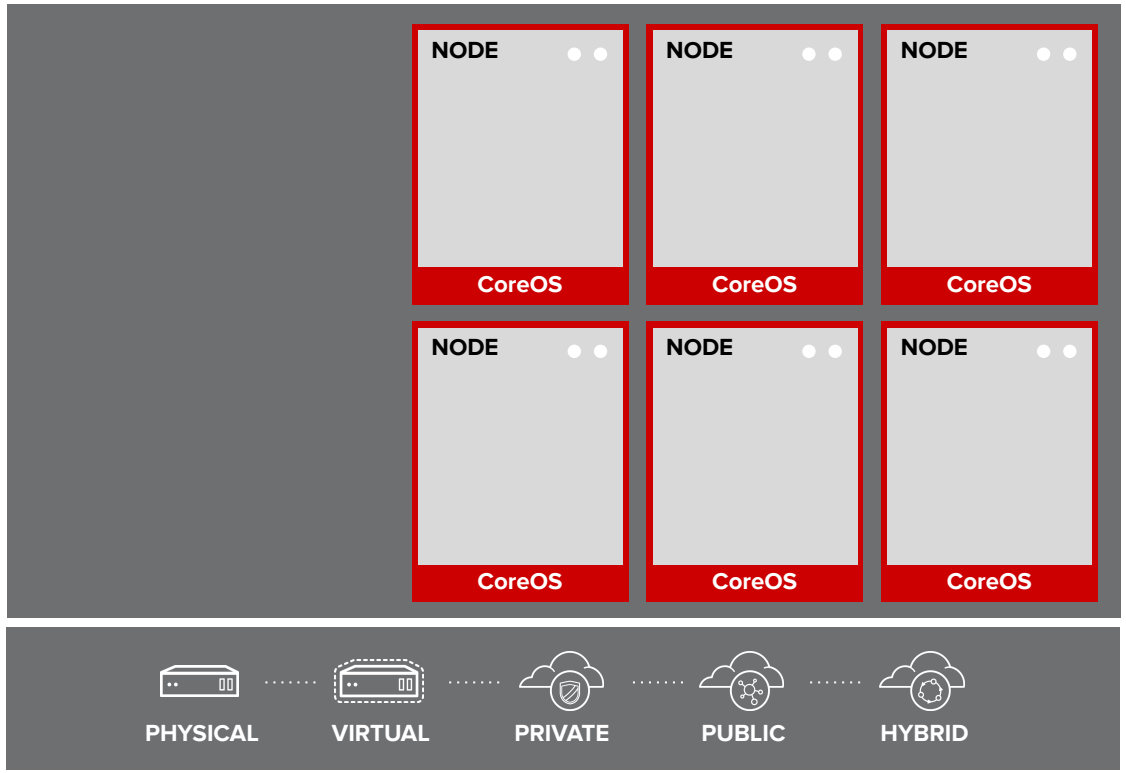
OpenShift Installation

Red Hat

YOUR CHOICE OF INFRASTRUCTURE

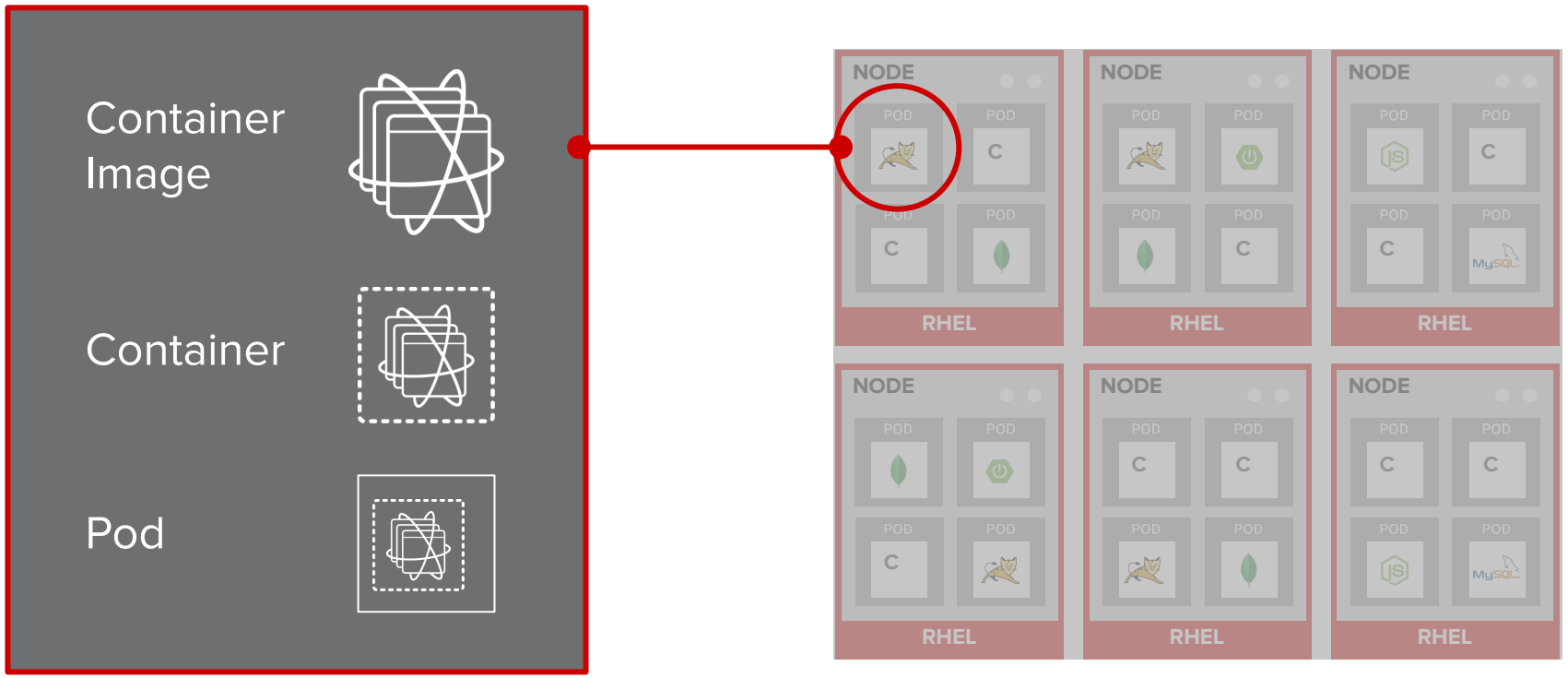
Red Hat

NODES RHEL INSTANCES WHERE APPS RUN



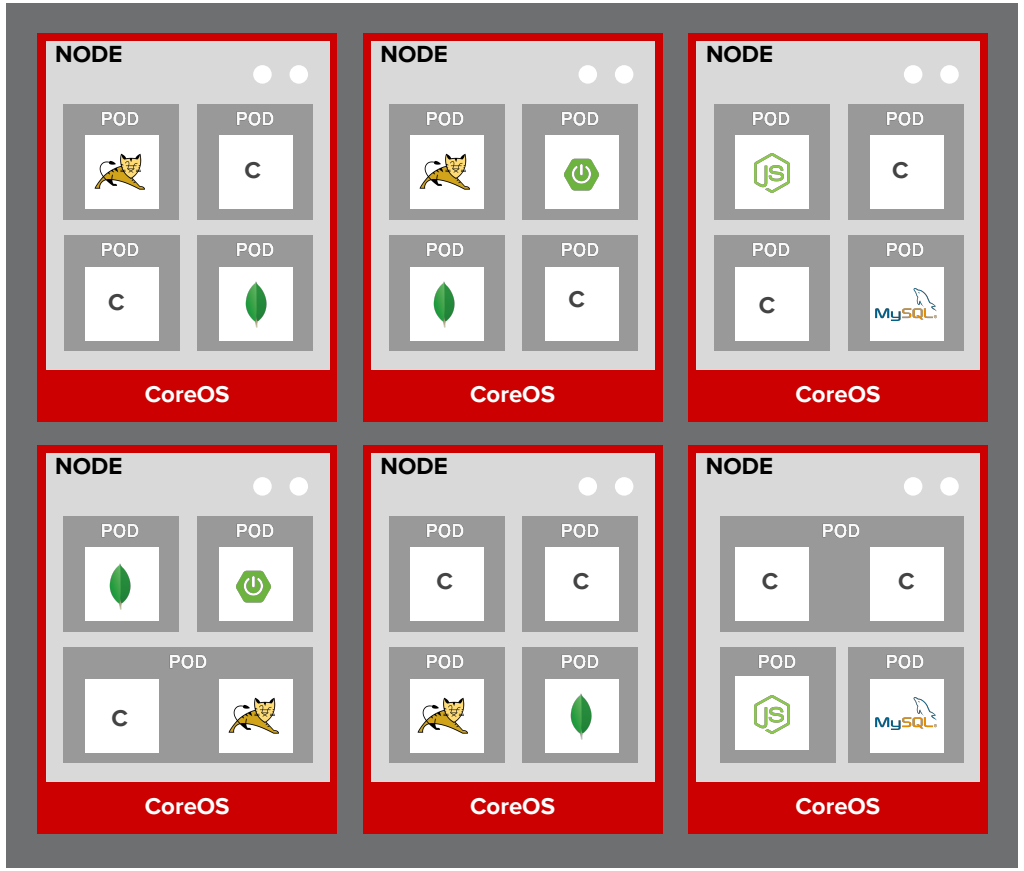
Red Hat

APPS RUN IN CONTAINERS



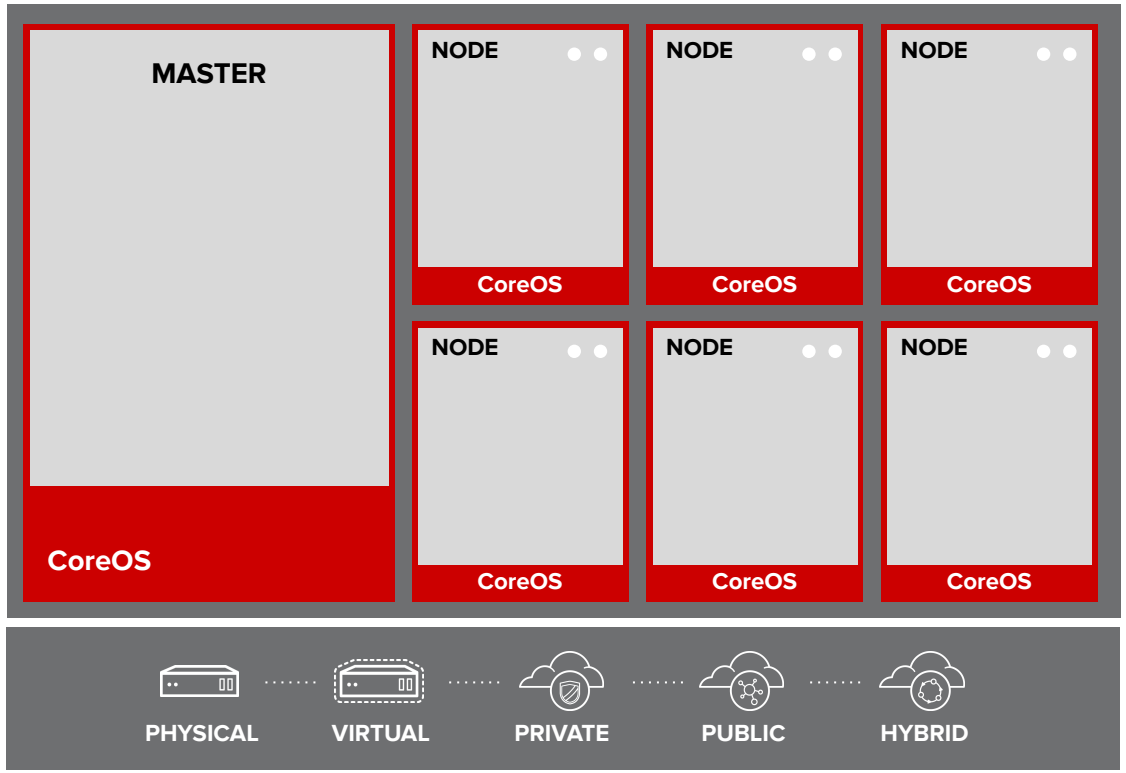
Red Hat

PODS ARE THE UNIT OF ORCHESTRATION



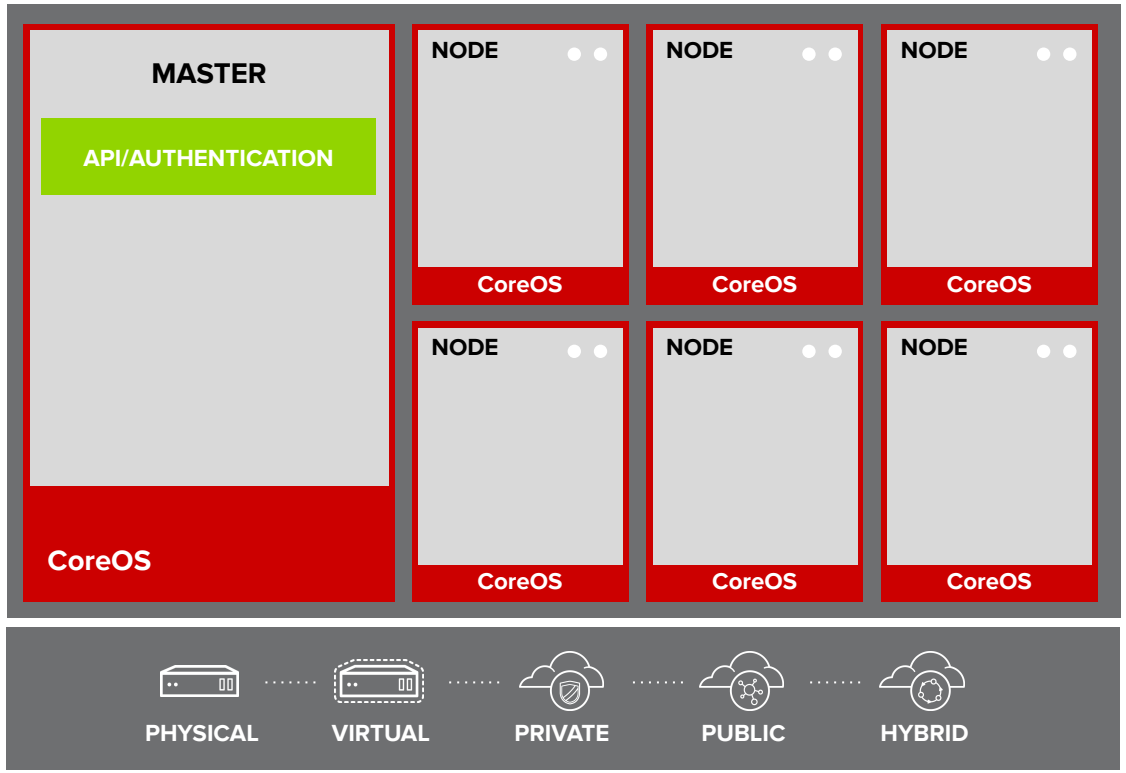
Red Hat

MASTERS ARE THE CONTROL PLANE



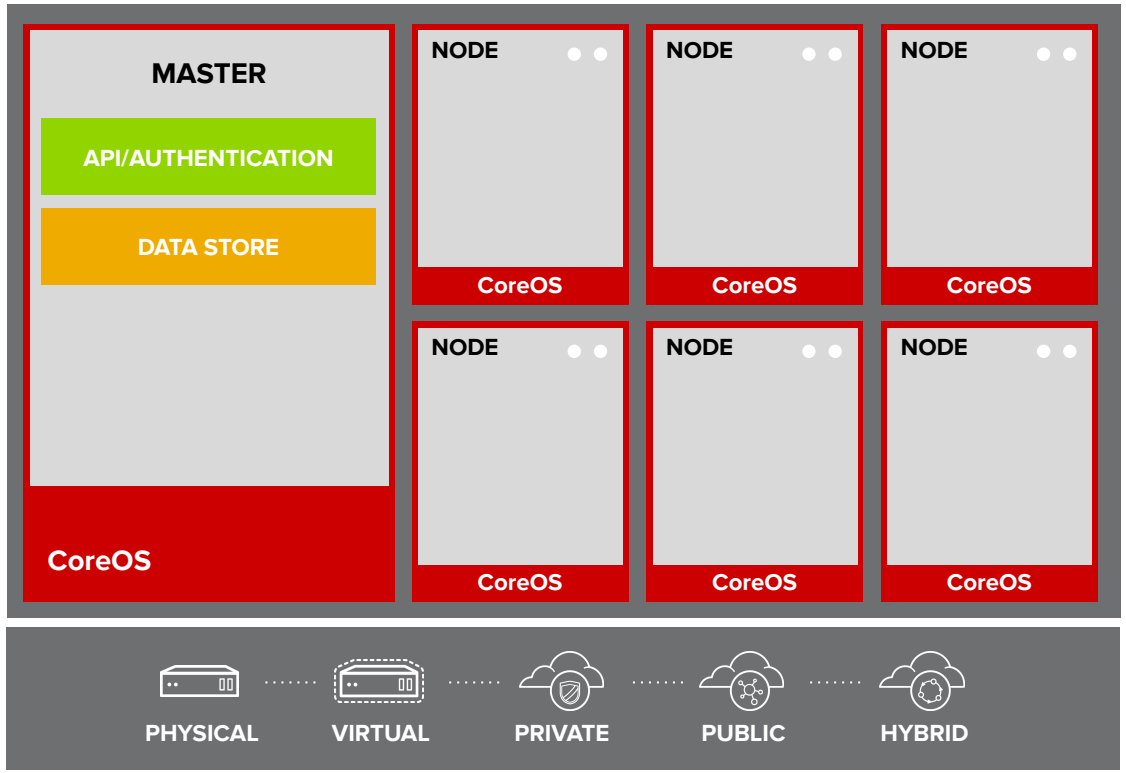
Red Hat

API AND AUTHENTICATION



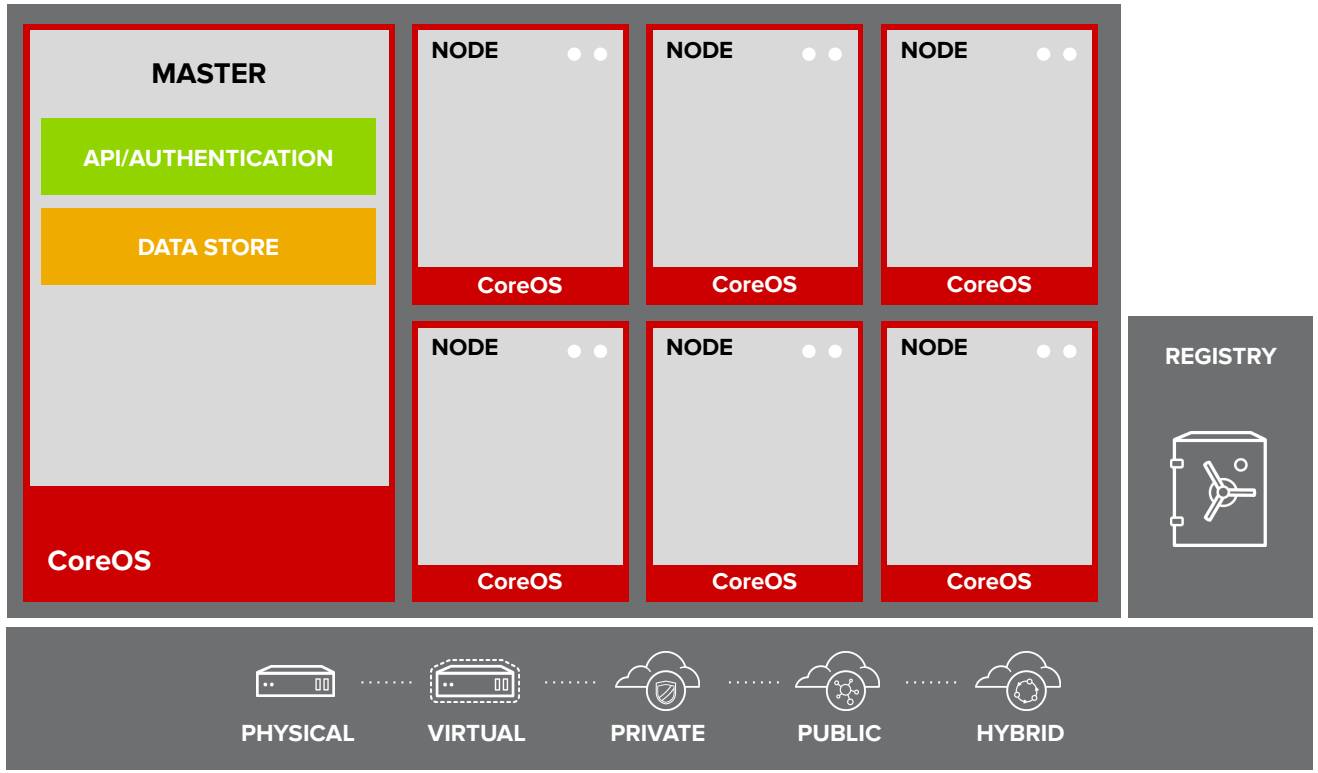
Red Hat

DESIRED AND CURRENT STATE



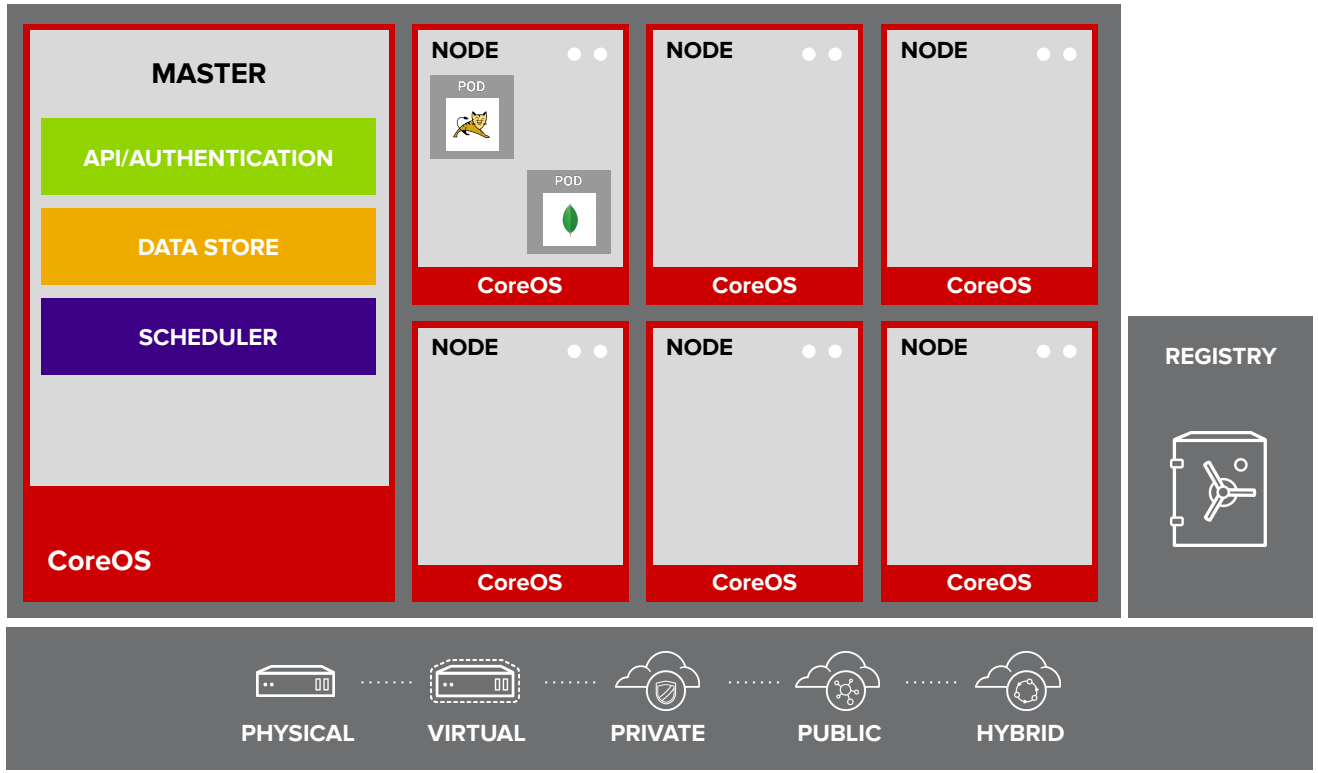
Red Hat

INTEGRATED CONTAINER REGISTRY



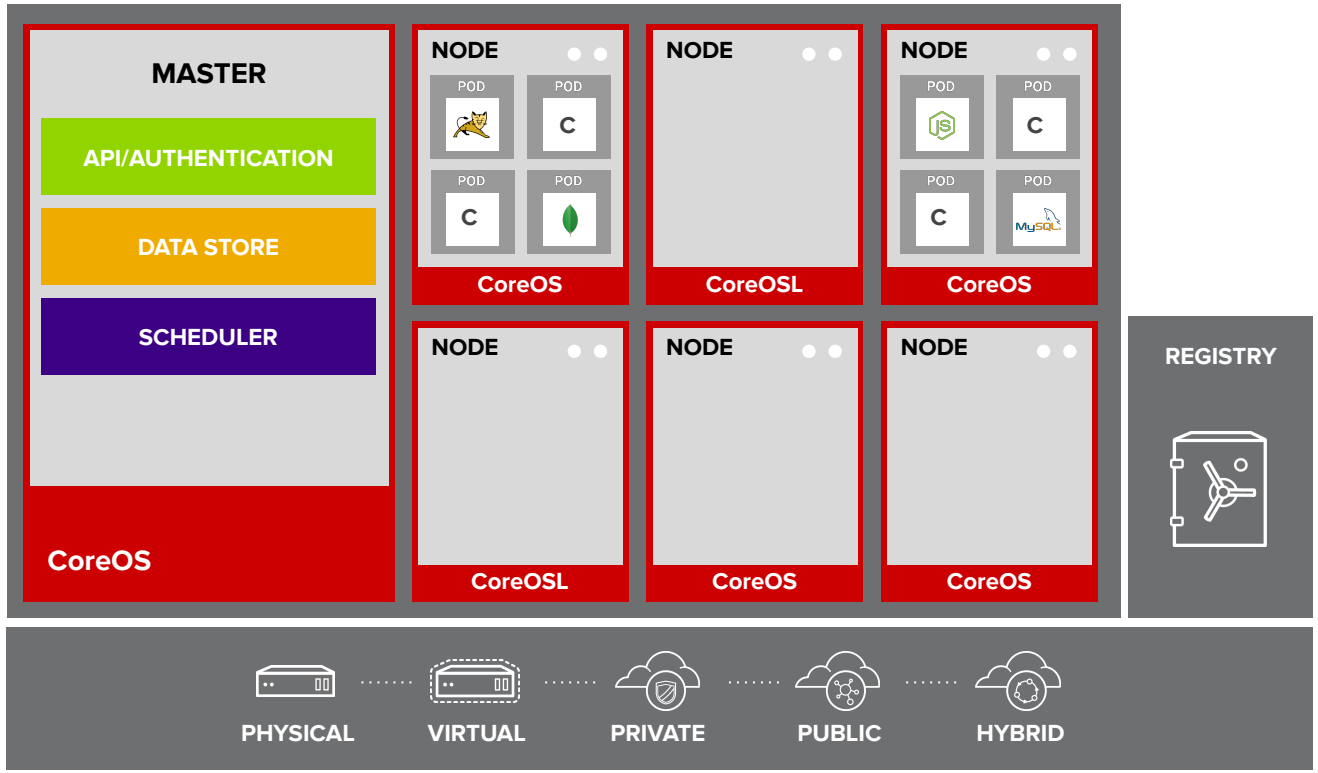
Red Hat

ORCHESTRATION AND SCHEDULING



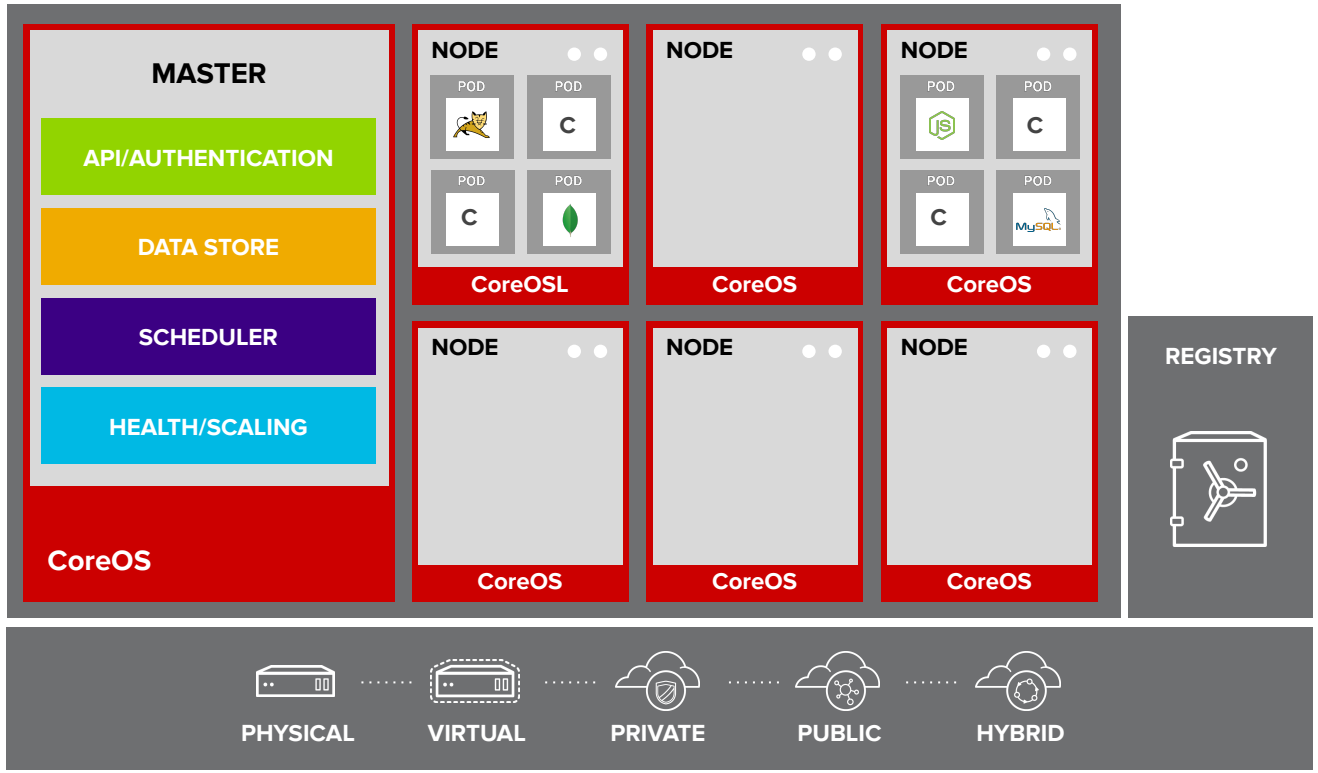
Red Hat

PLACEMENT BY POLICY



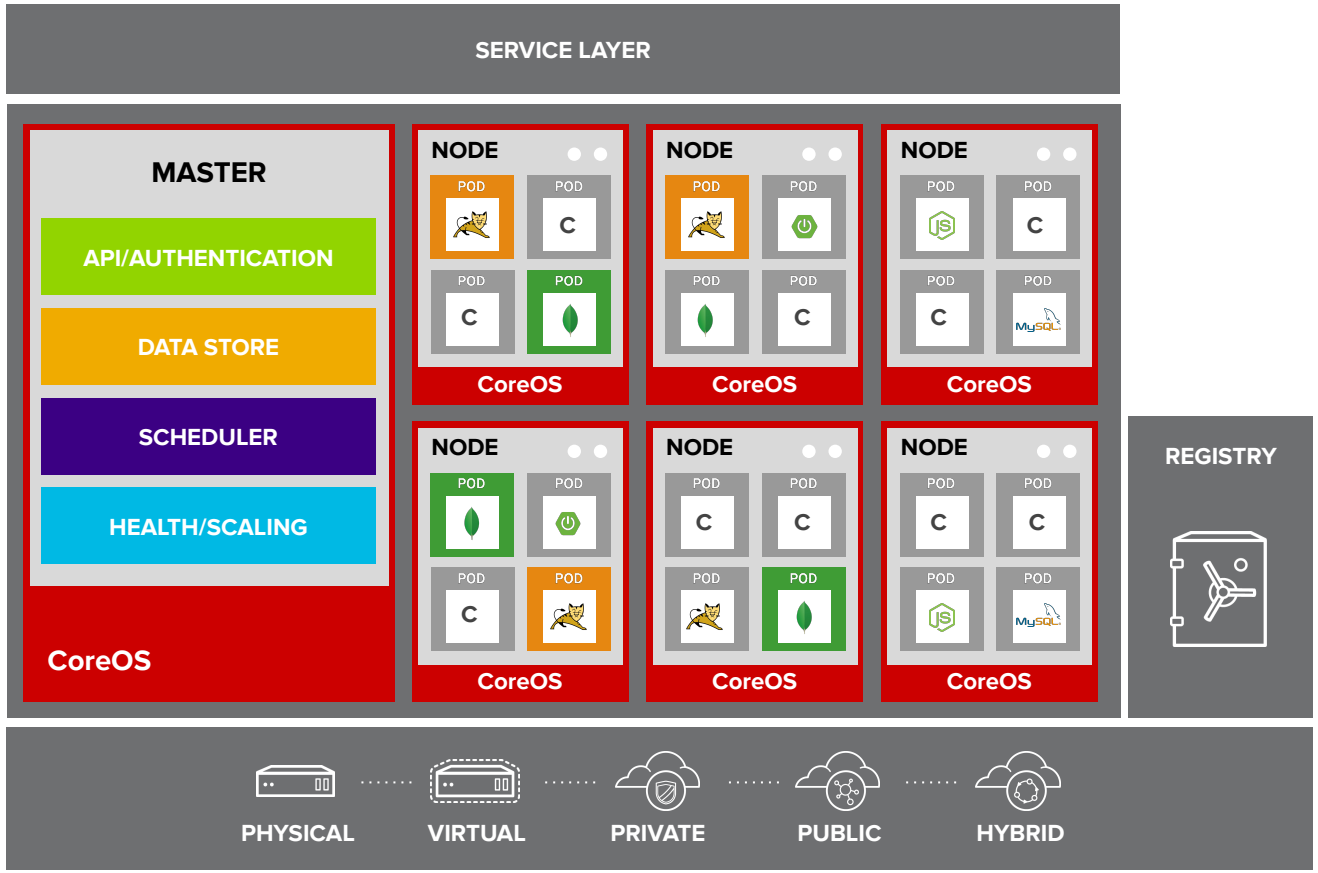
Red Hat

AUTOSCALING PODS



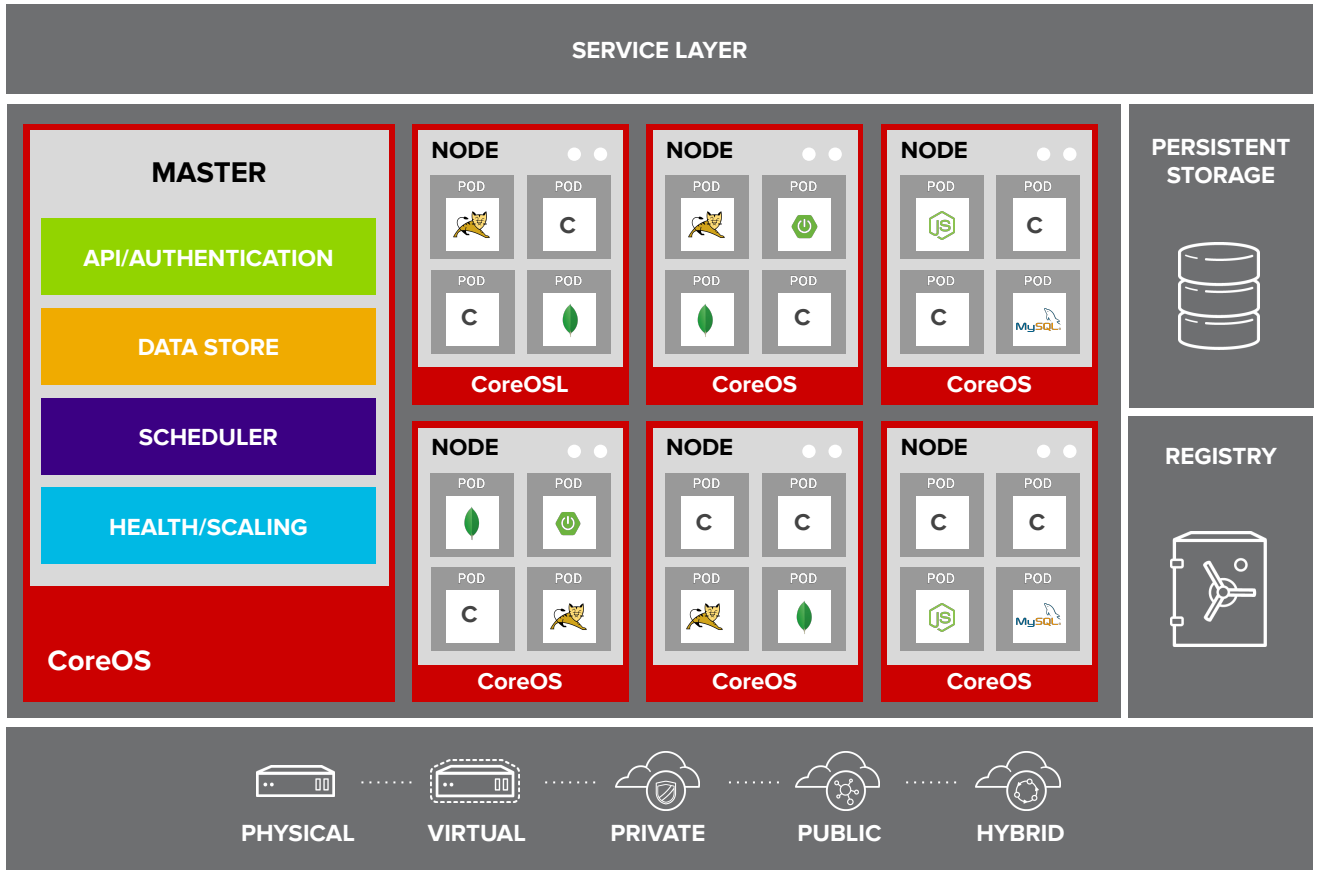
Red Hat

SERVICE DISCOVERY



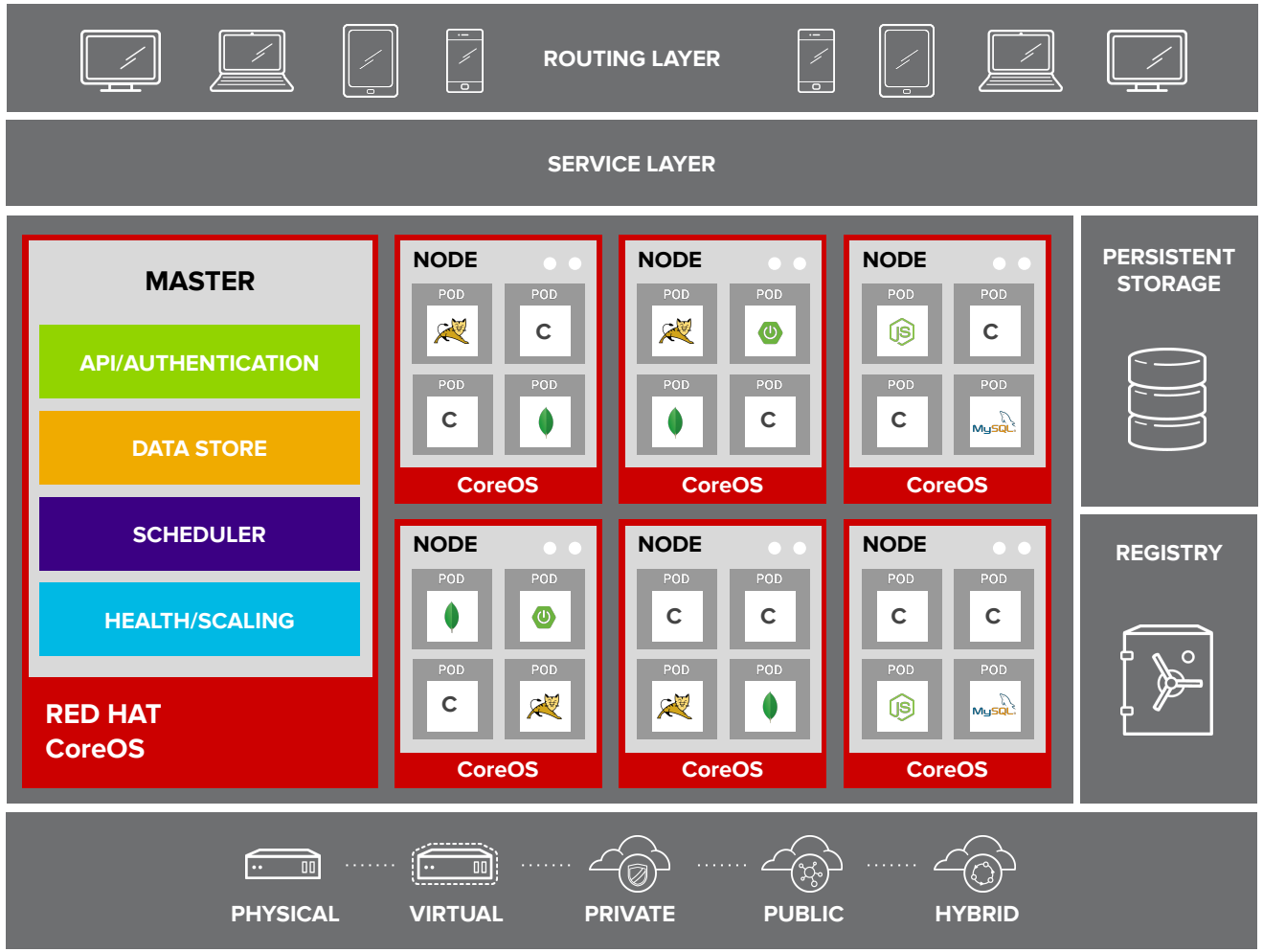
Red Hat

PERSISTENT DATA IN CONTAINERS



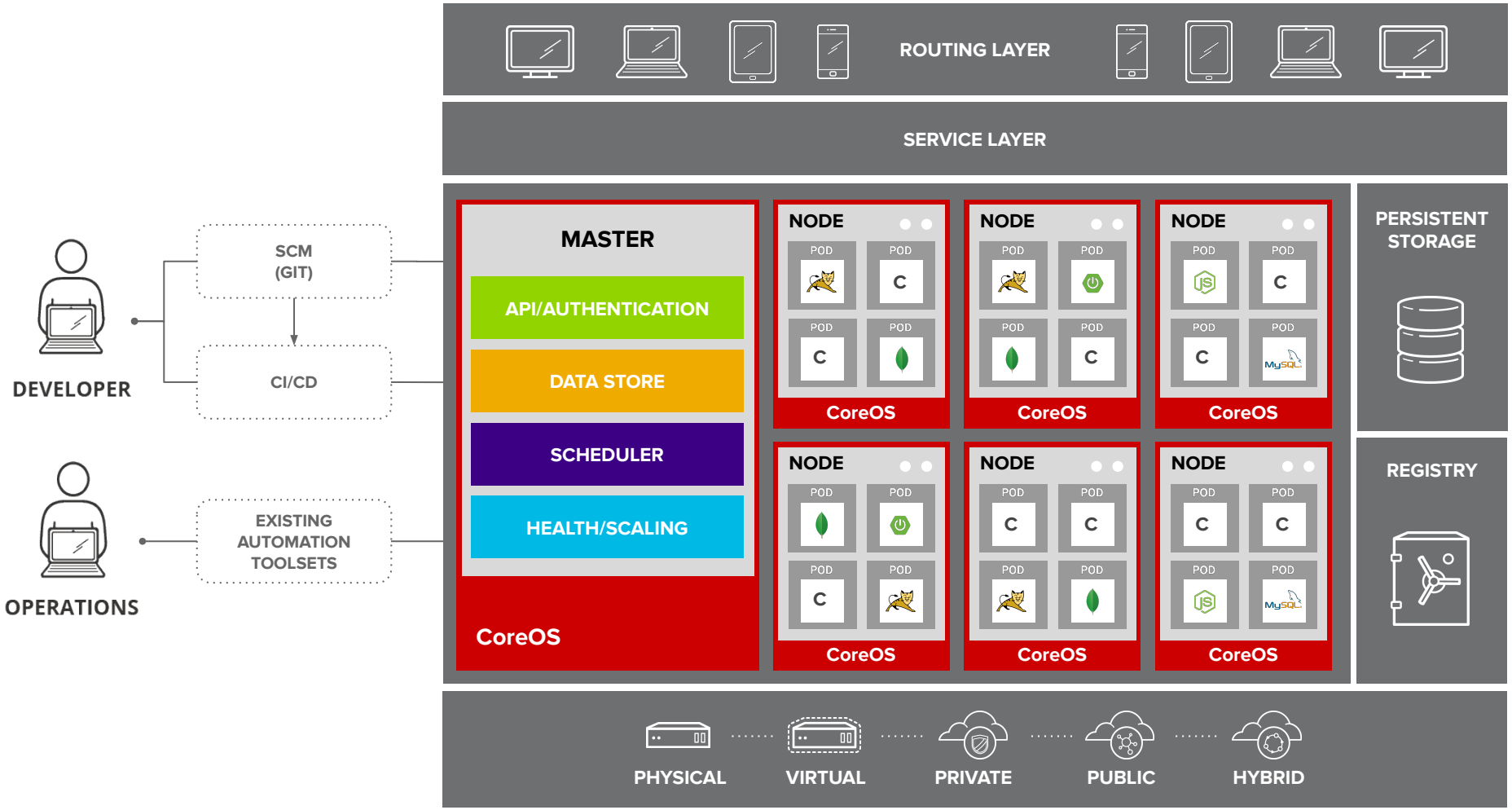
Red Hat

ROUTING AND LOAD-BALANCING



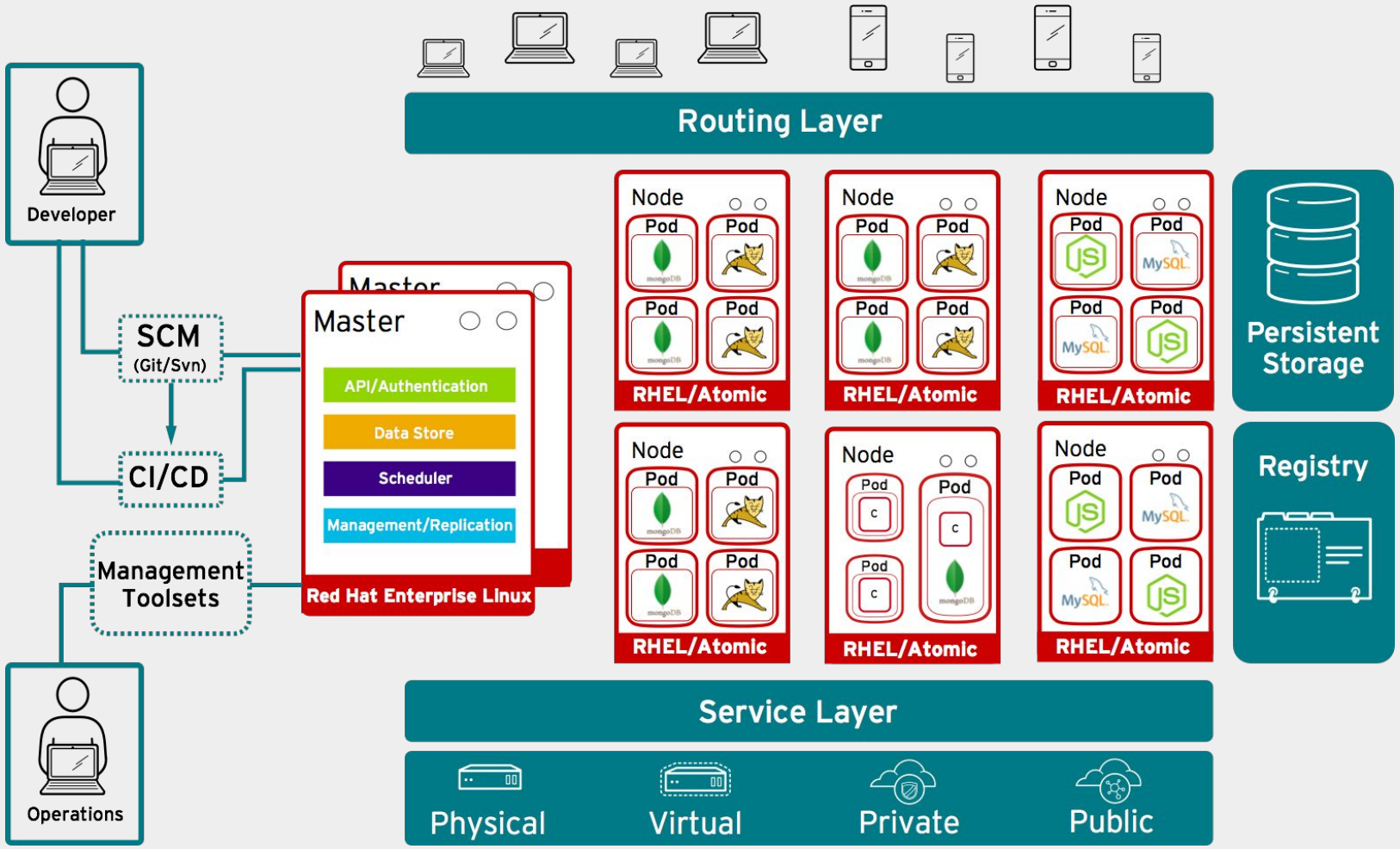
Red Hat

ACCESS VIA WEB, CLI, IDE AND API



Red Hat

OpenShift Architecture



Red Hat

OpenShift 4.x

Installation Experiences

OPENSHIFT CONTAINER PLATFORM

Full Stack Automation

Simplified opinionated "Best Practices" for cluster provisioning

Fully automated installation and updates including host container OS.

Red Hat Enterprise Linux CoreOS

Pre-existing Infrastructure

Customer managed resources & infrastructure provisioning

Plug into existing DNS and security boundaries

Red Hat Enterprise Linux CoreOS

Red Hat Enterprise Linux

HOSTED OPENSHIFT

Azure Red Hat OpenShift

Deploy directly from the Azure console. Jointly managed by Red Hat and Microsoft Azure engineers.

OpenShift Dedicated

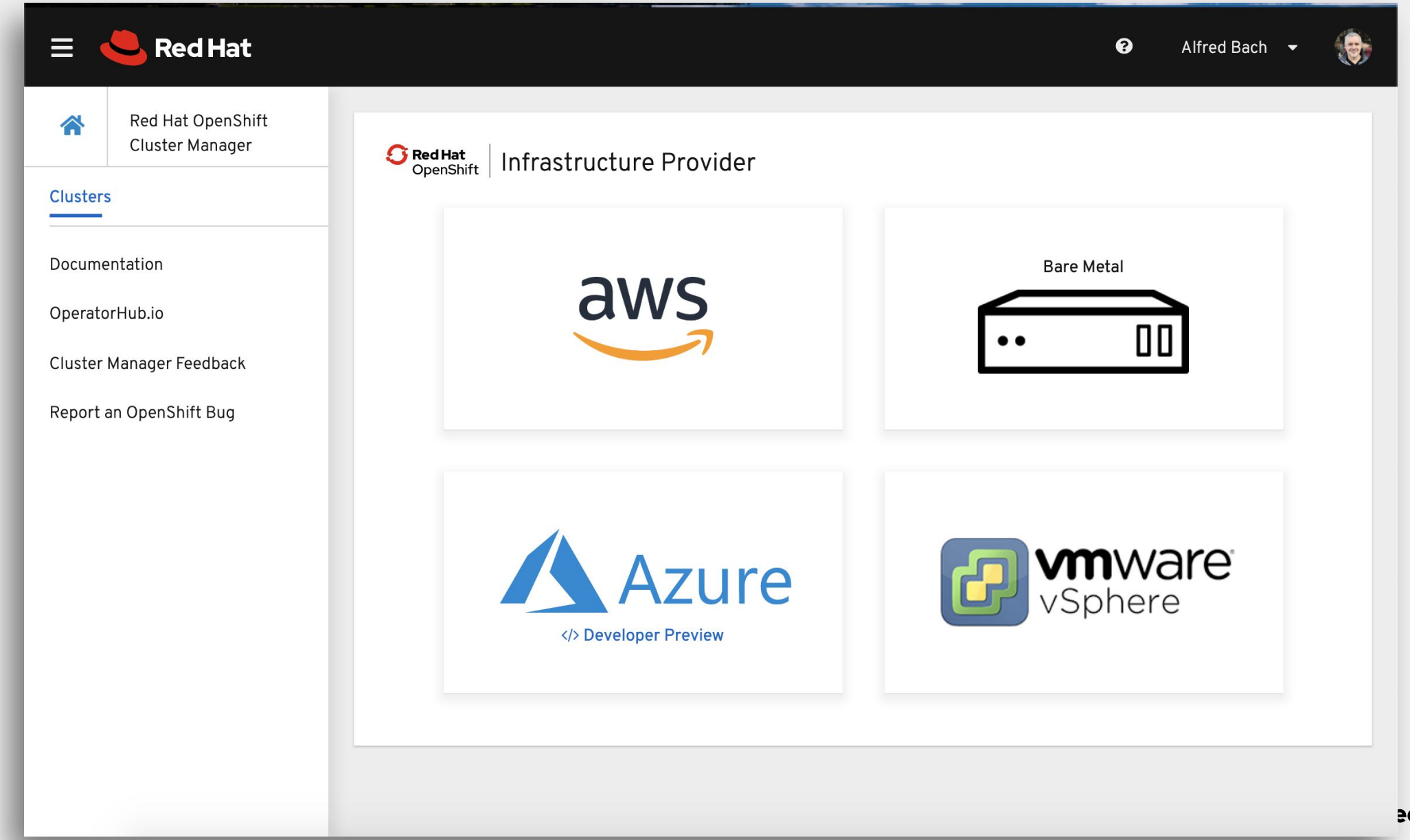
Get a powerful cluster, fully Managed by Red Hat engineers and support.

4.2 Supported Providers

Full Stack Automation (IPI)

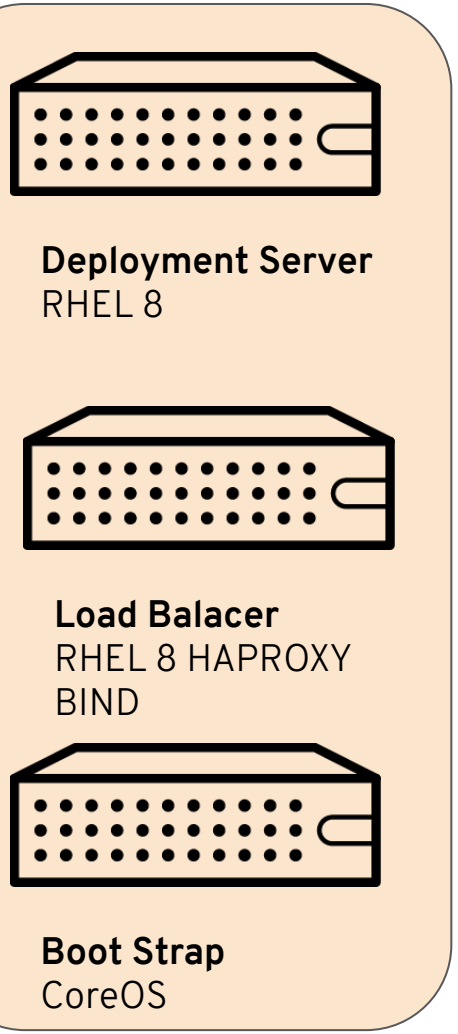
Pre-existing Infrastructure (UPI)

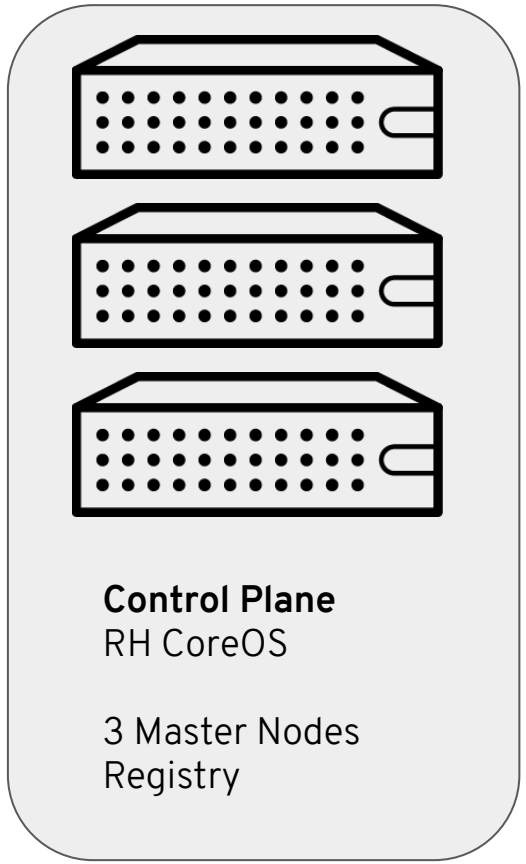
** Support for full stack automated installs to pre-existing VPC & subnets and deploying as private/internal clusters is planned for 4.3.*

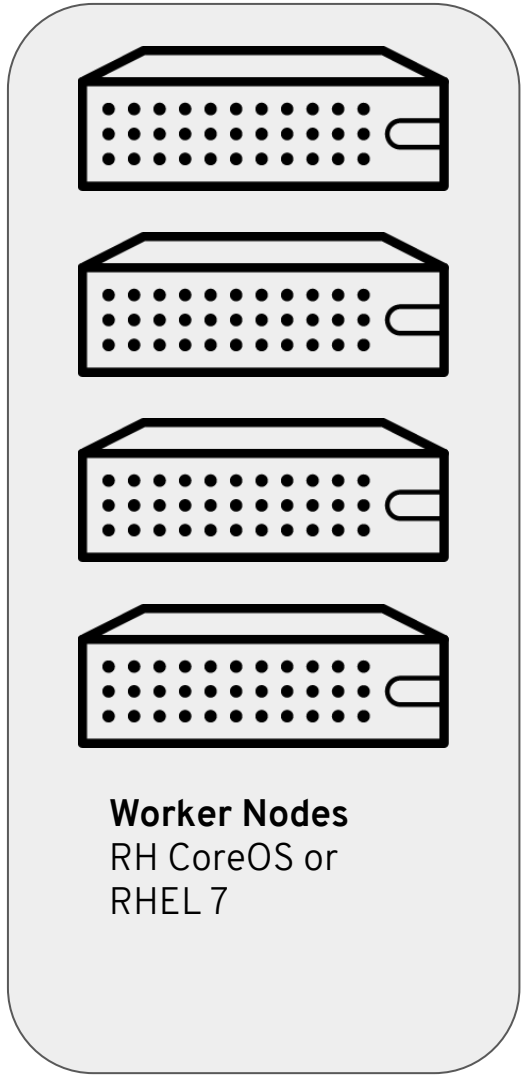

Red Hat
Alfred Bach
Red Hat OpenShift Cluster Manager
Clusters
Documentation
OperatorHub.io
Cluster Manager Feedback
Report an OpenShift Bug
Red Hat OpenShift
Infrastructure Provider
aws
Bare Metal
Azure
</> Developer Preview
vmware vSphere

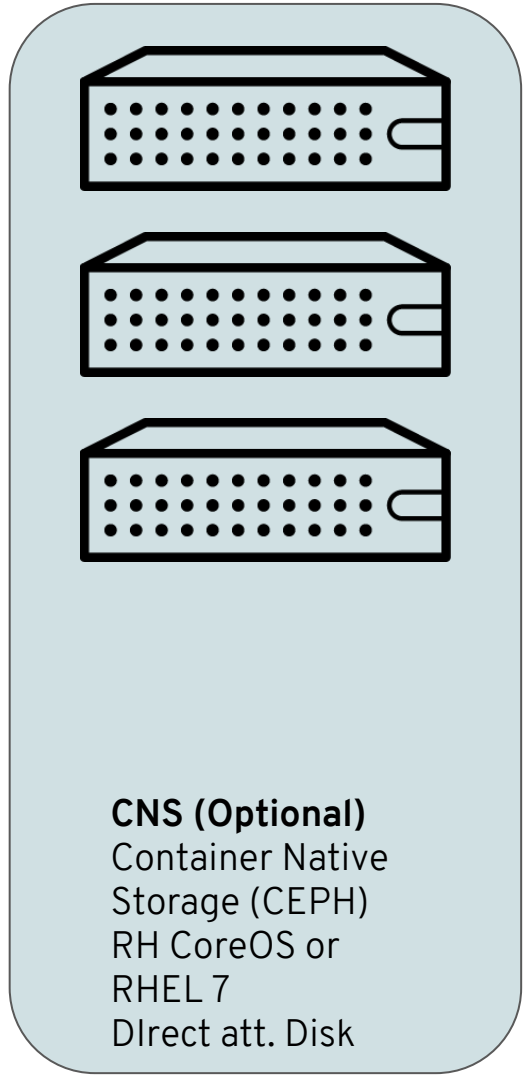
https://docs.openshift.com/container-platform/4.2/welcome/index.html

How to manual setup a OpenShift 4 cluster

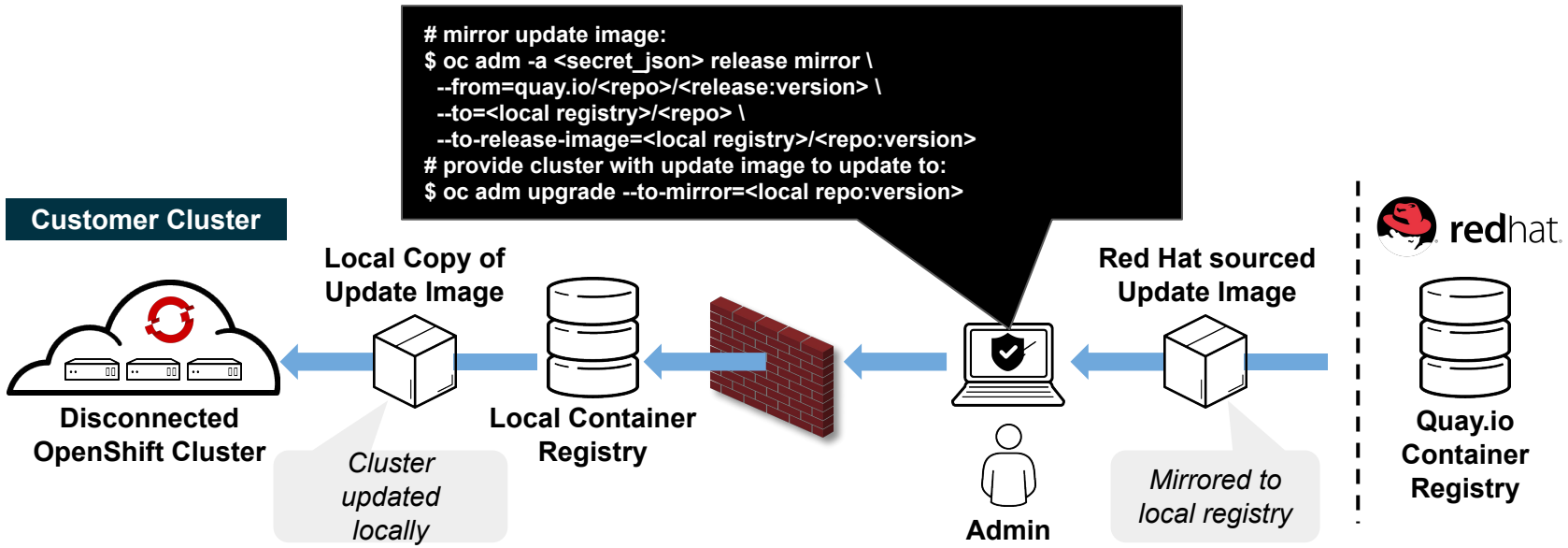








Disconnected “Air-gapped” Installation & Upgrading



Overview

- 4.2 introduces support for installing and updating OpenShift clusters in disconnected environments
- Requires local Docker 2.2 spec compliant container registry to host OpenShift content
- Designed to work with the user provisioned infrastructure deployment method
  - *Note: Will not work with Installer provisioned infrastructure deployments*

Installation Procedure

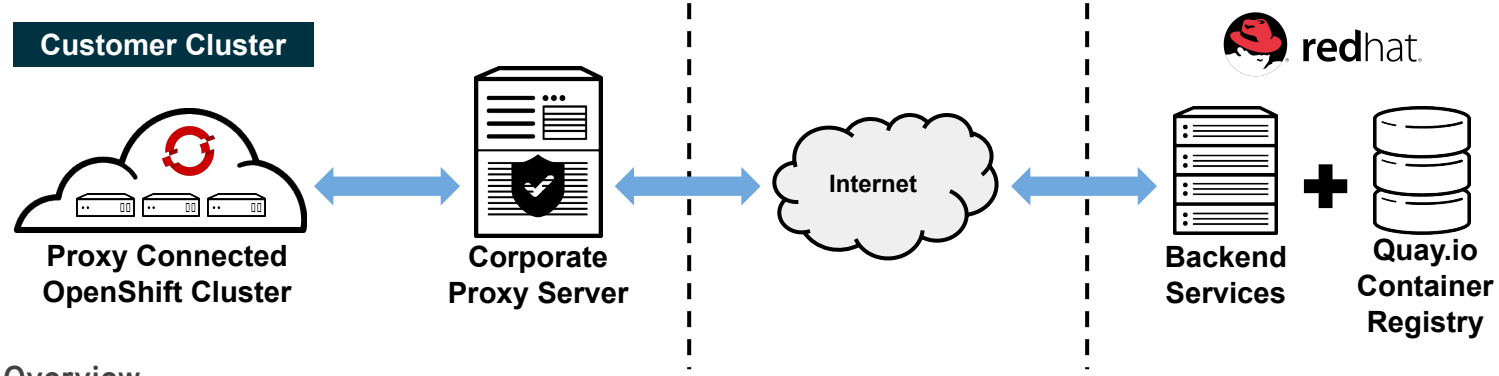
- Mirror OpenShift content to local container registry in the disconnected environment
- Generate install-config.yaml: $ ./openshift-install create install-config --dir <dir>
  - Edit and add pull secret (PullSecret), CA certificate (AdditionalTrustBundle), and image content sources (ImageContentSources) to install-config.yaml
- Set the OPENSHIFT_INSTALL_RELEASE_IMAGE_OVERRIDE environment variable during the creation of the ignition configs
- Generate the ignition configuration: $ ./openshift-install create ignition-configs --dir <dir>
- Use the resulting ignition files to bootstrap the cluster deployment

Product Manager: Katherine Dubé

Generally Available

Red Hat

Cluster-wide Egress Proxy



Overview

- 4.2 introduces support for installing and updating OpenShift clusters through a corporate proxy server
- Leverages new proxy controller within the cluster-network-operator, which is responsible for:
  - Reconciling a proxy object and writing spec > status upon successful validation.
  - Reconciling user-provided trust bundles referenced by trustedCA, validating the trust bundle certificates, merging the certificates with the system trust bundle and publishing the merged bundle to the openshift-config-managed/trusted-ca-bundle configmap.

Installation Procedure

- Installer will use PROXY* environment variables from the shell it's invoked from
- Generate install-config.yaml: $ ./openshift-install create install-config --dir <dir>
  - Edit proxy information (httpProxy, httpsProxy, & noProxy) and CA certificate ('additionalTrustBundle') to install-config.yaml
- Installer validates the provided install-config.yaml parameters, renders the necessary assets to create the cluster, and initiates the installation process based on the install method used:
  $ ./openshift-install create cluster --dir <dir>

An admin with privileges can interact with the proxy object using 'oc' commands (use the 'oc edit' command to modify the proxy information.) Here is an example proxy

```
$ oc get proxy/cluster -o yaml
apiVersion: config.openshift.io/v1
kind: Proxy
metadata:
  creationTimestamp: "2019-08-21T22:36:49Z"
  generation: 2
  name: cluster
  resourceVersion: "24913"
  selfLink: /apis/config.openshift.io/v1/proxies/cluster
  uid: 2a344b01-d267-11f9-a4f3-025de4b59c38
spec:
  httpProxy: http://<username>:<pswd>@<ip>:<port>
  httpsProxy: https://<username>:<pswd>@<ip>:<port>
  noProxy: example.com
  readinessEndpoints:
  - http://www.google.com
  - https://www.google.com
  trustedCA:
    name: user-ca-bundle
status:
  httpProxy: http://<username>:<pswd>@<ip>:<port>
  httpsProxy: https://<username>:<pswd>@<ip>:<port>
  noProxy:
10.0.0.0/16,10.128.0.0/14,127.0.0.1,169.254.169.254,172.30
.0.0/16,api-int.demo.example.com,api.demo.example.openshif
t.com,etcd-0.demo.example.com,etcd-1.demo.example.com,etcd
-2.demo.example.com,example.com,localhost
```

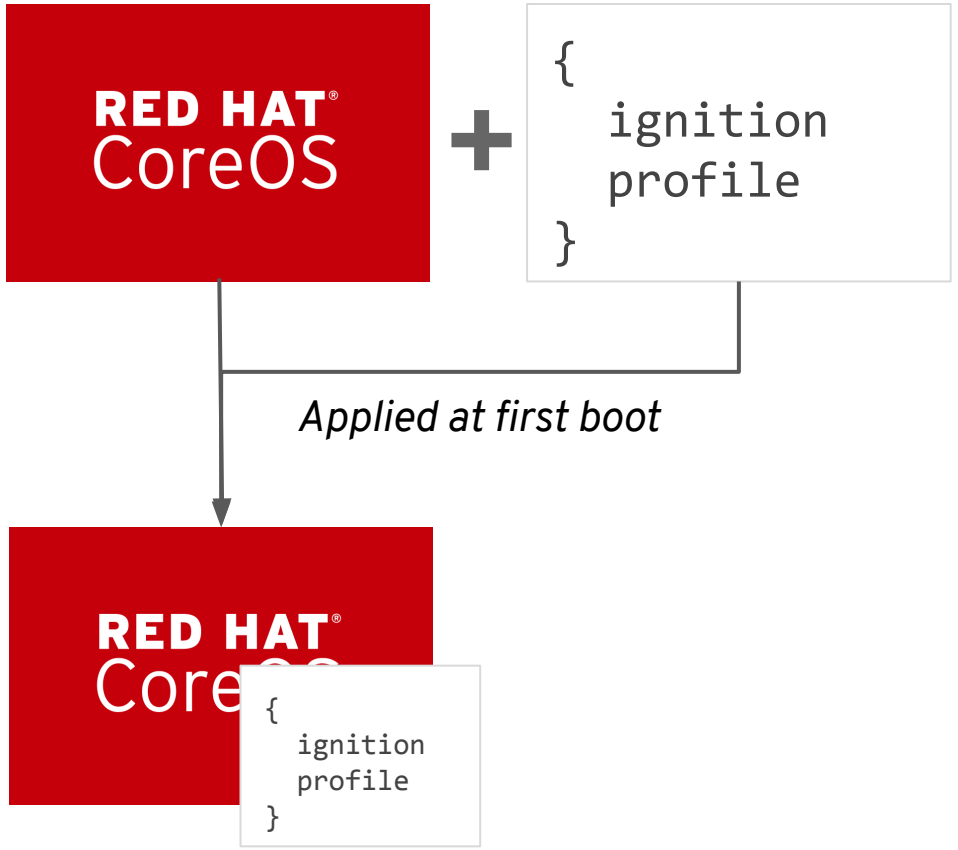
Product Manager: Marc Curry & Katherine Dubé

Generally Available

Red Hat

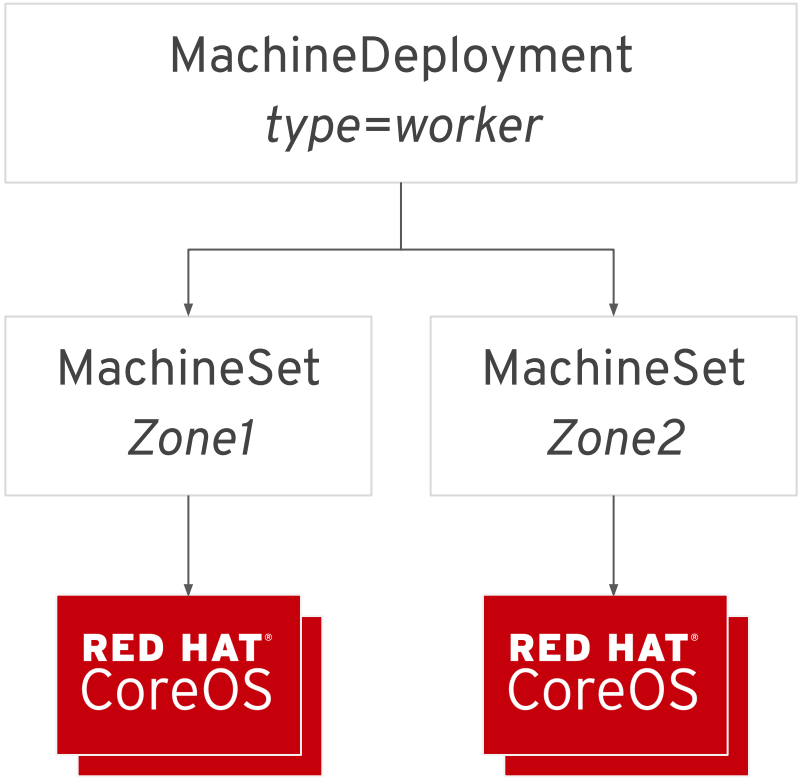
MACHINE CONFIGURATION

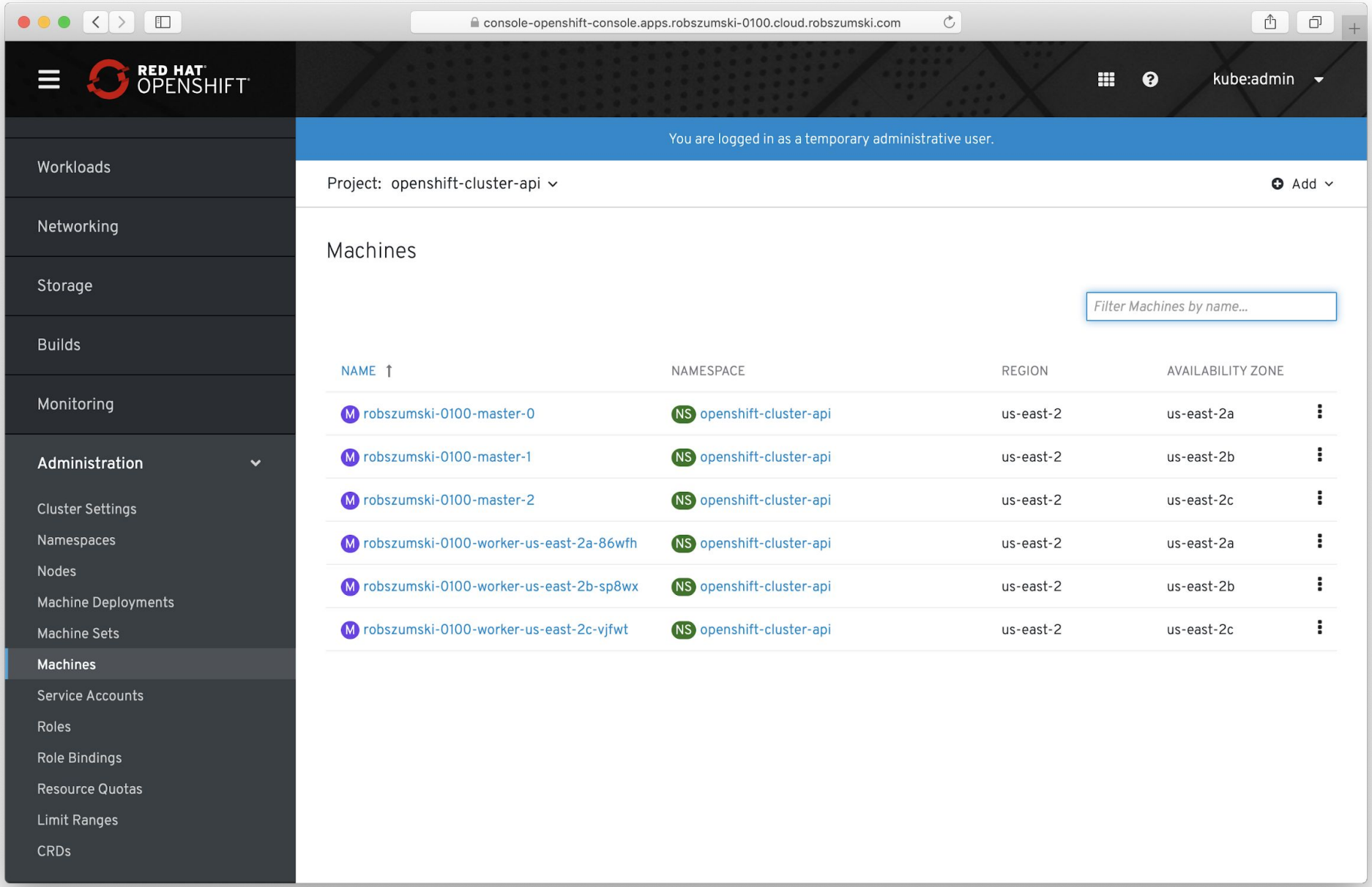
- Red Hat CoreOS uses Ignition for configuration
- Ignition only runs once, on the first boot
- Ignition runs before systemd starts
  - Configure networking
  - Provision disks/RAID

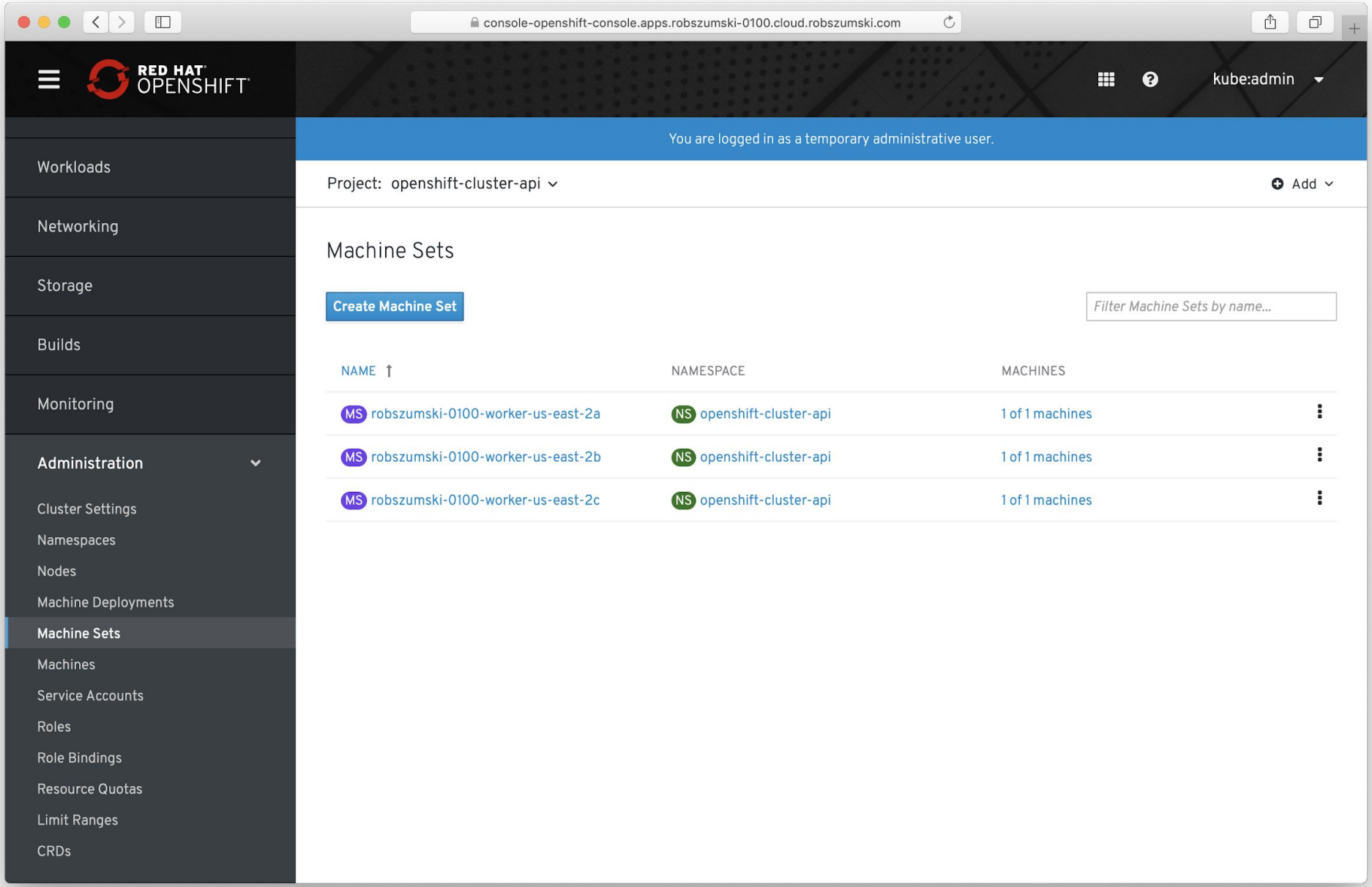


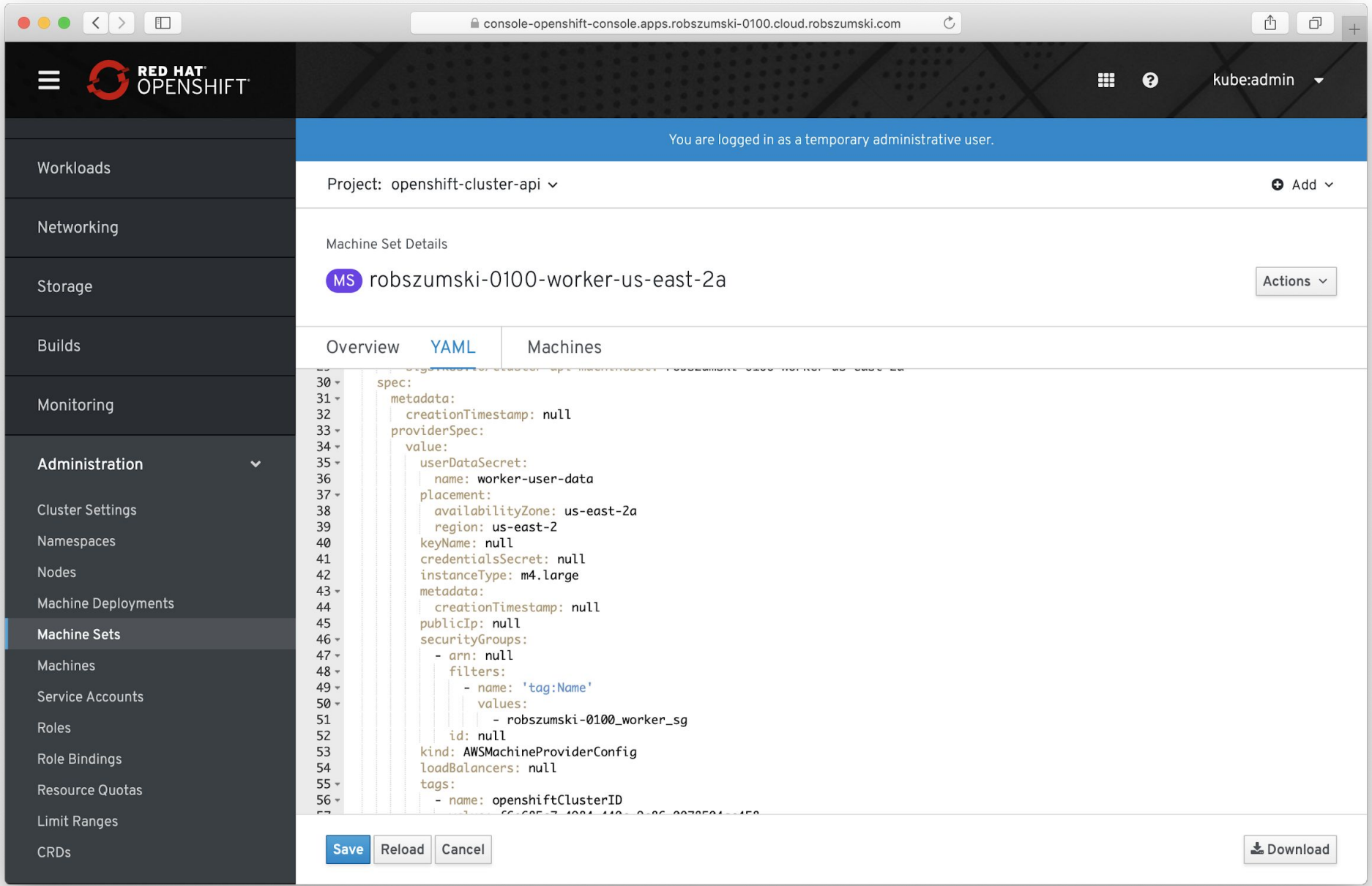
CLUSTER API OBJECTS

- New API objects to declaratively manage the cluster
  - MachineDeployment
  - MachineSet
  - Machine

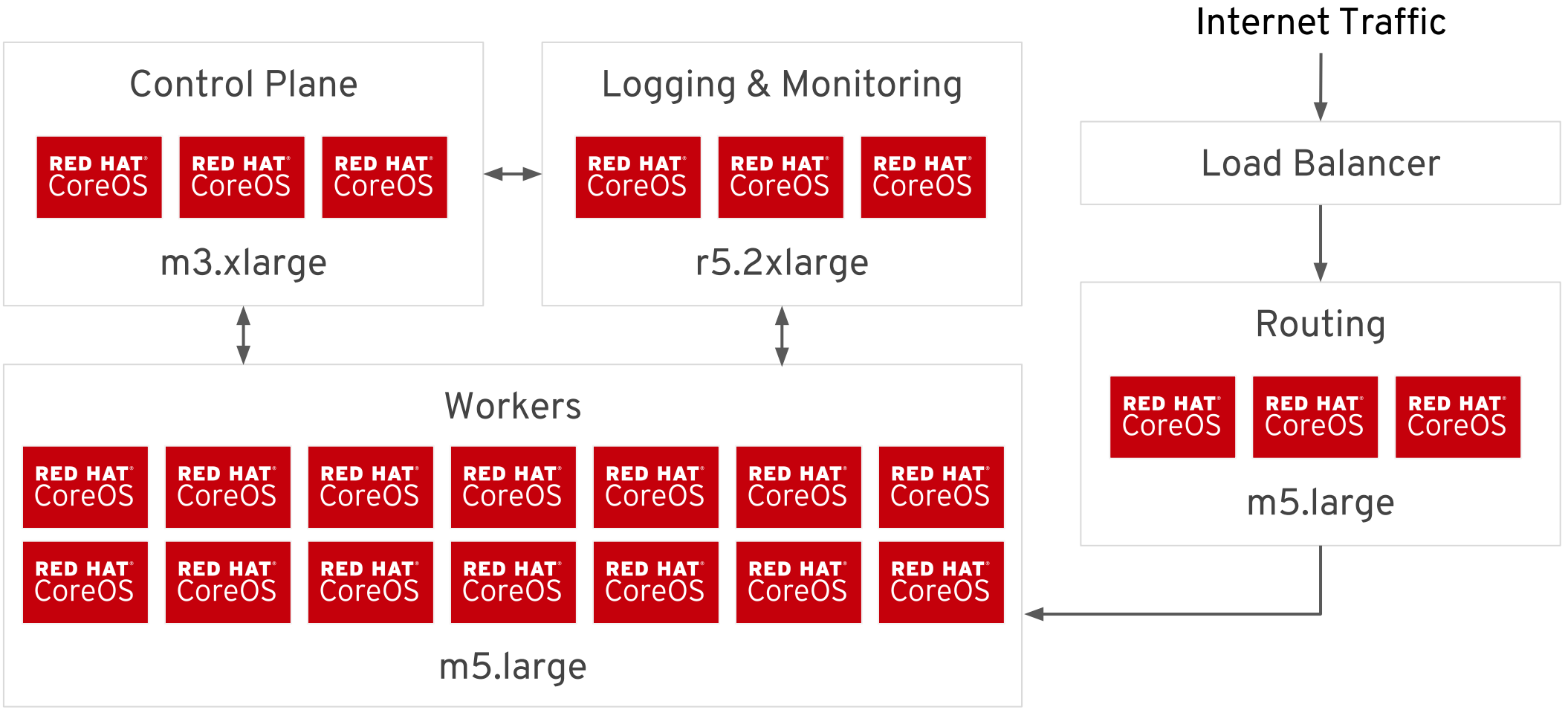



console-openshift-console.apps.robszumski-0100.cloud.robszumski.com
RED HAT OPENSHIFT
kube:admin
You are logged in as a temporary administrative user.
Workloads
Networking
Storage
Builds
Monitoring
Administration
Cluster Settings
Namespaces
Nodes
Machine Deployments
Machine Sets
Machines
Service Accounts
Roles
Role Bindings
Resource Quotas
Limit Ranges
CRDs
Project: openshift-cluster-api
Add
Machines
Filter Machines by name...
NAME
NAMESPACE
REGION
AVAILABILITY ZONE
robszumski-0100-master-0 openshift-cluster-api us-east-2 us-east-2a
robszumski-0100-master-1 openshift-cluster-api us-east-2 us-east-2b
robszumski-0100-master-2 openshift-cluster-api us-east-2 us-east-2c
robszumski-0100-worker-us-east-2a-86wfh openshift-cluster-api us-east-2 us-east-2a
robszumski-0100-worker-us-east-2b-sp8wx openshift-cluster-api us-east-2 us-east-2b
robszumski-0100-worker-us-east-2c-vjfwt openshift-cluster-api us-east-2 us-east-2c


console-openshift-console.apps.robszumski-0100.cloud.robszumski.com
RED HAT OPENSHIFT
kube:admin
You are logged in as a temporary administrative user.
Workloads
Networking
Storage
Builds
Monitoring
Administration
Cluster Settings
Namespaces
Nodes
Machine Deployments
Machine Sets
Machines
Service Accounts
Roles
Role Bindings
Resource Quotas
Limit Ranges
CRDs
Project: openshift-cluster-api
Add
Machine Sets
Create Machine Set
Filter Machine Sets by name...
NAME
NAMESPACE
MACHINES
MS robszumski-0100-worker-us-east-2a
NS openshift-cluster-api
1 of 1 machines
MS robszumski-0100-worker-us-east-2b
NS openshift-cluster-api
1 of 1 machines
MS robszumski-0100-worker-us-east-2c
NS openshift-cluster-api
1 of 1 machines


console-openshift-console.apps.robszumski-0100.cloud.robszumski.com
RED HAT OPENSHIFT
kube:admin
You are logged in as a temporary administrative user.
Workloads
Networking
Storage
Builds
Monitoring
Administration
Cluster Settings
Namespaces
Nodes
Machine Deployments
Machine Sets
Machines
Service Accounts
Roles
Role Bindings
Resource Quotas
Limit Ranges
CRDs
Project: openshift-cluster-api
Add
Machine Set Details
MS robszumski-0100-worker-us-east-2a
Actions
Overview
YAML
Machines
spec:
metadata:
creationTimestamp: null
providerSpec:
value:
userDataSecret:
name: worker-user-data
placement:
availabilityZone: us-east-2a
region: us-east-2
keyName: null
credentialsSecret: null
instanceType: m4.large
metadata:
creationTimestamp: null
publicIp: null
securityGroups:
- arn: null
filters:
- name: 'tag:Name'
values:
- robszumski-0100_worker_sg
id: null
kind: AWSMachineProviderConfig
loadBalancers: null
tags:
- name: openshiftClusterID
Save
Reload
Cancel
Download

POSSIBLE CLUSTER ARCHITECTURE



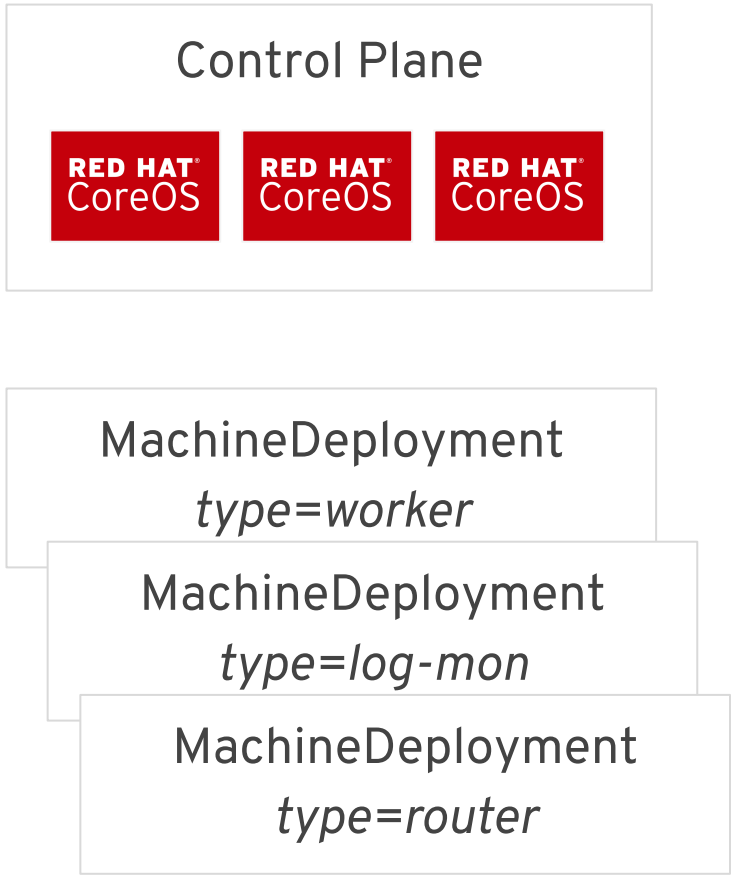
CLUSTER ARCHITECTURE

- Scale Deployments independently
- Desired state managed by cluster
- Autoscale is no effort at all
- Rolling Machine config updates

Special GPU = MachineDeployment

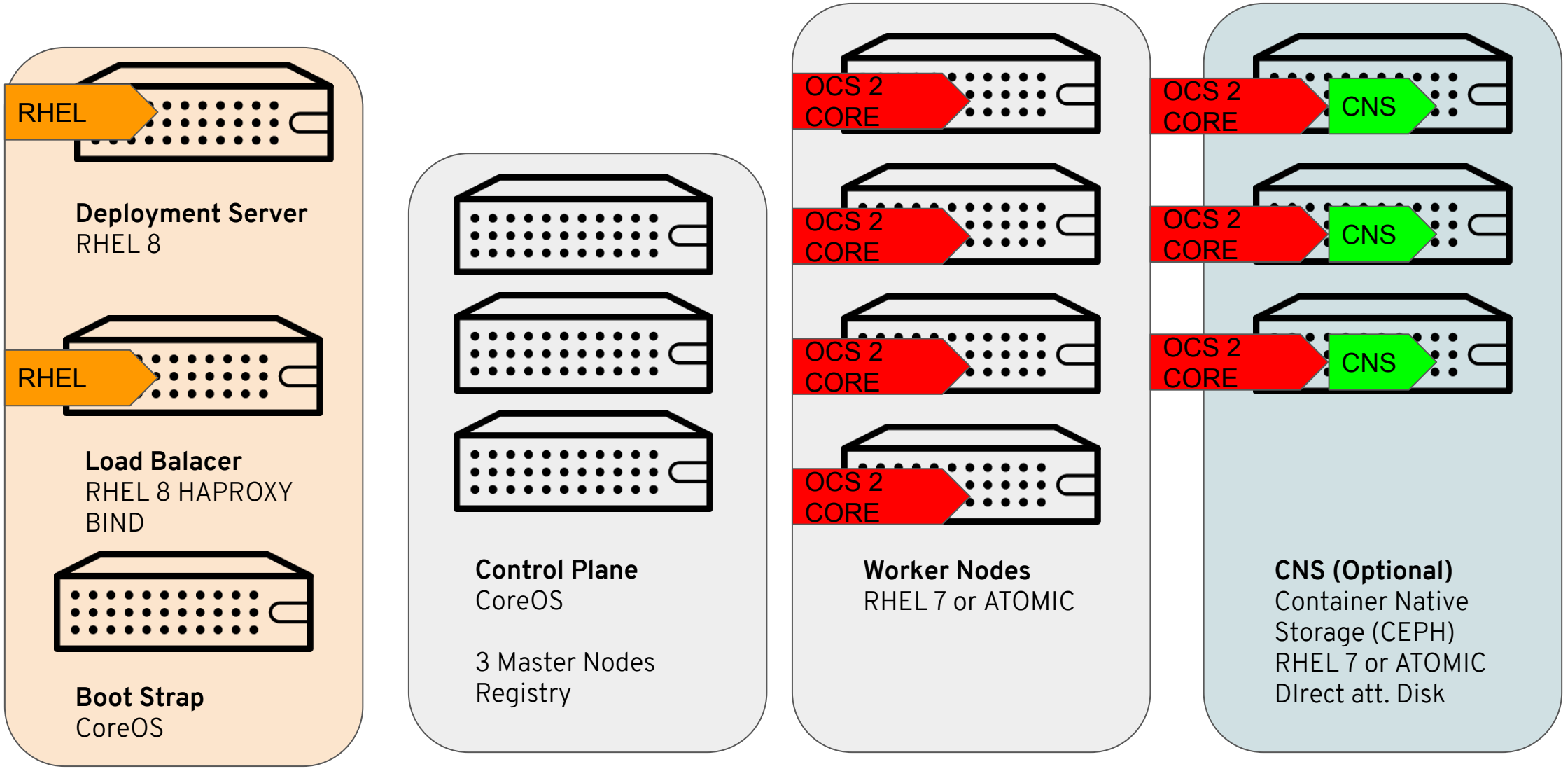
Special security = MachineDeployment

Special $anything = MachineDeployment



Subscriptons

Subscribe an OpenShift 4 cluster



Thank you

Red Hat is the world's leading provider of enterprise open source software solutions. Award-winning support, training, and consulting services make Red Hat a trusted adviser to the Fortune 500.


linkedin.com/company/red-hat


youtube.com/user/RedHatVideos


facebook.com/redhatinc


twitter.com/RedHat

Red Hat