

{\* VIRTUALIZATION \*}

# Microsoft submits Linux kernel patches for a 'complete virtualization stack' with Linux and Hyper-V

## Linux on Azure might no longer need Windows

Tue 15 Sep 2020 // 12:43 UTC

34  GOT TIPS?

Tim Anderson [BIO](#) [EMAIL](#) [TWITTER](#)

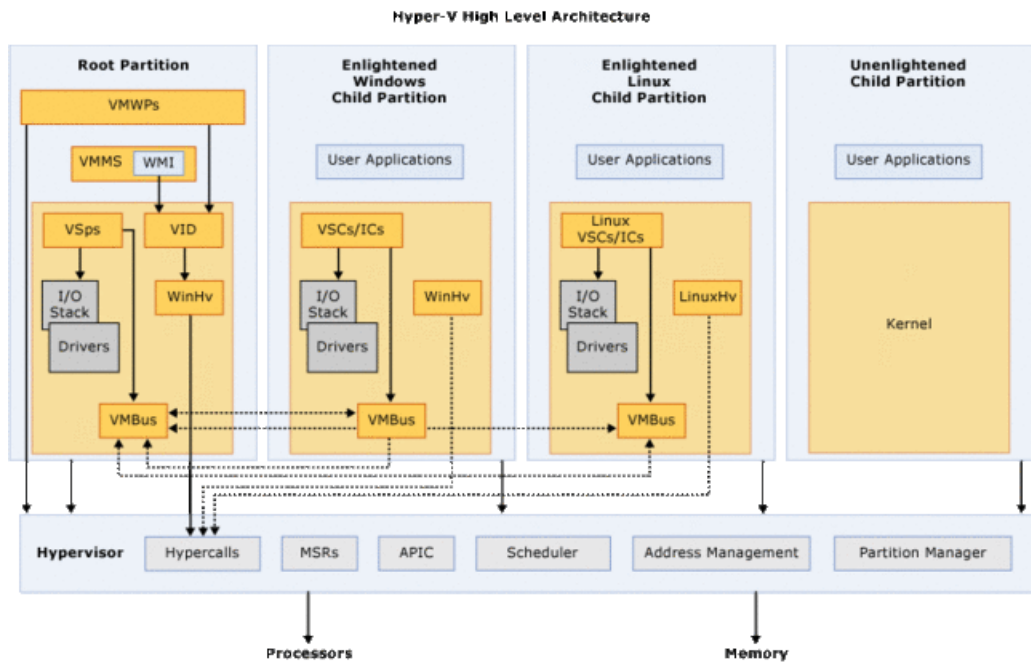
 SHARE

Microsoft has submitted a series of patches to the Linux kernel with its aim being "to create a complete virtualization stack with Linux and Microsoft Hypervisor."

The [patches](#) are designated "RFC" (Request for comments) and are a minimal implementation presented for discussion.

The key change is that with the patched kernel, Linux will run as the Hyper-V root partition. In the [Hyper-V architecture](#), the root partition has direct access to hardware and creates child partitions for the VMs it hosts. "Just think of it like Xen's [Dom0](#)," said Microsoft principal software engineer Wei Liu.

Hyper-V's architecture is more similar to Xen than it is to KVM or to VMware's ESXi, and Liu acknowledged that "we drew inspiration from the Xen code in Linux," specifically for code handling interrupts. Until now, the Hyper-V root partition had to run Windows.



In the Hyper-V architecture, the root partition has direct access to the hardware and creates child partitions for the VMs. It runs on top of the privileged ring -1 Microsoft Hypervisor

Microsoft has also ported Intel's open-source [Cloud Hypervisor](#), a Virtual Machine Monitor (VMM) written in Rust that normally runs on KVM, the hypervisor that is built into the Linux kernel. Cloud Hypervisor itself is currently in "very early pre-alpha stage".

Even when Linux is the root partition, it will still run on top of Microsoft's hypervisor, a thin layer running with ring -1 privileges. It will no longer be necessary to run Windows on that hypervisor, though, enabling Microsoft to call the new arrangement "a complete virtualization stack with Linux".



**DirectX comes to Linux (via WSL2): Microsoft unveils tricks needed to flash a GPU at a penguin**

[READ MORE](#)

With these changes, Microsoft likely has its Azure cloud infrastructure in mind. Azure runs more Linux than Windows, as acknowledged back in July 2019 by Microsoft engineer Sasha Levin who [said](#): "The Linux usage on our cloud has surpassed Windows." The proportion of Linux workloads looks set to increase with the trend towards Kubernetes, which is primarily a Linux technology. Linux already runs well on Hyper-V with a Windows root

Microsoft submits Linux kernel patches for a 'complete virtualization stack' with Linux and Hyper-V • The Register  
partition, but making this a complete Linux stack may improve performance.

Microsoft is also busy improving Linux support in Windows 10, thanks to the Windows Subsystem for Linux (WSL 2), and now ships a Linux kernel with Windows. GUI support has been promised. WSL 2 also uses Hyper-V, and Windows 10 is on a path to becoming a hybrid Windows/Linux system, though as of now this is mainly of interest to developers.

Microsoft's [Ignite](#) virtual shindig is next week and we can expect the company to say more about its Linux plans then. ®

**Sponsored:** [MCubed - AI, ML and Analytics. Live & Online. Book Now!](#)

[Corrections](#)

[34 Comments](#)

 **Sign up to our Newsletter** - Get IT in your inbox daily

**MORE** [Microsoft](#) [Linux](#)

 **SHARE**

## // KEEP READING

### **Here's a headline we never thought we'd write 20 years ago: Microsoft readies antivirus for Linux, Android**

Redmond knows a thing or two about tackling malware – amirite, Windows fans?!

### **Microsoft unshackles WSL2 Linux kernel from Windows 10 image for future fettling via Windows Update**

Chipping away at that OS image one component at a time

### **DirectX comes to Linux (via WSL2): Microsoft unveils tricks needed to flash a GPU at a penguin**

[BUILD](#) Driver code open-sourced

## Long after Linux, Windows Server Containers finally arrive on Microsoft's Azure Kubernetes Service

Generally available, but will never reach parity with Linux on Kubernetes

## Microsoft frees Windows Subsystem for Linux 2 from the shackles of, er, Windows?

Windows Update for the Linux kernel? No wonder Gates stepped down

## Microsoft brings K8s Security Center out of preview, replaces CoreOS Container Linux with Flatcar

Azure security dashboard now covers Kubernetes service - at a price

### // TECH RESOURCES

---



#### Simplifying Hybrid Cloud Flash Storage

According to industry analysts, a critical element for secure hybrid multicloud environments is the storage infrastructure.



#### Navigating the New Era of Cloud Computing

Hear from Steve Sibley, VP of Offering Management for IBM Power Systems about how IBM Power Systems can enable hybrid cloud environments that support “build once, deploy anywhere” options.



#### Accelerate Your Journey to the Cloud

Increasingly, enterprises are looking to the cloud to run their core mission-critical systems and the cloud is often the primary platform for launching new applications.



#### Northwestern cuts data storage costs in half with Komprise

Northwestern's research data holdings extend to petabytes of unstructured data. Read how Komprise solved the university's growing challenges of storage capacity and ...

---

ABOUT US



---

MORE CONTENT



**SITUATION PUBLISHING**SITUATION  
PUBLISHING

**The Register** - Independent news and views for the  
tech community. Part of Situation Publishing

**SIGN UP TO OUR DAILY NEWSLETTER**

This site is protected by reCAPTCHA and the Google [Privacy Policy](#) and [Terms of Service](#) apply.

**SUBSCRIBE**

Biting the hand that feeds IT © 1998–2020

[Do not sell my personal information](#)[Cookies](#)[Privacy](#)[Ts&Cs](#)