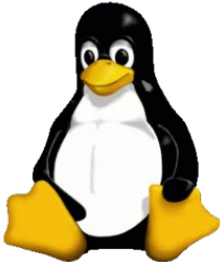


Introduction to Windows Subsystem for Linux (WSL)

Ohio LinuxFest 2019



Speaker

Rehgan Avon

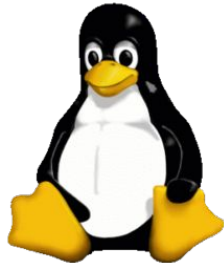
Head of Solutions - Mobikit

Founders and President - Women in Analytics

Previously Solutions Architect, Product Manager, Data Engineer

Industrial System Engineering - Ohio State

Linux enthusiast

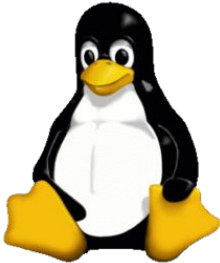


What is an operating system?

Interface with the computer's hardware and provides services that applications can use.

Uses device drivers to communicate with the device.

Windows, OS X, Linux



Why is it desirable to run one OS on another?

Vendors rarely sell linux machines

The dominant desktop operating system is Microsoft Windows with a market share of around 82.74%

Wanting to use benefits of both operating systems (example: photoshop on windows, development/scripting on linux)

Running applications only compatible with certain operating systems and versions



Why Windows and Linux?

Windows

Technical support

Easily accessible

Easy to get started

Compatibility with other tools

Highly adopted

Linux

Customization

Speed

Free

Stability

Less malware

Open source community



Why a subsystem on Windows?

Virtual machine - set up, run, and manage a virtual machine with a linux operating system

Linux machine - create a linux environment somewhere else and ssh into that environment

WSL - Windows 10 ships with linux and you select the distribution from the windows store (uses VM to run linux kernel), linux kernel updates and security patches with windows updates

***why would Windows want to support Linux?**



What are limitations of Linux on Windows?

WSL 2 is only available on Windows 10

Memory constraints because it is a VM

“localhost” does not work right away - linux and Windows have different IP addresses

VM is set up with defaults on size for file system (This VHD also has an initial max size of 256GB) - so if you need more, you have to jump into the command line to alter it

Applications like VMware are not able to run when WSL 2 is enabled



How can Linux technically run on Windows?

WSL 1

Windows wrote conversions for the linux commands to be compatible to the Windows kernel

Microsoft has to keep up with the linux community

WSL 2

Implemented a lightweight utility VM that interacts directly with a linux kernel

Linux kernel is altered to serve WSL but is open source



WSL high-level architecture

WSL 1

Linux Distributions - Windows Store

WSL Translation layer - driver

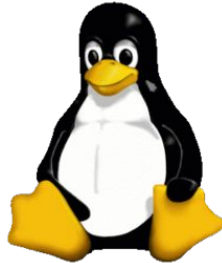
Windows NT Kernel

WSL 2

Linux Distributions - Windows Store

Linux Kernel

Hypervisor



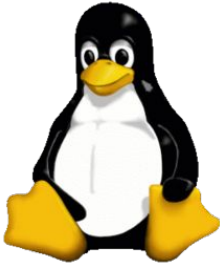
Getting WSL

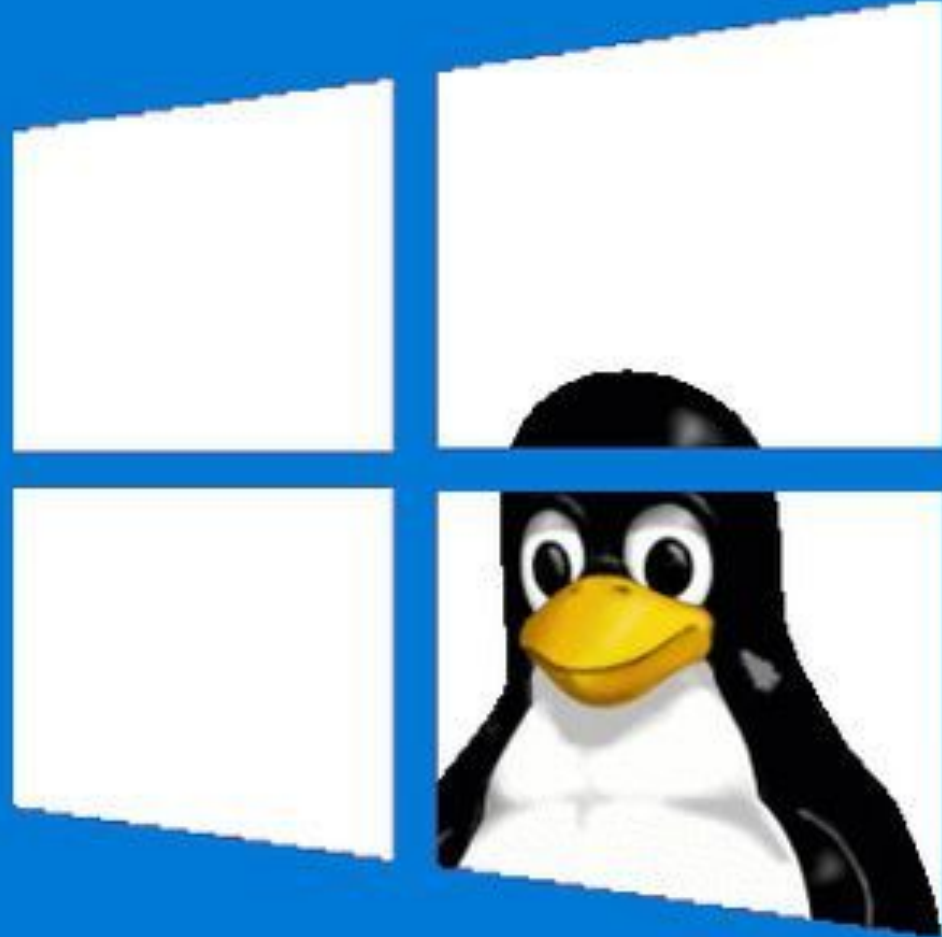
- 1.) **Open Windows Powershell as admin**
- 2.) **Run `Enable-WindowsOptionalFeature -Online -FeatureName Microsoft-Windows-Subsystem-Linux`**
- 3.) **Restart computer**
- 4.) **Windows app store - find your distro!**
- 5.) **Install**
- 6.) **Set up user and password**
- 7.) **GO LINUX GO!**



Demo

System Call Compatibility: Git Clone





Questions?