue audience debate on why I didn't pick their personal favourite

Others of note:



# How do I run a Linux Distro?

- More or less four primary ways:
  1. Install Linux on your computer directly  
(or use another computer e.g a Raspberry Pi)
  2. Dual boot Linux
    - a) via your internal drives – a few hoops to jump through, be careful!
    - b) via an External USB disk – will try and show this if we have time...
  3. Use a Virtual Machine – the easiest, and one we'll see shortly
  4. Windows Subsystem for Linux (WSL)



# First step – download an ISO image (disk image)

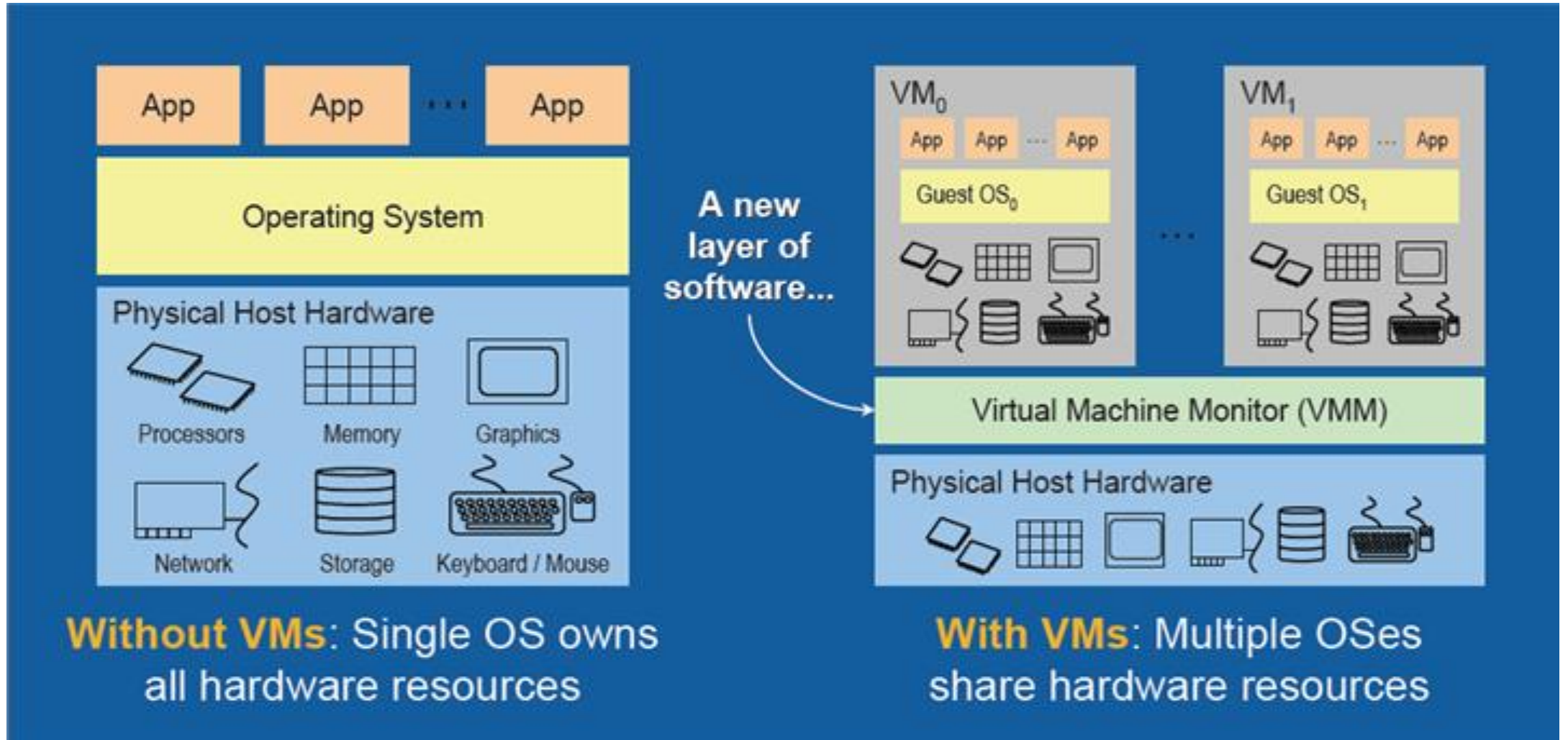
- <https://ubuntu.com/download/desktop>
- <https://getfedora.org/en/workstation/download/> (note media writer)
- <https://linuxmint.com/download.php> (note there are different flavours)

Also check out:

<https://distrotest.net/>



# What is virtualisation?



# Virtual Box

<https://www.virtualbox.org/>

Some settings advice (yours may vary...)

- Hard disk – 10-15GB storage (especially for Fedora)
- Increase video memory to max
- Increase CPU core count to at least 2 (if you can)
- Enable 3D acceleration
- Update Guest Additions



# Fedora 30 specifically...(I won't dwell on this...)

To install/update Virtual Box Additions....

Open a Terminal – Activities-> All -> Utilities -> Terminal

Run these commands:

```
[user@localhost ~]$ sudo bash
```

```
[root@localhost user]# dnf update kernel*
```

```
[root@localhost user]# dnf install make gcc dkms bzip2 perl kernel-headers  
kernel-devel libxcrypt-compat
```

```
[root@localhost user]# reboot
```

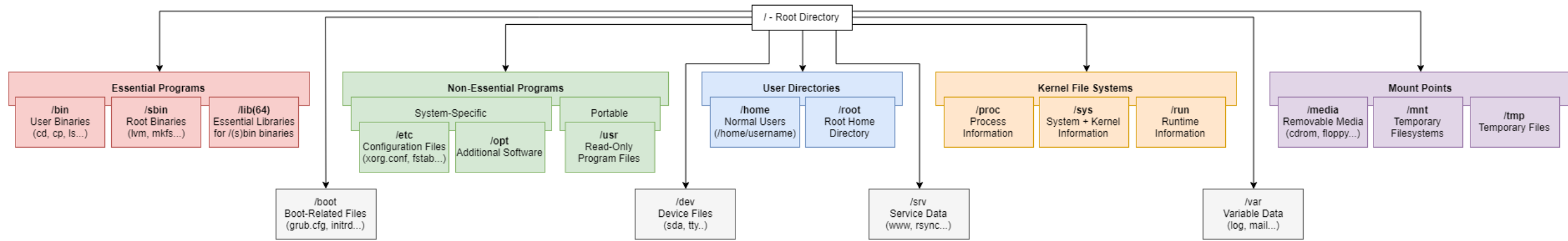
Then you can install Virtual Box Additions as normal.

Demo time!!!



# Where is my C: drive?

## The Filesystem Hierarchy Standard (FHS)



### Essential Programs:

Directories containing files needed to run essential programs

- **/bin** - Essential binaries such as 'cp' or 'ls' that all users have access to
- **/sbin** - Essential binaries only available to the root user
- **/lib(64)** - Libraries needed for essential binaries in /(s)bin

### Non-Essential Programs (Secondary Hierarchy):

Directories containing files needed to run non-essential programs

- **/etc** - System-specific configuration files for programs in /usr and /opt
- **/opt** - Additional programs not found in distribution repositories
- **/usr** - Portable, read-only, non-essential programs and program files

### Mount Points:

Directories used for mounting devices and file systems

- **/media** - Removable media such as CD-ROMs and floppy drives
- **/mnt** - Temporary file systems such as USB drives
- **/tmp** - Pseudo-filesystem for temporary files. Cleared by the kernel on boot

### User Directories:

Directories containing user-specific files

- **/home/(username)** - User files, configuration, and programs
- **/root** - Home directory for the root user

### Kernel File Systems:

Directories populated by the kernel to provide information to programs and the user

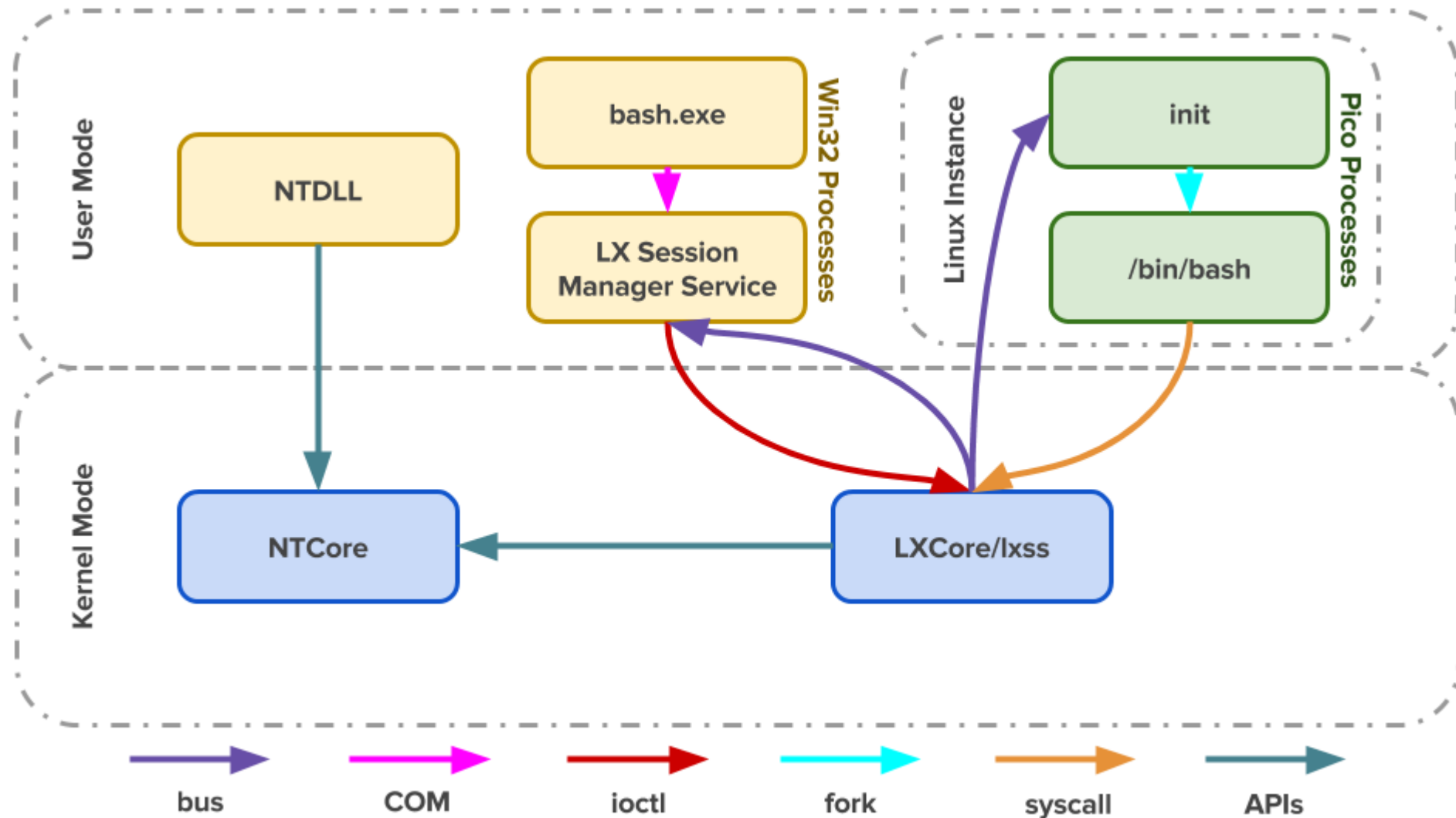
- **/proc** - Information about processes, the kernel and system hardware
- **/sys** - Information about system hardware and the kernel
- **/run** - Information about the system since the last boot

### Other directories:

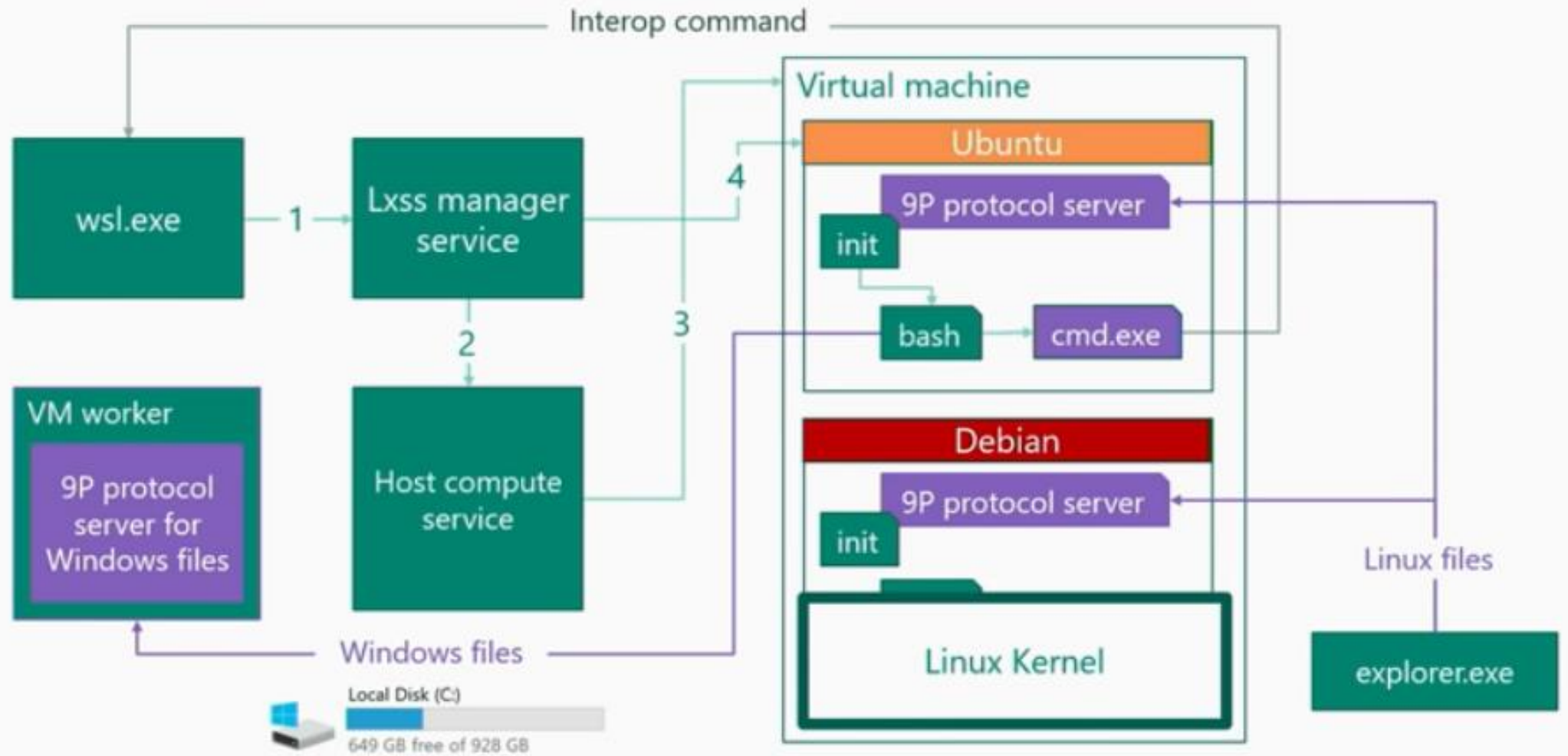
- **/boot** - Files essential for booting the system such as initrd, kernel, and bootloader configuration
- **/dev** - Device files for physical devices such as HDDs as well as data streams (stdin, stdout...)
- **/srv** - Files used for services offered by the system such as www, rsync, and ftp
- **/var** - Variable (changing) files such as lock files, logs, and mail

# WSL1 – Windows Subsystem for Linux

– the over complicated explanation...



# Complete WSL 2 architecture diagram



# Chromebooks

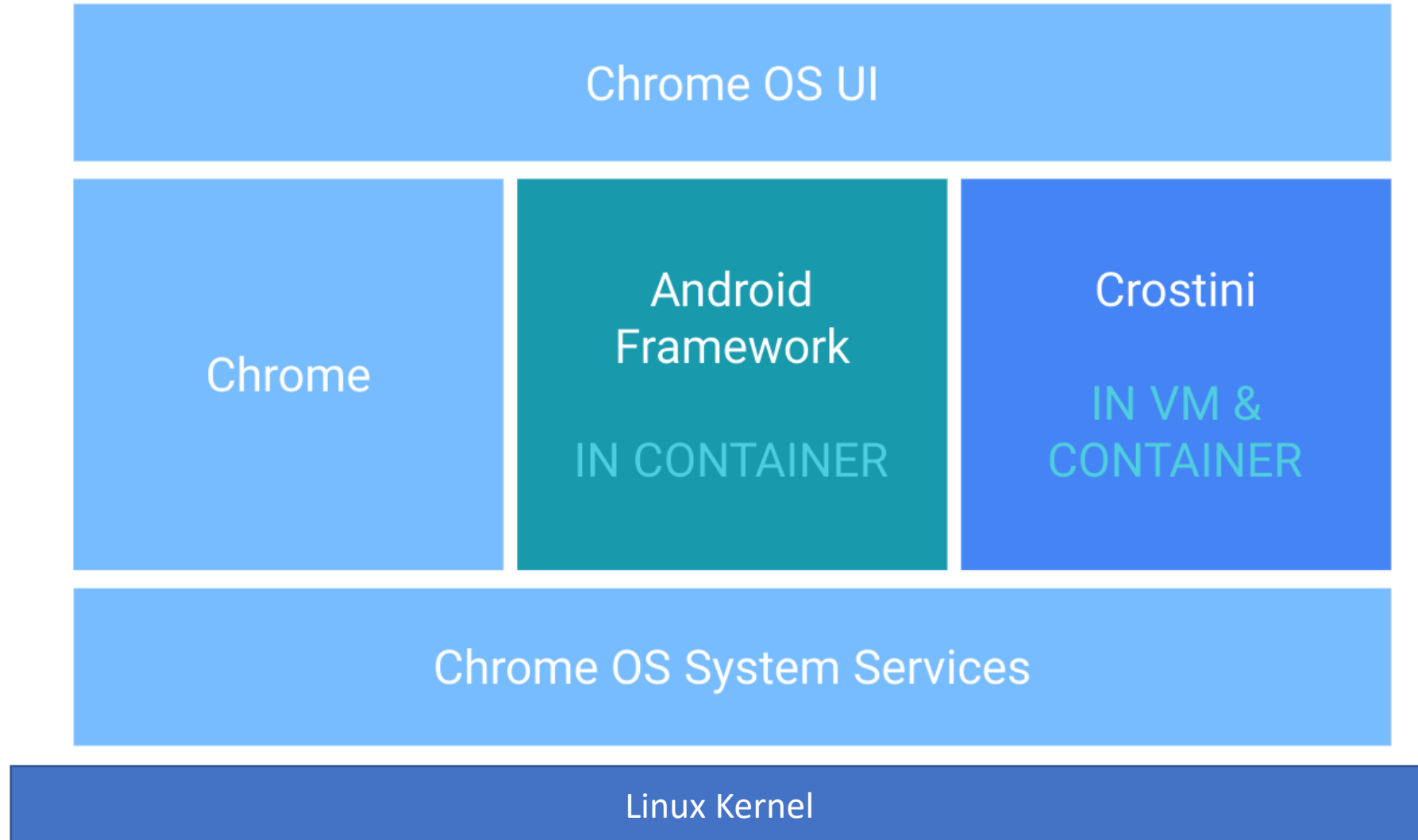


- Introduced by Google in 2011
- Runs ChromeOS – the clue is in the name
- All major manufacturers (Samsung, Dell, Acer, Asus, Lenovo etc...)
- Generally ARM or basic Intel based processors (i.e. lower cost) – Intel Celeron, Mediatek, Rockchip, Exynos, Tegra etc.
- Increasingly Intel Core (higher performance) variants available
- Available as Laptops, Convertibles, Tablets
- Strong School Adoption
- Low cost – ish!





# Architecture



Demo time!!!



# Any (more) questions?

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