



KubeCon



CloudNativeCon

Europe 2019

# Kubernetes Working Group for Multi-tenancy: Intro

Tasha Drew

# Multitenancy WG Intro



KubeCon



CloudNativeCon

Europe 2019

- The Multitenancy Working Group was formed at Kubecon North America in 2017 after there was a large show of community interest in the subject and approaches to achieving multitenancy.
- Formed under SIG Auth
- Touches many parts of Kubernetes: node, scheduling, security, network, storage, API machinery

# Who are we?



KubeCon



CloudNativeCon

Europe 2019

- Chairs
  - Tasha Drew, VMware
  - *David Oppenheimer, Google*
- Broad group of professionals from different organizations
  - Yisui Hu, Google
  - Sanjeev Rampal, Cisco
  - Mike Arpeia, Workday
  - Erica von Buelow, Redhat
  - Ryan Bezdicek, Cray
  - Fei Guo, Alibaba
  - Many others

# Where can you find us?



KubeCon



CloudNativeCon

Europe 2019

- Slack
  - Kubernetes Slack, #wg-multitenancy
  - Join at <https://slack.k8s.io/>
- Google groups
  - <https://groups.google.com/forum/#!forum/kubernetes-wg-multitenancy>
  - Join the mailing list here for automatically receiving calendar invites and meeting notes
- Bi-weekly meeting (join google group for invite)
  - Tuesday 11am Pacific Time
  - Meetings are recorded and posted to YouTube
    - Playlist:  
<https://www.youtube.com/playlist?list=PL69nYSiGNLP1tBA0W8zEe6UwPsabGQk-j>
- Github <https://github.com/kubernetes-sigs/multi-tenancy/>

# Why Multi-tenancy?



KubeCon



CloudNativeCon

Europe 2019

- People want to share Kubernetes clusters
  - Multiple users
  - Multiple applications
  - Multiple teams
  - Multiple customers
- Reduced cluster sprawl, improved resource utilization
- We love clusterAPI, federation, ephemeral clusters – those all have great applications – but users and enterprises still have a need and a desire for multitenancy

Read more at “Kubernetes Multi-Tenancy Proposal: Project Plan,” by Tasha Drew, VMware (@tasha on slack and @tashimi on github)

Presented to the Multitenancy Working Group April 2019

<https://docs.google.com/document/d/1U8RQQmTUjxgMZY05HG2f7b3KsB94BhK4Ko6aWbLNXcc/edit#heading=h.usecunpmfu3a>

# Tenancy



- A tenant represents a group of Kubernetes users
- A tenant has certain accessibility to a group of resources in a Kubernetes cluster
- A tenant can manage accessibility of the group of resources for sub-groups of users, limited by the accessibility granted to the tenant
- A tenant can be allocated quota to consume resources in a Kubernetes cluster
- A Kubernetes cluster is shared by one or more tenants who are either isolated or not isolated.
- In a Kubernetes cluster, a tenant is an entity representing a group of resources with defined accessibility and quota.

Read more at “Tenant Concept in Kubernetes,” by Yisui Hu, Google (@easeway on slack and github)

Presented to the Multitenancy Working Group May 2019

[https://docs.google.com/document/d/1ddx7UAEPKFIdBh\\_diksYO4WZXSHDUhm-e6hyNNGYVU/edit#](https://docs.google.com/document/d/1ddx7UAEPKFIdBh_diksYO4WZXSHDUhm-e6hyNNGYVU/edit#)

# Different Tenancy Models



KubeCon



CloudNativeCon

Europe 2019

## Soft Multitenancy

- Soft multitenancy is the model of multitenancy in which users of a shared cluster are trusted to have an incentive to behave as good actors on the system. Tenants should not have access to anything from other tenants, but it could be acceptable to share the Kubernetes' API, for example.

## Hard Multitenancy

- Hard multitenancy is the model of multitenancy in which there is zero trust between users of a shared cluster to behave as good actors on the system. Tenants should not have access to anything from other tenants, except for the Kubernetes' API, which must be protected but should still be accessible to allow tenant users' to run their own controllers/operators and take other actions on objects within their namespaces.

# What are we working on?



KubeCon



CloudNativeCon

Europe 2019

- Slack
  - Kubernetes Slack, #wg-multitenancy
  - Join at <https://slack.k8s.io/>
- Google groups
  - <https://groups.google.com/forum/#!forum/kubernetes-wg-multitenancy>
  - Join the mailing list here for automatically receiving calendar invites and meeting notes
- Bi-weekly meeting (join google group for invite)
  - Tuesday 11am Pacific Time
  - Meetings are recorded and posted to YouTube
    - Playlist:  
<https://www.youtube.com/playlist?list=PL69nYSiGNLP1tBA0W8zEe6UwPsabGQk-j>
- Github <https://github.com/kubernetes-sigs/multi-tenancy/>

# How to get involved



KubeCon



CloudNativeCon

Europe 2019

- Github <https://github.com/kubernetes-sigs/multi-tenancy/>
  - Check out our project boards and see if there's an issue you can contribute to!
- Read the docs, provide feedback
  - We are looking for new user stories
  - We are looking for new use cases

Epic	Now	Next	Future
Define a “secure” cluster using existing features	<ul style="list-style-type: none"><li>- Define a “secure” single tenant cluster</li><li>- Define a “secure” soft multitenant cluster</li></ul>	<ul style="list-style-type: none"><li>- Share secure tenant specifications with bug bounty</li><li>- Get peer review from other SIGs</li><li>- Investigate SecComp/AppArmor</li></ul>	<ul style="list-style-type: none"><li>- Gather improvements and feature requests, socialize with SIGs, feed into plan for soft and hard multitenancy</li></ul>
New features/tools to improve support for Soft Multitenancy		<ul style="list-style-type: none"><li>- Cluster Auditing Suite</li><li>- Tenant CRD</li><li>- Multitenant Monitoring</li></ul>	<ul style="list-style-type: none"><li>- Gather improvements and feature requests, socialize with SIGs, feed into plan for soft and hard multitenancy</li></ul>
Support Hard Multitenancy		<ul style="list-style-type: none"><li>- Gather requirements</li></ul>	<ul style="list-style-type: none"><li>- Put together roadmap, share with SIG-API Machinery, SIG-Auth, gather feedback, put together project plan</li></ul>

# More at Kubecon EU



KubeCon



CloudNativeCon

Europe 2019

Wednesday, May 22

14:50 Deep-Dive: Kubernetes WG for Multitenancy

16:45 Panel Discussion: Multi-Tenancy in Kubernetes: Current State and Future Roadmap

# Wow! So many links!



Europe 2019

They are all on our github page under “docs!”

<https://github.com/kubernetes-sigs/multi-tenancy/blob/master/docs/links.md>

# What do you want to talk about?



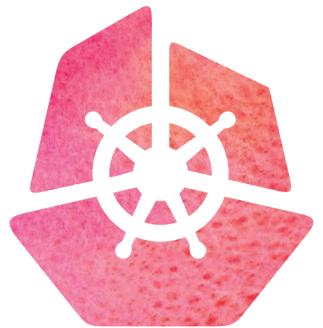
KubeCon



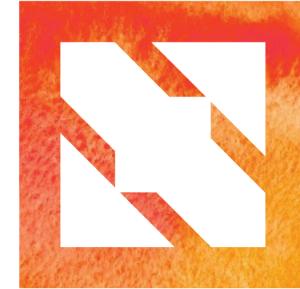
CloudNativeCon

Europe 2019





KubeCon



CloudNativeCon

Europe 2019