NLVMUG

8 DECEMBER

2020

Aan de slag met K8S op vSphere in 3...2...1

Your Link to the VMware Community.

INTRODUCTION

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https://www.viktorious.nl

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agenda

- Why vSphere with Tanzu?
- Networking Architecture
- Setup Networking
  - Setup HA Proxy
- Setup Workload Management
- Demo

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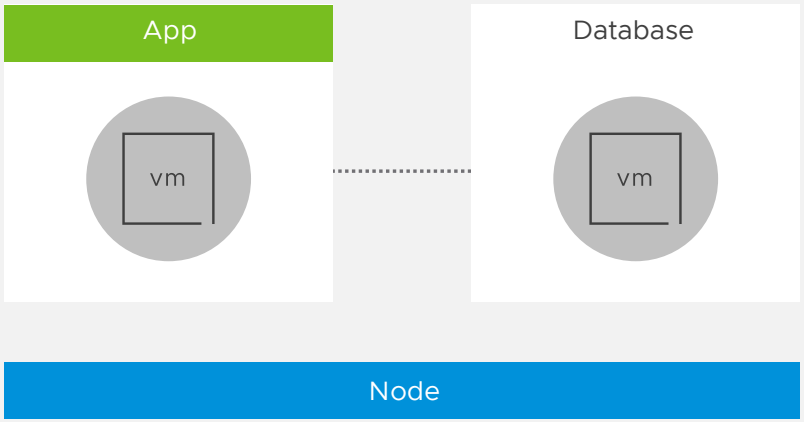
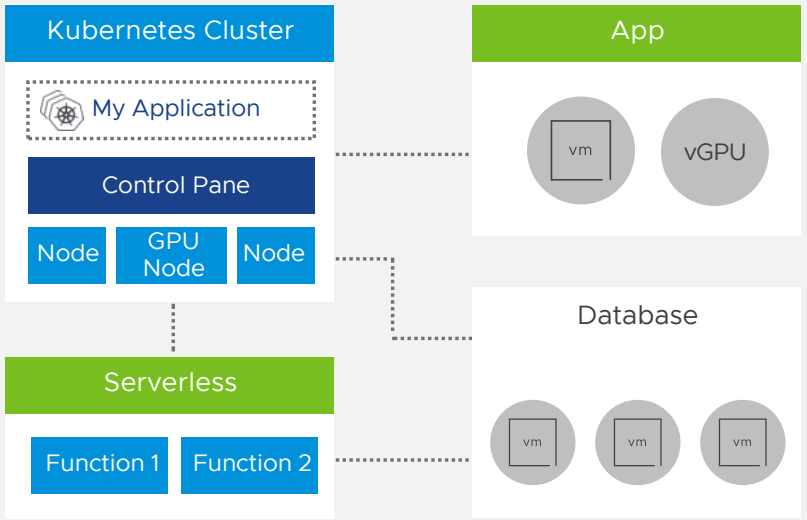
Why vSphere with Tanzu?

THE DEFINITION OF AN APPLICATION HAS CHANGED

An application used to consist of a few VMs



Modern applications are distributed systems



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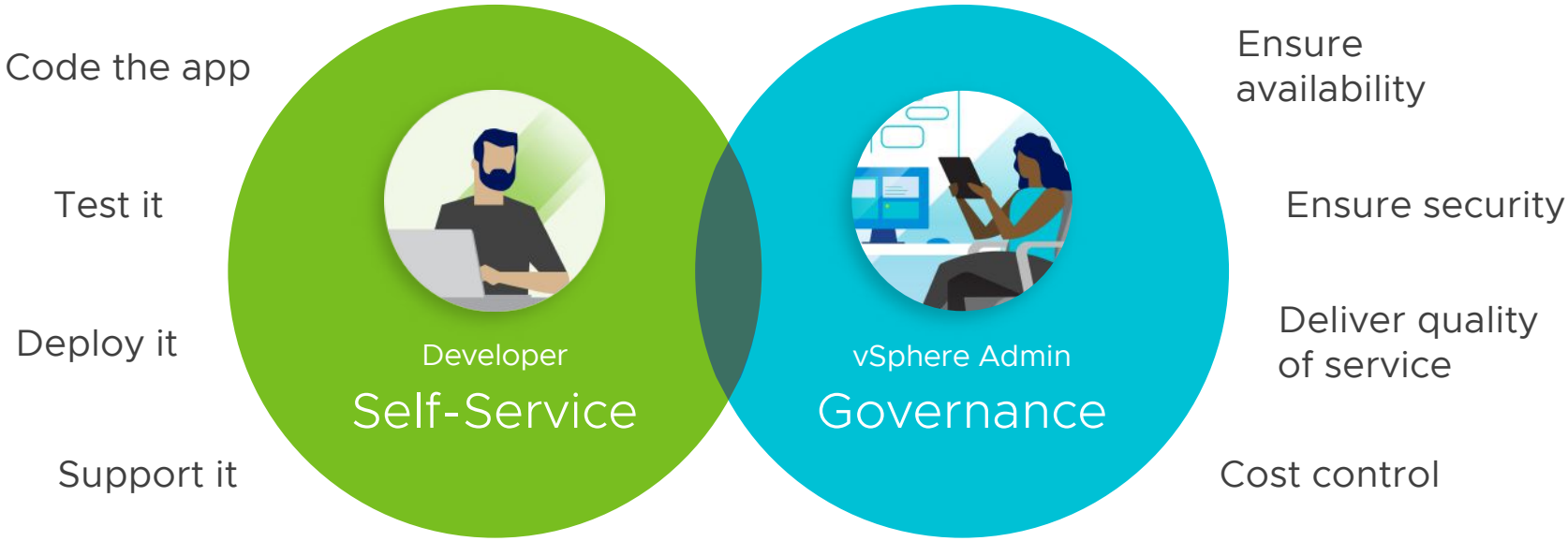
DIFFERENT PRIORITIES FOR MODERN APPS



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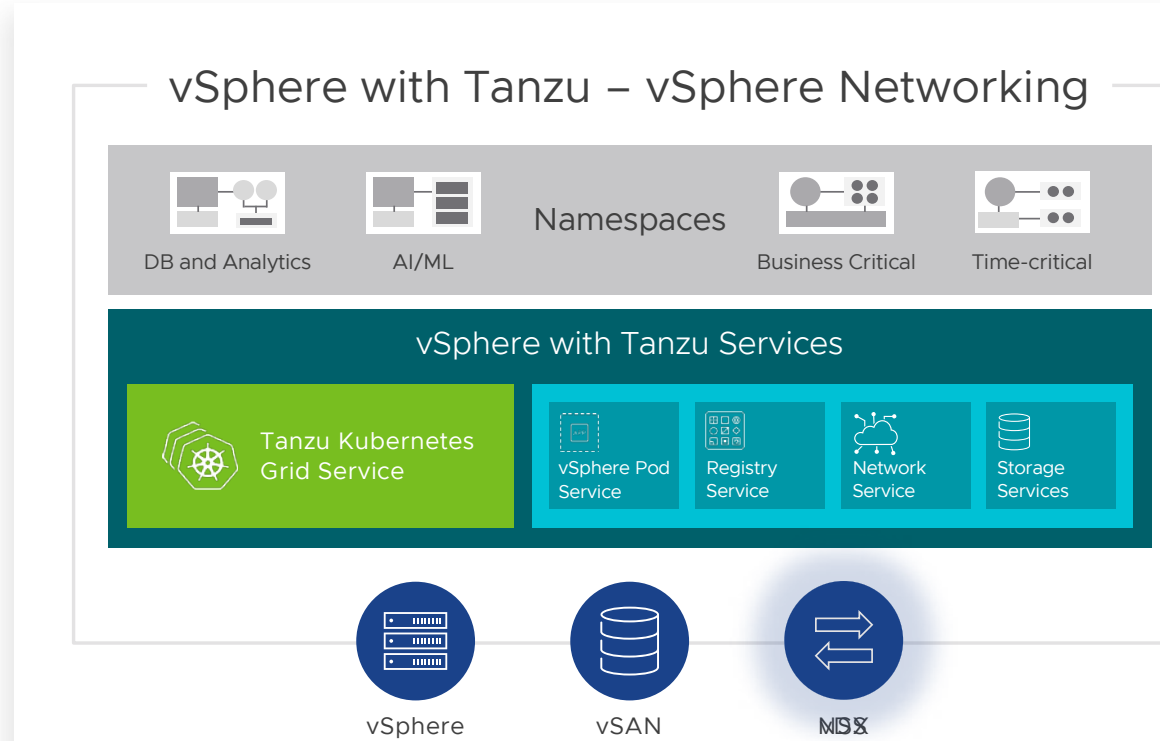
SIMPLIFIED DEPLOYMENT AND CONSUMPTION

vSphere with Tanzu

Developer



vSphere Admin

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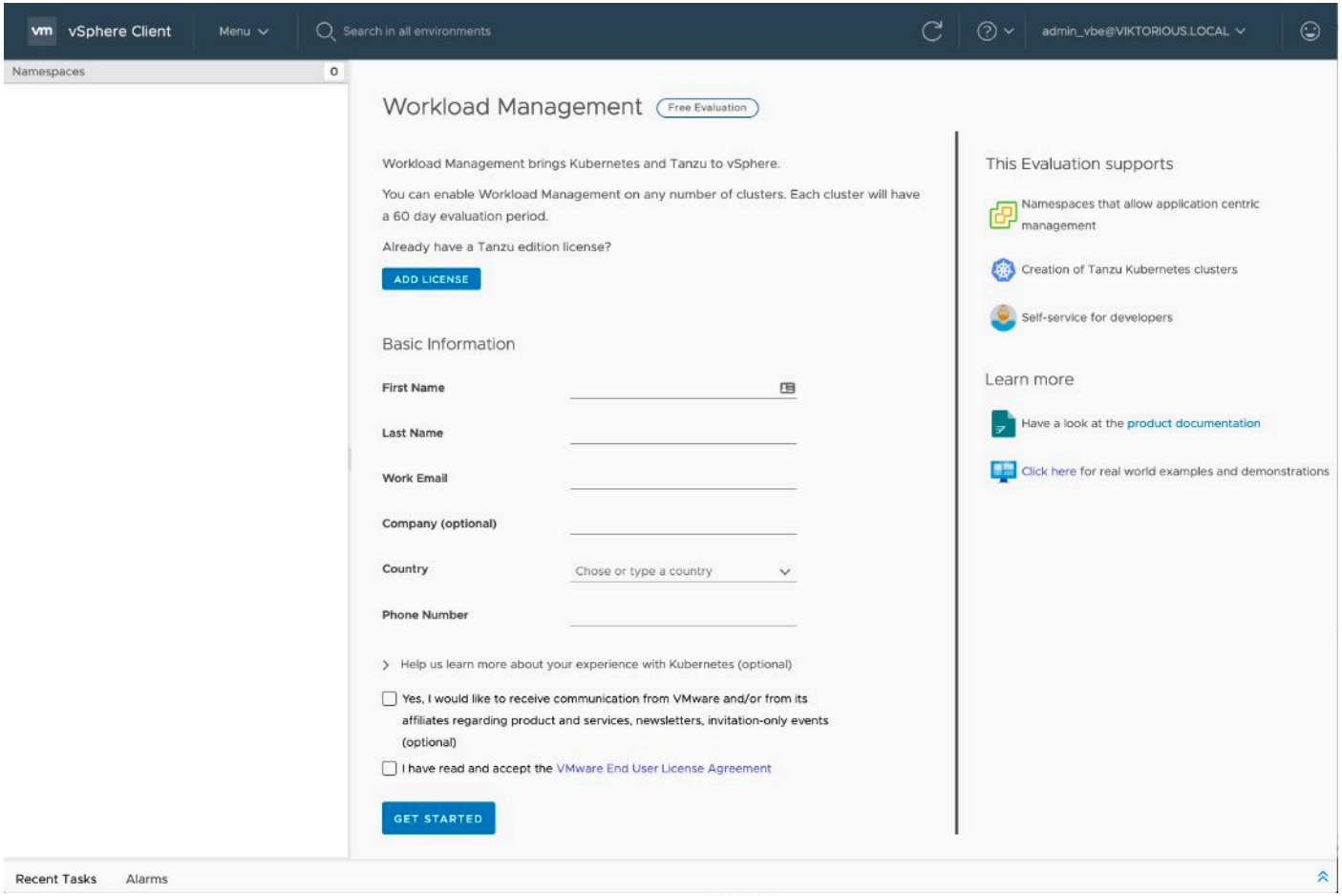
TANZU TRIAL IS INCLUDED IN VSPHERE 7 UPDATE 1



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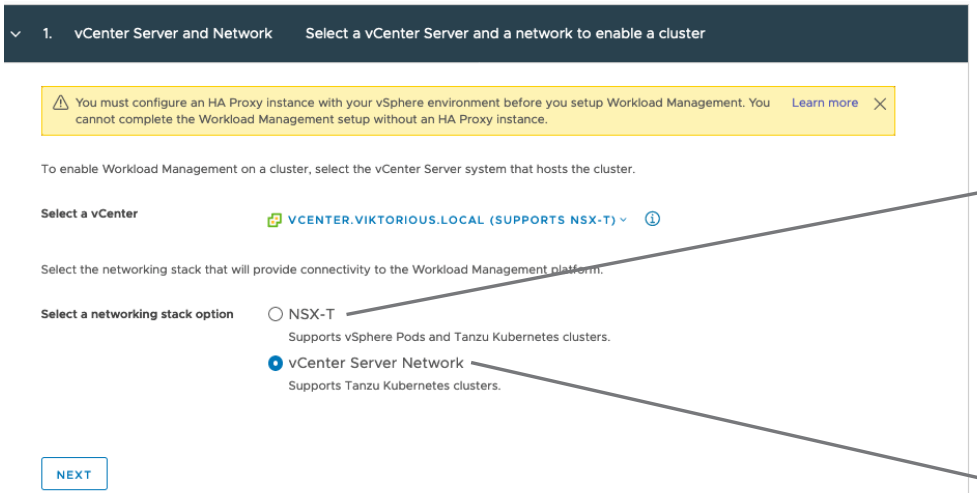
TANZU VSPHERE NETWORKING VERSUS NSX



With NSX-T

- Support for native PODs
- Support for Harbor (container registry)
- Automated deployment (through VCF)

Without NSX-T aka “vSphere Networking”

- No support for native PODs
- No support for Harbor
- HA Proxy is required

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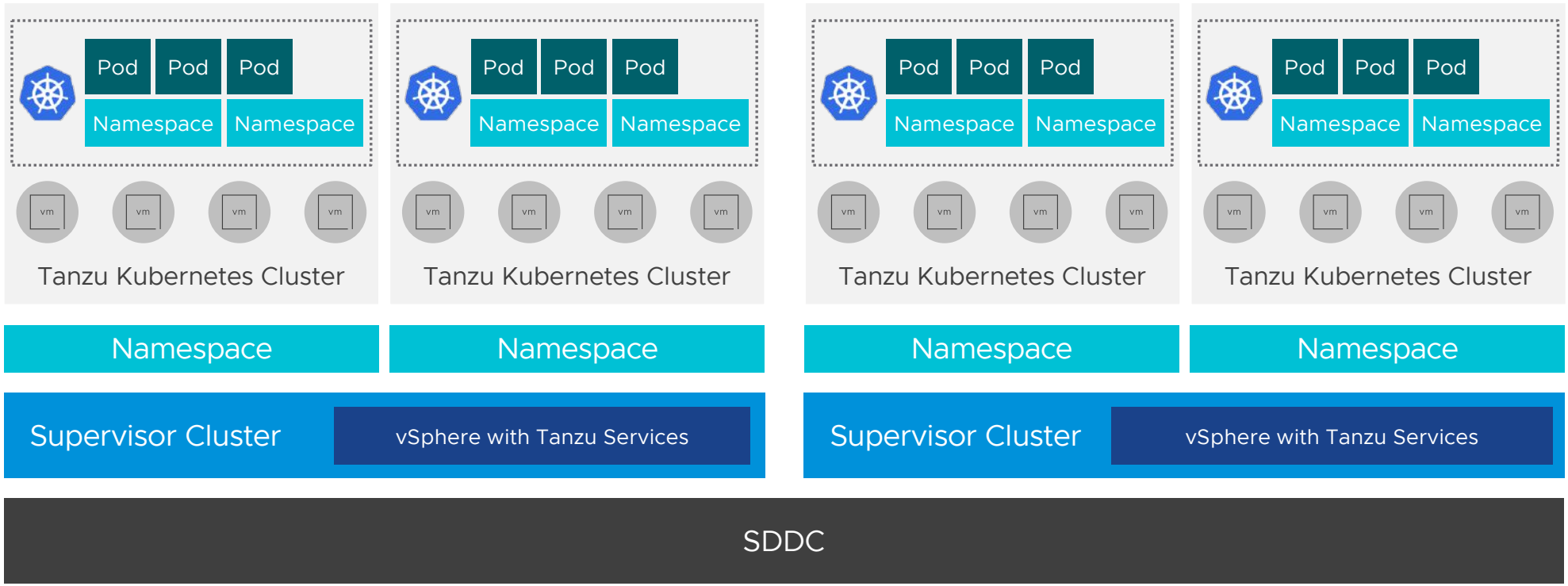
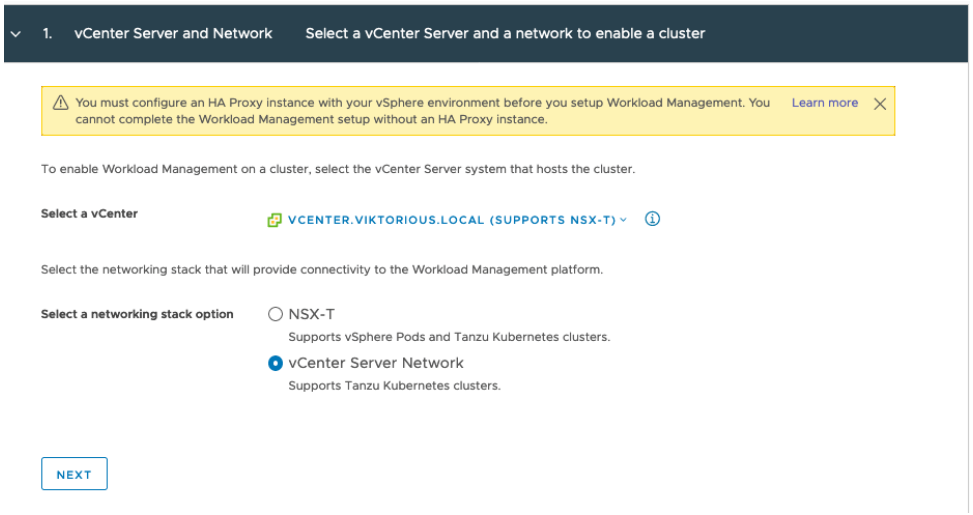
HIGH LEVEL ARCHITECTURE



TANZU VSPHERE NETWORKING VERSUS NSX



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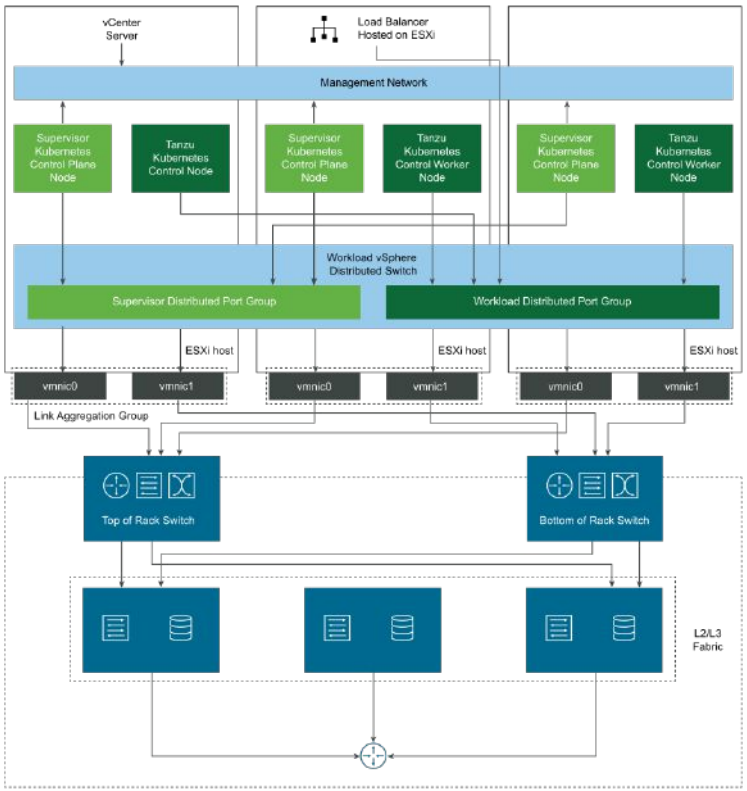
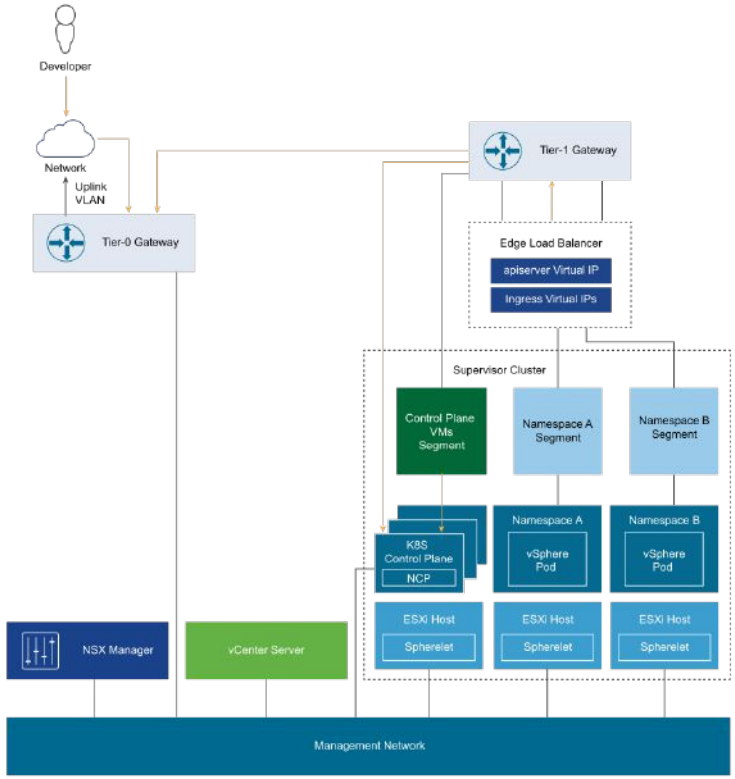
Networking architecture

NETWORKING ARCHITECTURES COMPARED

vSphere Networking



NSX



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REQUIREMENTS FOR VSPHERE /W TANZU /W VSPHERE NETWORKING

Requirements for vSphere with Tanzu with vSphere Networking

- vSphere 7.0U1
- vCenter Server
- 3 ESXi hosts, 4 ESXi hosts if using vSAN
- 1 HA Proxy load balancer
- At least two networking segments (VLANs)

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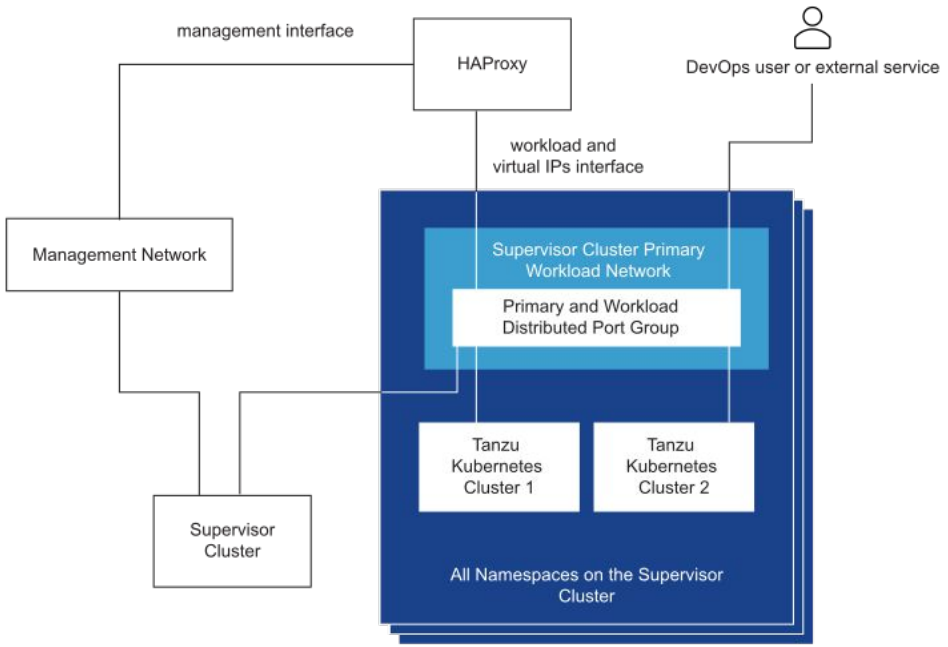
VSPHERE NETWORKING

HA Proxy is required for load balancing

Configure required network segements:

1. Topology with One Workload Network



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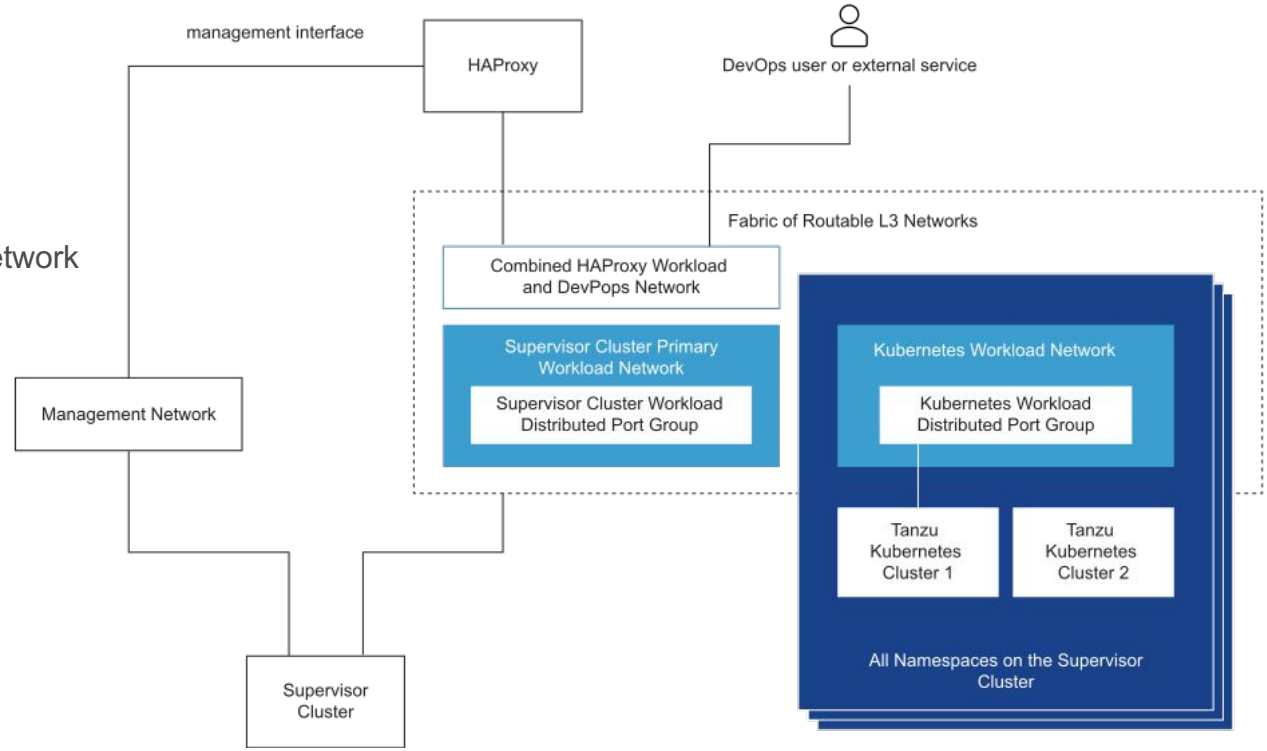
VSPHERE NETWORKING

HA Proxy is required for load balancing

Configure required network segements:

1. Topology with One Workload Network
2. Topology with an Isolated Workload Network

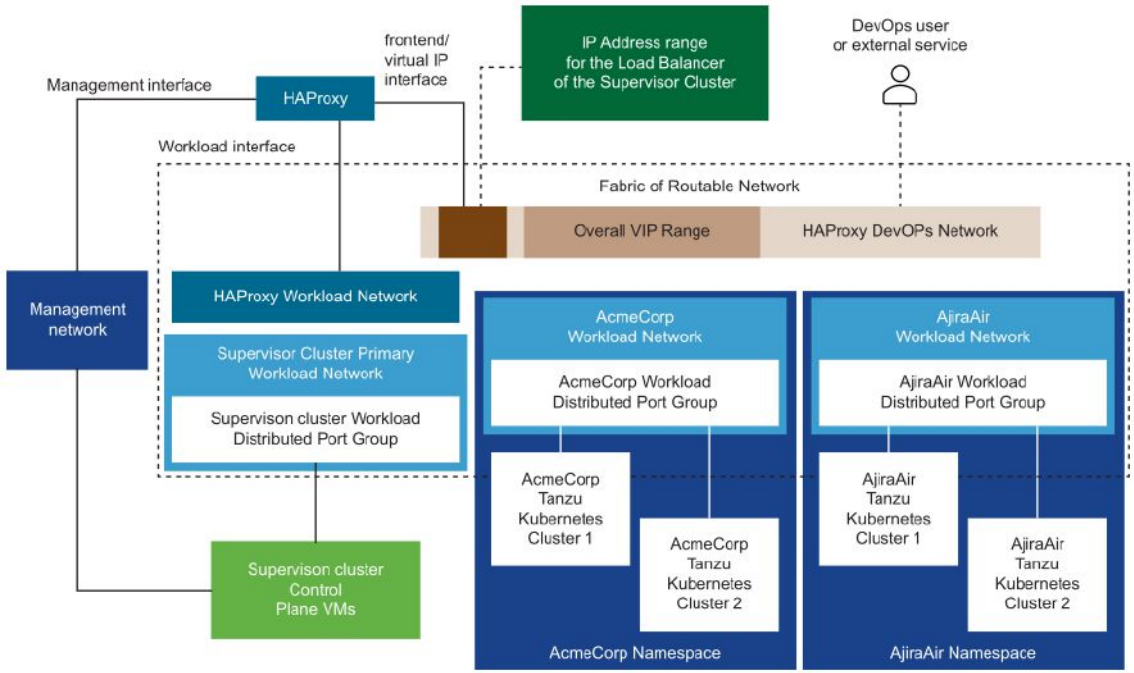


VSPHERE NETWORKING

HA Proxy is required for load balancing

Configure required network segements:

1. Topology with One Workload Network – 2 NICs
2. Topology with one (or more) Isolated Workload Network(s) – 2 NICs
3. Topology with a separate FrontEnd network – 3 NICs



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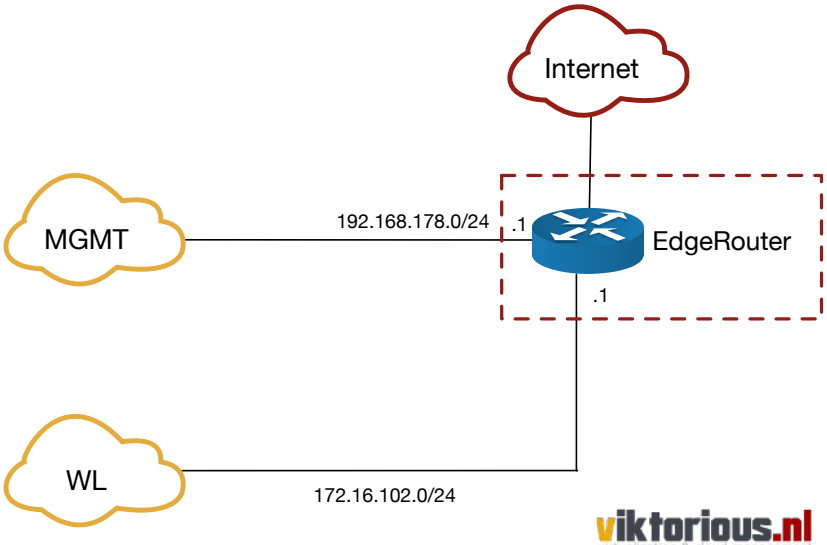
Setup networking

CREATE NETWORK SEGMENTS



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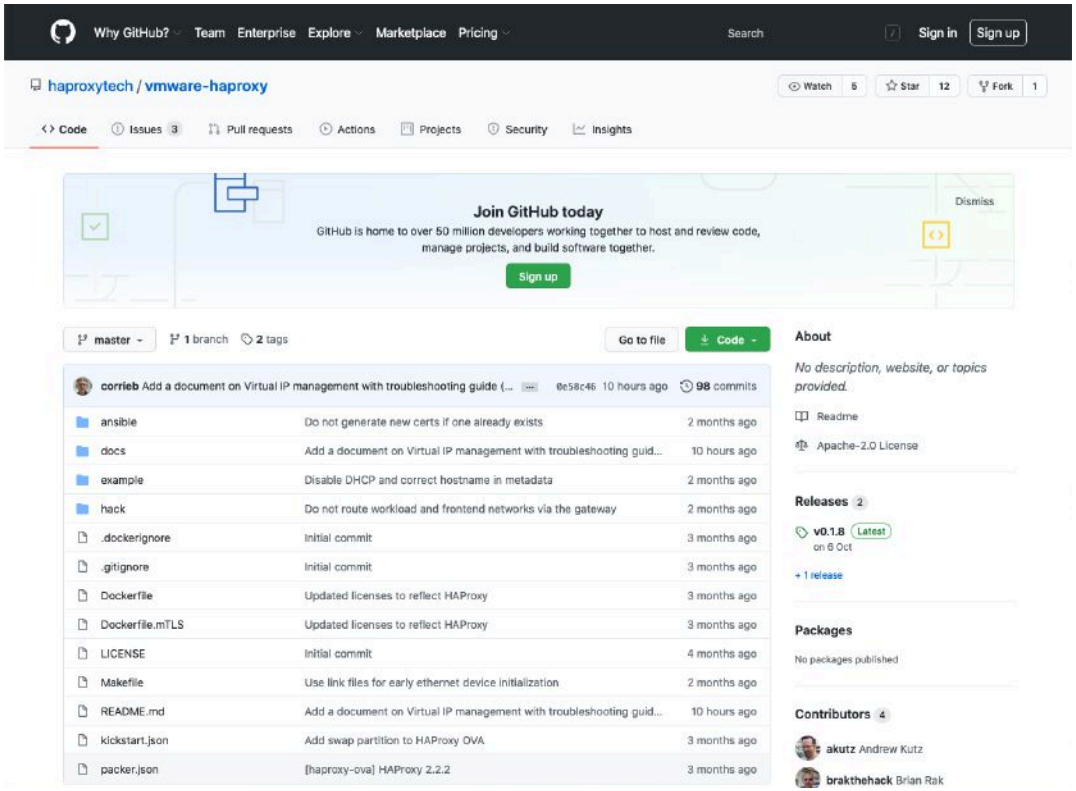
DEPLOY & CONFIGURE HA PROXY



https://github.com/haproxytech/vmware-haproxy

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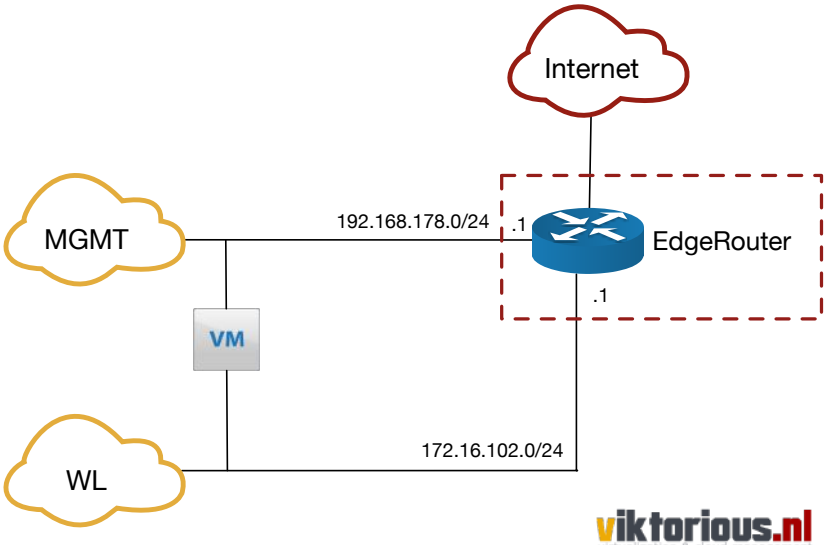
DEPLOY & CONFIGURE HA PROXY



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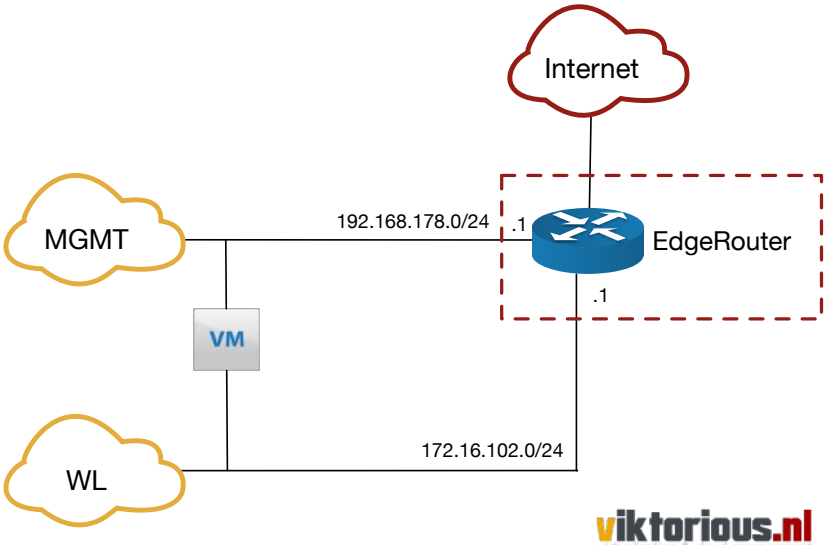
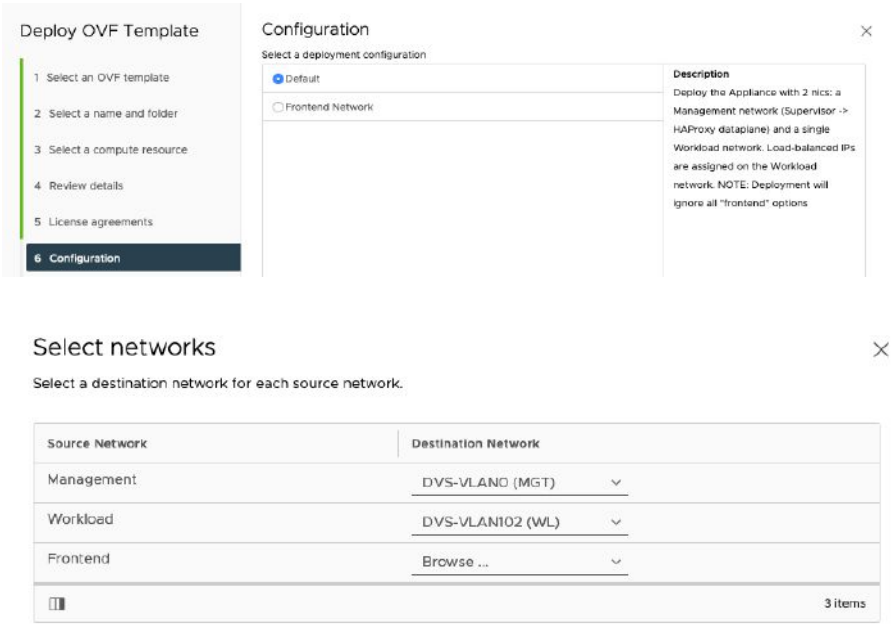
DEPLOY & CONFIGURE HA PROXY





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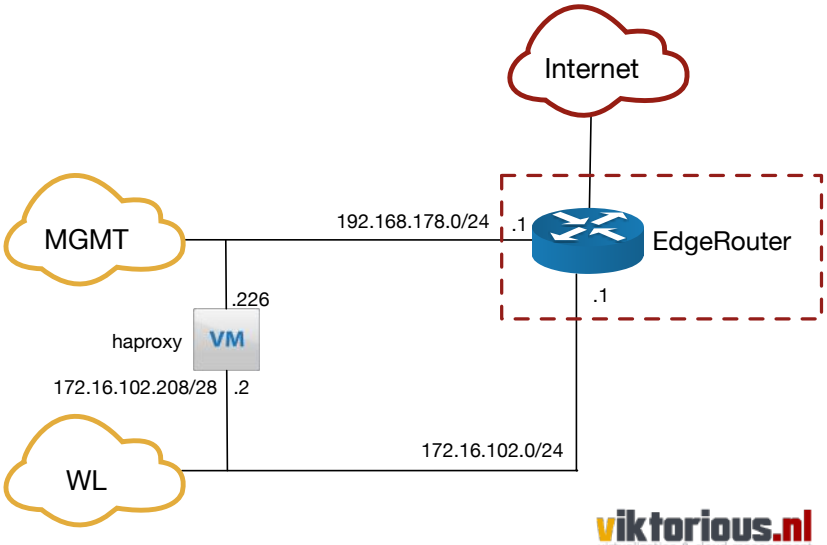
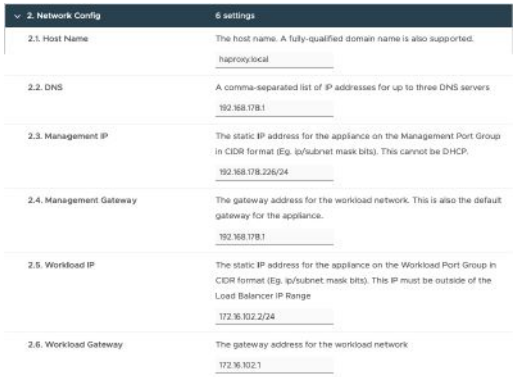
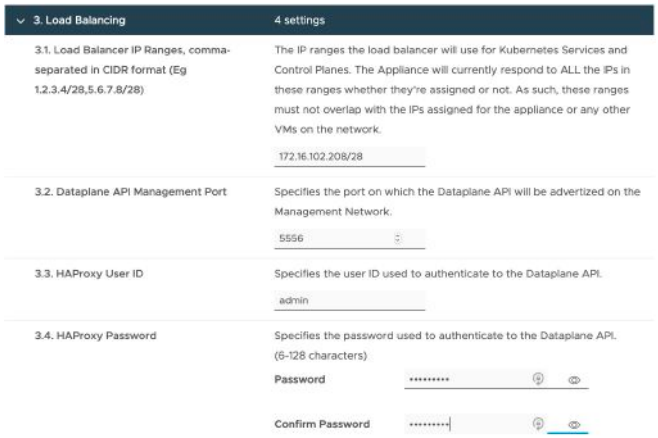
DEPLOY & CONFIGURE HA PROXY







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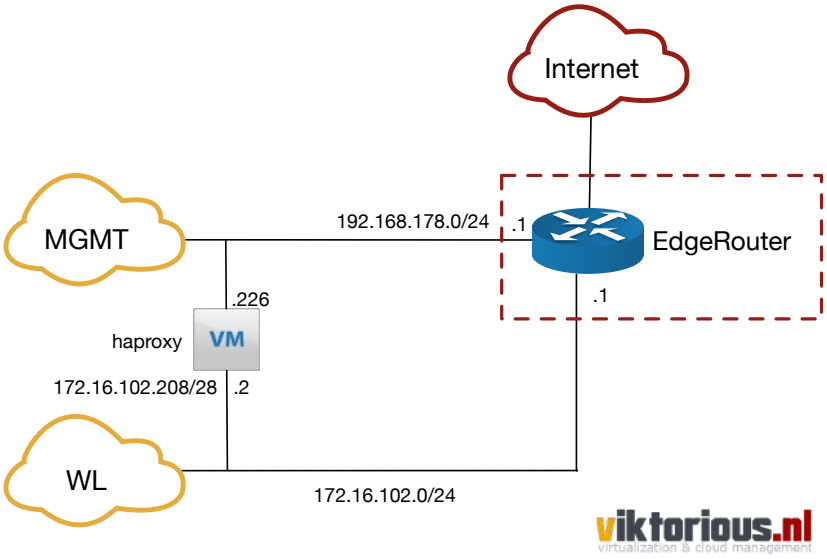
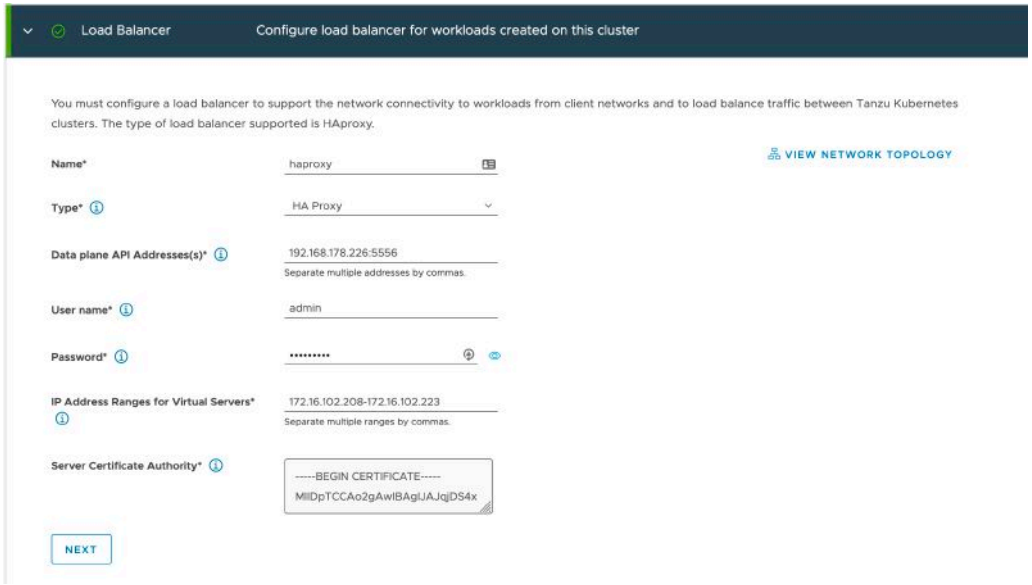
Enable Workload Management

ENABLE WORKLOAD MANAGEMENT





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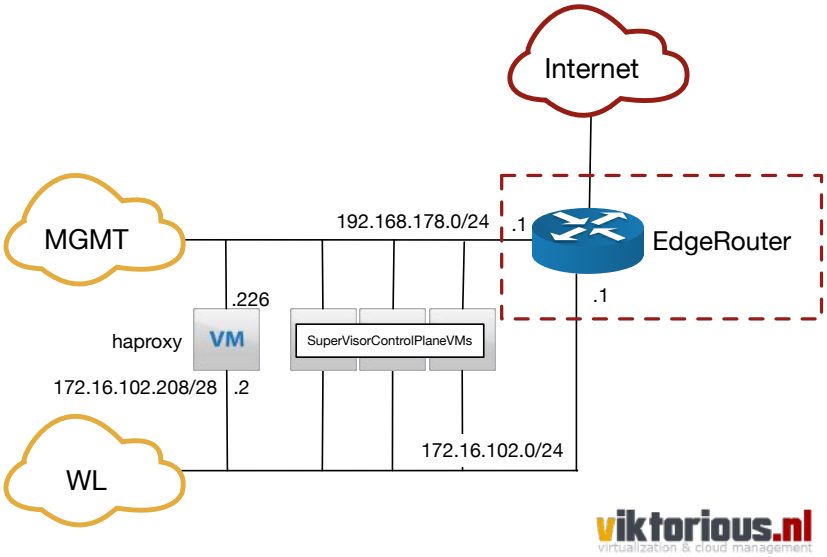
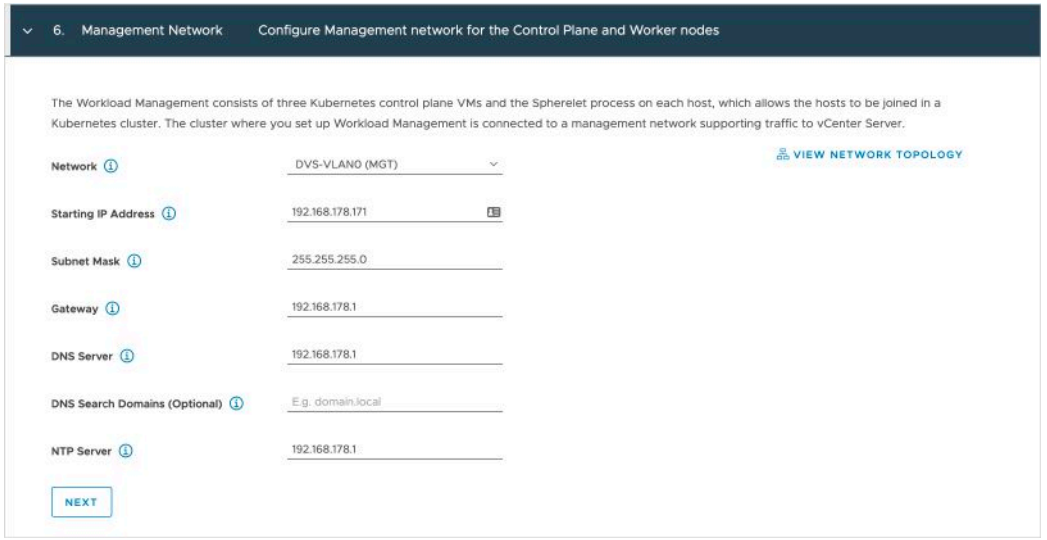
CONFIGURE WORKLOAD MANAGEMENT





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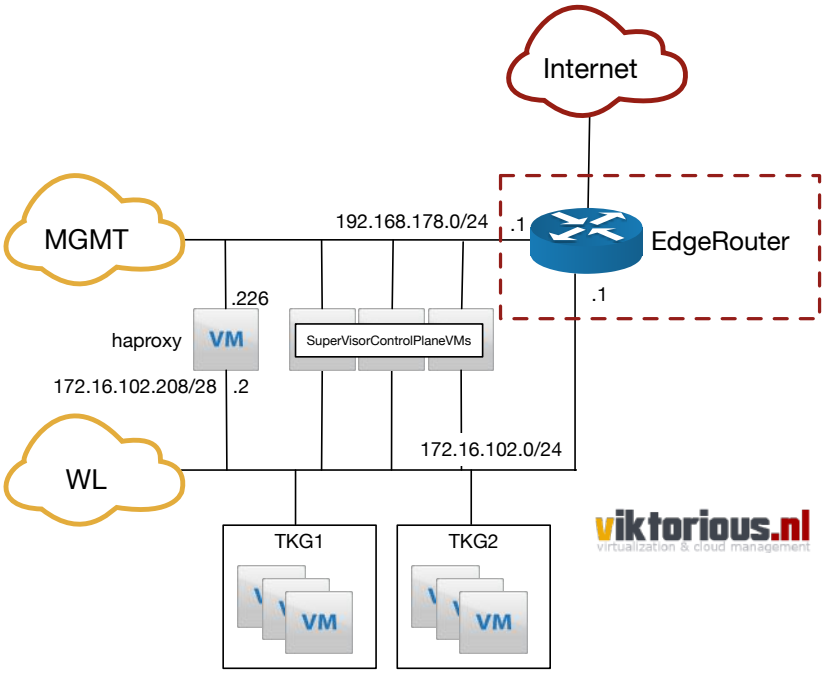
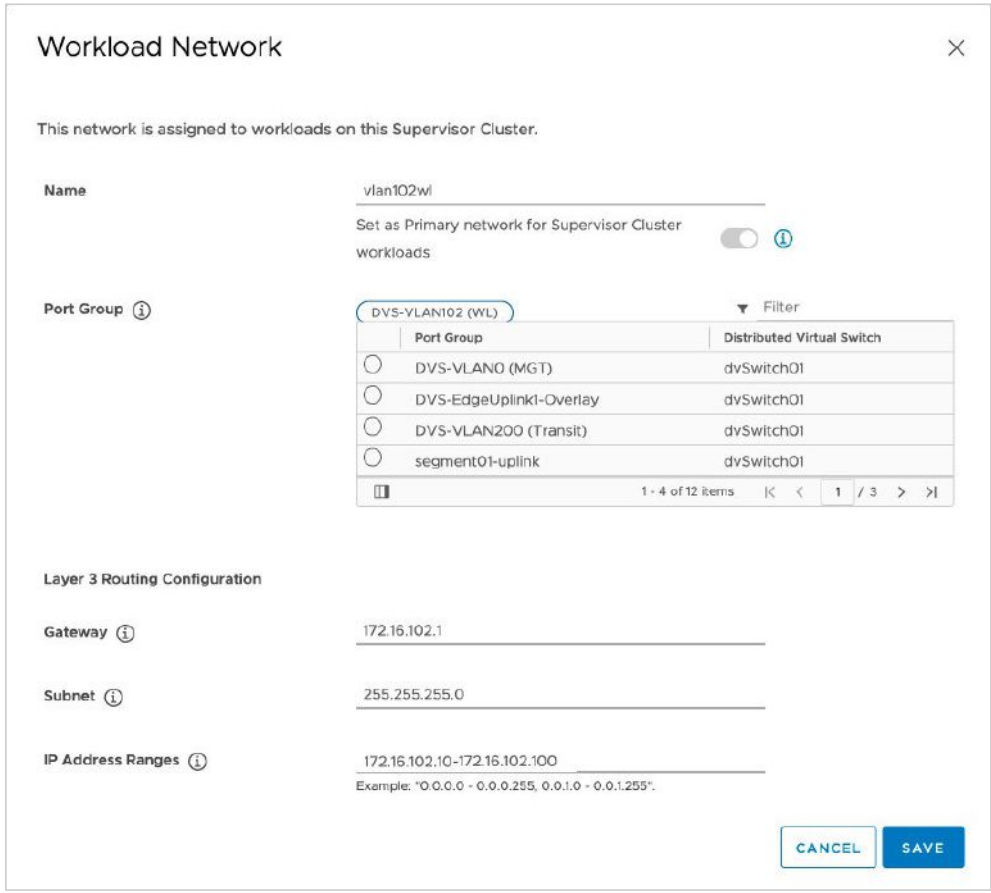
CONFIGURE WORKLOAD MANAGEMENT





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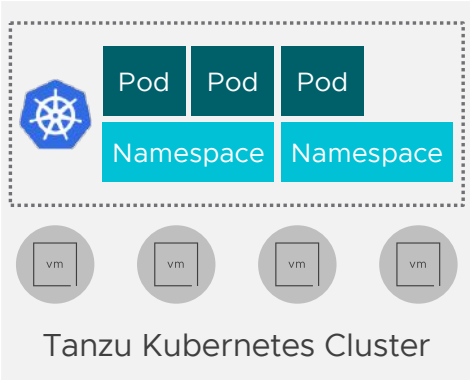
The result

CREATE A NAMESPACE AND TKG CLUSTER



Namespace

Supervisor Cluster | vSphere with Tanzu Services

Supervisor Cluster | vSphere with Tanzu Services

SDDC

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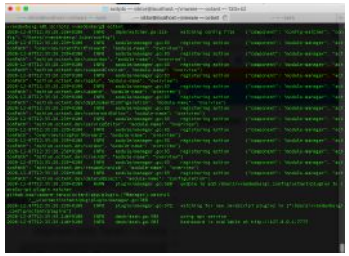
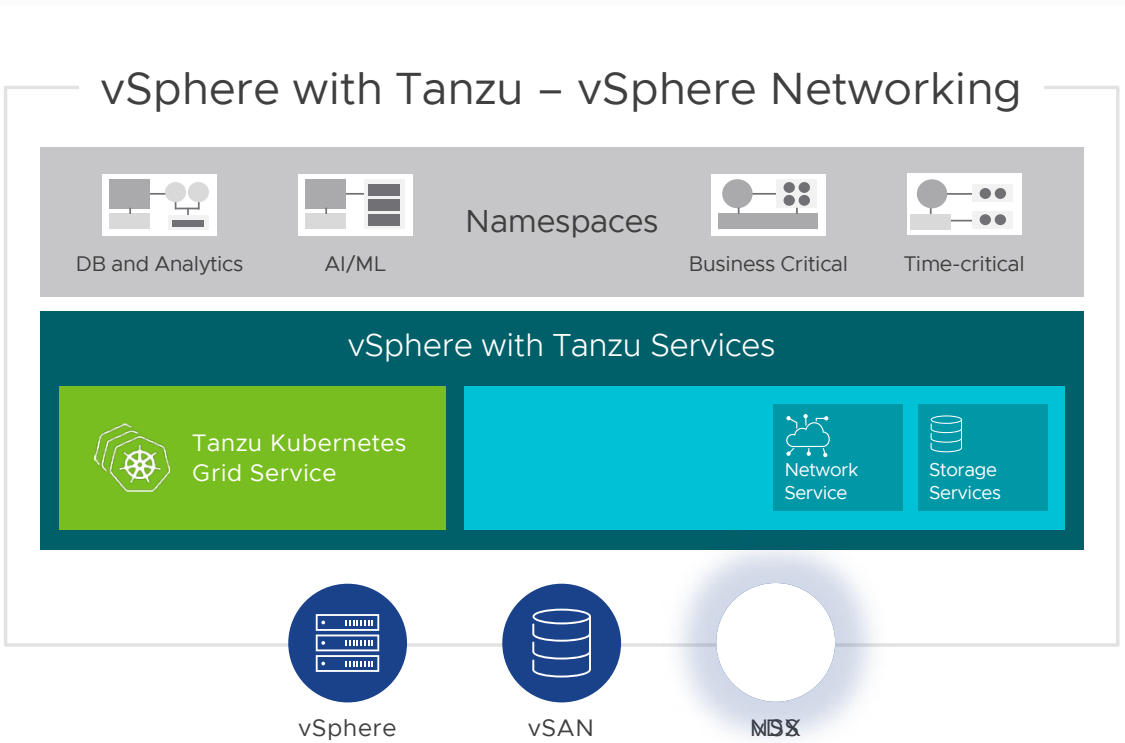
SIMPLIFIED DEPLOYMENT AND CONSUMPTION

vSphere with Tanzu

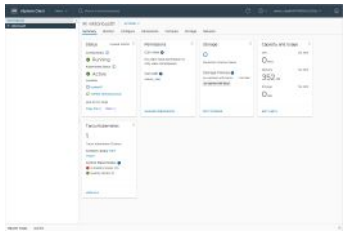
Developer



Kubectl/API



vSphere Admin



Webclient

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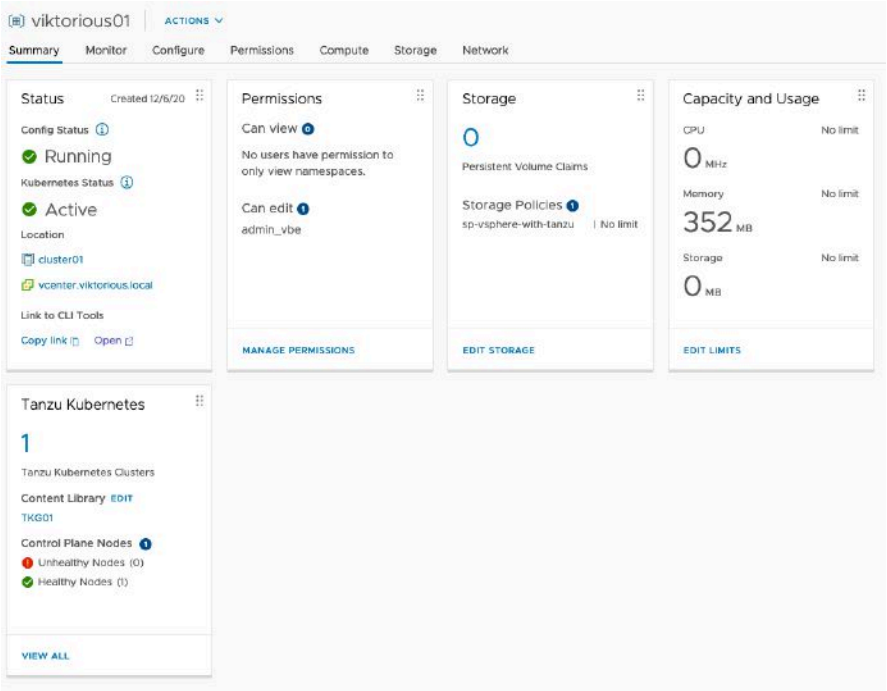
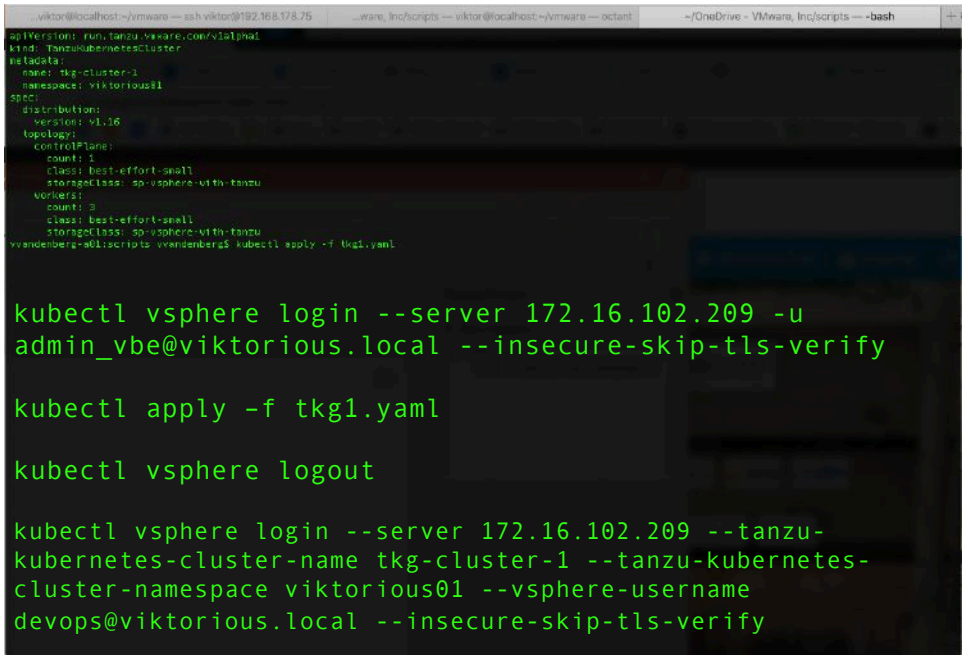
CREATE A NAMESPACE AND TKG CLUSTER

Create a namespace (vSphere WebClient)



Deploy a Tazu Kubernetes cluster (kubectl)



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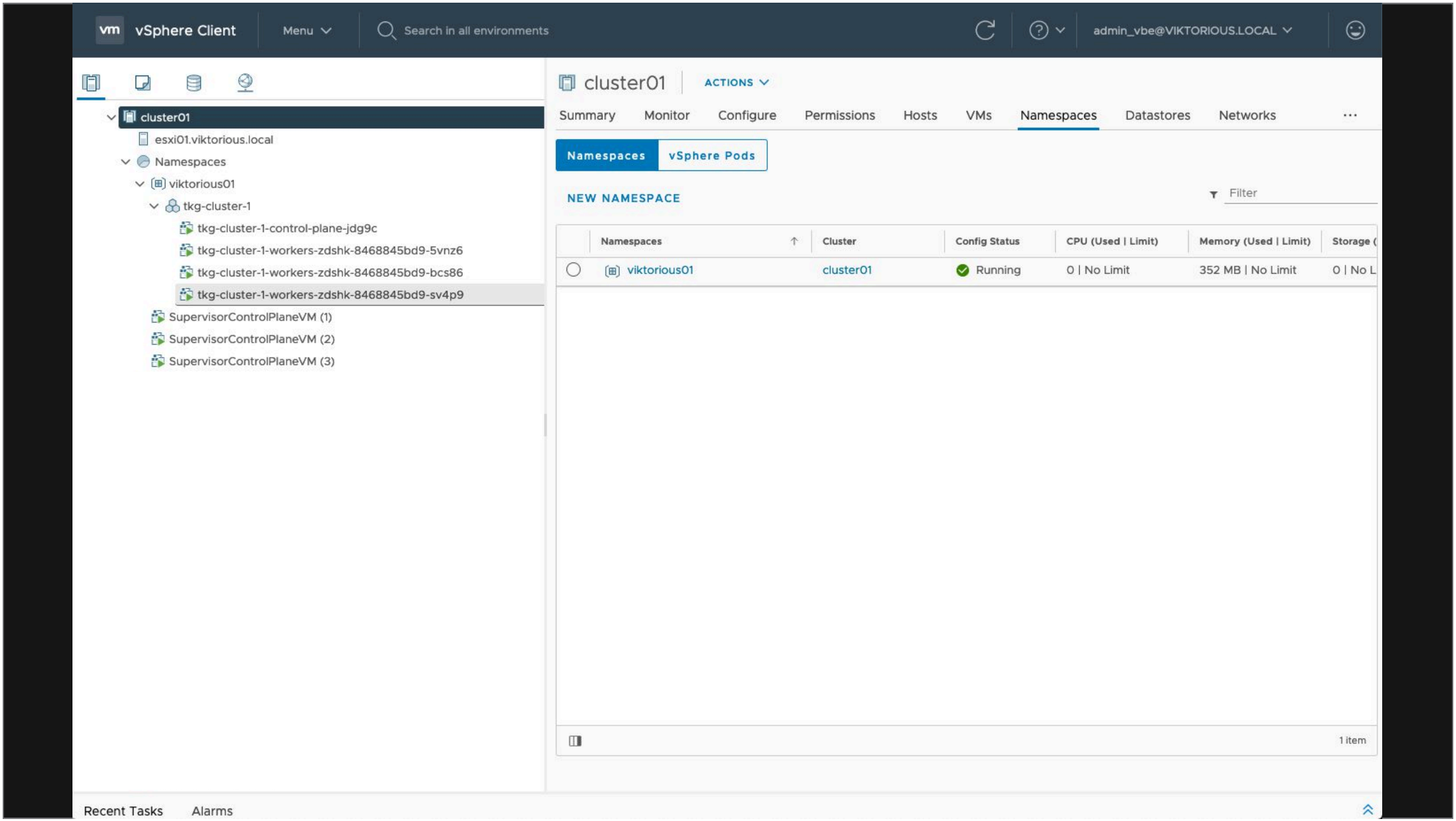
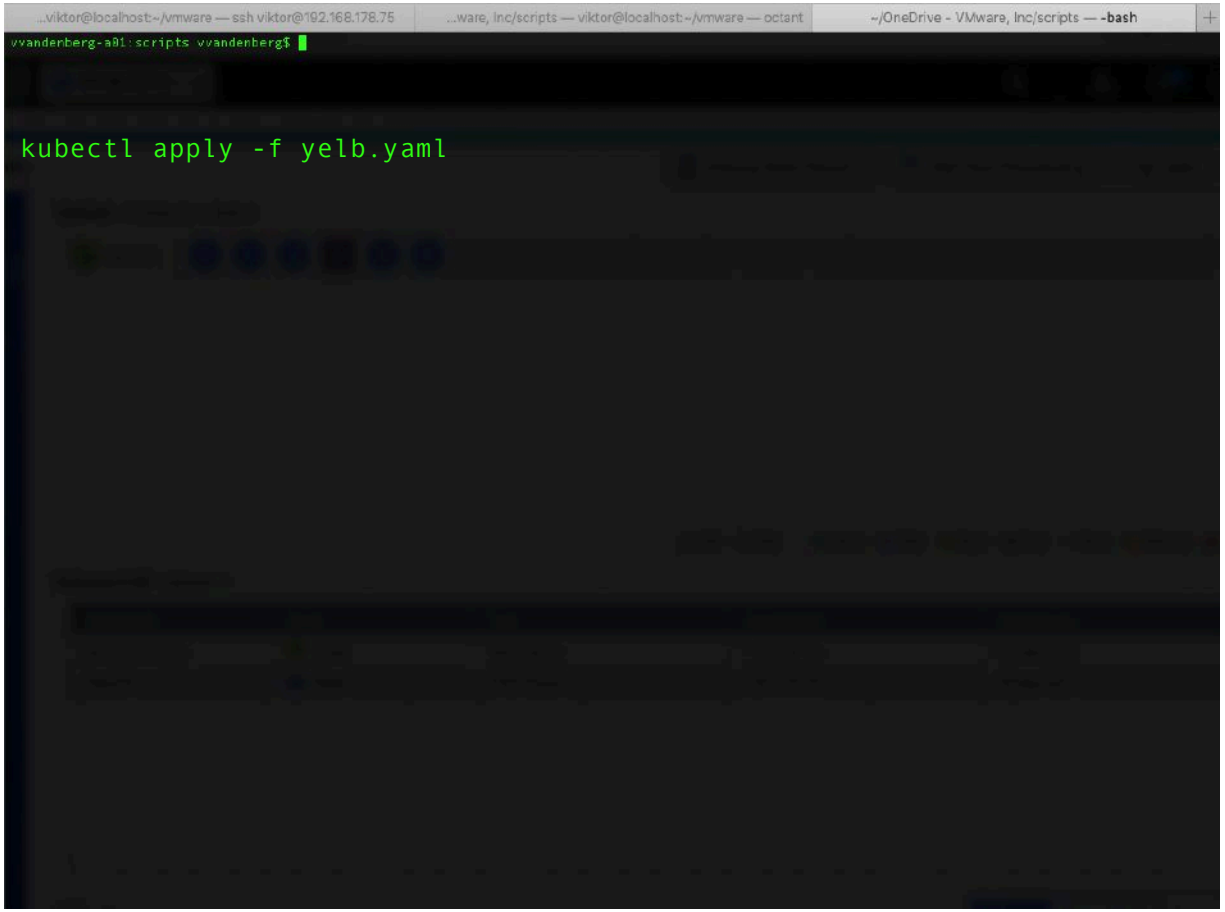

vSphere Client
Menu
Search in all environments
admin_vbe@VIKTORIOUS.LOCAL
cluster01
esxi01.viktorious.local
Namespaces
viktorious01
tkg-cluster-1
tkg-cluster-1-control-plane-jdg9c
tkg-cluster-1-workers-zdshk-8468845bd9-5vnz6
tkg-cluster-1-workers-zdshk-8468845bd9-bcs86
tkg-cluster-1-workers-zdshk-8468845bd9-sv4p9
SupervisorControlPlaneVM (1)
SupervisorControlPlaneVM (2)
SupervisorControlPlaneVM (3)
cluster01
ACTIONS
Summary
Monitor
Configure
Permissions
Hosts
VMs
Namespaces
Datastores
Networks
Namespaces
vSphere Pods
NEW NAMESPACE
Filter
Namespaces
Cluster
Config Status
CPU (Used | Limit)
Memory (Used | Limit)
Storage (
viktorious01
cluster01
Running
0 | No Limit
352 MB | No Limit
0 | No L
1 item
Recent Tasks
Alarms

DEPLOY APPS TO TKG CLUSTER & MONITOR K8S



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Yelb

Welcome to Yelb, the only hub for healthy food recommendations!

IHOP

Pancakes, for a powerful start!

VOTE

Chipotle

Burritos, for a mid-day break!

VOTE

Outback

Blooming onion, what else?

VOTE

Buca di Beppo

Lasagne, this is heaven!

VOTE

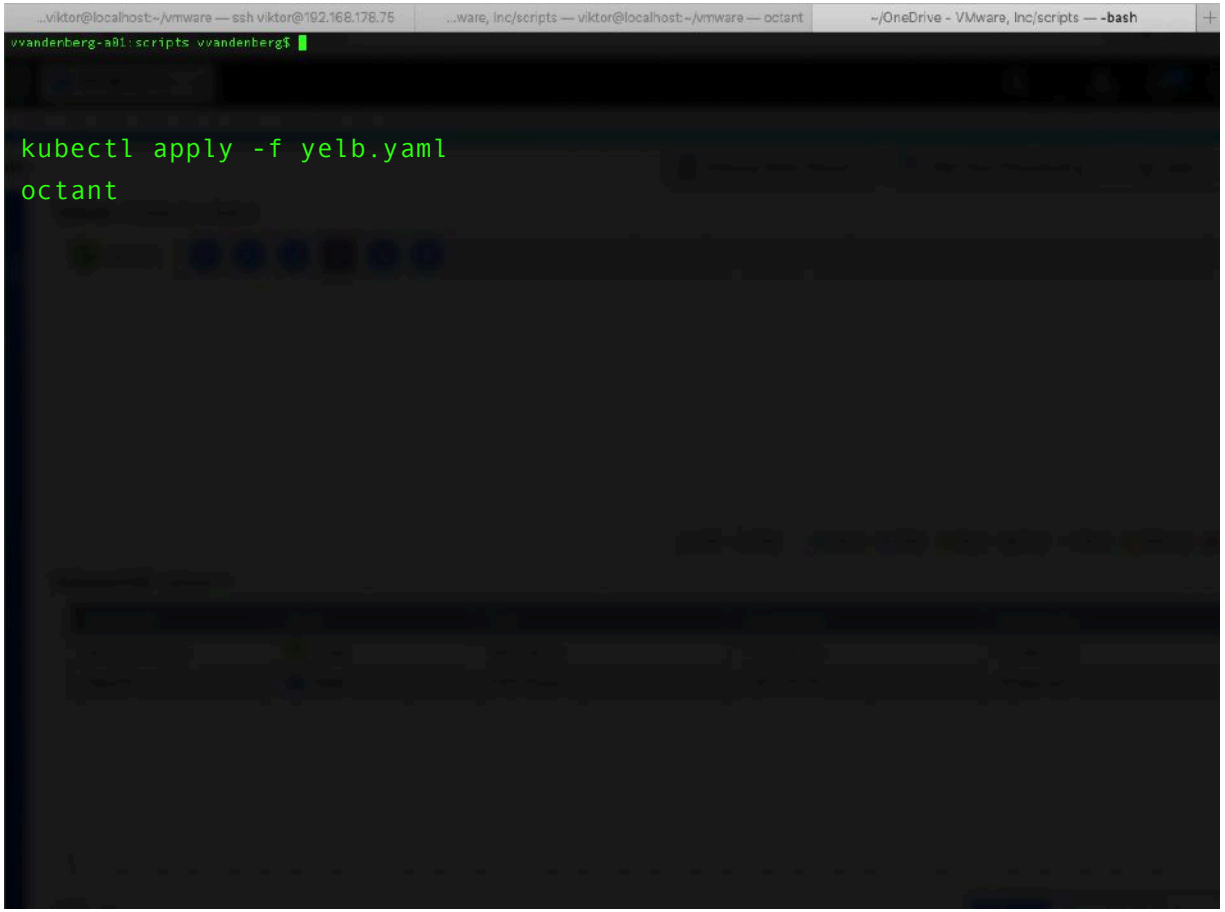
9
Total

4	2	1	2
outback	bucadibeppo	ihop	chipotle
44%	22%	11%	22%

Number of page views so far: 7

App Server: yelb-appserver-7cb8446b7b-7fksg

DEPLOY APPS TO TKG CLUSTER & MONITOR K8S



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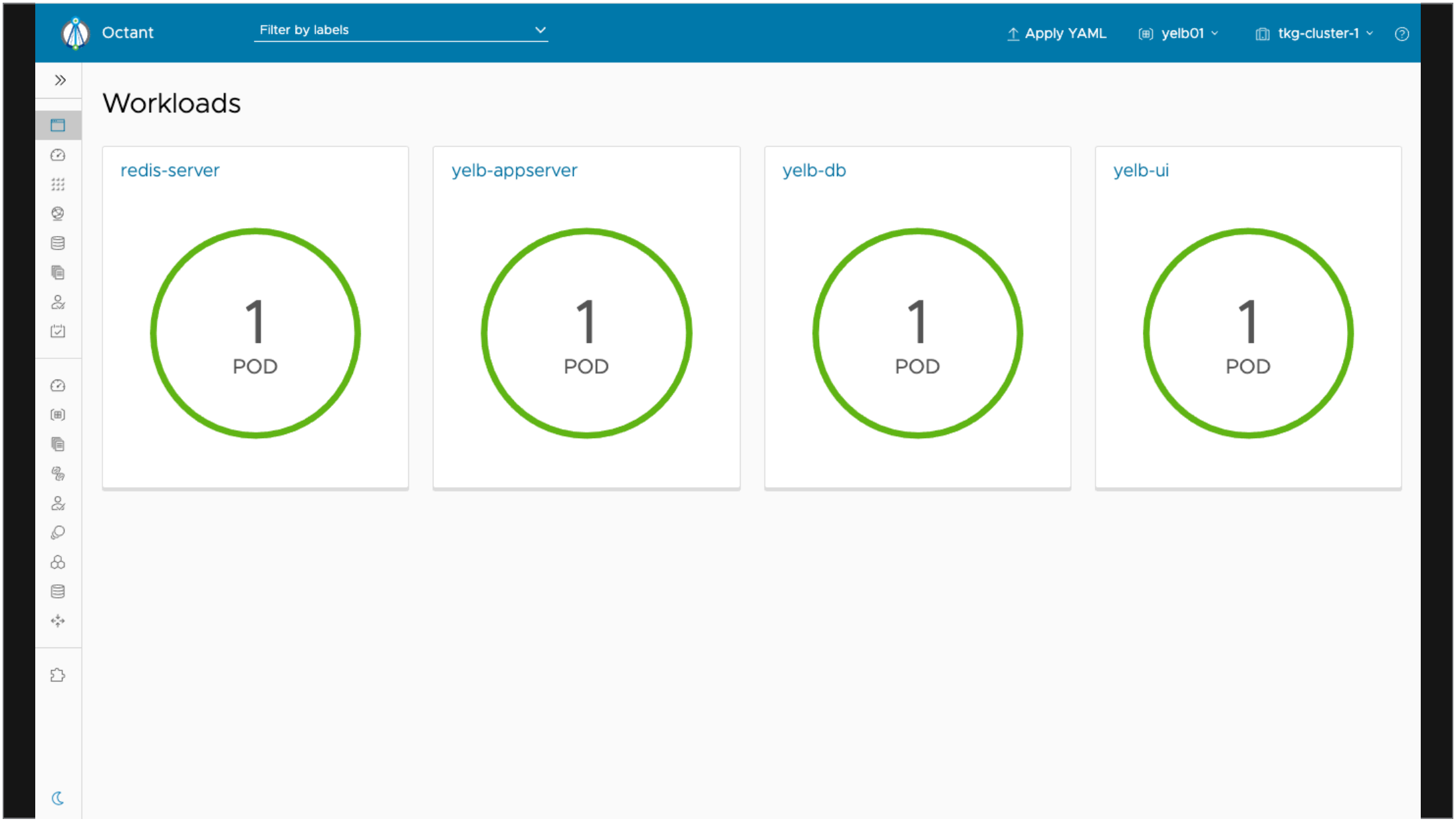
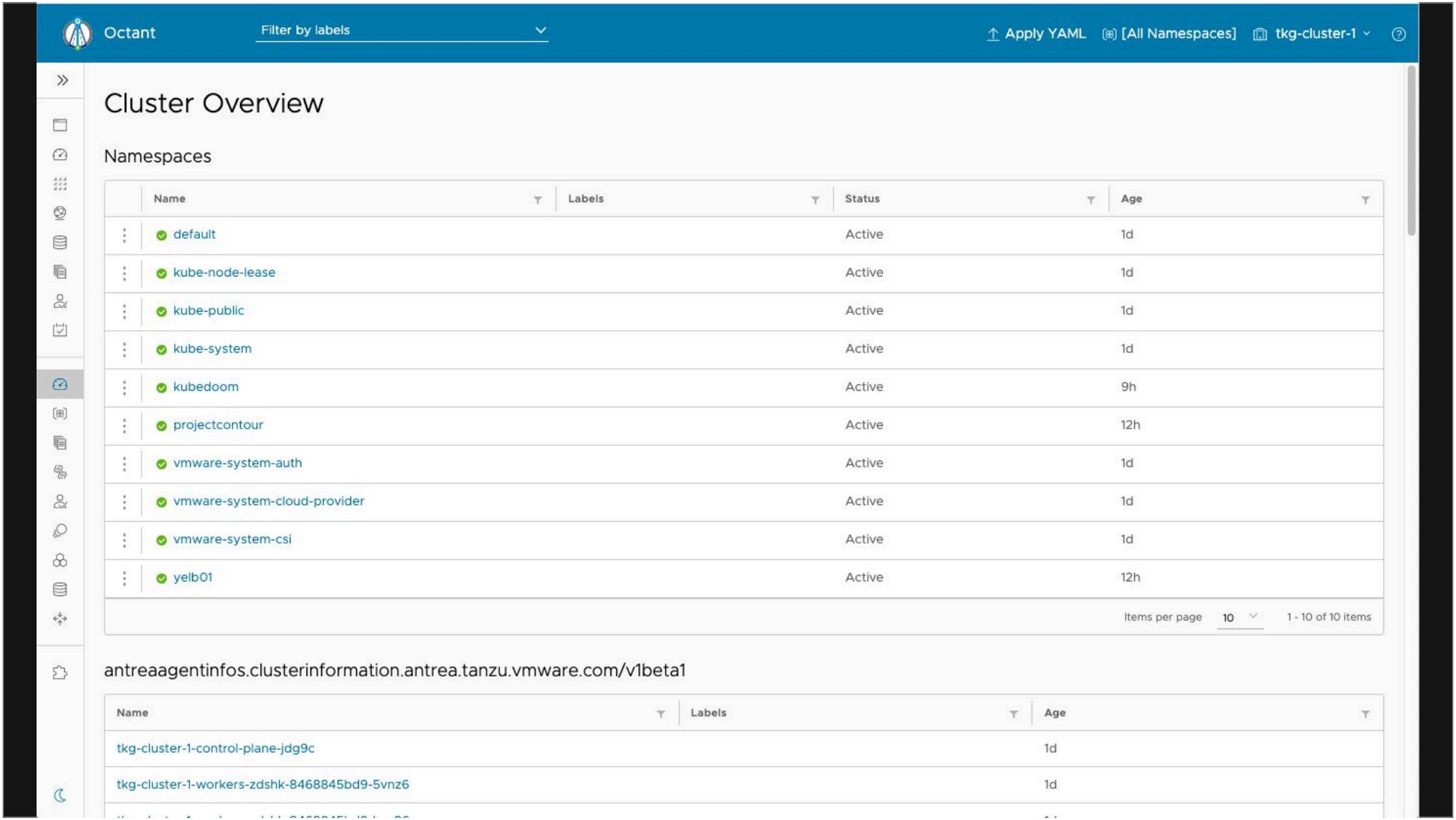
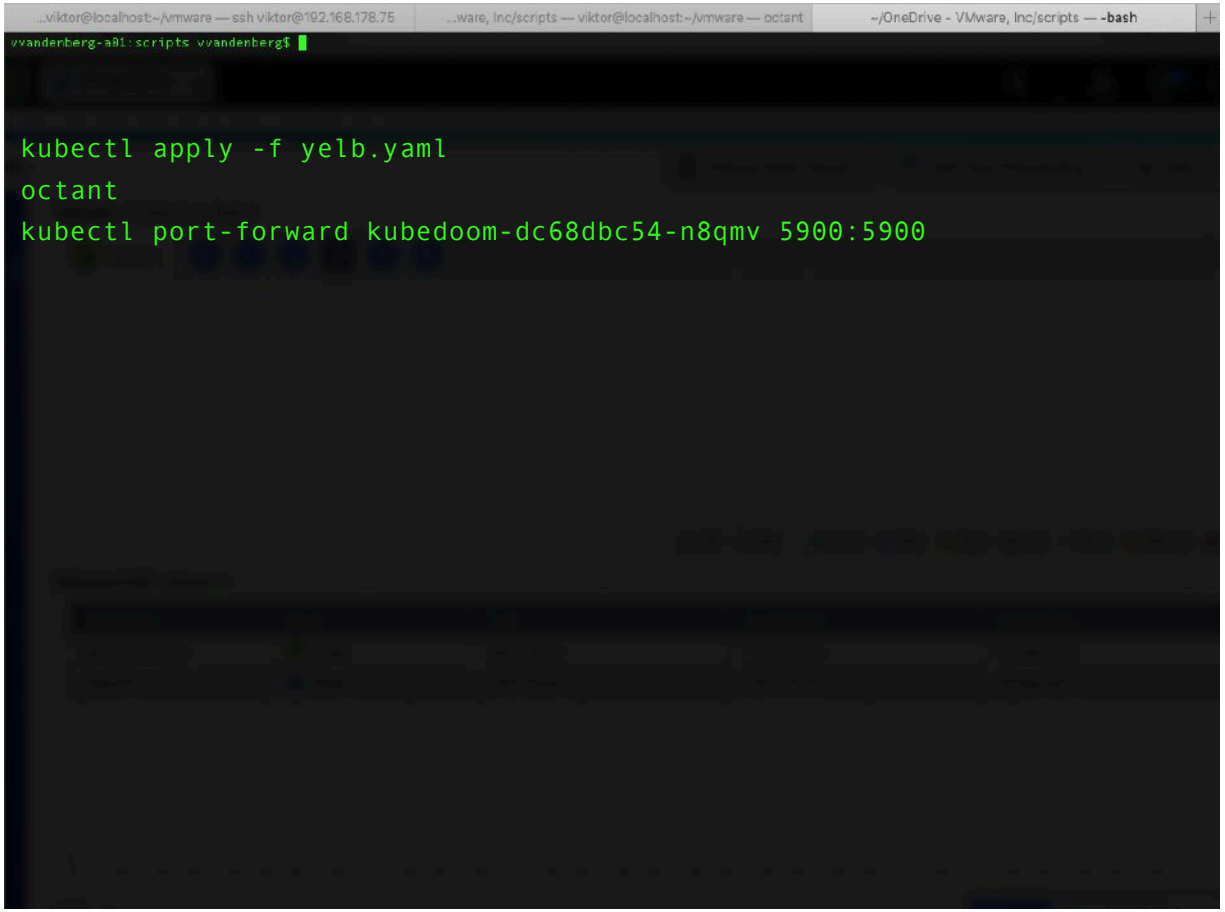

Octant
Filter by labels
Apply YAML
yelb01
tkg-cluster-1
Workloads
redis-server
1
POD
yelb-appserver
1
POD
yelb-db
1
POD
yelb-ui
1
POD


Octant
Filter by labels
Apply YAML
[All Namespaces]
tkg-cluster-1
Cluster Overview
Namespaces
Name
Labels
Status
Age
default
Active
1d
kube-node-lease
Active
1d
kube-public
Active
1d
kube-system
Active
1d
kubedoom
Active
9h
projectcontour
Active
12h
vmware-system-auth
Active
1d
vmware-system-cloud-provider
Active
1d
vmware-system-csi
Active
1d
yelb01
Active
12h
Items per page
10
1 - 10 of 10 items
antreaagentinfos.clusterinformation.antrea.tanzu.vmware.com/v1beta1
Name
Labels
Age
tkg-cluster-1-control-plane-jdg9c
1d
tkg-cluster-1-workers-zdshk-8468845bd9-5vnz6
1d

DEPLOY APPS TO TKG CLUSTER & MONITOR K8S



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localhost:5900 (tkg-cluster-1-workers-zdshk-8468845bd9-5vnz6:99) - VNC Viewer
DOOM
New Game
Options
Load game
Save game
Read This!
Quit Game
49
AMMO
100%
HEALTH
ARMS
0%
ARMOR
BULL 49 / 200
SHEL 0 / 50
RCKT 0 / 50
CELL 0 / 300

LEARN MORE K8S

Useful resources:

- Learn Kubernetes - https://kube.academy/
- William Lam - https://www.virtuallyghetto.com/
- Cormac Hogan - https://cormachogan.com/
- Frank Denneman - https://frankdenneman.nl/2020/11/06/vsphere-with-tanzu-vcenter-server-network-configuration-overview/ (network config HA Proxy / vSphere networking)
- Viktor van den Berg ☺ - https://www.viktorious.nl/

Kubernetes Demo Applications:

- Yelb, Kubedoom and more - https://www.virtuallyghetto.com/2020/06/interesting-kubernetes-application-demos.html
- VMware app examples - https://docs.vmware.com/en/VMware-vSphere/7.0/vmware-vsphere-with-tanzu/GUID-E217C538-2241-4FD9-9D67-6A54E97CA800.html

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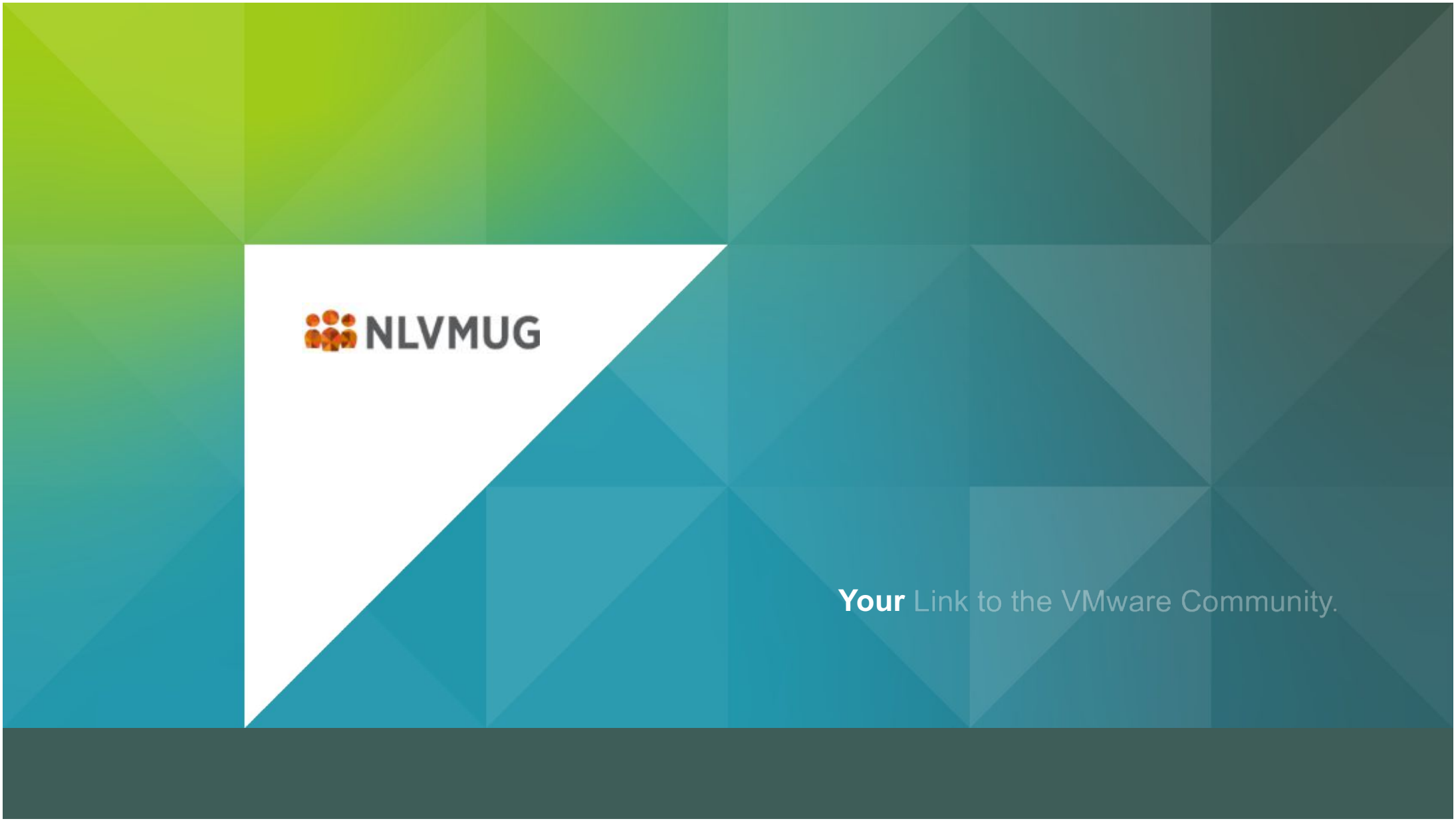
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Your Link to the VMware Community.