



# SUSE OpenStack Cloud Roadmap

**SUSEcon**<sup>'19</sup>

Session FUT1430

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# Agenda

- **Lifecycle**
- **Major Focus Areas**
- **Cloud 9**
- **Containerization Tech Preview**
- **Cloud 9 Updates**
- **Cloud 10**
- **Questions**

**Information is forward looking and subject to change at any time.**

# SUSE: Underpinning Digital Transformation



Business-critical Applications



Machine Learning



Internet of Things



Business Analytics



High Performance Computing



Traditional IT & Applications

## Application Delivery



Container Management

SUSE CaaS Platform



Platform as a Service

SUSE Cloud Application Platform

## Software-defined Infrastructure



Private Cloud / IaaS

SUSE OpenStack Cloud



Compute

Virtual Machine & Container



Storage

SUSE Enterprise Storage



Networking

SDN and NFV



Multimodal Operating System

SUSE Linux Enterprise Server



Public Cloud

SUSE Cloud Service Provider Program

Physical Infrastructure: Multi-platform Servers, Switches, Storage



Services

SUSE Global Services  
Consulting Services  
Select Services  
Premium Support Services

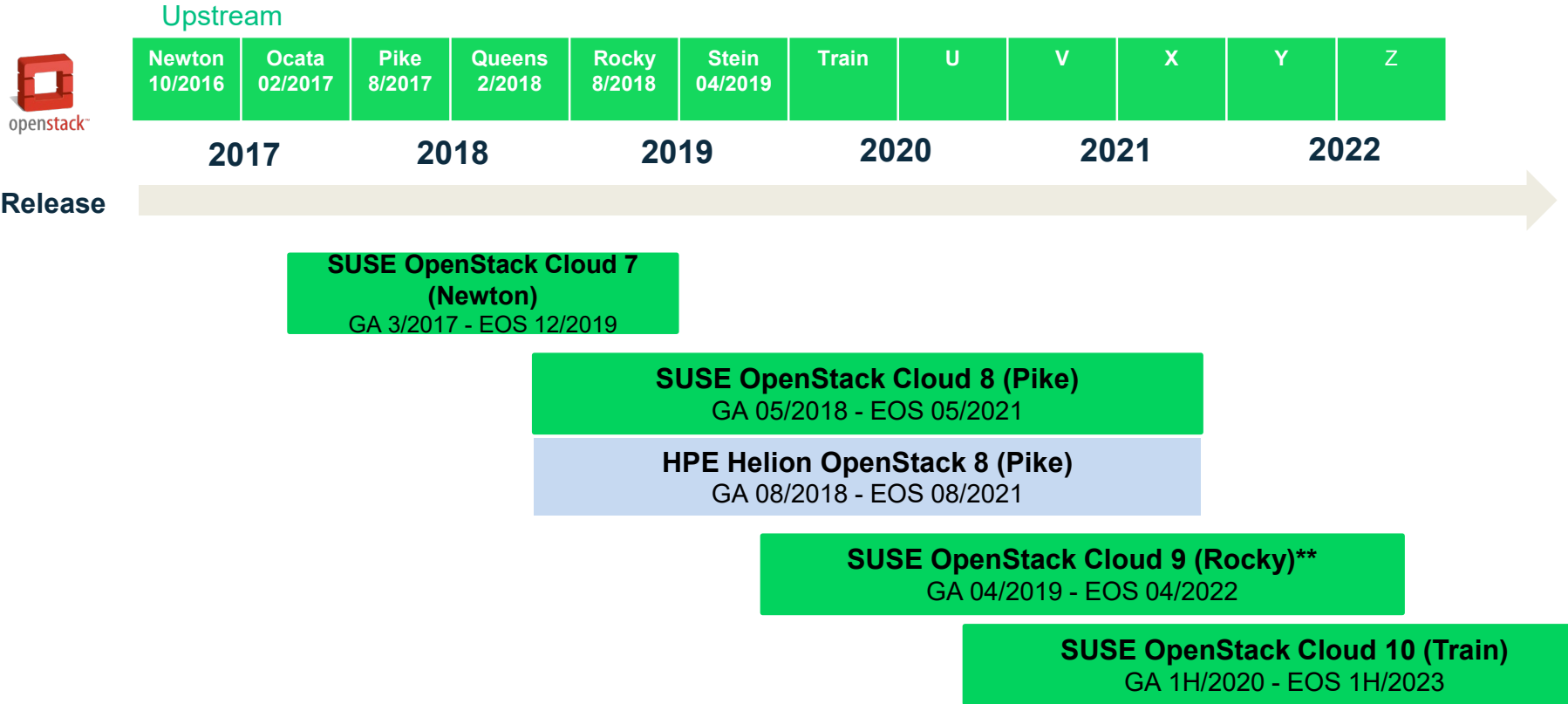


Infrastructure & Lifecycle Management

SUSE Manager

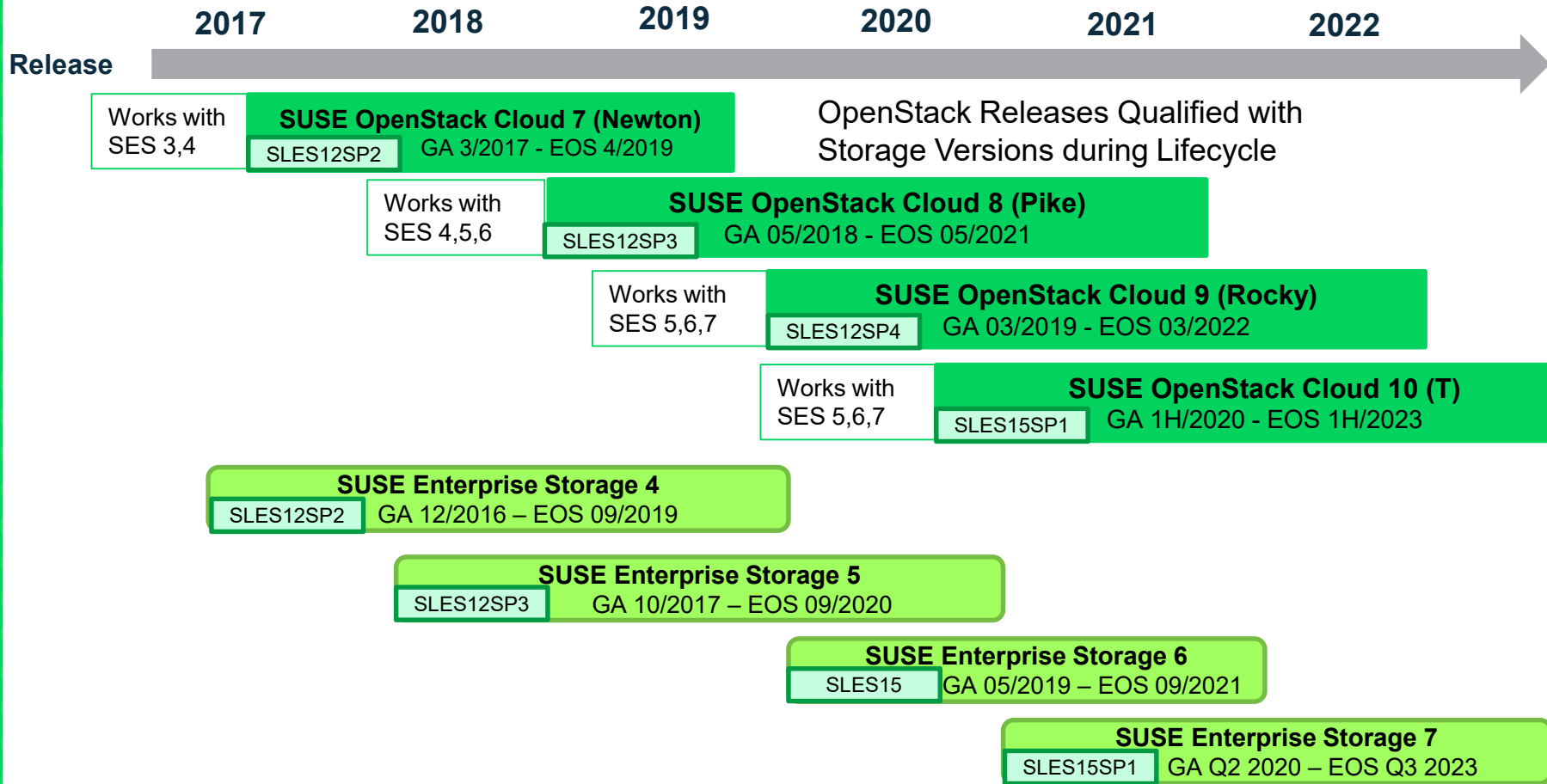
Open, Secure, Proven

# SUSE OpenStack Cloud Lifecycles



\*\* No HPE Helion Release  
Will Provide Upgrade to Cloud 9

# SUSE OpenStack Cloud + Enterprise Storage Lifecycle



# Futures - Themes for SUSE OpenStack Cloud

- Simplify Day 2 Operations
- Add more Networking Capabilities
- Containerized Components
- Standardized Monitoring Capabilities
- Support for Emerging Technologies

# What's new in SUSE OpenStack Cloud 9?

- Based on OpenStack Rocky
  - Multi-attached storage
  - Ironic Improvements
  - Includes Queens functionality
- SUSE Linux Enterprise Server 12 SP4
- Day two UI – CLM Admin Console
- IPV6 Support\*\*
- Watcher Optimization – Tech Preview\*\*
- GA Release planned for April 2019
- Dual lifecycle options
  - Crowbar
  - Cloud Lifecycle Manager (CLM)



\*\*Delivered in Cloud 9 Updates

# Cloud 9 - OpenStack Project Status

Project	Crowbar	CLM
Barbican	✓	✓
Cinder	✓	✓
<b>Designate</b>	✓	✓
<b>Freezer</b>		Deprecated
Glance	✓	✓
Heat	✓	✓
Horizon	✓	✓
Ironic	✓	✓
Keystone	✓	✓
Magnum	✓	✓
<b>Manila</b>	✓	✓

Project	Crowbar	CLM
Monasca	✓	✓
Monasca-Ceilometer	✓	✓
Neutron	✓	✓
Neutron(LBaaSv2)	Octavia	Octavia
Neutron(VPNaaS)		✓
Neutron(Fwaas)	✓	✓
Nova	✓	✓
<b>Octavia</b>	✓	✓
Sahara	✓; Tech Preview	
Swift	✓	✓
Watcher	✓	✓



# Day 2 UI SUSE OpenStack Cloud 9

## CLM Admin Console

The image shows two overlapping screenshots of the CLM Admin Console. The background screenshot displays the 'Servers' page under the 'COMPUTE-ROLE' section. It features a table with columns for server name, IP address, rack, hardware model, and MAC address. The foreground screenshot shows the 'Service Information' page, which contains a table listing various services with their descriptions, status, endpoints, and regions.

**Servers Page (Background):**

COMPUTE-ROLE	3			
compute1	10.243.140.16	rack1	HP-DL360-6PORT	8c:dc:d4:b5:78:c4
compute2				
compute3				

**Service Information Page (Foreground):**

Name	Description	Status	Endpoints	Regions
Ardana	Ardana Service	-	Admin https://192.168.245.6:9085 Internal https://192.168.245.6:9085 Public https://myardana.test:9085	region1 region1 region1
Barbican	Barbican as a Key Manager Service (created via barbican deploy)	-	Admin https://192.168.245.6:9311 Internal https://192.168.245.6:9311 Public https://myardana.test:9311	region1 region1 region1
Ceilometer	Ceilometer Service	-	Admin https://192.168.245.6:8777/ Internal https://192.168.245.6:8777/ Public https://myardana.test:8777/	region1 region1 region1
Cinder	Cinder Volume Service	-	Admin https://192.168.245.6:8776/v1/%(tenant_ids) Internal https://192.168.245.6:8776/v1/%(tenant_ids) Public https://myardana.test:8776/v1/%(tenant_ids)	region1 region1 region1

# 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, 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

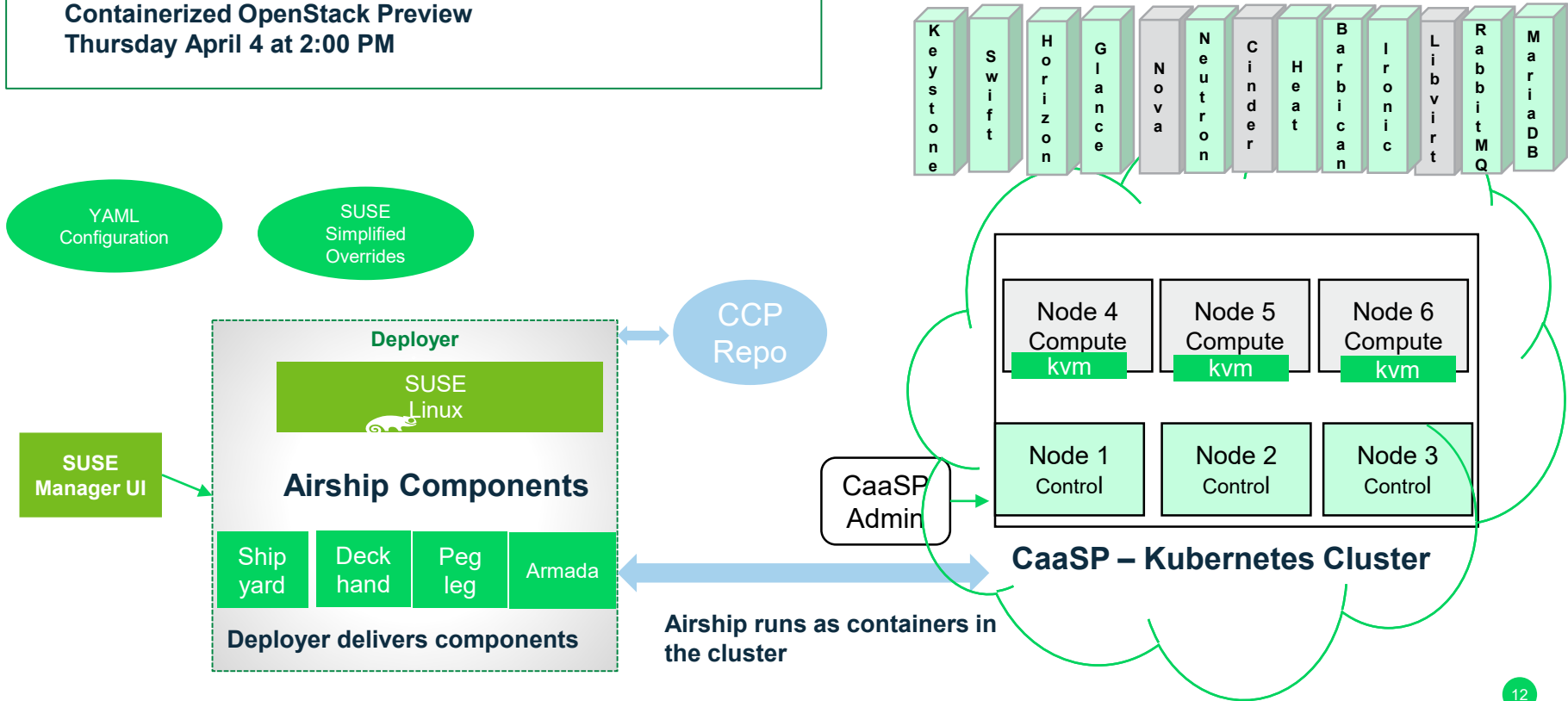
- Separately delivered – In Parallel with Cloud 9 Delivery
- Milestone for Cloud 10 Roadmap
- Unification of Lifecycle Management
- Based on upstream Airship Project
  
- SUSE Manager Integration Investigation – SUSE Manager Team
  
- Target for Delivery April 2019
- Details Linked from the Cloud 9 Beta Page  
<https://www.suse.com/betaprogram/cloud-beta/>

**We need your Feedback!!!**

# Cloud Lifecycle Management Airship

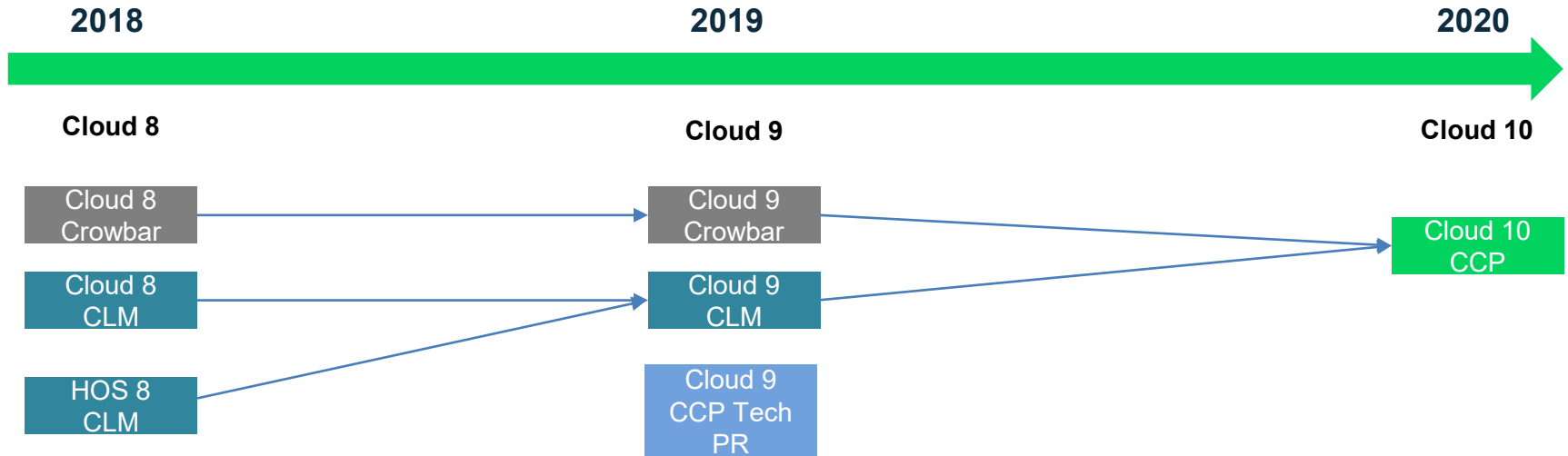
## Containerized Deployment

**AD** Full Details Attend SUSEcon Session TUT1273  
Containerized OpenStack Preview  
Thursday April 4 at 2:00 PM



# Lifecycle Upgrade Paths / Unification Plan

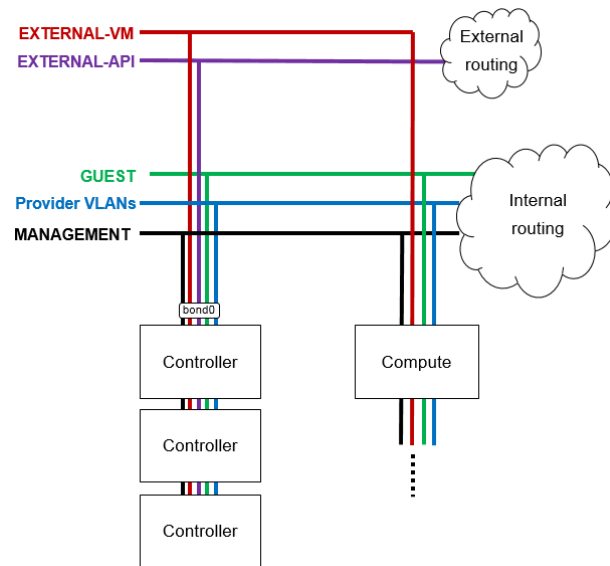
- SUSE OpenStack Cloud 10 Containerized Control Plane Requires Life Cycle Manager Conversion
- Provide Migration Path in Cloud 9 for both Flavors
- Allows single customer conversion to CCP in Cloud 10
- Lifecycle Manager is more aligned with Upstream



# Cloud 9 Updates

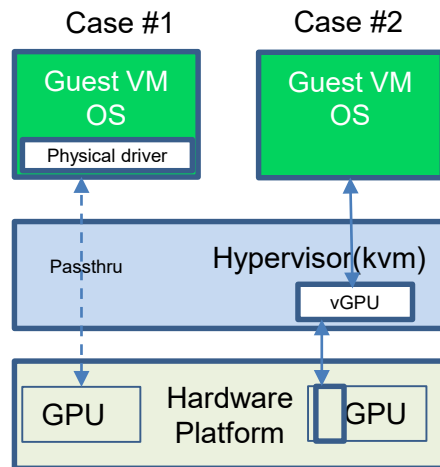
# IPV6 Support Details

- Cloud 8 Supports IPV6 Tenant Networks
- IPV6 Support for both Tenant and Control Plane Networks in Cloud 9
- Single Stack Support for IPV6
- No Conversion Allowed – Requires New Deployment
- Full Delivery in Early Cloud 9 Update Cycle



# SUSE OpenStack Cloud GPU Support

- **Primary Requested Use Case #1**
  - PCI Passthru NVIDIA GPUs to Guest VMs
  - This use case will be qualified in the Cloud 9 Updates
- **Second Most Requested Use Case #2**
  - NVIDIA GPUs shared using vGPU Driver
  - Once the NVIDIA vGPU driver is supported by NVIDIA we will consider this for the Cloud 9 Updates
- **Other Requested Configurations**
  - FPGAs
  - Other GPU Vendor Types
  - Discovery of GPUs and Provisioning within Ironic



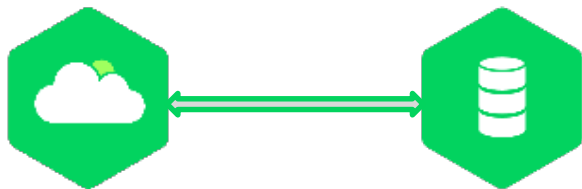


# SUSE Cloud/Storage Integration

Installation / Configuration Improvements to Connect the Cloud to SUSE Enterprise Storage

## Delivery Phases

1. Cloud 8 CLM Manual Additions Input Model
2. Cloud 8 CLM Updates Export / Import  
Cloud 9 Crowbar Export/Import in Maintenance Update



# OpenStack Watcher Cloud 9 Tech Preview



- Monitors (“Watches”) Infrastructure
- Watcher provides **Dynamic Resource Optimization**
  - Complete optimization loop using policies
- Primary Use Case Supported in Cloud 9
  - Compute Server is Overloaded High CPU Utilization
  - Redistribute VMs via Live VM Migration other Servers
  - Less Operator Intervention
- Delivered in a Cloud 9 Update

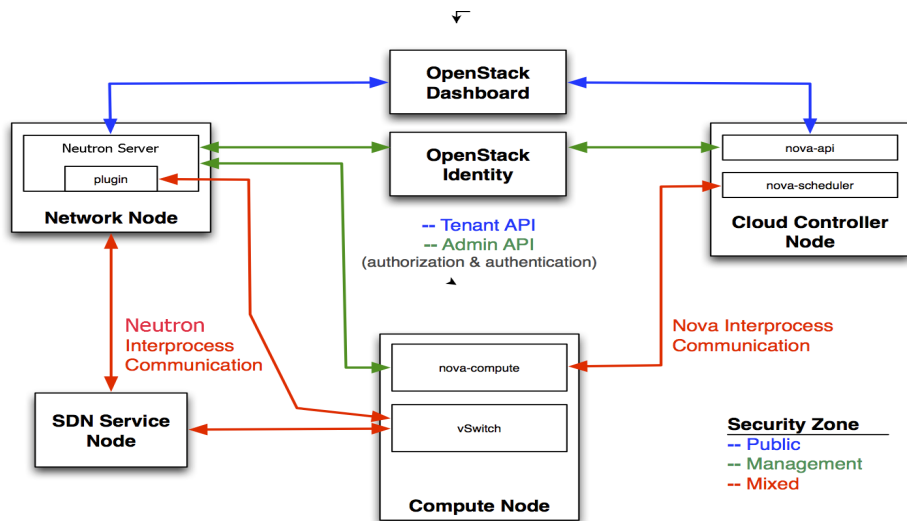
# Scalability Improvements

## Clouds are Getting Bigger



- Start Qualification Testing of Large Clouds in the 1,000 – 2,000 Node range – 2nd Half of 2019
- Key Areas of Focus to Enable This Growth
  - Adding Region Support to Lifecycle Managers
  - Working on Multi-Site Use cases
  - Federation

# SDN Integration



## Current SDN Support

-VMware v6.3 NSX-V - Cloud 8\*

## Planned Support

-VMware v2.4 NSX-T – Cloud 9 Updates \*\*

-Juniper v5 – Cloud 9 Updates \*\*

## Planning

-Cisco ACI \*\*\*

\* ESX supported only

\*\* kvm & ESX supported

\*\*\* kvm only

AD

Networking at SUSE FUT1442

Mark Darnell Tues, Wed at 10:00 am

# Monitoring Updates

## Monasca Improvements

Lifecycle Events Monitoring

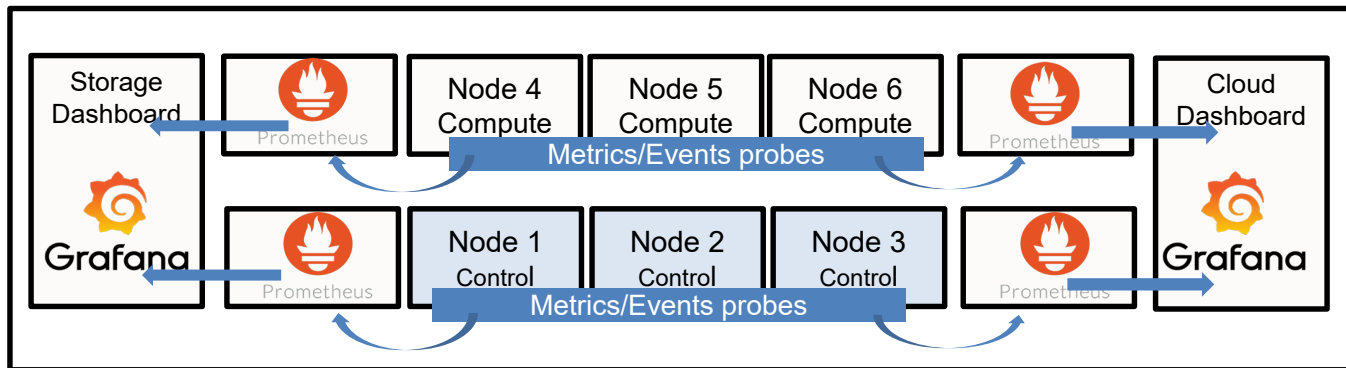
Correlation of Events

Better out of the box defaults



## Introduction of Prometheus – Cloud 10

Common View Across Products with Grafana Dashboards

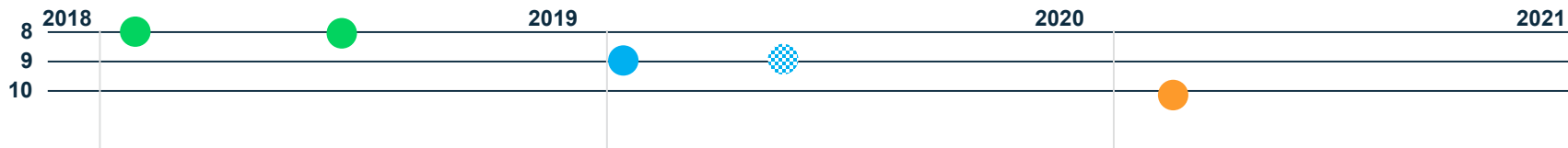


# Cloud 10 Themes

- Containerization of OpenStack – Full Production Support
- New Options for Monitoring
- Leveraging Kubernetes for HA
- Common Installer for Cloud Infrastructure
- New Single Lifecycle Manager Based on Airship
- Exploit new Acceleration Technology

Questions??

# SUSE OpenStack Cloud



## 8

### Built On

- OpenStack Pike Release
- SUSE Linux Enterprise Server 12 SP3

### New or Expanded Services

- SUSE CAP Integration
- Physical Server as a Service (Ironic)
- SDN Support for NSX-V
- Dual lifecycle manager options

### Operational Enhancements

- Non-disruptive Upgrade to Cloud 8
- Planning and Pre-install Validation
- Simple Deployment UI
- Scale Testing 200 nodes
- Monitor Capacity and Performance
- 3-year support

## 8 Updates

### Built on

- OpenStack Pike Release
- SUSE Linux Enterprise Server 12 SP3

### New or Expanded Services

- CLM Manila Support

### Operational Enhancements

- Lifecycle Tools Improvements
- mkcloud support
- SES Integration

## 9

### Built On

- OpenStack Rocky Release
- SUSE Linux Enterprise Server 12 SP4

### New or Expanded Services

- Containerized OpenStack\*\*
- Dual lifecycle manager options

## 9 Updates

### Built On

- OpenStack Rocky Release
- SUSE Linux Enterprise Server 12 SP4

### New or Expanded Services

- GPU Support
- SDN Support for Juniper
- SDN Support for NSX-T

### Operational Enhancements

- IPV6 Support
- Policy-based Optimization\*\*
- Scalability Improvements
  - Region Support
  - Federation
  - Multi-Data Center Support
- Cloud Monitoring
  - Lifecycle Events Monitoring
  - Advanced Log Analysis
  - Monitoring Analytics
- Integration with SUSE Single Sign-on

## 10

### Built On

- OpenStack Train Release
- SUSE Linux Enterprise Server 15

### New or Expanded Services

- Containerized Deployment
- Accelerator Engine Support

### Operational Enhancements

- Prometheus Monitoring
- Multiple Site Enhancements
- DR Enhancements
- Root Cause
- Detection/Analysis/Repair
- Kubernetes Networking Configurations
- Workflow Automation

\*\* Items are tech preview

\* Information is forward looking and subject to change at any time.





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