

# So Why Haven't You Switched Over To Linux Full Time Yet???

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Good <morning, afternoon>

We all know that Linux is faster, cheaper, and runs on more hardware than Windows. You wouldn't be here today at today at SELF if you didn't have an interest in Linux. So, why do you still use Windows? It's a common problem; there are one or more Windows applications that you need to use that don't also run on Linux. Maybe it's a corporate application, or maybe it's a financial application. In my case, it was TurboTax. My talk today is on how to handle that situation where you have one or a couple of Windows application that have no Linux equivalent, and this is why you have remained with Windows.

## The Presenter

- Who is Brad Whitehead?
- Chief Scientist for Formularity, an Electronic Forms company
- Formerly, he was a Partner and Master Technology Architect with Accenture
- Has been using Linux since 1994 (Slackware) now Pop!OS 22.04
- Brad holds a BS from Carnegie Mellon University and an MS from the University of Liverpool
- He can be reached at [brad.whitehead@formularity.com](mailto:brad.whitehead@formularity.com).
- Slides, software, and instructions are available from Formularity's GitHub page:
  - <https://github.com/Formularity/SELF2026>

My name is Brad Whitehead. I'm the Chief Scientist at Formularity, an Electronic Forms company.

I've been using Unix since 1985 and Linux since 1994. I started on Slackware back when it came on 24 floppy disks (remember what a floppy disk was?). My present distro of choice is System 76's Pop!OS.

All the slides, software, and instructions in today's talk are available from one of Formularity's GitHub repositories:

<https://github.com/Formularity/SELF2026>

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## ...That One Application...

- You would like to leave Window\$ and use Linux as your OS
- ...But... There is that one application (maybe a couple) that only runs under Windows
  - Perhaps it's a game,
  - A corporate application,
  - A design application, or
  - In my case, TurboTax 2025

There's that one or two Windows applications...

## So, What Are The Options?

- Dual Boot Windows and Linux
- Use WINE/Valve's Proton/CodeWeaver's Crossover
- Windows Subsystem for Linux (WSL 2.0)
- Windows Virtual Machine

So, if you want to make Linux your default operating system, what are the choices?

1. Dual booting both Windows and Linux
2. Use an application like WINE, Proton, or Crossover
3. Windows Subsystem for Linux
4. Use a Windows virtual machine

Let's look at the pros and cons of each approach

## Dual Boot

- You create multiple partitions on your storage and set SecureBoot or Master Boot Record (MBR) to boot either Linux or Windows
- Pros:
  - Windows application is sure to run
- Cons:
  - Time-consuming reboot required to switch OSs
  - Windows' bootloader doesn't play well with other OSs
  - Very difficult to share storage and files
  - Potentially lots of wasted storage

You create two partitions on your hard drive and install Windows in one and Linux in the other.

Well, your Windows application is ensured to run when you boot up Windows, since you are in a Windows-only environment

But there are a number of cons:

Switching from Linux to Windows takes time and is a complete change in workflow

There really is no integration

Windows' bootloader doesn't play well with other operating systems

## WINE/Proton/CrossOver

- Linux-based emulation programs that run some Windows programs natively on Linux
- Pros:
  - No reboots required
  - Works very well for gaming (Steam)
- Cons:
  - Only works for a limited number of Windows applications
  - CrossOver is not open source
  - Potential speed issues
  - "Microsoft isn't done till WINE won't run"

There are several projects aimed at running Windows programs natively in Linux. The oldest and probably best known of these projects is WINE. WINE is a acronym for "WINE is not an Emulator." It is a "compatibility layer" that sits between the Windows program and, in our case, the Linux operating system. WINE is open source. WINE works very well for running Windows games on Linux. A company called Codeweavers releases a proprietary version of WINE called CrossOver. CrossOver is slightly more compatible with Windows applications than WINE. The game company Valve uses a version of Crossover called

Top-10 Platinum List	
Applications which install and run flawlessly on an out-of-the-box Wine installation	
Application	Description
StarCraft 1.16.1 (Brood War)	In the distant future a small group of human exiles have been doomed to fight for survival on the edge of the galaxy. Through military strength, espionage and deceit, a unified Terran government has maintained an uneasy peace. As resources run short, however, these Confederate nations find themselves looking towards the rich worlds of their alien neighbours, the enigmatic Protoss. To further complicate matters, it seems that a previously unknown and deadly species known only as the Zerg has entered Protoss space and is destroying everything in its path. The time for war has come....
Guild Wars All Versions	Guild Wars is an episodic series of multiplayer online role-playing games created by ArenaNet, a Seattle game development studio and a subsidiary of the South Korean game publisher NCsoft.
Adobe Animate Flash CS6 (12.0)	Adobe Animate (formerly Adobe Flash Professional, Macromedia Flash, and FutureSplash Animator) is a multimedia authoring and computer animation program developed by Adobe Systems.
Gothic 3 1.x	While the previous games centered around the Valley of Mines and
Battlefield 2 1.x	In Battlefield 2, players will choose to fight for one of three military superpowers: the United States, the Chinese, or the newly formed Middle East Coalition. Armed with the latest modern weaponry, players can take control of any of the game's 30+ vehicles to engage in major conflicts with over 64 players in some of the largest online battles on the PC. Additionally, persistent character growth allows players to rise through the ranks and attain the ultimate rank of General.
.NET Framework 3.5	The Microsoft .NET Framework is a development and execution environment that allows different programming languages and libraries to work together seamlessly to create Windows-based applications that are easier to build, manage, deploy, and integrate with other networked systems.

WINE lists five levels of compatibility: platinum, gold, silver, bronze, and garbage. Here is the latest list of new platinum applications. As you can see, four of the six are games. Number 3 is Adobe FLASH, a deprecated application, and number 6 is a version of the .NET framework that came out in 2008. The latest .NET framework is version 8. Like I said, if your interest is Windows gaming on Linux, the WINE-type applications are the way to go.

Version	Description	Latest Rating	Latest Wine version tested	Test results	Comments
'95	This entry is just for testing the installer of Microsoft Office 95.	Gold	3.12	4	0
'97	This entry is just for testing the installer of Microsoft Office 97.	Gold	11.0	21	2
2000	This entry is just for testing the installer of Microsoft Office 2000 office suite.	Silver	3.12	32	0
2002 (XP)	This entry is just for testing the installer of Microsoft Office 2002 (XP) office suite.	Platinum	10.0	34	0
2003	This entry is just for testing the installer of Microsoft Office 2003 office suite.	Platinum	3.12	54	1
2007	This entry is just for testing the installer of Microsoft Office 2007 (aka Office 12) office suite.	Platinum	10.0-rc6	98	7
2010 (32 bit)	Retail release June 15, 2010	Gold	10.2-staging	98	7
2010 (64 bit)	64 bit version of Microsoft Office 2010 installer.	Garbage	9.12	17	0
2013 (32 bit)	Retail release January 29, 2013	Silver	7.21	43	13
2013 (64 bit)		Gold	7.15	10	4
2016 (32 bit)	Retail release 22 September 2015	Silver	9.3	16	11
2016 (64 bit)		Bronze	6.0.1	14	2
2019 (HUP)	Web-installer for Office 2019 Pro Plus (Home Use Program)	Silver	6.2	5	10
2021 Pro Plus	Download Microsoft Office 2021 versions Pro Plus - This is	Garbage	9.0	3	2
365 Business	Office 365 Business includes:	Garbage	11.0	8	0
365 Personal (32 bit)	The premium Office apps and cloud services for PC/Mac, tablet and phone. An annual subscription with exclusive, new features every month and 1 TB of OneDrive cloud storage.	Silver	3.0.1	1	0
365 ProPlus (7016)	Office 365 ProPlus ( 2016 )	Garbage	7.2	15	56

Because of their ubiquity, office suites are often used as a measure of cross-platform compatibility. Here are the WINE compatibility levels for several different versions of Microsoft Office. None are Platinum. The best is Office 2013 at Gold. So there are probably some visual problems with Office, but it works. Unfortunately Office 365 Business and ProPlus are “Garbage”. So, for some of us, WINE-type compatibility is not the answer.

## Windows Subsystem for Linux (WSL 2.0)

- Run Windows and be able to use Linux applications
- From the user's point-of-view, you are running Windows and can run one or more Linux applications. This is kind of the reverse of what we want; running Linux and being able to run one or more Windows applications
- Pros:
  - Windows application are sure to run
  - Shared storage and files
    - Run Windows applications on Linux files, and vice-versa
- Cons:
  - Limited number of Linux distros
  - Very difficult to install and run GUI applications

Microsoft has introduced “Windows Subsystem for Linux” (WSL 2.0). This is sort of the reverse of what we as Linux users want. WSL lets Windows users run Linux within Windows. Additionally, it has a number of drawbacks, including only a limited number of distros that can be run in WSL. WSL works fine with commandline Linux. WSL 2.0 can run GUI programs but installation is very difficult and again the GUI programs are limited. In my opinion, WSL is a stop-gap measure on Microsoft’s part to keep people from investigating and migrating to Linux. Using Linux under WSL, you would never know that Linux is an easy to use competitor

## Windows Virtual Machine

- Run both Windows and Linux at the same time
- From the user's point-of-view, Windows runs as a window on the Linux desktop
- Pros:
  - Windows application is sure to run
  - Shared storage and files
    - Run Linux applications on Windows files, and vice-versa
- Cons:
  - Takes some CPU and memory from Linux
  - Difficult to use GPU
  - Default is the entire Windows desktop in one Linux window

Linux has the native ability to run Windows, or any other operating system inside a box called a virtual machine. With a virtual machine, both Linux and Windows are both running at the same time. A Windows application is sure to run because it's a real copy of Windows running in the virtual machine. In my opinion, this is the best way to run legacy Windows application in Linux. It takes a bit of CPU and memory away from Linux, and GPU pass-thru is difficult, but for the most part, this doesn't affect the Linux and Windows applications. It does have one minor drawback. Used the most common means of running a virtual machine the

### ...Default is the entire Windows desktop in one Linux window

- Inconvenient to work with multiple Windows windows inside of one Linux window
- Continues to perpetrate “Windows side” and “Linux side” concept
- We can do better...
  - Integrate Windows application icons directly onto the Linux desktop (or Applications Center)
  - Windows windows as native Linux windows

Instead of running all of Windows in a single Linux window, we can run individual Windows applications in their own dedicated windows, and we can put Windows icons on our Linux desktop, fully integrating Windows applications side-by-side with our Linux applications. Additionally, Windows applications can operate on Linux files and Linux applications can run on Windows files.

## The Technology...

- Using Microsoft Technology (but not Microsoft software!)
  - Microsoft Remote Desktop Protocol (RDP)
  - Microsoft Terminal Server
  - “Remote Applications Integrated Locally” (RAIL)
- Using Linux Technology
  - Kernel Virtual Machine (KVM) and QEMU
  - LibVirt and Virtual Machine Manager (VMM)
  - XfreeRDP in “seamless” or “rootless” mode
  - RDPWrapper

First, we use Linux’s built-in virtual machine capability, Kernel Virtual Machine (KVM) and Quick Emulator (QEMU) to create a virtual machine.

Next, we use Libvirt and Virtual Machine Manager (VMM) to manage the virtual machine and to install Windows 11 Pro into the virtual machine.

Next step, we use Microsoft’s own technology, but not their software.

First, we connect to our new Windows virtual machine using Microsoft’s “Remote Desktop Protocol (RDP)” and the open source XfreeRDP Linux client.

## Demo Time...

- One Ancient Non-Windows 11-compliant laptop
  - Fresh copy of Ubuntu 24.04 Desktop
  - Install KVM, QEMU, and Virtual Machine Manager
  - Install XfreeRDP
  - Install MenuLibre
- Install Windows 11 Pro
  - Install RemoteApps Tool
  - Install RDPWrapper
- Configure XfreeRDP and MenuLibre
- Enjoy!

Enough slides. Now for a demonstration

We are going to use an ancient laptop that definitely is not Windows 11-compliant. It has a fresh copy of Ubuntu 24.04 installed.

We are going to install KVM, QEMU, and Virtual Machine Manager in order to create a Windows virtual machine.

We are going to install XfreeRDP as our Linux RDP application and MenuLibre, an open source desktop menu editor.

Then we are going to install the latest version of Windows 11 Pro into our virtual machine.

Into Windows, we are going to install RemoteApps, an open source Windows

## Resources...

- Links to all software is on Formularity's GitHub page:
  - <https://github.com/Formularity/SELF2026>
  - Step-by-step instructions are also on the page
  - A PDF of this slide deck is included
- Go forth and kick Microsoft to the curb while enjoying the few apps that (for now) don't run on Linux :-)

