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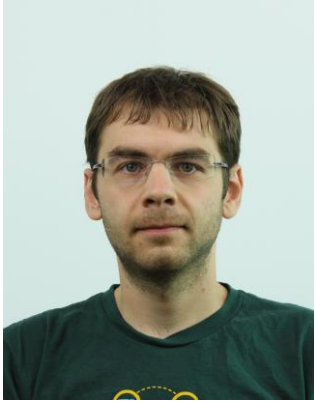
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# What's New With SIG-Windows:

**HostProcess Containers  
and  
Developer Environments**

# Speaker Introductions



**Mark Rossetti**

- Software Engineer at Microsoft
- SIG-Windows Co-Chair
- Member of the Azure Container Upstream team
- @marosset on GitHub
- @Mark Rossetti on K8s slack



**Danny Canter**

- Software engineer at Microsoft
- Member of the Container Platform team in Hyper-V
- @dcantah on Github
- @Danny Canter on K8s Slack



**jayunit100**

- Hangs out with MARK and James
- Lead for windows on k8s at vmware/SIG-Windows lead
- Hopes Kube proxy for windows will get moved out of tree some day
- @jayunit100 on twitter
- @jayunit100 on github



**Brandon Smith**

- PM, Microsoft
- GH & Slack: @brasmith-ms
- Windows Container Platform



**Friedrich Wilken**

- Software Engineer at SAP Hybris
- @FriedrichWilken on GitHub
- @Friedrich on K8s Slack

# Agenda

- What's new in SIG-Windows
- Windows Server 2022
- Windows Developer Environment
- HostProcess (Privileged) Containers update



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# What's New in SIG-Windows

# What's New in SIG-Windows



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- CSI plugin support for Windows
  - GA in v1.22
  - <https://github.com/kubernetes/enhancements/issues/1122>
- HostProcess container support
  - Alpha in v1.22
  - Pursuing Beta in v1.23
  - <https://github.com/kubernetes/enhancements/issues/1981>
- Identify Windows Pods at API admission
  - Pursuing Alpha in v1.23
  - Adds a new 'OS' field to the PodSpec!
  - <https://github.com/kubernetes/enhancements/issues/2802>
- View node logs with `kubectl logs`
  - Pursuing Alpha in v1.23
  - <https://github.com/kubernetes/enhancements/issues/2258>



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# Windows Server 2022

# Windows Server 2022

- Brings many features such as multi-subnet and IPv6/dualstack support for container networking, gMSA for Active Directory, and virtualized time zone support to an LTSC release
- Container images
  - 1Gb size reduction of servercore images
  - Base Images
    - [windows/nanoserver](#): **Nano Server** base OS image
    - [windows/servercore](#): Windows **Server Core** base OS image
    - [windows/server](#): Windows **Server** base OS image; *new* for this release.
  - Image Tags
    - Featured tag: “**ltsc2022**” - Latest
    - Featured tag + KB: “**ltsc2022-KBxxxxxxx**”, e.g. “ltsc022-KB5005039”.
    - Build number: “**10.0.20348.XX**”, e.g., 10.0.20348.169
- Improved compatibility between host and container images with process isolation
  - Any future Windows 11 OS will run WS2022 containers (previously this was only possible through Hyper-V isolated containers)
- No more SAC releases

# Windows Server 2022

## More info:

- [What's new for Windows Containers on Windows Server 2022](#)
- [Windows Server 2022 now generally available—delivers innovation in security, hybrid, and containers](#)
- [Windows Server 2022 and beyond for containers](#)
- [Windows Server 2022 Now Generally Available](#)





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# Windows Developer Environment

# Windows Developer Environments

Ability to **run and develop on Kubernetes on Windows** in a completely ephemeral, cloud-agnostic environments on your laptop using Vagrant and **VirtualBox**/VMWare Fusion/ProxMox/Hyper-V

```
# 286709... v1.21.2-rc.0 has the kube-proxy userspace fix...
kubernetes_sha: "286709307da5adb62e78d989b7ed846355d5c88e"
# this is the compatbility version, determining args we send
kubernetes_compatibility: "1.21.2"
overwrite_windows_bins: "false"

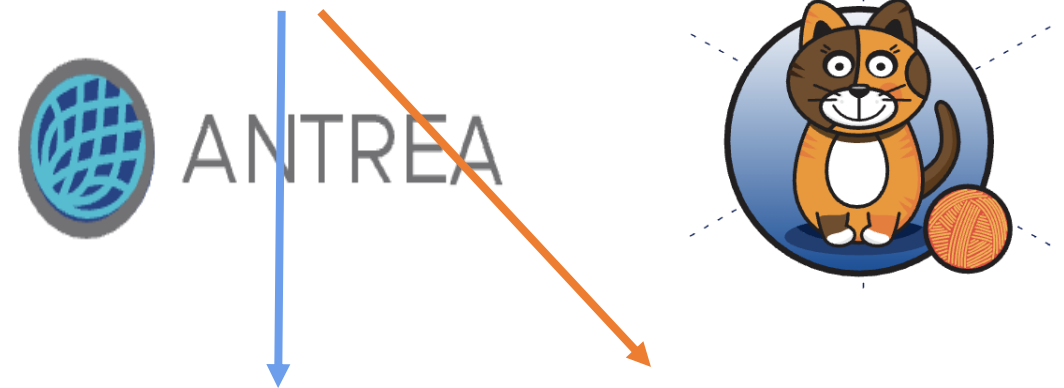
kubelet_path: "./sync/windows/bin/kubelet.exe"
kubeproxy_path: "./sync/windows/bin/kube-proxy.exe"
windows_node_ip: "10.20.30.11"

k8s_linux_registry: "gcr.io/k8s-staging-ci-images"
k8s_linux_kubelet_deb: "1.21.0"
k8s_linux_apiserver: "ci/v1.22.0-alpha.3.31+a3abd06ad53b2f"
k8s_linux_kubelet_nodeip: "10.20.30.10"
```

Highly customizable for all emerging aspects of Kubernetes Windows development/testing/exploration

- kubelet.exe
- kube-proxy.exe (userspace+antrea + OVS )
- kube-proxy.exe (kernel space+calico + VXLAN)
- containerd.exe + hcsshim
- HostProcess Windows containers
- Normal Windows containers

```
##### CHOOSE YOUR CNI $$$$$$$$$$$$$$$$
# cni: "calico"
cni: "antrea"
~
```



Status	Name	DisplayName
Running	antrea-agent	antrea-agent

Status	Name	DisplayName
Running	ovsdb-server	ovsdb-server
Running	ovs-vswitchd	ovs-vswitchd

```
PS C:\Users\vagrant> Get-Service *cali*

Status Name                DisplayName
-----
Running CalicoFelix           Calico Windows Agent
Running CalicoNode          Calico Windows Startup
```

```
PS C:\Users\vagrant> Get-Service *kube*

Status Name                DisplayName
-----
Running kubelet          kubelet
```

# Windows Developer Environments

## Goal: Giving a standardized environment for end to end Kubernetes-on-Windows Engineering

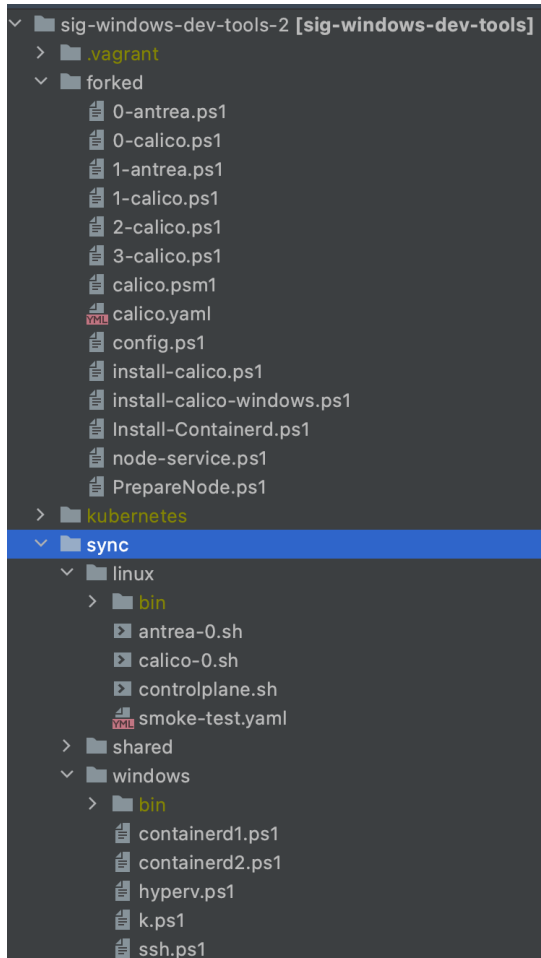
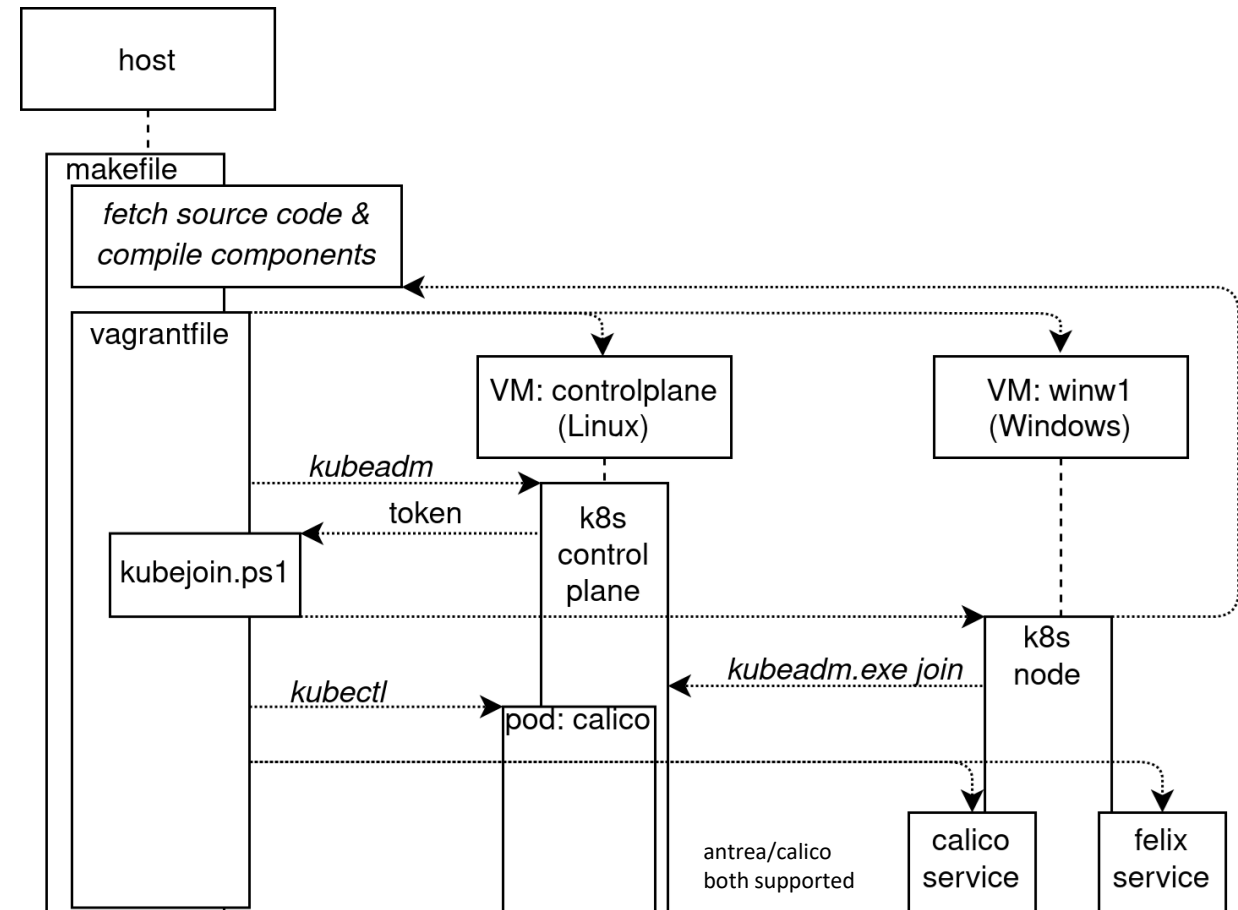
<https://storage.googleapis.com/kubernetes-release-dev/ci/latest.txt>

```
kubernetes_sha: "286709307da5adb62e78d989b7ed846355d5c88e"  
overwrite_windows_bins: "true"
```

**Anyone can test modifications** to  
kubernetes windows components  
with the new developer environments!

The makefile will **compile windows kubelet and kube-proxy from any branch**, so that it can run from source, and automatically mount it into the Windows VM.

**CNI installation scripts** for either antrea or calico services run after kubeadm join is completed.



# Windows Developer Environments

<https://github.com/kubernetes-sigs/sig-windows-dev-tools>



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# HostProcess Containers

# HostProcess (Privileged) Containers

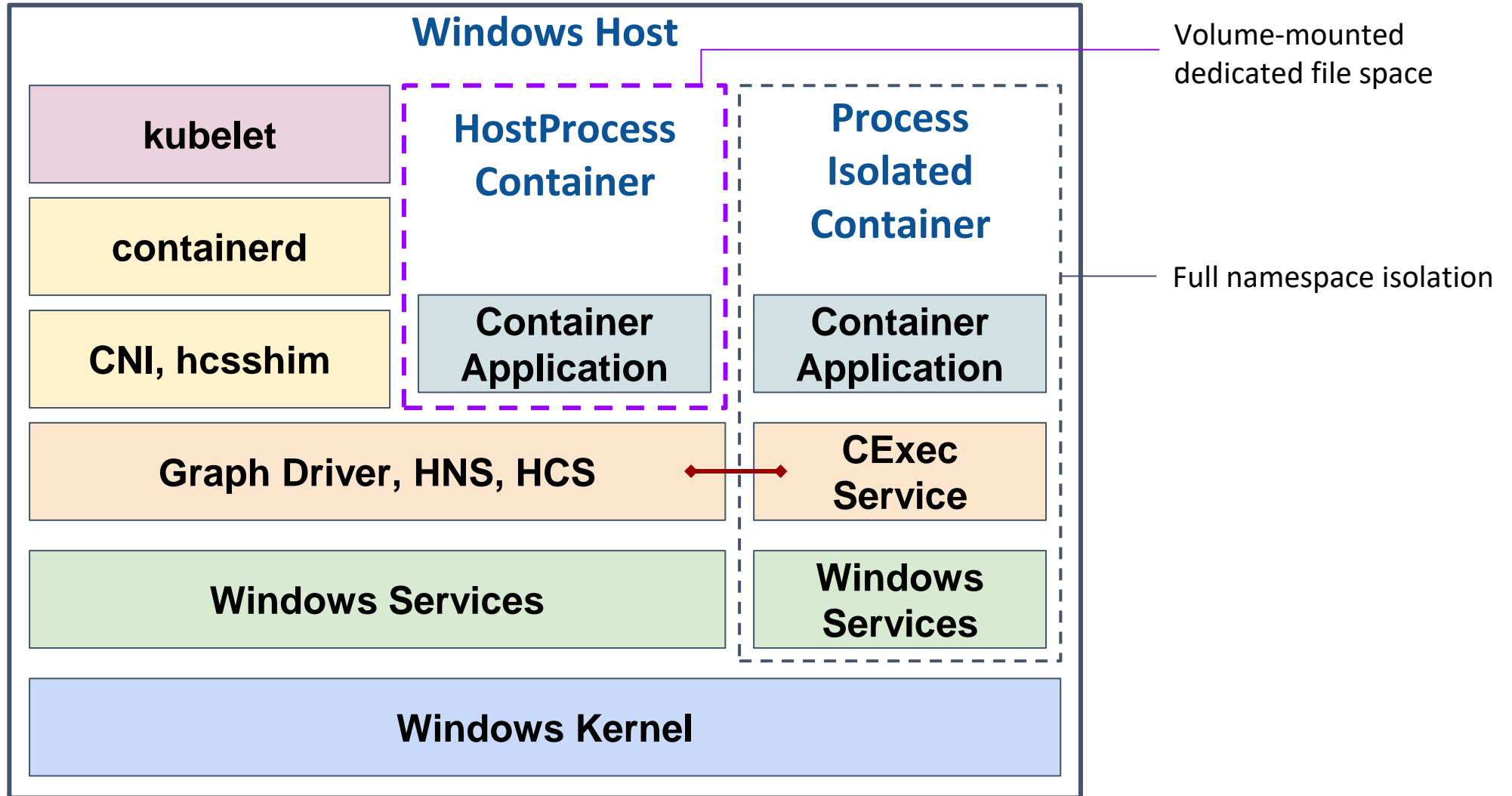


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# HostProcess (Privileged) Containers

## What they are:

- A method for the packaging and distribution of management operations which require access to the host
- Windows job objects, which run directly on the host
- Capable of accessing the host filesystem and installing drivers + system services
- A utility to reduce the privileges demanded by other Windows nodes

## What they're not:

- Process and file system isolated
- Synonymous with Linux privileged containers
- Supported on the docker runtime (containerd only)
- A replacement for Windows server containers

# HostProcess (Privileged) Containers



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Demo:





# HostProcess (Privileged) Containers

- Blog: [Alpha in v1.22: Windows HostProcess Containers](#)
- Documentation: [Create a Windows HostProcess Pod](#)
- KEP: [Privileged Windows container support](#)

# Special Thanks and New Contributors

## Special Thanks...

**Peri Thompson (VMWare):** For working with Microsoft Engineers on various aspects of the HostProcess support story  
(<https://github.com/containerd/containerd/pull/5131>)

**Amim Knabben:** For getting Calico fully enabled and contributing his Ethernet Device selection code to upstream calico-node  
(<https://github.com/kubernetes-sigs/sig-windows-dev-tools/pull/84>)

**Aravindh Puthiyaparambil (Red Hat):** For node-log viewing and deep diving into other security / sustainability issues, always answering community questions!

<https://github.com/kubernetes/enhancements/tree/master/keps/sig-windows/2258-node-service-log-viewer>

**Ravisantosh Gudlimeta (Red Hat):** For hardening the definition of windows container runtimes

<https://github.com/kubernetes/enhancements/pull/2803/files> and keeping our testing dashboard healthy

**Jordan Liggitt (Google) :** For reviewing all of our KEPS and PRs !

**Antonio Ojea (Red Hat):** For helping to recently patch the userspace-kubeproxy

**Jamie Phillips and Luther Monson (Rancher):** For always answering tough questions around Cloud APIs and Windows

**Sebastian Soto (red hat):** for taking ownership on <https://github.com/kubernetes/kubernetes/issues/104269>

## New Contributors to Sig-Windows...

**Hongsheng Xie (VMware):** Testing and patching our windows “burrito” <https://github.com/kubernetes-sigs/sig-windows-tools/tree/master/burrito>

**Wenli Wei (VMware):** Designing HostProcess based CNI Reboot tests for Upstream Kubernetes and various aspects of Antrea CNI resiliency (<https://github.com/kubernetes/kubernetes/issues/104428>)

**Stuart Preston (VMware):** Doing initial work on testing windows 2022 on the Kubernetes Image Builder (<https://github.com/kubernetes-sigs/image-builder/pull/682>)

**John Schnake:** For integration of sonobuoy and working on the Windows Conformance Initiative ! <https://sonobuoy.io/sonobuoy-adds-windows-support/>

# How To Contribute

- Visit our [SIG-Windows community page](#)
- Join our [community meetings](#) (12:30pm EST every tuesday)
- Join our SIG-Windows pairing sessions: <https://github.com/kubernetes-sigs/sig-windows-samples/blob/master/PAIRING.md> (always right after the main meeting)
- Help us write additional documentation and user stories
- File bugs or review open PRs from our [project board](#) Content

# SIG-Windows Community

## Mark Rossetti

Co-Chair  
Microsoft  
@Mark Rossetti [Slack]  
@marosset [GitHub]

## Jay Vyas

Technical Lead  
VMWare  
@jayunit100 [Slack / GitHub]

## James Sturtevant

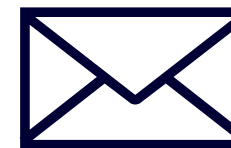
Technical Lead  
Microsoft  
@jsturtevant [Slack / GitHub]

## Claudi Belu

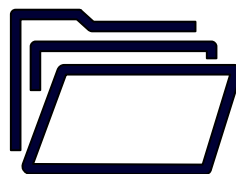
Technical Lead  
Cloudbase Solutions  
@Claudi Belu [Slack]  
@claudiubelu [Github]



#sig-windows



<https://groups.google.com/forum/#!forum/kubernetes-sig-windows>



<https://kubernetes.io/docs/setup/production-environment/windows/>



<https://github.com/kubernetes/community/tree/master/sig-windows>



[YouTube Playlist](#)



<https://zoom.us/j/94389601840>  
Every Tuesday @ 12.30pm EST



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# Q & A