



CROSS-PLATFORM GOODNESS WITH THE WSL

DuPSUG May 2020



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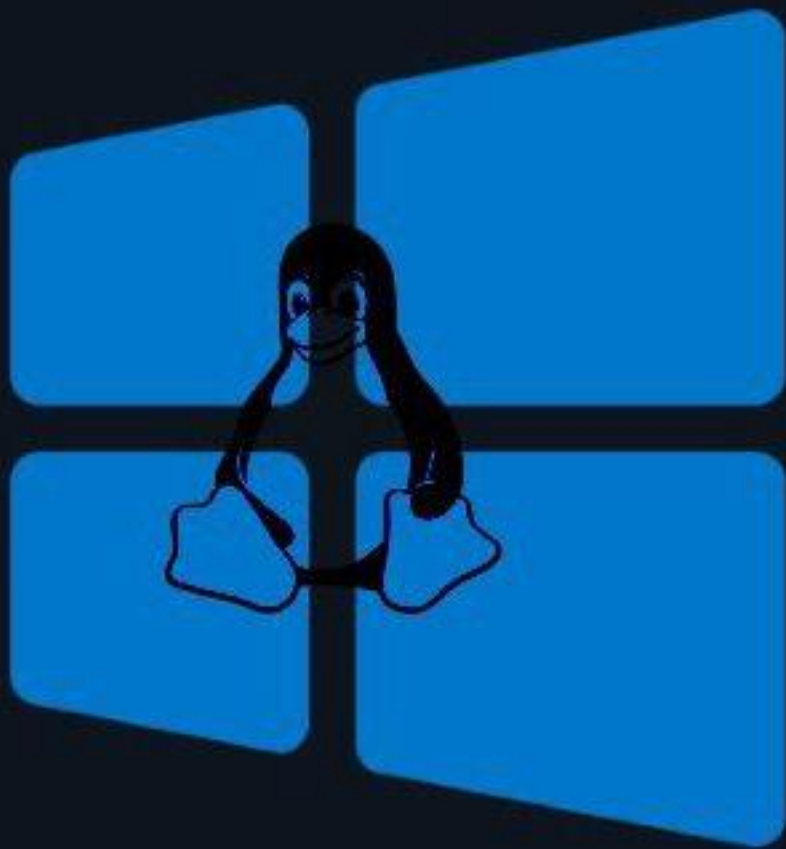
“Free Software licenses are the devil’s work.” – Microsoft PR (2001)

“Linux is a cancer that attaches itself in an intellectual property sense to everything it touches. That’s the way that the license works.” – Steve Ballmer (2001)

“Novell pays us some money for the right to tell customers that anybody who uses SUSE Linux is appropriately covered,” Ballmer said. This “is important to us, because [otherwise] we believe every Linux customer basically has an undisclosed balance-sheet liability.” – Steve Ballmer (2006)

“I may make jokes about Microsoft at times, but at the same time, I think the **Microsoft hatred is a disease.**” –
Linus Torvalds

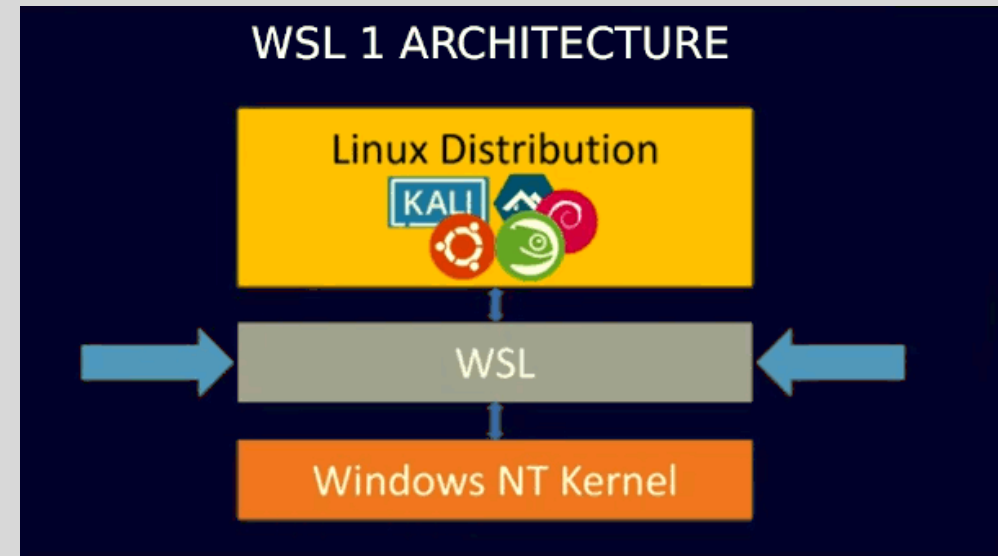




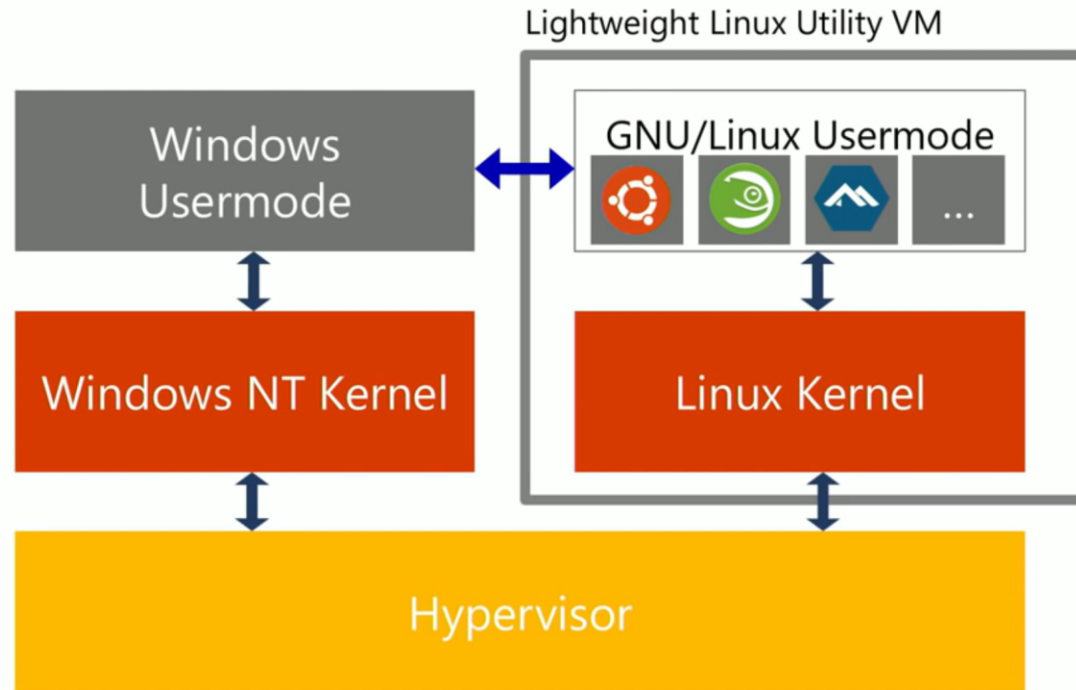
Windows Subsystem for Linux v2

WSL v1

- August 2016 Ubuntu only
- Late 2017 Store images
- W10 1607+ & Server 2019
- Linux-compatible kernel with GNU
- Could not scale
- No systemd – no binaries



WSL 2 Architecture Overview



WSL v2 (so far)

No longer emulating calls

Type1 “Lightweight” Hypervisor running single VM with ext4 VHD

One kernel running multiple distros

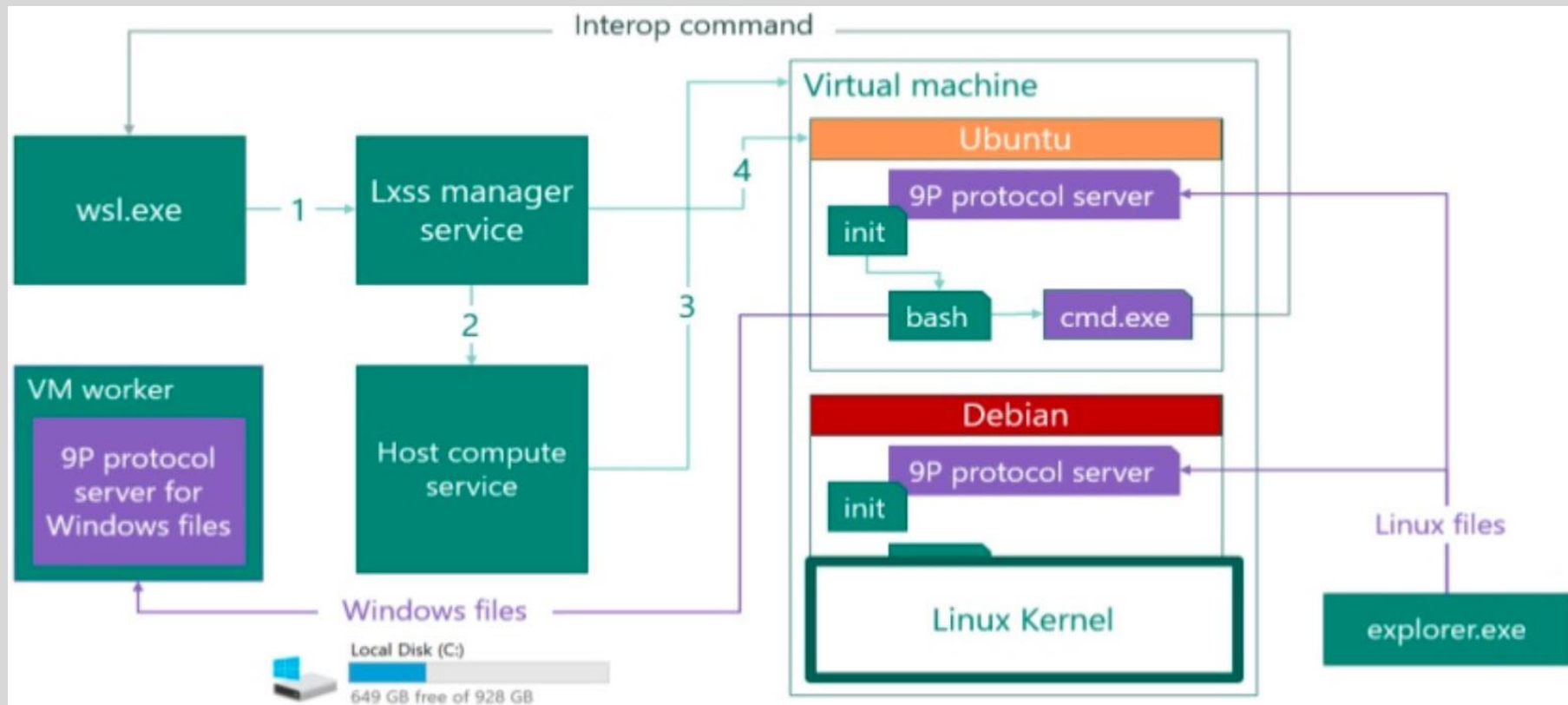
Independent IP’s

New Docker backend

Host filesystem accessible via 9P protocol (everything is a file)

IFS Network Redirector for Linux file access

v2 Overall Architecture



- Raised on *nix
- Work on appliances
- Cross-Develop

Why?

Docker Desktop Install with v2



Windows

- Dev tools
- User utilities and scripts
- Other user customizations...

Docker Desktop

Deploys and update
the WSL integration
package

Bootstrapper

Control execution of
Linux Daemons
(start/stop/config...)

Lifecycle
controller

Exposes the daemon to
the Windows Docker
CLI, handle bind mounts

Docker Proxy

CLI &
plugins

DockerD
(windows)

WSL VM

User Distribution

- Dev tools
- User utilities and scripts
- Other user customizations...

Docker Integration Package

Manage
execution of
Linux Daemons

Lifecycle
server

DockerD

Kubernetes

Socket
Forwarder

CLI &
plugins

...

Forward
connections to
Linux Daemons



- permissions
- paths “\ or /” & CaSe
- wslpath
- .wslconfig
- /etc/wsl.conf
- WSLENV (17063+)
- Server install is different
- LxssManager service
- wsl command line
- hcstdiag
- Custom Distros/MS kernel available
- wslutilities



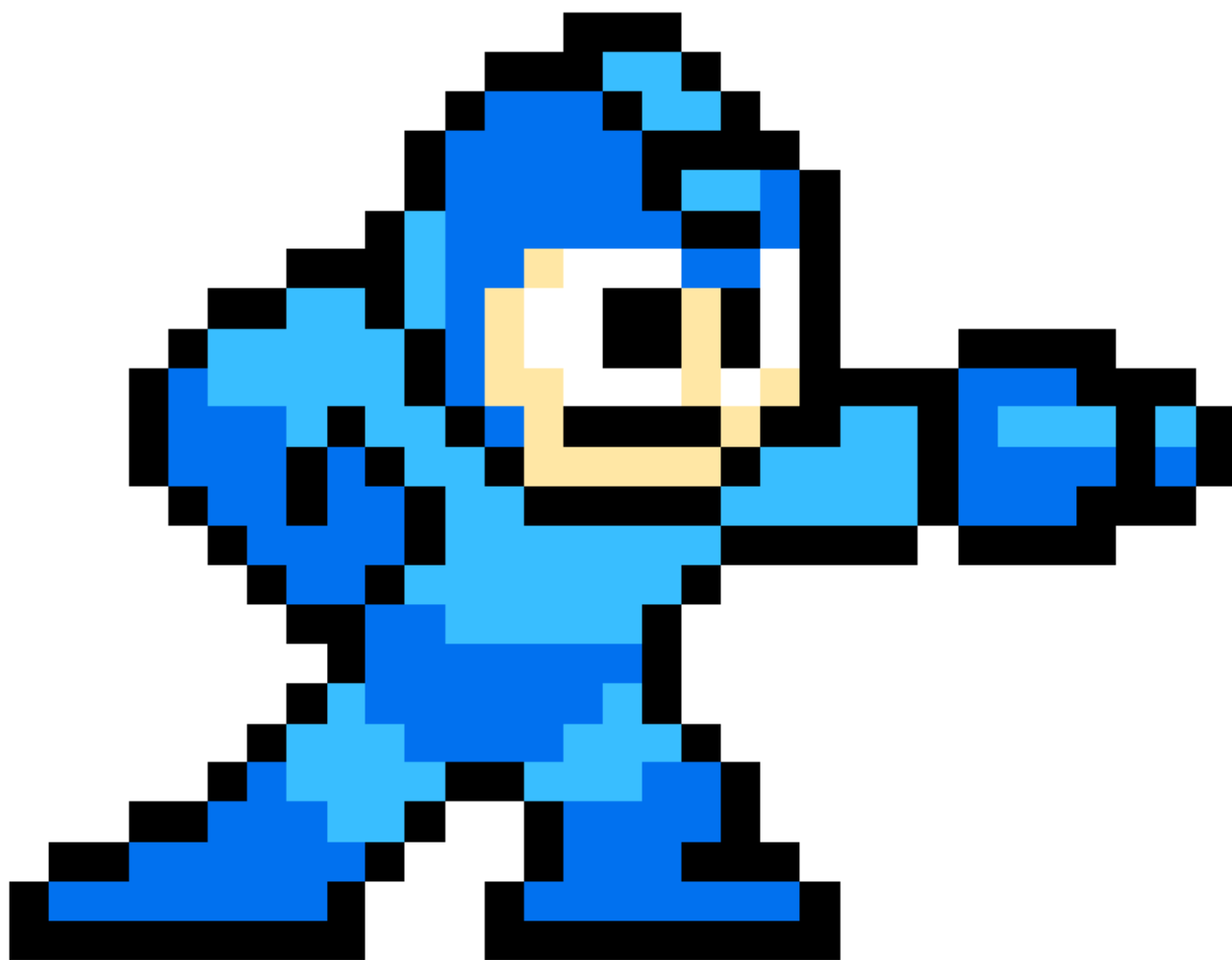
WSL Feature Availability

	1607	1703	1709	1803, 1809	1903, 1909	2004
lxc.exe	✓	✓	✓			
bash.exe/wslconfig.exe	✓	✓	✓*1	✓*1	✓*1	✓*1
<distro>.exe			✓	✓	✓	✓
wsl.exe			✓	✓	✓*2	✓*2
WSL Interoperability		✓	✓	✓	✓	✓
DrvFS Mounting			✓	✓	✓	✓
wsl.conf				✓	✓*2	✓*2
\$WSL_DISTRO_NAME					✓	✓
\$WSLENV				✓	✓	✓
\\wsl\$\\					✓	✓
WSL2						✓
/mnt/wsl/						✓

*1: Kept for backward compatibility

*2: feature of the function extended in these builds

“WiP”



Demos