Agenda

• Introduction to Containerized OpenStack
• Airship Open Source Project
• Technology Preview
• Demo
• Questions
Containerized OpenStack Tech Preview

What is it?
• OpenStack services (e.g., Nova, Keystone, Neutron) packaged to run in containers as opposed to running as processes on bare metal
• Kubernetes installed onto bare metal, with OpenStack deployed within containers using Helm Charts
• Airship open source project foundation for lifecycle management

Why are we introducing it?
• Containers are more lightweight than VMs and easier to start up and terminate
  • OpenStack environment faster to start up and scale
• Easier to separate individual OpenStack projects
  • Easier to scale individual components up and down
  • Upgrades of individual components become easier
• Leverage Kubernetes’ built-in HA
  • Designing a self-healing environment becomes simpler
• Securing individual services and components becomes easier, due to container isolation
Cloud 9 Containerized OpenStack

Tech Preview
• Separately delivered – In parallel with Cloud 9 delivery
• Mandatory milestone for Cloud 10 roadmap
• Unification of Lifecycle Management
• Based on upstream Airship project

• SUSE Manager Integration Investigation – SUSE Manager Team
• Target for Delivery – May 2019
• Details linked from the Cloud 9 Beta page
  https://www.suse.com/betaprogram/cloud-beta/

We need your Feedback!
What Is Airship?

- Full Lifecycle Management of Data Center Infrastructure using Containerized OpenStack
- Uses OpenStack-Helm to Deploy OpenStack on a Kubernetes Infrastructure
Cloud Lifecycle Management Airship

Containerized Deployment

- Leverages Community Tools to Deploy OpenStack in a Kubernetes Infrastructure.
- SUSE Simplified Overrides Accelerates Deployment
- Selected Set of Airship Services

SUSE Linux

YAML Configuration

SUSE Simplified Overrides

SUSE Manager UI

Airship Components UCP

Deployer delivers components

CCP Repo

CaaSP – Kubernetes Cluster

Airship runs as containers in the cluster
SUSE OpenStack Cloud 10 Containerized Control Plane requires Lifecycle Manager conversion

Provide Migration Path in Cloud 9 for both flavors

Allows single customer conversion to CCP in Cloud 10

Lifecycle Manager is more aligned with Upstream
CCP Deployment on Existing CaaSP and SES

SOC Site Manifests

SOCOK8s

Image Registry

Helm

SUSE Linux

Deployer

CaaSP

Docker Kubelet

SUSE MicroOS

Airship UCP | Openstack CP

SES Hosts

Compute Hosts

SES Deployment on Existing CaaSP and SES

Keystone

Horizon

Glance

Neutron

Nova

Cinder

Heat

MariaDB

RabbitMQ

Tiller

Armada

Shipyard

Decknad

Pegleg

Ingress

Nova compute

Libvirt

OVS

MariaDB

RabbitMQ

Tiller

Armada

Shipyard

Decknad

Pegleg

Ingress

Nova compute

Libvirt

OVS

MariaDB

RabbitMQ

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OVS

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RabbitMQ

Tiller

Armada

Shipyard

Decknad

Pegleg

Ingress

Nova compute

Libvirt

OVS
CCP Deployment – What if I Don’t Already Have K8S?

SUSE Linux

Deployer

Image Registry

Helm

SOCOK8s (final name?)

SOC Site Manifests

CaaSP Heat templates

CaaSP V3

Docker Kubelet

SUSE MicroOS

Host

SES AIO

SES V5.5
Declarative and Repetitive Cloud Infrastructure

- Helm charts
- Container Images
- Overrides
- Profiles
- Network
- Security Policy
- Storage
- Host

SOC Site

SOCOK8s (final name?)

Image Registry

Helm

SUSE Linux

Deployer
One Workflow for Lifecycle Management

Use Case 1: Scale out Control Plane

"Before"
Single Node Demo Control Plane
One Workflow for Lifecycle Management

**Use Case 1: Scale out Control Plane**

Three Node HA Control Plane

**SOC Site Manifests**

- SUSE Linux Deployer
- Image Registry
- Helm
- SOCOK8s
- Deployer

- CaaSP
  - Docker Kubelet
  - SUSE MicroOS
  - Control Worker 1

- CaaSP
  - Docker Kubelet
  - SUSE MicroOS
  - Control Worker 2

- CaaSP
  - Docker Kubelet
  - SUSE MicroOS
  - Control Worker 3

- Ingress
- Keystone
- Horizon
- Glance
- Neutron
- Nova
- Cinder
- Heat
- MariaDB
- RabbitMQ

**“After”**

- SUSE MicroOS Compute Host
- Ingress
- Heat
- MariaDB
- RabbitMQ
- Nova compute
- Neutron OVS
- Libvrt
- SES Hosts
One Workflow for Lifecycle Management

Use Case 2: Expand Compute Capacity

Before

Spare Worker node
One Workflow for Lifecycle Management

**Use Case 2: Expand Compute Capacity**

```
SOC Site
Manisfets

SUSE Linux
Deployer

SOCOK8s
Registry
Helm

CaaSP
Docker Kubelet
SUSE MicroOS
Control Worker 1

CaaSP
Docker Kubelet
SUSE MicroOS
Control Worker 2

CaaSP
Docker Kubelet
SUSE MicroOS
Control Worker 3

RabbitMQ
Nova
Keystone
Horizon
Glance
Cinder
Neutron
Nova
Deckmnad
Pegleg
CaaSP
Ingress
Armada

```

“After”
Additional Compute Host

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Compute Host
Compute Host
Compute Host

Libvirt
Neutron
OVS
Nova
Heat
MariaDB
RabbitMQ
Keystone
Horizon
Glance
Neutron
Nova
Cinder
Control Worker 3
CaaSP
Docker Kubelet
SUSE MicroOS

```
One Workflow for Lifecycle Management

Use Case 3: Upgrade Service from Pike to Queens
Resilience and Self-Healing

What happens when a node is lost?

- Leverages Kubernetes HA
- Airship Can Redeploy Components on New Node

CaaSP – Kubernetes Cluster
Cloud 9 Containerized OpenStack

Details Linked from the Cloud 9 Beta Page
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Coming to you soon.. May 2019

We need your Feedback!!!
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