

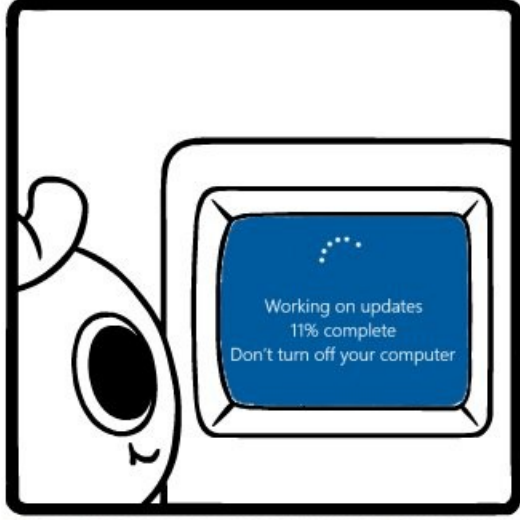
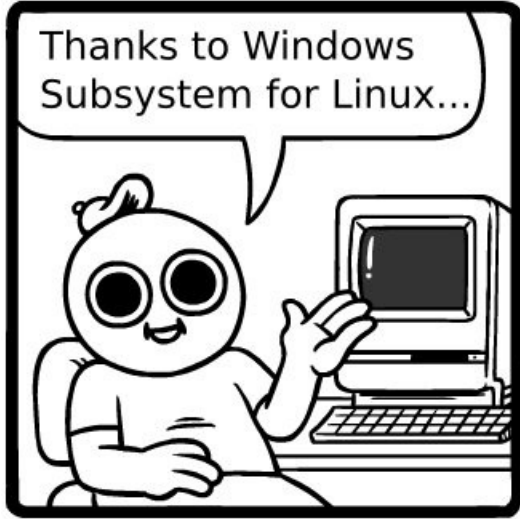
Intro to WSL

KW-LUG Presentation

Epoch 1546905600

jasoneckert.net



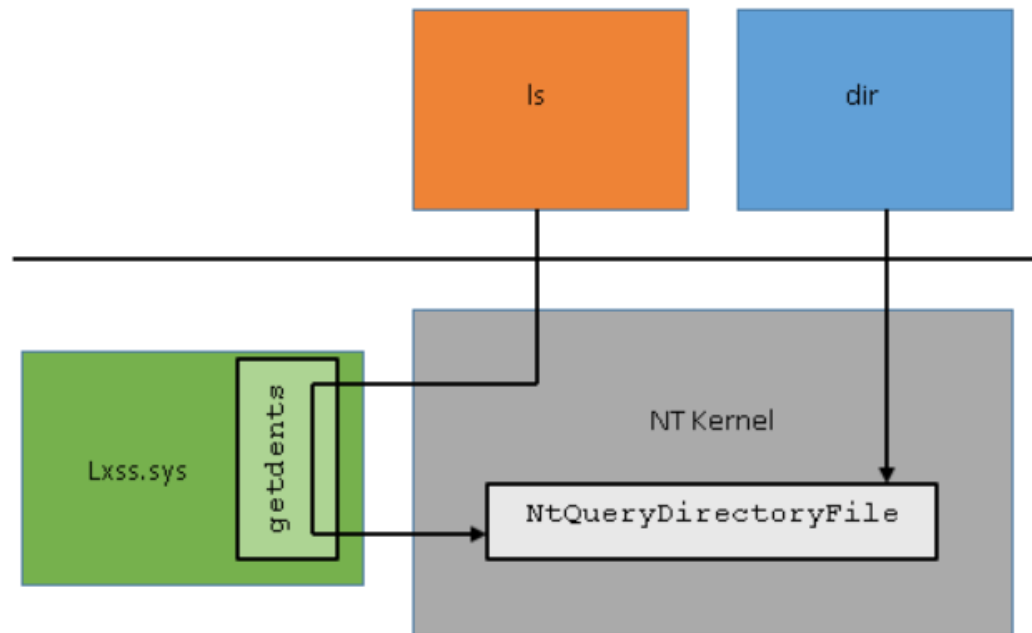


THIS COMIC MADE POSSIBLE THANKS TO DUNCAN LATHLIN

MRLOVENSTEIN.COM

What is WSL?

- It's a kernel interface (**lxcore/lxss**) that allows 64-bit Linux binaries to run on a Win10/2019 kernel:



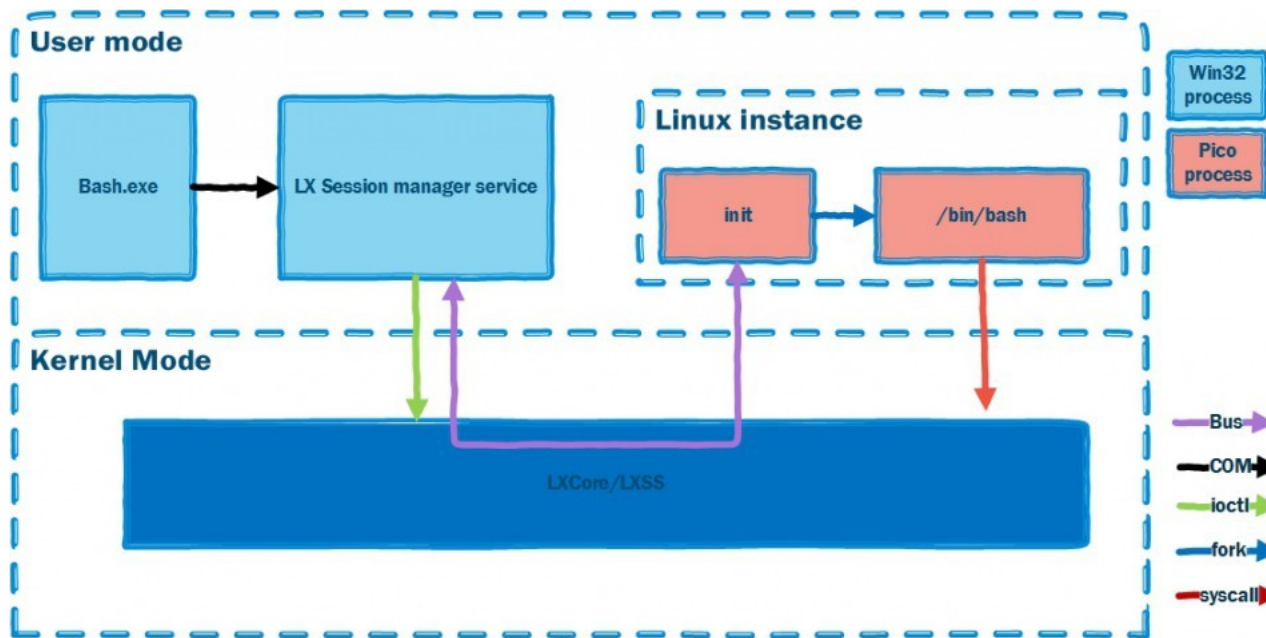
What is WSL?

- **Add a distro userland** (everything else except the Linux kernel), and you can run Linux distros natively on a Windows kernel
- You can start/access the Linux distro via a command (e.g. **kali.exe**)
- You can install **multiple distros**
- Primarily designed to support **developers**
- Microsoft is actively **changing** it all the time

Interested in the architecture?

- <https://blogs.msdn.microsoft.com/wsl/2016/04/22/windows-subsystem-for-linux-overview>

└



How do I install it?

The screenshot shows the Windows Settings application window. The title bar at the top left contains a back arrow and the word "Settings", with a red arrow and the number "1" pointing to it. The left sidebar lists various settings categories: Home, Update & security (with a red arrow and "2" pointing to it), Windows Update (highlighted in blue), Windows Defender, Backup, Troubleshoot, Recovery, Activation, Find My Device, For developers (with a red arrow and "3" pointing to it), and Windows Insider Program. The main content area is titled "Windows Update" and shows the "Update status" section. It indicates that updates are available, specifically a "Feature update to Windows 10, version 1803". A progress bar shows that the system is "Preparing to install updates 82%". Below this, there are links for "Update history", "Update settings", "Change active hours", "Restart options", and "Advanced options". The "Update settings" section explains that updates will be automatically downloaded and installed, except on metered connections. At the bottom of the update status section, there is a link for "Learn more". On the right side of the window, there are links for "Get help", "Give us feedback", and "Make Windows better."

Settings ← 1

Home

Find a setting

Update & security ← 2

Windows Update

Windows Defender

Backup

Troubleshoot

Recovery

Activation

Find My Device

For developers ← 3

Windows Insider Program

Windows Update

Update status

Updates are available.

- Feature update to Windows 10, version 1803

Preparing to install updates 82%

[Update history](#)

Update settings

We'll automatically download and install updates, except on metered connections (where charges may apply). In that case, we'll automatically download only those updates required to keep Windows running smoothly.

[Change active hours](#)

[Restart options](#)

[Advanced options](#)

Looking for info on the latest updates?

[Learn more](#)

Have a question?
[Get help](#)

Make Windows better.
[Give us feedback](#)

← Settings

Home

Find a setting

Update & Security

- Windows Update
- Windows Security
- Backup
- Troubleshoot
- Recovery
- Activation
- Find my device
- For developers**
- Windows Insider Program

For developers

Use developer features

These settings are intended for development use only.

[Learn more](#)

- Microsoft Store apps
Only install apps from the Microsoft Store.
- Sideload apps
Install apps from other sources that you trust, like your workplace.
- Developer mode**
Install any signed and trusted app and use advanced development features.

Developer Mode package installed. Remote tooling for desktop is now enabled.

Enable Device Portal

Turn on remote diagnostics over local area network connections.

Off

Device discovery

Make your device visible to USB connections and your local network.

Off


File Explorer

Apply the following settings for a more developer friendly File

Create your own Windows app
Build a Universal Windows Platform (UWP) app and share it with the world through Microsoft Store.
[Get info about UWP apps](#)

Have a question?
[Get help](#)

Make Windows better
[Give us feedback](#)



Settings

Home

Find a setting

Apps

- Apps & features
- Default apps
- Offline maps
- Apps for websites
- Video playback
- Startup

Apps & features

Installing apps

Choose where you can get apps from. Installing only apps from the Store helps protect your PC and keep it running smoothly.

Allow apps from anywhere

Apps & features








[Manage optional features](#)

[Manage app execution aliases](#)

Search, sort, and filter by drive. If you would like to uninstall or move an app, select it from the list.

Search this list

Sort by: Name Filter by: All drives

	3D Builder Microsoft Corporation	16.0 KB 12/28/2018
	Alarms & Clock Microsoft Corporation	16.0 KB 12/27/2018
	App Installer Microsoft Corporation	16.0 KB 12/28/2018
	Calculator Microsoft Corporation	16.0 KB 12/27/2018
	Camera Microsoft Corporation	16.0 KB 12/27/2018
	Dell SupportAssist	15.2 MB 12/27/2018
	Feedback Hub	16.0 KB

[Change app defaults](#)

To choose the default apps that open your files, links, and more, go to Default app settings.

[Open Default app settings](#)

Related settings


[Programs and Features](#)

Have a question?

[Get help](#)

Make Windows better

[Give us feedback](#)



Control Panel Home

Uninstall or change a program

View installed updates

To uninstall a program

Turn Windows features on or off

Organize

Name

- Dell SupportAssist
- Google Chrome
- Microsoft OneDrive
- NVIDIA 3D Vision Drive
- NVIDIA Graphics Drive
- Synaptics Pointing Device

Windows Features

Turn Windows features on or off

To turn a feature on, select its check box. To turn a feature off, clear its check box. A filled box means that only part of the feature is turned on.

- Telnet Client
- TFTP Client
- Windows Defender Application Guard
- Windows Hypervisor Platform
- Windows Identity Foundation 3.5
- Windows PowerShell 2.0
- Windows Process Activation Service
- Windows Projected File System (Beta)
- Windows Subsystem for Linux
- Windows TIFF IFilter
- Work Folders Client

OK Cancel

On	Size	Version
018	15.2 MB	3.0.2.48
018	428 MB	71.0.3578.98
018	112 MB	18.222.1104.0007
018		391.25
018		391.25
018	46.4 MB	19.2.17.55



Currently installed programs Total size: 602 MB
6 programs installed

Results for: linux


Departments: All departments

Available on: PC

C:\> Linux on Windows? Totally.

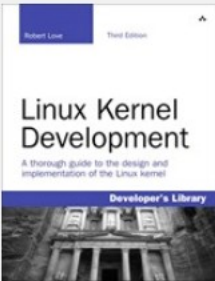
Install and run Linux distributions side-by-side on the Windows Subsystem for Linux (WSL).

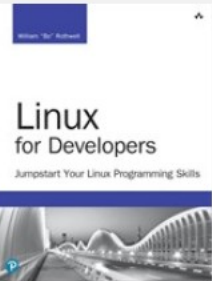
[Get the apps](#)

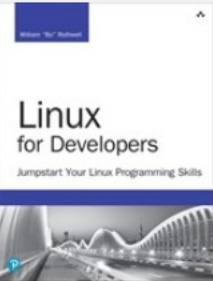



Books (192) [Show all](#)

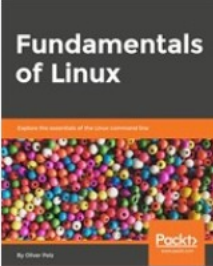
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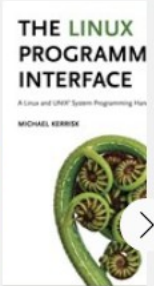
Linux Phrasebook
Linux Phrasebook_2
- 

Linux Kernel Development
- 

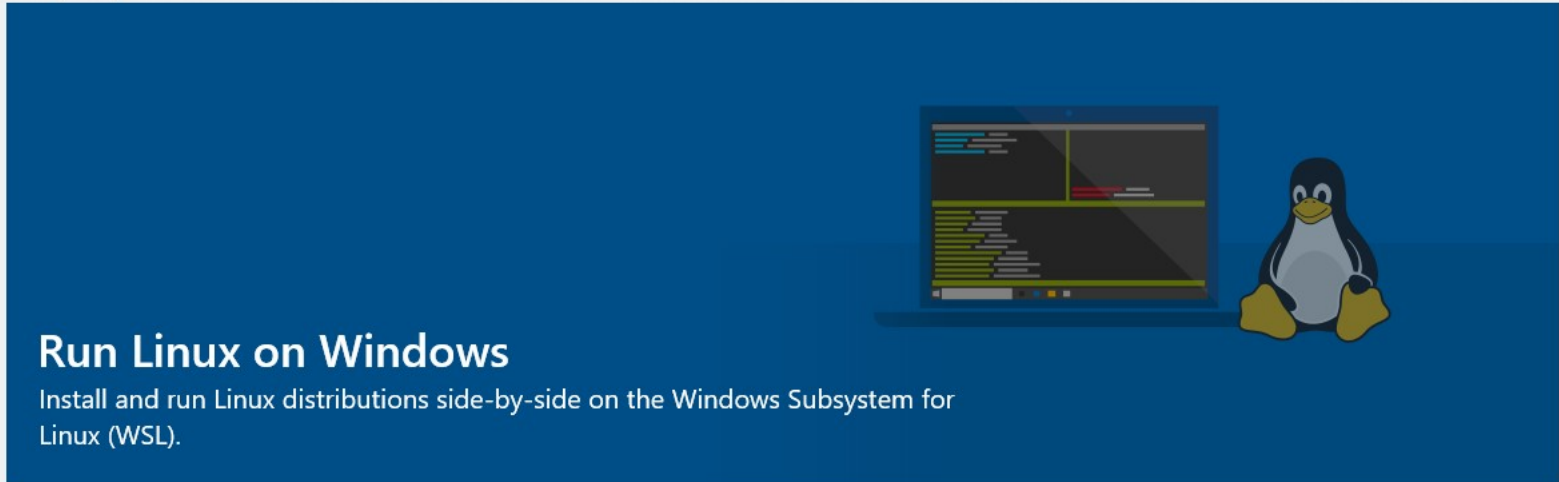
Linux for Developers
Jumpstart Your Linux Pr...
- 

Linux for Developers
Jumpstart Your Linux Pr...
- 

Essential Linux Device Drivers
- 

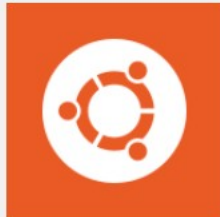
Fundamentals of Linux
- 

The Linux Programming Interface



Run Linux on Windows
Install and run Linux distributions side-by-side on the Windows Subsystem for Linux (WSL).

The banner features a dark blue background. On the right side, there is an illustration of a laptop displaying a terminal window with code, and a Tux penguin mascot sitting next to it.



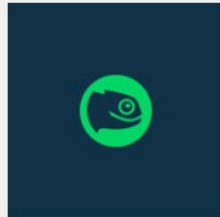
Ubuntu
★★★★★ 197

Free



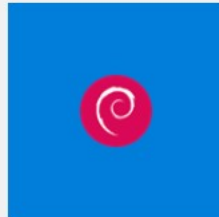
openSUSE Leap 42
★★★★★ 58

Free



SUSE Linux Enterprise Server 12
★★★★★ 19

Free



Debian GNU/Linux
★★★★★ 69

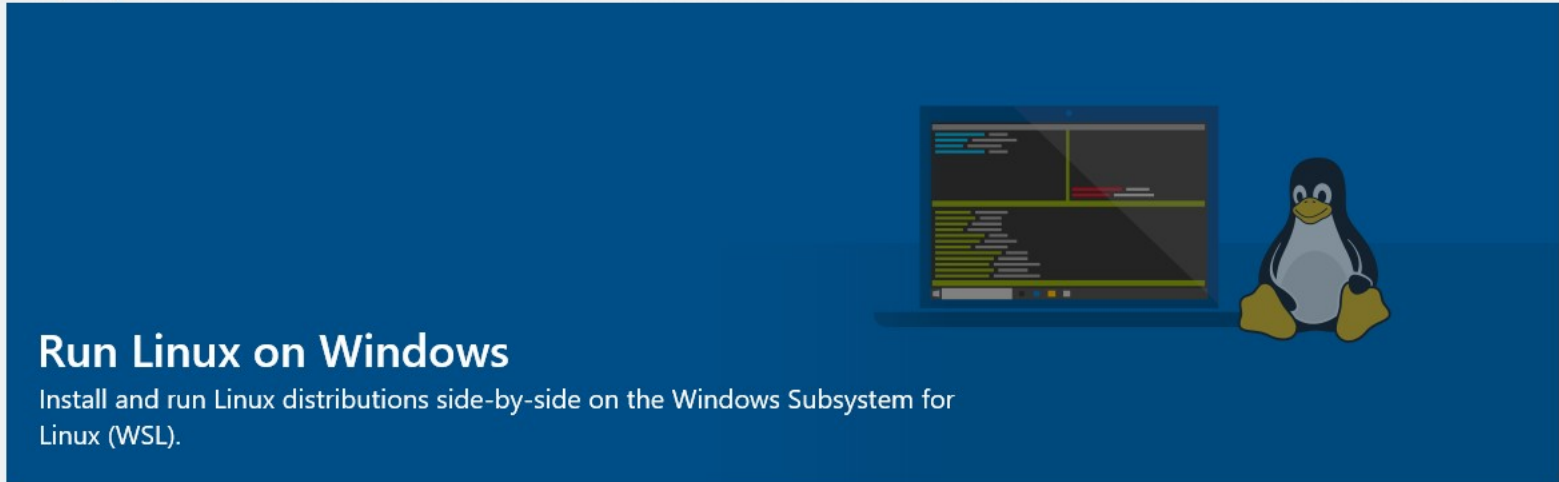
Free



Kali Linux
★★★★★ 162

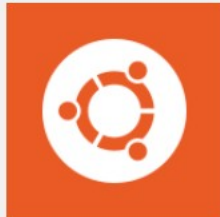
Free





Run Linux on Windows
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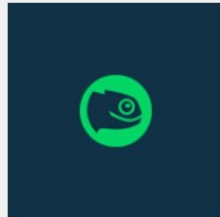
Ubuntu
★★★★★ 197

Free



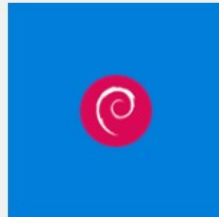
openSUSE Leap 42
★★★★★ 58

Free



SUSE Linux Enterprise Server 12
★★★★★ 19

Free



Debian GNU/Linux
★★★★★ 69

Free



Kali Linux
★★★★★ 162

Free

Kali Linux

Kali Linux · Security > PC Protection

★★★★★ 162 [Share](#)

The Kali for Windows application allows one to install and run the Kali Linux open-source penetration testing distribution natively, from the Windows 10 OS. To launch the Kali shell, type "kali" on the command

[More](#)



EVERYONE

Free

Get

Add to cart

[♥ Wish list](#)

[Overview](#)

[System Requirements](#)

[Reviews](#)

[Related](#)

Available on

 PC

Description

The Kali for Windows application allows one to install and run the Kali Linux open-source penetration testing distribution natively, from the Windows 10 OS. To launch the Kali shell, type "kali" on the command prompt, or click on the Kali tile in the Start Menu.

The base image does not contain any tools, or a graphical interface in order to keep the image small, however these can be installed via apt commands very easily. For more information about what you can do with this app, check <https://www.kali.org/kali-on-windows-app>.

Note: Some tools may trigger Antivirus warnings when installed, please plan ahead accordingly. Make sure to visit our Kali on WSL tutorial page at <https://www.kali.org/news/kali-linux-in-the-windows-app-store>

Finish the install

- Click icon on Start, or

ubuntu.exe

opensuse-42.exe

sles-12.exe

debian.exe

kali.exe

```
🖱️ jason@alienware-ARFA: ~
```

```
Installing, this may take a few minutes...
```

```
Please create a default UNIX user account. The username does not need to match your Windows username.  
For more information visit: https://aka.ms/wslusers
```

```
Enter new UNIX username: jason
```

```
Enter new UNIX password:
```

```
Retype new UNIX password:
```

```
passwd: password updated successfully
```

```
Installation successful!
```

```
jason@alienware-ARFA:~$ █
```

What do I do now?

- After installation

```
sudo passwd root
```

```
su -
```

```
apt-get update
```

```
wget https://kali.sh/xfce4.sh && sh xfce.sh  
/etc/init.d/xrdp start (connect to localhost:3390)
```

```
apt install metasploit-framework
```

```
apt install ssh
```

```
apt install xbill
```

```
apt install apache2 (or whole LAMP stack)
```

```
apachectl start (connect to localhost:80)
```

```
ls /mnt/c
```


What do I do now?

- Paths (add exception in AV for first path):

```
C:\Users\name\AppData\Local\Packages\KaliLinux.*\
```

```
C:\Users\name\AppData\Local\Packages\KaliLinux.*\Local  
State\rootfs
```

This is VolFs

Copying to it from Windows is flakey

Accessing Windows from VolFs is not flakey

(use symlinks to access Windows dev content via /mnt/c)

```
C:\Users\name\AppData\Local\Microsoft\WindowsApps\Kali  
Linux.*\kali.exe
```

Final thoughts

- Designed for developers who don't want to mess with VMs
- Many, many limitations (nmap?, wireshark?)
- Not bad for an admin station (ssh, python, etc.)
- Can be used to obtain ssh access to Windows via sshd (openssh-server)
- Can be used to look cool (look ma, no VMs!)