

Kubernetes VMware User Group Working Doc

The VMware User Group facilitates communication among Kubernetes users and contributors on topics pertaining to running Kubernetes on VMware infrastructure.

This document is used to plan, run and document meetings of the Kubernetes VMware User Group.

This User Group adheres to the governance described in [ug-governance](#) under the community standards of the Kubernetes project. Membership is open to all - join the group here <https://groups.google.com/forum/#!forum/kubernetes-ug-vmware>

NOTE: After June 2023, this User Group is no longer holding recurring meetings.

~~To join the Zoom meeting~~

~~Regular Zoom App:~~

~~<https://zoom.us/j/408267383?pwd=cmRPbWQ3SlJPVk1abCtaVjZjbXJkZz09>~~

~~Web Client:~~

~~<https://zoom.us/join/408267383?pwd=cmRPbWQ3SlJPVk1abCtaVjZjbXJkZz09>~~

- ~~• Every First Thursday at 11am Pacific ([Time zone converter](#))~~
- **~~You can add this meeting to your personal calendar by using the link in the Kubernetes community calendar [here](#)~~**
- See <https://github.com/kubernetes/community/tree/master/ug-vmware-users> for group information.
- Mailing list: <https://groups.google.com/forum/#!forum/kubernetes-ug-vmware>
- Slack: <https://kubernetes.slack.com/messages/ug-vmware>
- Recordings of previous meetings:
<https://www.youtube.com/playlist?list=PL69nYSiGNLP1WP1H0hRIjVnzvmpprloXq>

NOTE: After June 2023, this User Group is no longer holding recurring meetings.

meeting history:

June 1, 2023 11:00AM Pacific ([convert to your timezone link](#))

recording: <https://youtu.be/eYYzIS1chmU>

Attendees: (5)

- Steve Wong VMware
- Robert Kloosterhuis
- Bryson Shepherd
-

Agenda:

- members are encouraged to nominate or questions for discussion by editing the agenda/notes document ([link](#))
- Recent Activity in CSI and vSphere Cloud Provider
- Announcement: “twilighting” of this user group within the Kubernetes project.
 - A proposal to start a similar group under the CNCF as a general on-prem user group is being discussed but unlikely to commence meetings until later this year at earliest.

vSphere 7

- ESXi 7.0 Update 3m (May 3, 2023) resolves issues about ESXi hosts losing network connectivity in certain environments and under specific conditions. For more information, see VMware knowledge base articles [91887](#) and [92035](#), and the [Resolved Issues](#) section. [Release Notes](#) [Update Patch Doc](#)
- for most users and those needing OEM customized ESXi install media and not impacted by issues in the Update 3m release notes, 7.0U3L (2023-3-30) may still remain the best option

vSphere 8

8.0U1 (2023-4-18) is still the latest ESXi release

8.0U1 (2023-4-18) is still the latest vCenter release

Documentation was updated on May 9, 2023 [Release Notes](#)

CSI plugin:

- no [release updates](#) in past month
- one recent new issue reported and resolution tbd failed to get shared datastores in kubernetes cluster [#2377](#)
- Docs were updated on May 12, 2023 [Release Notes](#)

VMware vSphere Cloud Provider

v1.25.3 and 1.24.6 released yesterday had similar updates

- fixes an issue around autoconf'd addresses being assigned to the External and Internal when using IPv6 [PR #725](#)
- use a meaningful user agent name so it is easier to spot on the vCenter UI whether a session is created by the cloud provider or not [PR #721](#)

Helm installer [1.24.6](#) for these updates

No [new issues](#) opened in past month

Discussed during meeting: community of platform engineers

- <https://platformengineering.org/>

May 4, 2023 11:00AM Pacific

recording: <https://youtu.be/wkCUUJor470>

Attendees:

- Steve Wong VMware
- Vince Brown

Agenda:

updates:

CSI plugin:

[v3.0.1 released last week](#)

- Fixed a bug in the CSI full sync that caused the Delete PVC operation to fail due to the deletion of the `CNSVolumeInfo` CR. More information can be found at [#2327](#)
- Resolved the panic observed in the syncer container during the full sync process. The panic occurred when stale CNS Volumes were deleted when the corresponding PV was not present in the Kubernetes cluster. Refer to [#2347](#) for more detail.

[v2.7.1 released about a month ago](#)

- New sidecar versions and CVE fixes. For information, see [2304](#).

VMware vSphere Cloud Provider

[v1.26.1 released yesterday](#)

- Update distroless image version to debian 11, and update other golang dependencies by [@briantopping](#) ([#710](#)) Cherry picked in ([#713](#))
- CVE fix of golang/x/net by [@lubronzhan](#) ([#707](#))
- Update TLS Thumbprint on e2e test by [@lubronzhan](#) ([#716](#))

v1.25.2 and 1.24.5 released yesterday had similar updates

- Update distroless image version to debian 11, and update other golang dependencies by [@briantopping](#) ([#710](#)). Cherry picked in ([#714](#))
- CVE fix of golang/x/net by [@lubronzhan](#) ([#708](#))
- Update TLS Thumbprint on e2e test by [@lubronzhan](#) ([#712](#))

The installer Helm chart was updated 4 days ago to [1.24.5](#)

vSphere

vSphere 8U1 docs were updated yesterday

<https://docs.vmware.com/en/VMware-vSphere/8.0/rn/vsphere-esxi-801-release-notes/index.html>

Downloads updated April 18

<https://customerconnect.vmware.com/en/downloads/details?downloadGroup=ESXI80U1&productId=1345&rPId=104334>

No updates to vSphere 7U3 in past month

Scott Lowe posted this on Mastodon recently about Google Groups ending.

<https://ahelwer.ca/post/2023-03-08-google-groups/>

April 6, 2023 11:00AM Pacific ([convert to your timezone link](#))

recording: <https://youtu.be/XOGxaSbKlwl>

Attendees:

Steve Wong VMware

Bryson Shepherd Walmartt

Agenda:

- Coverage of recent cloud provider, and CSI storage plugin update releases
- discuss future of this group
- physical event at KubeCon in Amsterdam - Tentative Tuesday April 18 - shout out to ITQ, details being evaluated in search of a higher capacity venue
- members are encouraged to nominate additional topics or questions for discussion by editing the agenda/notes document ([link](#))

Deck on Cloud Provider and CSI storage plugin updates - link

<https://drive.google.com/file/d/1wUAAb5NIBRikr91LknrFrKEoe8LlyxKB/view?usp=sharing>

March 2, 2023

recording: <https://youtu.be/JpzP2WW4tbM>

Attendees:

Steve Wong VMware

Kyle Dunne

Bryson Shepherd

Agenda:

- members are encouraged to nominate additional topics or questions for discussion by editing this agenda/notes document
- Discussed opportunity to improve documentation related to migrating from legacy in tree storage and cloud provider to current out of tree. There are external articles, blogs etc, but these are not easy to find.

Storage Plugin in-tree to CSI Migration Resources

vSphere CSI docs on migration

<https://docs.vmware.com/en/VMware-vSphere-Container-Storage-Plug-in/2.0/vmware-vsphere-csp-getting-started/GUID-968D421F-D464-4E22-8127-6CB9FF54423F.html>

limitations: There are StorageClass parameters that are deprecated and not supported in the CSI storage plugin - see documentation linked above.

Blog posts and secondary sources related to non-VMware Kubernetes distributions

The blog posts associated with particular distributions are targeted at these distributions, but many of these also contain useful explanations and advice that are generally applicable to all Kubernetes distributions.

written by Cormac Hogan of VMware

<https://cormachogan.com/2021/04/14/kubernetes-csi-migration-from-vcp/>

[Kubernetes.io](#) blog post

<https://kubernetes.io/blog/2021/12/10/storage-in-tree-to-csi-migration-status-update/>

note the line in this blog related to beta, GA, and in-tree removal related to the vSphere storage plugin was written prospectively and so milestones indicated in this blog post are no longer current. CSI migration feature gate unlock for vSphere is slated for the next Kubernetes 1.26.x patch release and 1.27. In tree removal is slated for 1.29 (subject to change)

written by Rancher:

<https://ranchermanager.docs.rancher.com/how-to-guides/new-user-guides/kubernetes-clusters-in-rancher-setup/set-up-cloud-providers/migrate-from-in-tree-to-out-of-tree>

written by OKD:

https://docs.okd.io/latest/storage/container_storage_interface/persistent-storage-csi-migration.html

written by Kubermatic:

<https://docs.kubermatic.com/kubeone/v1.5/guides/ccm-csi-migration/>

written by OpenShift:

<https://veducate.co.uk/openshift-ootb-vsphere-csi/>

written by kumina

<https://blog.kumina.nl/2022/12/migrating-volumes-to-csi-in-well-established-kubernetes-clusters/>

“Deep Dive” resources for storage plugin and volume migration

These explain the migration architecture and may be useful for understanding “edge use cases” and troubleshooting.

Design doc for the K8s migration feature

<https://github.com/kubernetes/enhancements/tree/master/keps/sig-storage/625-csi-migration>

Kubernetes SIG Storage planning meeting video recording https://youtu.be/-xRhZ0_dRsA

Blog post on Kubernetes status regarding in tree to CSI migration

<https://kubernetes.io/blog/2022/09/26/storage-in-tree-to-csi-migration-status-update-1.25/>

February 2, 2023

agenda:

- This meeting was brief as there was limited recent change activity related to the K8s VMware CSI plugin or cloud provider. Adjourned after two minutes of social chat while waiting for attendees. not recorded.

January 5, 2023

meeting canceled - on account of little news or events because of holiday and Kubernetes post release lull in activity - no new releases of cloud provider, csi driver. (Note that Kubernetes itself has seen patch release 1.25.1, 1.25.2, 1.25.3, 1.25.4, and 1.25.5 since last meeting as documented here:

<https://github.com/kubernetes/kubernetes/blob/master/CHANGELOG/CHANGELOG-1.25.md#changelog-since-v1254> but this activity is not VMware specific.

December 1, 2022 11:00AM Pacific

recording: <https://youtu.be/gCPaGpzrbHw>

Attendees (3) please add your name here

- Steve Wong - VMware
- Kyle Dunne

Agenda:

- v.2.7.0 release of the vSphere CSI plugin
- 1.25 release of the vSphere cloud provider
 - deck on CSI and cloud provider updates presented at meeting is here <https://drive.google.com/file/d/1IOt53qFwRvZkbT8BK5hN998RLqE3gqya/view?usp=sharing>
- general birds of a feather discussion

- Antrea Egress
<https://blogs.vmware.com/networkvirtualization/2022/11/antrea-egress-vsphere8-with-tanzu.html/>
 -
-

November 3, 2022 meeting canceled because of proximity to KubeCon North America, and VMware Explore Europe.
 Next meeting December 1.

October 6, 2022 11:00AM Pacific

recording: <https://youtu.be/Zjalku3c6D0>

Attendees:

- Steve Wong
- Scott Rosenberg
- Kyle Dunne

Agenda:

- recap recent updates to vSphere CSI storage driver
- recap recent updates to vSphere Kubernetes Cloud Provider
- vSphere 8 announcement at the VMware Explore conference
- User Group activity at the upcoming [KubeCon conference in Detroit](#) later this month
- members are encouraged to nominate additional topics or questions for discussion by editing the agenda/notes document ([link](#))
-

[Finding and Removing Stale CNS Volumes in vSphere – vRabbi's Blog](#)

September 1, 2022 11:00AM Pacific

We are considering canceling the September 1 User Group meeting because it conflicts with the VMware Explore conference and many are attending physically or virtually - but I will put it out for a vote by members and prospective attendees.

Please indicate your preference in this poll - I will tabulate responses through August 31, afternoon.

<http://www.polljunkie.com/poll/fsmoog/september-1-meeting-preference>

Meeting was canceled, because poll result was 4 votes in favor of canceling, with no votes in favor of holding the meeting.

August 4, 2022 11:00AM Pacific ([convert to your timezone link](#))

recording <https://youtu.be/NZi01B4iFoE>

Attendees () please add your name here

- Steve Wong VMware
- Amar Gandhi
- Jonathan Copeland
- Scott Rosenberg
- others

Agenda:

K8s homelab on vSphere

We will have an informal discussion on running a Kubernetes homelab on a vSphere hypervisor. We will cover a minimum viable installation for home services such as home automation, hosting a private Office 365/Google Suite like productivity document and app store, and maybe a bit more.

While this will take a few steps and shortcuts not likely to be used in an on prem commercial datacenter, some of the techniques appropriate for a homelab might be useful in a low resource edge situation. You are invited to come to learn, or if you run your own homelab, come to share your experiences. The infrastructure will presume vSphere but all Kubernetes distros are open for discussion.

Notes:

Why do a homelab?

Learning opportunity

Best way to learn Cloud Native Tech is to build it and run it

Host your own services and file/media sharing

Might save money

Regain privacy

Protect yourself from service outages

Downsides

hardware expense plus power, space and noise (Capex)

You need to put time into this (Opex)

What do you need?

hardware

Firewall / Router

Build your own on x86 host OR

Consumer Router

Network Switch

Managed with VLAN support

Esxi Host

New – Intel NUC, Sseed ReServer, other OR

Used – rackmount server

Advantages: low price, expansion

Disadvantages: size, noise, can take extra time to set up

Optional: Raspberry Pi or other host for physical IO connection(s)

software

Firewall / Router software

pfSense, OPNsense, other

ESXi and vCenter

VMUG advantage, 60 day trial, or get license another way

Storage (NFS, SMB, S3) – if running on vSphere or bare metal

Openmediavault, other

Authentication source for users and service account

Specialized Apps for IO on bare metal

Container Image Registry

Kubernetes – any distro, K3s, MicroK8s, other

Whatever Apps and services you choose to run

What apps would you want?

A few suggestions for home hosting

“Bare metal” infra:

Docker/Podman, Docker-compose, Portainer, OpenLDAP/FreeIPA, zwavejs2mqtt, Mosquitto

vSphere tools:

Powershell, govomi, govc

Home/Away services on Kubernetes:

HomeAssistant

NextCloud

Plex
EFK stack (logging)

Exposing services for out-of-home use

How can you do this securely?

On Kubernetes layer

Load Balancer (kube-vip, MetalLB, other)

Ingress with LetsEncrypt certs

At outer layer

NAT in pfSense or other firewall router

[CloudFlare argo tunnels](#)

Inbound vpn is also an option

[inlets](#)

[ngrok](#)

[apache guacamole](#)

- **Members and prospective speakers are encouraged to suggest topics by directly editing this document here. Please include your name and a time estimate**

July 7, 2022 11:00AM Pacific

Attendees (2)

- Steve Wong
- Robert Kloosterhuis - ITQ

Agenda:

- Since only a couple people showed up because of the US holiday week, this was a short chat and the meeting was adjourned. No recording published.

June 2, 2022 11:00AM Pacific

recording <https://youtu.be/H1p3sATSEYM>

Attendees (8) please add your name here

- Steve Wong
- others

Agenda: tbd

- **Members and prospective speakers are encouraged to suggest topics by directly editing this document here. Please include your name and a time estimate**
- recap of activity at KubeCon Europe
 - Session: Optimize Kubernetes on vSphere with Event Driven Automation
 - [Optimize Kubernetes on vSphere with Event-Driven Automation - Steven Wong & Michael Gasch, VMware - YouTube](#)
 - [via.vmware.com/EiC0](https://vmware.com/EiC0)
- request for topics of interest - for recruiting speakers for future meetings
-

May 5, 2022 11:00AM Pacific ([convert to your timezone link](#))

recording <https://youtu.be/JGnyZEK4-rg>

Attendees (8) please add your name here

- David vonThenen
- Steve Wong
- Scott Rosenberg
- Kyle Dunne

Agenda: tbd

- **Members and prospective speakers are encouraged to suggest topics by directly editing this document here. Please include your name and a time estimate**
- Upcoming events at KubeCon Europe (Steve Wong 5 min)
 - Session: Optimizing Kubernetes on vSphere with Event Driven Automation
 - Friday May 20 14:55
 - <https://sched.co/yttR>
 - Proposed physical meeting in Valencia for users. Friday evening or other time tbd?
- Proposal to change the way user groups operate under the Kubernetes project (Steve Wong 5 min)

- should this be factored as on-prem vs public cloud, rather than by cloud oprovider?
- Discussion: Kubernetes Zones 101
- VEBA, limitation tied to a single vCenter, cross vCenter events gets complex
-

April 7 2022 - 11:00AM Pacific

Zoom recording <https://youtu.be/O72H47QXifQ>

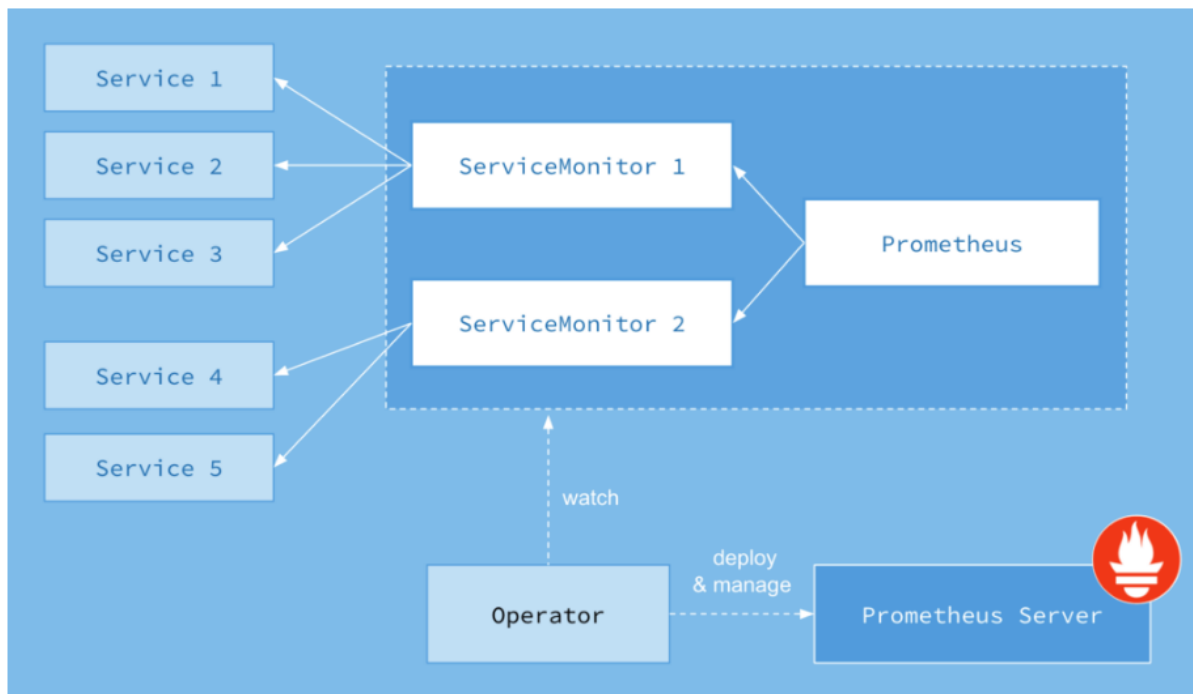
Attendees (8) please add your name here

- Steve Wong - VMware
- Robert Kloosterhuis - ITQ
- Myles Gray - VMware
- Bryson Shepherd - Walmart
- Pavan Yenisetty - Walmart

Agenda:

- At a previous meeting a member mentioned that the latest vSphere CSI storage driver now reports metrics to prometheus, but that this is not as well documented as it could/should be. Recently additional documentation and resources became available. Let's discuss
 - Blog post:
 - Cormac Hogan Announcing vSphere CSI driver v2.5 metrics for Prometheus monitoring, March 10. This includes information on setting up Prometheus and also a Grafana dashboard to use with it
 - <https://cormachogan.com/2022/03/10/announcing-vsphere-csi-driver-v2-5-metrics-for-prometheus-monitoring/>
 - A few items in the sample code may need tweaks depending on your K8s distribution. For example you might find that in your installation the `vmware-system-csi service` is in the namespace `kube-system` instead of `vmware-system-csi`
 - useful metrics:
 - Success rate of CNS-CSI operations(ideally 100%) - indicates failures and retries
 - `vsphere_csi_volume_ops_histogram` Success rates of CSI create, delete, attach, detach, expand, etc volume operations.

- vsphere_cns_volume_ops_histogram Success rates of CNS (as seen from CSI) create, delete, attach, detach, expand, etc volume operations.
 - Percentile latency of CNS-CSI operations (ideally low) - indicates performance
- CSI release notes updated March 23
 - <https://docs.vmware.com/en/VMware-vSphere-Container-Storage-Plug-in/2.5/rn/vmware-vsphere-container-storage-plugin-25-release-notes/index.html>
- Documentation, Collecting Metrics with Prometheus in vSphere Container Storage Plug-in, published March 24
 - <https://docs.vmware.com/en/VMware-vSphere-Container-Storage-Plug-in/2.0/vmware-vsphere-csp-getting-started/GUID-65817276-3F34-4E45-92A0-831316AEC853.html?hWord=N4lghgNiBclA4CcD2BbApgFwBZoK4GcACAY3wEsQBfIA>

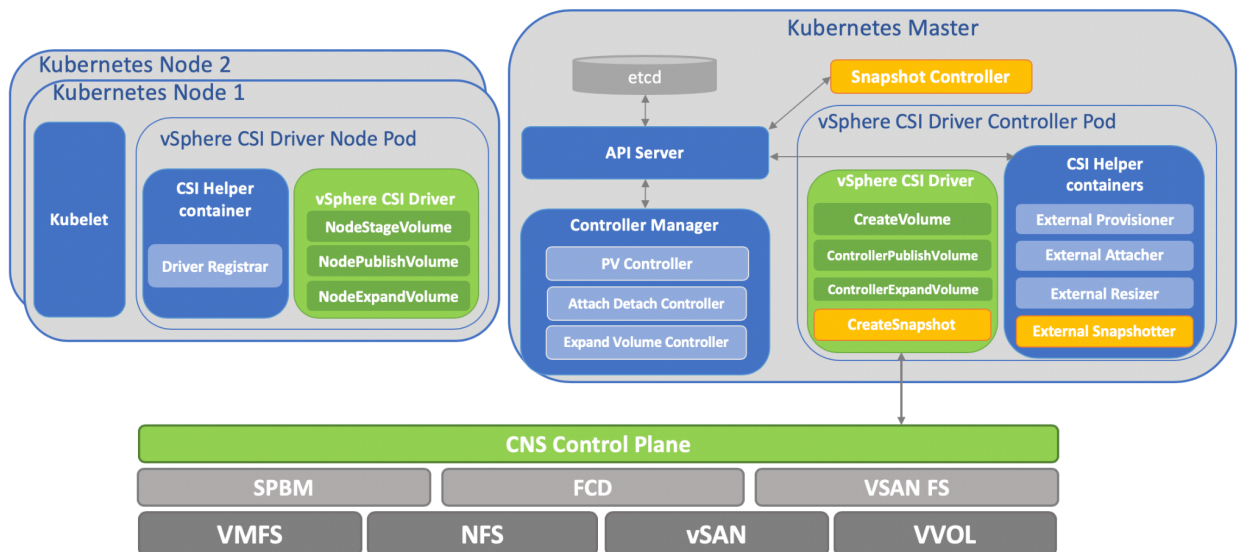


-
- Check out the kube-prometheus-stack helm chart as it includes the Prometheus Operator which gives you access to the ServiceMonitor CRD for configuring metric scrape targets:
 - <https://github.com/prometheus-community/helm-charts/blob/main/charts/kube-prometheus-stack/README.md>
- Advisory related to CSI and the upcoming Kubernetes 1.24 release (not out yet, and not supported yet but expected soon)
 - If a user chooses to upgrade the k8s version to 1.24 in their environment, they should drain one node at a time, upgrade the kubelet and then uncordon the

node. This needs to be done for all the nodes in the cluster. See the PR in the kubernetes/kubernetes repo for explanation

<https://github.com/kubernetes/kubernetes/pull/107065> PR.

- vSphere CSI now supports CSI Snapshot natively
 - CSI Snapshot does not provide application-level consistency. It will be handled by backup applications..
 - CSI Snapshot does not support to delete volume with snapshots due to the dependent lifecycle.
 - CSI Snapshot does not support to expand volume with snapshots due to a limitation in FCD, i.e. CNS block volume



-
- Stretched Cluster is now “supported” but maybe still not a good idea :)
- vSphere Cloud Provider: new version came out two weeks ago: v1.20.1, v1.21.3, c1.22.6. [release note link](#).
 - installation helm chart has been moved to /charts from deprecated location
 - Return error when VM's info returned from VC doesn't contains IP address (#586)
 - Fix logic to correctly read and pass along value `nsxt.RemoteAuth` in config (#591)
 - Some fixes backports to older versions:
 - For paravirtual, empty ProviderUUID appears for node
 - Remove cached node based on UUID when unregister node
 - Do not use the cached node addresses when NodeAddresses is invoked.
 - Fix a bug where only the first VM NIC was checked for node addresses
- vSphere CSI now has no dependency on the CPI

- Discussion on minimum VMHW version for CSI - it is VMHW 15 supported from 6.7 U2 and on: <https://kb.vmware.com/s/article/1003746>
- For the adventurous who might want to try K8s in a VM in an ARM based desktop hypervisor, a tech preview of the Fusion hypervisor came out on March 10.
 - <https://communities.vmware.com/t5/Fusion-for-Apple-Silicon-Tech/ct-p/3022>
- KubeCon Europe conference is coming in May.
 - <https://events.linuxfoundation.org/kubecon-cloudnativecon-europe/>
 - Session with Michael Gasch - Optimize Kubernetes on vSphere with Event Driven Automation. May 20 at 14:55 <https://sched.co/yttR>

March 3 2022

recording <https://youtu.be/xMAv4lFUohY>

Attendees

- Steve Wong - VMware
- Scott Rosenberg - TeraSky
- David vonThenen
- others

Agenda: tbd

- **Members and prospective speakers are encouraged to suggest topics by directly editing this document here. Please include your name and a time estimate**
- Recently published updates and patches
 - The CSI storage plugin for vSphere released v2.5.0 two days ago - definitely see [release notes](#) for known issues and workarounds
 - in particular: Kubernetes pods with CNS volumes cannot be created, deleted, or re-scheduled during vSAN stretched cluster partition
 - When a vSAN stretched cluster has a network partition between sites, an intermittent timing issue can cause volume information to be lost from the CNS. When volume metadata is not present in the CNS, you cannot create, delete, or re-schedule pods with CNS volumes. vSphere CSI Driver must access volume information from CNS to perform these operations.
 - When the network partition is fixed, CNS volume metadata is restored, and pods with CNS volumes can be created, deleted, or re-scheduled.

Notable Changes

- Support for Kubernetes version 1.23
 - Decouple vSphere CSI from [vSphere CPI](#) - vSphere CSI driver no longer depends upon the Kubernetes Node ProviderID set by vSphere CPI for its operations. This provides the ability to use custom CPI along with vSphere CSI driver.
 - Snapshot feature support for block volumes - Refer to this [link](#) for more detail.
 - Expose metrics for prometheus monitoring - Refer to this [link](#) for more detail.

Update to VMware Tools now allows determination of what containers are running in which VMs (scott)

Audience/member poll: what are you using, or what do you recommend as a logging solution? for vSphere, Storage, and Kubernetes. Troubleshooting or analyzing performance across the k8s/infrastructure stack has frequently come up in the group, and I am thinking this could be something related to that.[Steve Wong 15 min or ++]

Elasticsearch is common but can be difficult to manage and resource intensive at scale. Consider [Grafana Loki](#) as a possible alternative in the open source category. Scales well with performance. Fluentbit is a good solution for collecting and sending logs. FluentD is more flexible but has higher resource requirements. There are “managed log services, where a vendor manages the elasticsearch so maybe consider these to outsource the skills of managing elastic on k8s. There is a reason there are many organizations offering managed elastic service, along with the backend storage. (Scott)

If you keep logs a long time it is possible to use AI to anticipate issues and accelerate root cause determination. Harder to detect malware, ransomware with this because usually they take steps to evade logging. This would show up more in a metric gathering solution where you have weird spikes happening

February 3 2022

recording: <https://youtu.be/gfiwMTgMm6M>

Attendees () please add your name here

- Steve Wong VMware

- Scott Rosenberg - TeraSky
- Myles Gray - VMware
- Robert Kloosterhuis - ITQ

Agenda:

- Recently published updates and patches
 - ESXi and vCenter were both updated on Jan 27, 2022
 - ESXi 7.0 Update 3c
<https://docs.vmware.com/en/VMware-vSphere/7.0/rn/vsphere-esxi-70u3c-release-notes.html>
 - vCenter
<https://customerconnect.vmware.com/en/downloads/details?downloadGroup=VC70U3C&productId=734>
 - Log4j: “VMware has investigated and has found that the newest two Log4j disclosures, CVE-2021-45105 and CVE-2021-44832, are not exploitable in VMware products.”
 - For more see
 - <https://www.vmware.com/security/advisories/VMSA-2021-0028.html>
 - <https://core.vmware.com/vmsa-2021-0028-questions-answers-faq#section1>
 - vSphere Storage CSI storage plugin was updated to 2.4.1 on Jan 14, 2022
 - features added for those using vSphere 6.7 P06
 - Release Notes
<https://docs.vmware.com/en/VMware-vSphere-Container-Storage-Plugin/2.4/rn/vmware-vsphere-container-storage-plugin-24-release-notes/index.html>
 - <https://github.com/kubernetes-sigs/vsphere-csi-driver/releases>
 - Documentation related to upgrading the CSI storage plugin was updated on Jan 19. This applies to those using “vanilla” Kubernetes versions, and not for those on the vSphere with Tanzu commercial product
 - <https://docs.vmware.com/en/VMware-vSphere-Container-Storage-Plugin/2.0/vmware-vsphere-csp-getting-started/GUID-3F277B52-68CC-4125-AD0F-E7293940B4B4.html#GUID-3F277B52-68CC-4125-AD0F-E7293940B4B4>
 - Documentation related to CSI with zoning was also recently updated
<https://docs.vmware.com/en/VMware-vSphere-Container-Storage-Plugin/2.0/vmware-vsphere-csp-getting-started/GUID-73D106A3-1D8A-4CDC-9762-6CB35A65B0B4.html>

- vSphere Storage CSI storage plugin was update 2.3.1 released on Jan 14, 2022
 - Two bug fixes, Release notes and binary available at <https://github.com/kubernetes-sigs/vsphere-csi-driver/releases>
- Helm chart 1.0.0 for deploying the vSphere Cloud Provider was released Jan 24, 2022
 - <https://github.com/kubernetes/cloud-provider-vsphere/releases/tag/vsphere-cpi-chart-1.0.0>
- vSphere Cloud Provider was [updated](#) to v1.22.5 on Jan 21,2022
 - Adds ability to configure subnets describing what ranges shall be excluded from node ip selection. External subnet exclusions and internal subnet exclusions are separately configurable.
- Alpha.1 v1.23.0 of vSphere Cloud Provider was [released](#) on Jan 10,2022
 - Supports newer version of K8s
 - Release estimated by Feb 11 - estimate not a commitment
- Possibly have a poll for a new time for VMware User Group meeting given most attendees are EMEA based.
 - AI: Myles to add to the Slack channel to poll
- discussion of resource limit declaration and admission controllers
- discussion of monitoring of resource use
 - Namespace based quota (Robert)
 - https://kyverno.io/policies/best-practices/add_ns_quota/
 - CSI now has a prometheus endpoint for monitoring - but this is not widely documented
 - if you use tanzu, need to use a config map to configure. Most people install using a prometheus operator instead because it gives you an ability to set up alert rules. Very hard to manage using a config map. Easiest way is to use the Helm chart called [kube prometheus stack](#). [Example of a values yml](#) for that chart from Myles. [Bitnami prometheus operator](#) is also good and includes thanos if you need large scale or long term saving of data. (Scott)

January 6 2022

recording here https://youtu.be/VmW-K_TzNgw

Attendees () please add your name here

- Steve Wong VMware

- Scott Rosenberg - TeraSky

Agenda:

- vSphere Log4j status:
 - December Blog post with summary
<https://blogs.vmware.com/vsphere/2021/12/vmsa-2021-0028-log4j-what-you-need-to-know.html>
 - Latest Q&A thread - which is being updated periodically
<https://core.vmware.com/vmsa-2021-0028-questions-answers-faq#section1>
 - "Source of truth" CVE
<https://www.vmware.com/security/advisories/VMSA-2021-0028.html>
- Important information on vSphere ESXi 7 Update 3
<https://blogs.vmware.com/vsphere/2021/11/important-information-on-esxi-7-update-3.html>
 - FAQ <https://kb.vmware.com/s/article/86398>
- Deprecation Advisory to regarding SD Card and USB device as an ESXi boot device
<https://kb.vmware.com/s/article/85685>
 - blog posts:
 - <https://www.yellow-bricks.com/2021/09/17/booting-esxi-from-sd-usb-devices-time-to-reconsider-when-buying-new-hardware/>
 - <https://williamlam.com/2021/09/considerations-for-future-vsphere-home-labs-due-to-upcoming-removal-of-sd-card-usb-support-for-esxi.html>
 - [No future for booting ESXi from USB in VMware home labs, using max endurance microSD for ESXi 7.0U3 now, SATA/SATADOM or M.2 later | TinkerTry](#)
- Kubernetes vSphere Cloud Provider release v1.22.4 came out in December
 - bug fixes and supported newer Kubernetes
 - <https://github.com/kubernetes/cloud-provider-vsphere/releases/tag/v1.22.4>
- vSphere CSI
 - 2.4 is latest release -published in November. Supports Kubernetes 1.22
<https://github.com/kubernetes-sigs/vsphere-csi-driver/releases/tag/v2.4.0>
 - Older versions had critical updates release in Q4 2021 for example 2.0.2 had a release note update on December 17, 2021
 - <https://docs.vmware.com/en/VMware-vSphere-Container-Storage-Plugin/2.0/rn/vmware-vsphere-container-storage-plugin-20-release-notes/index.html>
- Free form discussion
- <members add your additional topic here>

December 2 2021

recording link <https://youtu.be/u3oAvudSJNQ>

Attendees

- Steve Wong - VMware
- Myles Gray - VMware
- Robert Kloosterhuis - ITQ

Agenda:

- Free form discussion around app and service availability when mapping Kubernetes availability features+issues to vSphere.
For many users, intermittent, reduced, or no internet connectivity operation may be an added challenge. There will be no pre-arranged speaker for this, but attendees are welcome to bring ideas, "lightning talks" or simply chat, listen or ask questions and share experiences.
- <members add your additional topic here>

Availability services to consider:

- Maybe outside Kubernetes:
 - identity management source
 - Load Balancer for API
 - image registry
 - DNS
 - IPAM

Blog post about using host groups with vSphere

<https://cormachogan.com/2019/12/20/using-host-groups-for-availability-zones-azs-in-enterprise-pks/>

What is it you are trying to accomodate?: perhaps this is mainly protect against single host failure; or a datacenter failure - not things like a rack failure

If you do hosts groups within a single cluster, what is it you are protecting against?

Q: how can I take advantage of a stretch cluster? technically maybe you can but it's not supported

K8s was never designed to handle a failover recovery after a 3 node etcd failover/restart

So if a persistent app is cloud native = handles replication at the app level, it can likely work under Kubernetes, albeit with a lot of extra burden in configuration yaml. For legacy non cloud native apps, running as VMs is likely the better option. Using a Paas is likely something else you should consider.

If we did a white paper or series of white papers, maybe we should classify apps into categories and then also map to topologies of underlying infrastructure. May much of this is not specific to vSphere. The Kubernetes availability features seem relatively static at this point so it is likely if we invested in this it would have a long “shelf life”. There is nothing out there (on internet) for the VMware stack.

November 4 - 11:00AM Pacific

recording link: <https://youtu.be/9Z5KOrbFZIM>

Attendees () please add your name here

- Steve Wong, VMware
- Chip Zoller, Dell Technologies
- David vonThenen, VMware
-

Agenda:

- We will hold a recap of related announcements and highlights from KubeCon North America and VMworld conferences.
- <members add your additional topic here>

code connect video recording play list:

<https://www.youtube.com/playlist?list=PLnopqt07fPn3KFB7fukvXhzo6i3lr60z>

future topic nominations: air gapped Kubernetes. include carvel and carvel on-prem

availability around Kubernetes. mapped kubernetes availability concepts mapped to vSphere. (Robert Kloosterhuis may be interested in presenting this.)

Bryson: What happens if kubelet on a control plane can't talk to the vSphere API infrastructure level of Kubernetes and airgapped. And applications in airgapped are separate domains.

October - no meeting because of conflict with VMworld conference and KubeCon following week.

September 2 - 11:00AM Pacific:

recording link: <https://youtu.be/xDYARbAupxo>

Agenda

- We will hold a no-formal-agenda open forum birds-of-a-feather discussion. We will be open for Q&A, or volunteer for or suggest a topic below.
- Michael Roy comments on desktop hypervisors, ARM support
- open user discussion of stateful app best practices

Q: is a VSAN host is down, how to I prevent creating a new volume

Attendees (14) please add your name here

- Robert Kloosterhuis, ITQ

August 5 - 11:00AM Pacific

recording: <https://youtu.be/HuzO5WcpaggY>

Attendees (14) please add your name here

- Steve Wong, VMware
- Robert Kloosterhuis, ITQ
- Chris Privitere, Epic
- Dan Finneran - Equinix Metal
- Scott Rosenberg - TeraSky
- Myles Gray - VMware

- Ken Rider - Capstone IT

Agenda:

- Dan Finneran will present and answer questions on [kube-vip](#)
 - Audience requested Questions or discussion topics:
 - attendees, please add questions or topics to this list
 - What is the relation of the cloud provider and kube-vip?
 - cloud provider handles IP assignment for exposing a Kubernetes hosted service
 - What are the minimum realistic resource requirements for running a kube-vip based load balancer at an edge location, in terms of cpu cores, memory, etc?
 - very lightweight, and suitable for low resource edge
 - What are the limits of using a kube-vip load balancer, if there are any? In other words could it be expected to front a 5,000 node cluster, or keep a 40gbe pipe saturated? When would somebody expect to want to go to an F5?
 - When using BGP, kube-vip should handle the largest possible clusters. ARP would have limits
 - When deploying, what are considerations, points of failure, and best practices for high availability? How would you go about "instrumenting" an installation to get alerts when components have failed?
 - Are there metrics exposed which could be useful for troubleshooting L4 issues?
 - not at the moment - aside from logs
 - You mentioned hybrid mode was mainly for edge deployments. Currently we use metallb to do our load balancing on VMware, would you view kube-vip in hybrid mode as a viable production replacement for that?
 - depends on the size of the cluster. metallb has dependencies on config maps, kube-vip ties itself to kubernetes API objects instead, just watches those primitives.
- Resources (attendees, please add more resources to this list..)
 - Why kube-vip? Jan 2020 blog post from Dan <https://thebsdbox.co.uk/2020/01/02/Designing-Building-HA-bare-metal-Kubernetes-cluster/#Networking-load-balancing>
 - project portal <https://kube-vip.io/>
 - open source repo <https://github.com/kube-vip/kube-vip>
 - cloud provider <https://github.com/kube-vip/kube-vip-cloud-provider>
 - articles on compares or migrations from HAPROXY

- <https://techfeed.io/entries/6023dc95896d4eb64a1384fb>
- <https://docs.vmware.com/en/VMware-Tanzu-Kubernetes-Grid/1.2/vmware-tanzu-kubernetes-grid-12/GUID-upgrade-tkg-migrate-haproxy.html>
- kube-vip vs keepalived with haproxy in kubeadm docs
<https://github.com/kubernetes/kubeadm/blob/master/docs/ha-considerations.md>
- <https://www.cncf.io/online-programs/cloud-native-live-leveling-up-kubernetes-with-kube-vip/>
- intro to kube-vip video <https://youtu.be/gJCumFZQt1M>
- upcoming session at KubeCon North America 2021 <https://sched.co/1Uzp>
-
-

July 1

recording link <https://youtu.be/wUMcrrN1RzY>

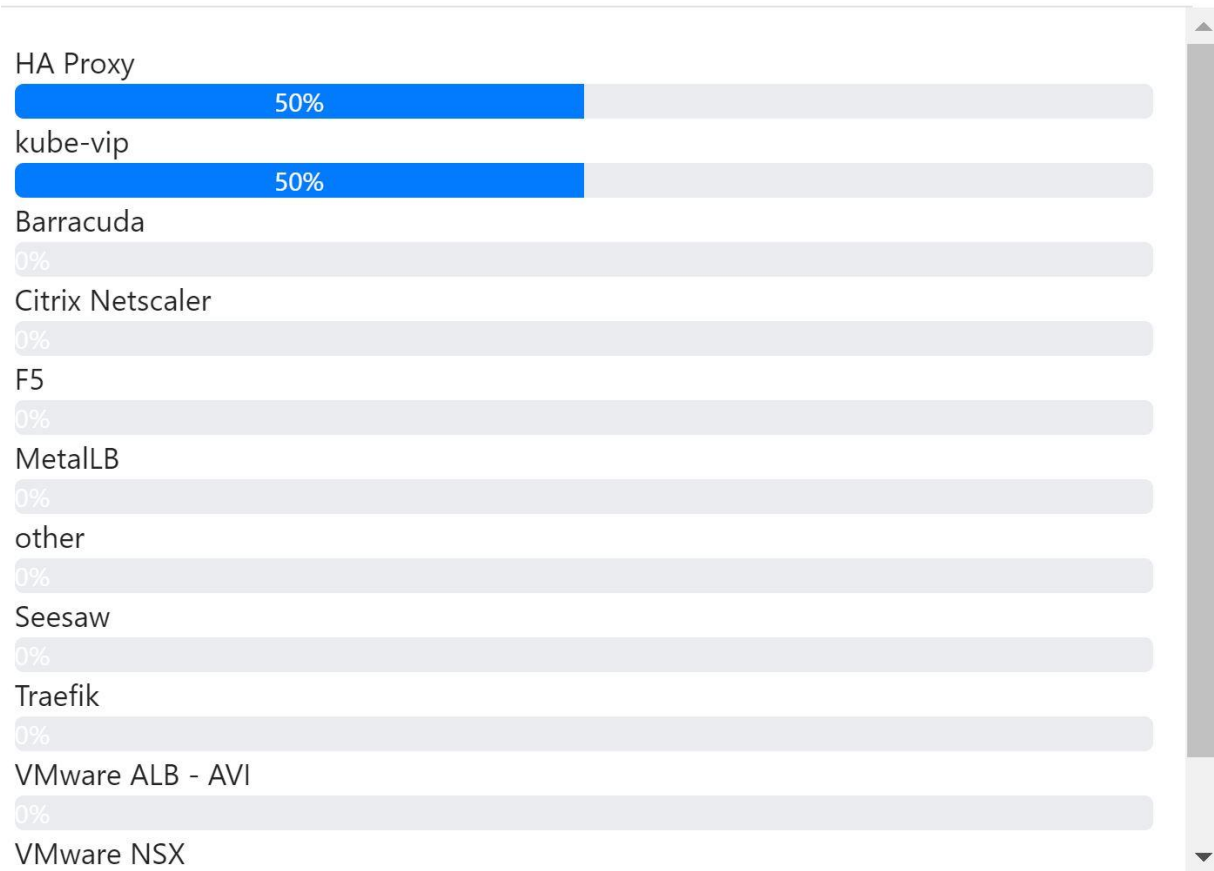
Attendees (8)

- Myles Gray - VMware
- Steve Wong - VMware
- Scott Rosenberg - TeraSky
- Keith Lee - VMware
-
-

Agenda:

- Intro and survey of Load Balancers for on-prem Kubernetes
 - We were hoping to get a guest for a deep dive into one of the popular software load balancers, but the person was not available this month. In lieu of that we'll still do an intro and survey of Load Balancing solutions - as a segue to a deep dive at a future meeting.
 - We'll also do an audience poll and discussion of what load balancer solutions people have considered or used, and what the experience was like.
 - Load balancer Deck [link](#)
 - poll result

What load balancers have you used with Kubernetes running on VMware infrastructure?



-
-

June 3

Cluster API

meeting recording: <https://youtu.be/ULOy6PYhgIc>

Agenda

Members are welcome to suggest (organizers will recruit speakers) or speak on topics - please edit this document to add items

- **Discussion of Cluster API for vSphere** with key contributor Yassine Tijani

Cluster API is a Kubernetes sub-project focused on providing declarative APIs and tooling to simplify provisioning, upgrading, and operating multiple Kubernetes clusters.

In a nutshell it extends the Kubernetes API so you can automate infrastructure management related to Kubernetes cluster creation, configuration, and management. There are plugin providers for vSphere as well as other platforms like AWS. It's a way to automate provisioning of VMs and support for it has been going in to a growing number of Kubernetes installers.

- Intro Deck [link](#)
- <members add your additional topic here>

Attendees (10)

- Myles Gray - VMware
- Steve Wong - VMware
- David vonThenen - VMware
- Yassine Tijani - VMware
- Robert Kloosterhuis - ITQ

Notes, Links:

past meetings:

May 6

recording link: <https://youtu.be/rMdw2Pq4bzs>

Agenda

- Michael Gasch and William Lam will be attending this to give us an overview of the VEBA: [VMware Event Broker Appliance](#) following on from discussion from the last meeting around dealing with VM tagging and discovery and proliferating those events to Prometheus alerts.
- Scott Rosenberg is going to give us a demo of a practical use-case of VEBA as well.
-

notes:

VEBA can be deployed on Kubernetes using a Helm chart or as a VM appliance

Michael's example code is here

<https://github.com/vmware-samples/vcenter-event-broker-appliance>

About 1800 events are published out of the box but this can be augmented with custom events

This tool was first published as a "fling" in 2019

use cases:

- notification, to slack, text message, etc
- automation - example apply a tag as something is deployed, can be event driven by Knative
- integration - use public cloud services of your choice triggered by vSphere events/data
- remediation - example react to a host down event
- audit - example pick out events like a failed login

Event driven = write just enough code to do what is needed, without using vCenter itself, and using a language or script tool of your choice.

Get stuff done without needing to learn the vSphere API.

A use case is to automatically tag vSphere objects as they are created. Tag with a category and a name. This can be used in conjunction with DRS groups to accomplish affinity and anti-affinity behavior for high availability.

platforms for events: CloudWatch == Kibana == LogInsight == Syslog

ElasticSearch also could be a better sink for events

Code for the alarm server example: <https://github.com/embano1/vsphere-alarm-server>

Comment: Send to home assistant and toggle a light on and off when a VM powers off. :)

Actually should be pretty straightforward to do that. Yes it is said Michael Gasch.

Attendees (23)

- Myles Gray - VMware
- Scott Rosenberg - TeraSky
- Keith Lee - VMware
- Steve Wong - VMware
- Alan Renouf - VMware
- Bryson Shepherd - Walmart
- Dan Larson - Walmart
- Emily Leahy - VMware
- Bilel KAMMOUN (Mairie de Paris)

- Bernard Manzanares

4/1/2021 meeting - “bring us your problems” workshop:

recording link: <https://youtu.be/ywMmY8BHH5A>

Attendees (14)

Please add your name below

- Steve - VMware, UG co-chair
- Myles Gray, VMware
- Scott Rosenberg - TeraSky
- Sean McGinnis - VMware
- Bryson Shepherd - Walmart

Agenda:

“Bring us your problems” workshop and discussion:

- XFS support for vSphere CSI driver:
<https://github.com/kubernetes-sigs/vsphere-csi-driver/issues/670>
- online volume expansion not documented?
 - Coming in 2.2 release which has a branch, but hasn't been cut yet.
- <https://github.com/kubernetes-sigs/vsphere-csi-driver/pull/767>
- Open question - Is there an e2e test case that covers storage vMotion when using the CSI driver? We do have some tests, but there have been some observations of issues. So users are advised to not assume it works, but it is thought to work in most cases. Docs will be updated. It is supported for in-tree to CSI migration
<https://github.com/kubernetes-sigs/vsphere-csi-driver/issues?q=is%3Aissue+storage+vmotion>
- discussion of using eventing to police tags on objects like hosts (useful in zones for example) but this also has other potential applications
 - Event broker appliance that published vSphere/vCenter events
<https://flings.vmware.com/vmware-event-broker-appliance>
 - also see <https://vmweventbroker.io>
- Filed an issue for raw block volumes -
<https://github.com/kubernetes-sigs/vsphere-csi-driver/issues/772>
 - Sandeep Pissay Srinivasa Rao: Just wanted to add that the raw block volume has been in our internal backlog for a while now. More customer request will help in prioritizing it higher.
-

3/4/2021 meeting recording: <https://youtu.be/bXFAOdsSWvI>

Attendees (13)

Please add your name below

- Steve Wong - VMware, co-chair
- Myles Gray - VMware
- Robert Kloosterhuis - ITQ
- David vonThenen - VMware
- Scott Rosenberg - TeraSky
- Keith Lee - VMware

Agenda

Members are welcome to suggest or speak on topics - please edit this document to add items:

- CSI snapshot requirements - Gopala Suryanarayana and Xing Yang

Xing Yang (Kubernetes Storage SIG co-chair, VMware Engineer) and Gopala Suryanarayana (VMware Product Line Manager, Data Persistence and Cloud Native Storage) will be soliciting user thoughts on key usage patterns in order to drive roadmap and feature priorities.

They would specifically like to talk about use cases for **CSI volume snapshots** and would like input on these items from Kubernetes users, or organizations serving users -and they are specifically interested in these parameters for purposes of understanding usage patterns and prioritizing feature roadmaps.

What are your use cases for CSI snapshots?

- None
- backup use case
- test-dev
- snapshot-restore
- clone
- other

If you would use CSI volume snapshots, would you plan to move to move/copy it?

- To a public cloud such as AWS S3 or GCE object
- To an object store at on on-prem location
- Nowhere - leave on primary storage only

Please estimate your performance and scalability requirements

- Number of snapshots per volume
- Total number of snapshots across all your volumes
- How long does it take to create a snapshot (seconds)
- How many snapshots per hour

What is the snapshot retention policy?

- Delete based on expiration date
- Delete based on max total number of snapshots
- Manual trigger of snapshot deletes

What is the anticipate snapshot availability policy?

- Access across multiple vSphere datastores
- Access across multiple zones
- Access across multiple regions
- Access across multiple clouds

Do you need scheduled or automatic snapshots?

- Yes
- No

Ask Me Anything" on: CSI, snapshots and other topics related to storage, disaster recovery, stateful app management.

Kubernetes Data Protection WG:

<https://github.com/kubernetes/community/tree/master/wg-data-protection>

2/4/2021

recording link: <https://youtu.be/OZqYtYyXbZg>

Agenda

Members are welcome to suggest or speak on topics - please edit this document to add items:

- **Discussion of hosting Replicated Stateful Apps:** At the last meeting a request was made to address coverage of best practices when running stateful clustered aps/services that manage their own redundancy at the at the ap/service level and thus don't need this to be performed at the backing storage layer.
 - Intro ([mini deck link](#))
 - Comments by Myles
 - Group discussion

Attendees (13)

Please add your name below

- Myles Gray - VMware
- Steven Wong - VMware
- Chip Zoller – Dell Technologies
- Scott Rosenberg - TeraSky
- Robert Kloosterhuis (ITQ)
- David vonThenen - VMware
- Sean McGinnis - VMware

1/7/2021

recording link <https://youtu.be/3YZkEgjbIQ4>

Attendees (13)

Please add your name below

- Chip Zoller – Dell Technologies
- Steve Wong - VMware
- Sean McGinnis - VMware
- David vonThenen - VMware
- Chris Little - VMware
- Myles Gray - VMware
- Jose Coronado - Dell Technologies
- Ken Rider - Capstone IT

Agenda

Members are welcome to suggest or speak on topics

- GPU support for K8s workloads running on vSphere hosted Kubernetes (Myles)
 - Demo GitHub link <https://github.com/mylesagray/a-new-hope-app>
 -
-

What is Bitfusion?

VMware vSphere Bitfusion virtualizes hardware accelerators such as graphical processing units (GPUs) to provide a pool of shared, network-accessible resources that support artificial intelligence (AI) and machine learning (ML) workloads.

vSphere Bitfusion has a client-server architecture. The product allows multiple client virtual machines (VMs) running artificial intelligence (AI) and machine learning (ML) applications to share access to remote GPUs on virtual machines running vSphere Bitfusion server software. You run the applications on the vSphere Bitfusion client machines, while the GPUs that provide acceleration are installed on the vSphere Bitfusion server machines across a network.

Some GPU resource links:

vSphere 7 with Bitfusion blog post [link](#)

Bitfusion deep dive [link](#)

Bitfusion requirements [link](#), another [link](#)

Bitfusion with vSphere overview video <https://youtu.be/NWV9nYC4Xjs>

Nvidia docs for Anthos Kubernetes on vSphere [link](#)

Setup demo (on vSphere) from Nvidia [link](#)

12/03/2020

Meeting recording link <https://youtu.be/hlDOezYPNns>

Attendees

- Scott Rosenberg - TeraSky
- Sean McGinnis - Independent
- Myles Gray - VMware
- Robert Kloosterhuis (ITQ)
-

Agenda

Members are welcome to suggest or speak on topics

- Carryover from last meeting discussion of Load Balancers for Kubernetes when on-prem
- Potential sneak peek of some GPU stuff on K8s w/ VMware (Myles)
-

Kubernetes Ingress controller comparison:

<https://docs.google.com/spreadsheets/d/191WWNpjJ2za6-nbG4ZoUMXMpUK8KIClosvQB0f-oq3k/edit#gid=907731238>

Load balancer <https://kube-vip.io/>

On prem Load Balancer mini deck from meeting [link](#)

11/05/2020 Meeting:

Meeting recording link <https://youtu.be/WHVUfE2Tbf0>

Attendees (10)

- Keith Lee (VMware)
- Myles Gray (VMware)
- Chip Zoller (Dell Technologies)
- Robert Kloosterhuis (ITQ)
- David vonThenen - VMware
- Steven Wong - Vmware
- Gopala Suryanarayana - VMware
- Bryson Shepherd - Walmart
- Ken Rider
- Wayne Stolley - Walmart

Agenda

- **vSphere 7.0 Update 1** release - what's new - speaker Gopala Suryanarayana
 - Deck link tbd
-

Minio / vSAN integration (vSAN Data Persistence platform)

<https://min.io/solutions/vmware>

<https://www.vmworld.com/en/video-library/video-landing.html?sessionId=1589586064518001pDvZ>

10/01/2020

Meeting recording link <https://youtu.be/tDzJzQIFMkw>

Attendees (7)

- Steve Wong VMware
- Myles Gray VMware
- Dave Smith-Uchida - VMware
- David vonThenen - VMware
- Chip Zoller – Dell Technologies
- Bryson Shepherd - Walmart
- Malini Bhandaru
- Please add your name here

Notices

Notice going forward after this meeting a passcode (77777) will be required to join the meeting as part of a Kubernetes wide Zoom security initiative - Didn't want to start this without notice so today only a waiting join to join meeting is in place.

The recent KubeCon Europe (best practices) and Cloud Native China (out-of-tree migration) User Group session recordings have been placed in the User groups [YouTube Playlist here](#).

Agenda

- ~~vSphere 7.0 Update 1~~ release ~~what's new~~ - speaker Gopala Suryanarayana unavailable, postponed to a future meeting
- Community projects related to vSphere Cloud Native Storage (CNS) **Data Protection** - speaker Dave Smith-Uchida
 - Velero project link <https://velero.io/>
 - Deck: <https://drive.google.com/file/d/11ty-o54IhIDipyduDMUEeRyVz1bX5Isi/view?usp=sharing>
- Discussion of issue related to moving a Kubernetes cluster to a different vCenter
- Tbd: Any user group members are encouraged to edit this document and nominate agenda items here - just add to this list and organizers will attempt to recruit speakers

9/03/2020

Meeting recording link <https://youtu.be/w9u05bmEKrA>

Attendees ()

- Please add your name here
- Myles Gray
- David vonThenen
- Scott Rosenberg
- Bryson Shepherd - Walmart

Agenda

- Presentation and discussion: troubleshooting Cloud Provider and CSI storage plugin issues deck [link](#)
- ~~Tentative: vSphere Cloud Native Storage (CNS) by Gopala Suryanarayana postponed to a future meeting~~
- Tbd: Any user group members are encouraged to edit this document and nominate agenda items here - just add to this list and organizers will attempt to recruit speakers
 - CSI Helm chart and CPI helm chart integration
 - <https://cormachogan.github.io/vsphere-csi-helmchart/>
 - David has SCC and PSP support in CPI helm chart for OpenShift: <https://github.com/helm/charts/tree/master/stable/vsphere-cpi>
 -

8/06/2020 Thursday

[recording link](#)

Attendees (8)

- Myles Gray - VMware
- Steven Wong - VMware
- David vonThenen - VMware
- Bryson Shepherd - Walmart

Agenda

- ~~Dan Finneran (Packet)~~ Myles Gray - Overview and demo of [kube-vip](#) a load balancer for inside and outside K8s clusters.
- David vonThenen new features in recent [Cloud Provider vSphere 1.2.0 release](#)
 - Node deletion occurs when the vSphere VM is no longer accessible/present - <https://github.com/kubernetes/cloud-provider-vsphere/pull/359>
 - Experimental NSX-T LoadBalancer support - <https://github.com/kubernetes/cloud-provider-vsphere/pull/292>
 - YAML cloud-config support - <https://github.com/kubernetes/cloud-provider-vsphere/pull/305>
 - Run as non-root - <https://github.com/kubernetes/cloud-provider-vsphere/pull/297>
- User focussed sessions at CNCF conferences
 - Deck from July 30 Cloud Native + Open Source China conf - migration from in-tree to out-of-tree cloud provider and storage plugins, plus best practices [link](#)
 - Upcoming KubeCon Europe online [registration link](#)
 - vSphere Cloud Provider [Thursday, August 20 • 18:50 - 19:25](#) (CEST) <https://sched.co/ZevZ>
 - vSphere Intro to cloud provider and storage + K8s on desktop hypervisors [Tuesday, August 18 • 17:45 - 18:20](#) (CEST) <https://sched.co/ZewL>
 - User panel: Lessons Learned Thursday, August 20 • 13:00 - 13:35 (CEST) <https://sched.co/ZeqU>
 - SIG Usability research and code and non-code contributions Thursday, August 20 • 17:20 - 17:55 (CEST) <https://sched.co/Zeue>
- Open table for discussion of member nominated topics
- Tbd: Any user group members are encouraged to edit this document and nominate agenda items here - just add to this list and organizers will attempt to recruit speakers

7/2/2020 Thursday 11:00AM Pacific [recording link](#)

UK: 19:00 BST

US West - 11:00 PDT

US East - 14:00 EDT

EMEA - 20:00 CEST

APAC - next day Friday 2 AM CST

Attendees (8)

All joining on Zoom, Please add your name here during meeting

1. Keith Lee - VMware
2. Robert Kloosterhuis - ITQ
3. Steven Wong - VMware
4. David vonThenen - VMware
5. Myles Gray - VMware
6. Xing Xang - VMware, Co-Chair K8s Storage SIG
7. Francis Guillier - VMware
8. Ed Grigson - VMware
9. Bryson Shepherd - Walmart

Agenda

- Xing Yang (VMware) - To give us a level set on what's coming in CSI upstream in K8s 1.19 and 1.20.
 - Deck link
<https://docs.google.com/presentation/d/1hyJlt3uhVSQ3nqrSo1MLF4rGqa8mkAjOfosDhVVR5eA/edit#slide=id.p>
- RoberK (ITQ) Would like to ask the group about the current state of Windows-based containers, and the status of their support in k8s, but also in the wider CNCF community. (assuming anyone has anything to say on this topic)
 - Intro Windows containers slide
<https://docs.google.com/presentation/d/1epZtz5P8PEAf39C9Q9MVI2FyYXAmKwUaxiQ-B1p7hlo/edit?usp=sharing>
 - From David vonThenen to Everyone: 11:12 AM
 - <https://kubernetes.io/docs/setup/production-environment/windows/intro-windows-in-kubernetes/>
 - Blog post on CSI Windows
<https://kubernetes.io/blog/2020/04/03/kubernetes-1-18-feature-windows-csi-support-alpha/>
 - Recent post from Cormac on the current state of CSI support for VMware ESX storage layers
 - <https://cormachogan.com/2020/05/07/vsphere-csi-driver-versions-and-capabilities/>
 - Windows CNI support - Antrea plugin
<https://github.com/vmware-tanzu/antrea/issues/331>
 -

Windows Containers

Support on windows 2016 no-go, go with 2019

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

Call Members with practical Experience:

David von Thenen - Vmware

Myles Gray - Vmware

CNI Support particularly bad (most used IPTables so will fail in any case)

Antrea might work? OpenvSwitch based?

What about (other) sidecar services?

Steven will organise an expert speaker for next month.

vSphere Container Storage Interface

Xing Xang - will share slides with Steven

<https://cormachogan.com/2020/05/07/vsphere-csi-driver-versions-and-capabilities/>

<https://github.com/kubernetes-sigs/vsphere-csi-driver>

<https://vsphere-csi-driver.sigs.k8s.io/>

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6/4/2020 Thursday 11:00AM Pacific [video recording](#)

UK: 19:00 BST

US West - 11:00 PDT

US East - 14:00 EDT

EMEA - 20:00 CEST

APAC - next day Friday 2 AM CST

Attendees (9)

All joining on Zoom, Please add your name here during meeting

1. David vonThenen - VMware
2. Chip Zoller
3. Chris Little - VMware
4. Steven Wong - VMware
5. Bryson Shepherd - Walmart

Agenda

- User Group Events for online KubeCon Europe - (carryover from last meeting since we didn't have time for this)
 - User group session <https://sched.co/ZewL>
 - Tuesday, August 18 • 12:00 - 12:35 (unclear what time zone this referenced to)
 - vSphere Cloud Provider session <https://sched.co/ZevZ>
 - Thursday, August 20 • 12:00 - 12:35
- Follow up on Slack inquiry about compatibility matrix of Kubernetes version vs storage plugin and cloud provider

Resources for running Kubernetes on vSphere – version matrix

This blog covers a compatibility matrix with categories based of vSphere version (back to 6.7u3) vs Kubernetes distribution (the “native” Kubernetes category includes various VMware and other commercial distributions including Red Hat OpenShift and Google Anthos)

<https://cormachogan.com/2020/05/07/vsphere-csi-driver-versions-and-capabilities/>

vSphere Storage CSI driver documentation – This is published independently of VMware product documentation in order to expose to those electing to run Kubernetes from upstream open source or from non VMware commercial distributions.

<https://vsphere-csi-driver.sigs.k8s.io/>

If you are running on vSphere prior to 6.7u3 the in-tree storage provider might be your best or only option but be advised that end of life notification as gone out for this combination. Like the Kubernetes storage plugins, the cloud providers are also moving out-of-tree. This blog post covers the out of tree vs in-tree considerations:

<https://theithollow.com/2020/04/14/in-tree-vs-out-of-tree-kubernetes-cloud-providers/>

vSphere cloud provider on GitHub – with links to docs

<https://github.com/kubernetes/cloud-provider-vsphere>

Considerations with specific Kubernetes distributions

In some cases, commercial distributions are opinionated on what combination of cloud provider and storage plug-in (in-tree vs out-of-tree, CSI) is supported by the vendor and sometimes enhanced features are associated with this. Vendor provided product documentation should always be considered more authoritative than the “generic” docs.

vSphere 7.0 with Kubernetes

The vSphere 7.0 documentation includes storage with Kubernetes coverage but some aspects of this are unique to this particular commercial distribution

<https://docs.vmware.com/en/VMware-vSphere/7.0/vmware-vsphere-with-kubernetes/GUID-1B136277-E46C-41FC-9C8C-3E78E9B97F5C.html>

Red Hat Open Shift

Blog posts and product docs

OCP 4 with vSphere CSI:

<https://access.redhat.com/solutions/4867261>

OpenShift 4.3 with CSI:

<https://www.openshift.com/blog/installing-and-configuring-vsphere-csi-driver-on-openshift-4.3>

OpenShift 4.4 with vSphere 7

<https://www.openshift.com/blog/deploying-openshift-4.4-to-vmware-vsphere-7>

Video (OpenShift 4.4 with vSphere 6.7u3)

<https://youtu.be/Be0dRq0wjWE>

- Backup of Kubernetes and stateful apps running on Kubernetes on vSphere: The Velero project is an open source solution for doing this and is reaching out for input, questions, and feedback from users.
 - Please followup in Kubernetes [VMware User Group Slack](#) or [Velero Slack](#) channels

5/7/2020 Thursday 11:00AM Pacific [recording link](#)

UK: 19:00 BST

US West - 11:00 PDT

US East - 14:00 EDT

EMEA - 20:00 CEST

APAC - next day Friday 2 AM CST

[Recording link](#)

Attendees (18)

All joining on Zoom, Please add your name here during meeting

1. Keith Lee - VMware
2. Steve Wong - VMware
3. Steve Sloka - VMware
4. Robert 'TheFluffySysop' - ITQ
5. Anand Parthasarathy - VMware
6. Ashish Shah - VMware
7. Michael Michael - VMware
8. Manish Chugtu - VMware
9. Ken Rider - Capstone IT
10. Chris Little - VMware

Agenda

- Meeting intro - What is a load balancer (10 minutes)
- Load Balancing and Ingress solutions for on-prem with demo (Steve Sloka, Michael Michael) 30 minutes
- VMware Infrastructure Advanced Load Balancer (ALB) roadmap - (Ashish Shah, Manish Chugtu) - 15 minutes
- User Group Events for online KubeCon Europe - (Possible time will require postponing this to the next meeting.)
- Any user group members are encouraged to edit this document and nominate agenda items here - just add to this list and organizers will attempt to recruit speakers

Notes

- Steve Wong - LB Introduction (Slides)
 - LB Basics, L4 vs L7, Brands and Types, relationship to k8s Ingress [deck](#)
 - **Link to Kubecon session (Steven / Micheal)**
- Steve Sloka - Load Balancing in Kubernetes with Kimbal/Contour/Envoy
 - Goals of HTTPProxy CRD (custom resource definition) / The challenges of LB integration in k8s **(deck)**
 - Gimbal Demo
- Ashish Shah, Anand Parthasarathy - VMware NSX ALB (Advanced Load Balancer) (ex Avi 'Vantage')
 - Introduction to architecture **(deck)**
 - Steve Wong: ALB has built-in visibility functions, can it send out to Prometheus, etc? - Yes

Gimbal (Heptio)

Gimbal is a layer-7 load balancing platform built on [Contour](#), which is an Ingress controller for Kubernetes that works by deploying the [Envoy proxy](#) as a reverse proxy and load balancer. It provides a scalable, multi-team, and API-driven ingress tier capable of routing Internet traffic to multiple upstream Kubernetes clusters and to traditional infrastructure technologies such as OpenStack.

<https://github.com/projectcontour/gimbal>
[Introducing Heptio Gimbal](#)

Contour

<https://projectcontour.io/>

Contour project to be donated to CNCF. (currently managed by VMware)

[Envoy](#)

VMware NSX ALB (Advanced Load Balancer) (Avi Networks)

<https://www.vmware.com/products/nsx-advanced-load-balancer.html>

VMware NSX Advanced Load Balancer (Avi Networks) provides multi-cloud load balancing, web application firewall and application analytics across on-premises data centers and any cloud. The software-defined platform delivers applications consistently across bare metal servers, virtual machines and containers to ensure a fast, scalable, and secure application experience.

Steve Wong -

Steve Sloka is demo'ing MetalLB in BGP mode - but be advised that if you use MetalLB in L2 mode, and you run it on VMware infrastructure it engages in MAC address changes and forged transmits. This means that you are going to have to use a port group configuration on vSphere that enables "MAC address changes" and "Forged transmits under Policies in the UI.

I believe that some other load balancers also have this same requirement to allow forged transmits

4/2/2020 Thursday 11:00AM Pacific

Meeting Video Recording <https://youtu.be/C5n2pwW88M0>

Attendees ()

1. Robert 'TheFluffySysop' - ITQ
2. Keith Lee - VMware
3. Steven Wong - VMware
4. Brandon Willmott - VMware
5. Naadir Jeewa - VMware
6. David vonThenen - VMware
7. Brandon Graves - Paylocity
8. Bryson Shepherd - Walmart Labs
9. Tiffany Jernigan - VMware
10. Xing Yang - VMware
11. James McLeod - Xtravirt
12. Deepa Kalani - VMware

13. Kenny Coleman - VMware

Agenda

- Service mesh with vSphere infrastructure: (meshes tbd, candidates are AVI, Antrea open source, NSX service mesh)
 - Intro deck [link](#)
 - Niran just posted a [blog](#) on TSM (Tanzu Service Mesh) which included a [demo](#)
 - The Hamlet Project *“Hamlet specifies a set of API standards for enabling service mesh federation. The [API specification](#) was realized as a collaborative effort with service mesh vendors viz. Google, HashiCorp, Pivotal and VMware.”* - <https://github.com/vmware/hamlet>
 - (blog post: <https://octo.vmware.com/project-hamlet-secure-multi-vendor-multi-mesh-federation-on-open-source/>)
 - There is an introductory ebook about Tanzu Service Mesh here: <https://pages.cloud.vmware.com/service-mesh-dummies>
 -

Question Robert: What is, in the on-prem context, the overlap and differences between NSX-T and Tanzu Service Mesh ? Does Tanzu Service Mesh replace NSX-T in Tanzu GRID (project Pacific)?

- Answer: They are complimentary, integration between the two is coming. TSM is CNI-agnostic.

- Any user group members are encouraged to edit this document and nominate agenda items here - just add to this list and organizers will attempt to recruit speakers

3/5/2020 Thursday 11:00AM Pacific

UK: 19:00 GMT

US West - 11:00 PST

US East - 14:00 EDT

EMEA - 20:00 CET

APAC - next day Friday 3 AM CST

Meeting Video Recording <https://youtu.be/M-lrF7TRveQ>

Attendees (18)

14. Steven Wong - VMware

15. Myles Gray - VMware
16. Yassine Tijani - VMware
17. Keith Lee - VMware
18. Joe Searcy - T-Mobile
19. Robert 'TheFluffySysOp' Kloosterhuis - ITQ
20. David vonThenen - VMware
21. Joe Mann - VMware
22. Kenny Coleman - VMware
23. Naadir Jeewa - VMware
24. Bryson Shepherd - Walmart
25. Brandon Willmott - VMware
26. Andrew Sy Kim - VMware
27. Mo Khan - VMware
28. Brandon Graves - Paylocity
29. All joining on Zoom, Please add your name here during meeting

Agenda

- Update on KubeCon Europe status - postponement
 - Official notice [here](#)
 - Robert would appreciate a cancel if people who RSVP'd for the vBeers event and no longer will attend. Locals still intend to have the vBeers event. Search your email for "Your Tickets for vBeers KubeCon" to get a View and manage link to cancel
- Cluster API for vSphere overview and demo (carryover request for discussion from request in 2/2/2020 meeting)
 - Background: Cluster API deep dive [deck](#) from KubeCon Nov 2019
 - Cluster Api for vSphere can use things like [Vault](#) to hold credentials securely. Other mechanisms to set environment variables without leaving creds in bash history could also be used. Docs show creds in cleartext in files, but this is not likely to be suitable for production use.
 - Components deployed are sourced from github, but you can over-ride to source locally for air gapped deployments, or tighter governance of provenance.
 - Ssh keys configured are NOT vSphere ssh creds - these are for deployed VM logins
- Members: please nominate topics here - Edit access is gated by group membership. See above for instructions on joining this group.
- Can Mike Foley post a link to his new guide? (robert) - Not public yet as of this date
- [andrewsykim] Service Type=LoadBalancer support for NSX-T load balancers
<https://github.com/kubernetes/cloud-provider-vsphere/pull/292>
 - Please try it out and provide feedback!

- Please do not run this in production yet, this feature is alpha!
- [Quick Start using the Kubernetes Cluster API Provider for vSphere \(CAPV\)](#)
- Future topic suggestion service mesh: AVI, NSX service mesh

2/6/2020 Thursday 11:00AM Pacific

UK: 19:00 GMT

US West - 11:00 PST

US East - 14:00 EDT

EMEA - 20:00 CET

APAC - next day Friday 3 AM CST

Meeting Video Recording: <https://youtu.be/01gpbvqdRHs>

Attendees (18)

30. Please add your name here during meeting
31. Steve Wong - VMware
32. Myles Gray - VMware
33. David vonThenen - VMware
34. Keith Lee (VMware)
35. Joe Searcy (T-Mobile)
36. Kenny Coleman (VMware)
37. Bryson Shepherd (Walmart Labs)
38. Robert Kloosterhuis (ITQ)

Agenda

- Overview First Class Disk and CSI
 - Resources
 - First Class Disk Primer [link](#)
 - With update [link](#)
 - Safekeeping open source tool [link](#)
 - CSI
 - vSphere CSI docs (6.7) [link](#)
 - CSI driver doc (6.7 u3) [link](#)
 - vSphere CPI/CSI install guide [link](#)
 - Noticed that the min version has changed from 6.7u2->6.7u3?
 - CSI k8s volume snapshot support is coming
 - Volume resize support is coming
 - Backup
 - Velero for K8s Backup and Restore of CSI Volumes [link](#)
 - Presentation in Nov 2019 at Kubecon [link](#)

- Cloud Native Storage aka CNS (6.7 u3)
 - Docs [link](#)
 - Overview blog post [link](#)
 - Trying CNS and CSI on vSphere with CAPV [link](#)
 - ClusterAPI for vSphere repo [link](#)
- Kubecon Amsterdam (put in by Robert (Fluffysysop))
 - Who is coming
 - Kenny Coleman
 - Keith Lee
 - David vonThenen
 - Myles Gray
 -
 - Social Events
 - Intro Session UG (when?) on Tuesday
 - Face-to-face lunch
 - vBeers ([vbeers link](#))
 - What are people focusing on
 - What sessions are of special value to us?
- Run Kubernetes on desktop hypervisors (Fusion) - Michael Roy (if time allows)
 - Github link <https://github.com/VMwareFusion>
- How to manage pod anti affinity to run on different nodes/hosts, when vm's move between hosts?
- Plan9 FS information [link](#)

Erik Shanks was featured on the last VMware Community podcast ([link](#)), he has a blog series of running k8s on vSphere, with special focus on Storage, Networking and LB
<https://theithollow.com/2020/01/08/deploy-kubernetes-on-vsphere/>