

Kubernetes 101

Łukasz Kałużny

MVP: Microsoft Azure

Cloud Technology Leader @ Beyond.pl

kaluzny.io | @kaluzaaa



<https://github.com/kaluzaaa/presentation/tree/master/2019>



devwarsztaty • Following

...



devwarsztaty Microsoft make ❤️ with Linux on 🍎 :)

127w



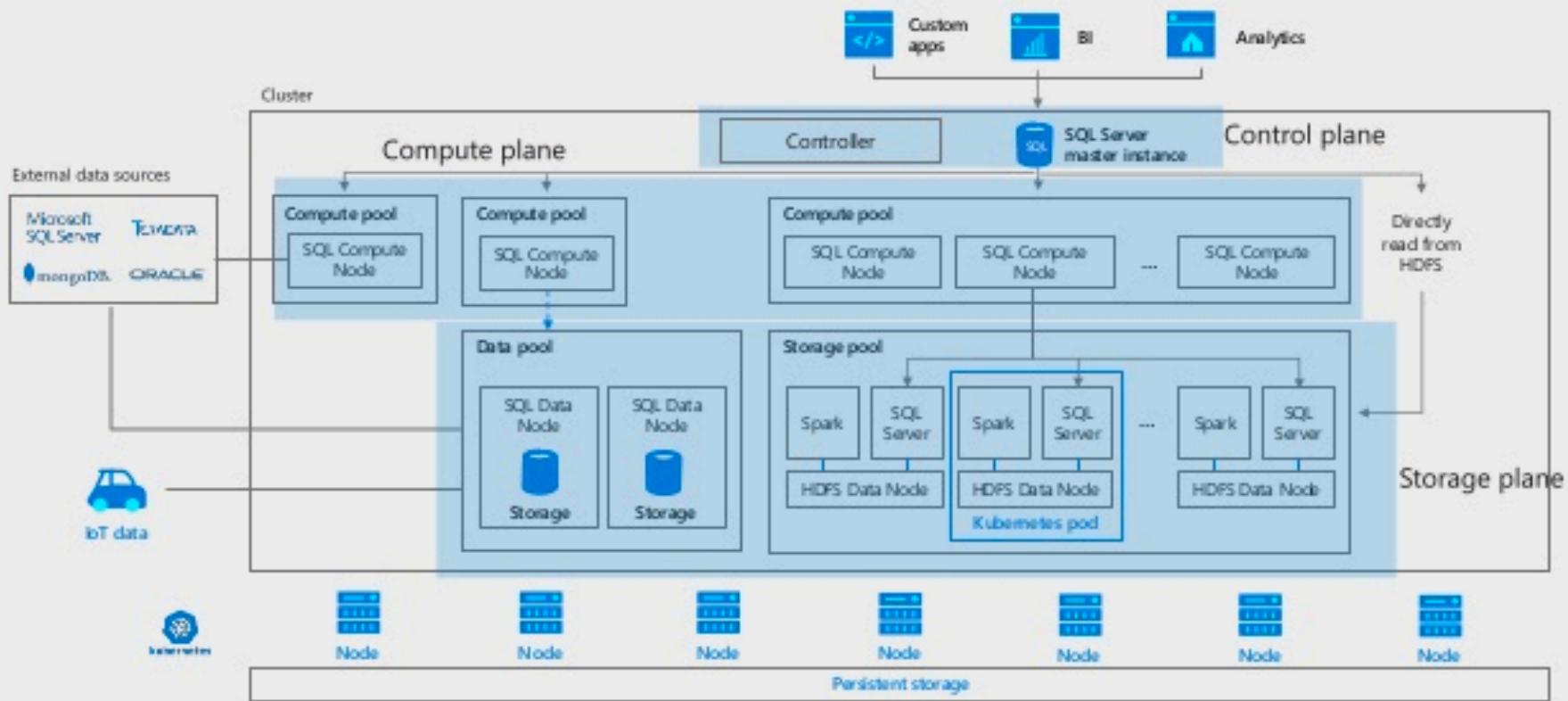
Liked by gutek and 3 others

DECEMBER 3, 2016

Add a comment...

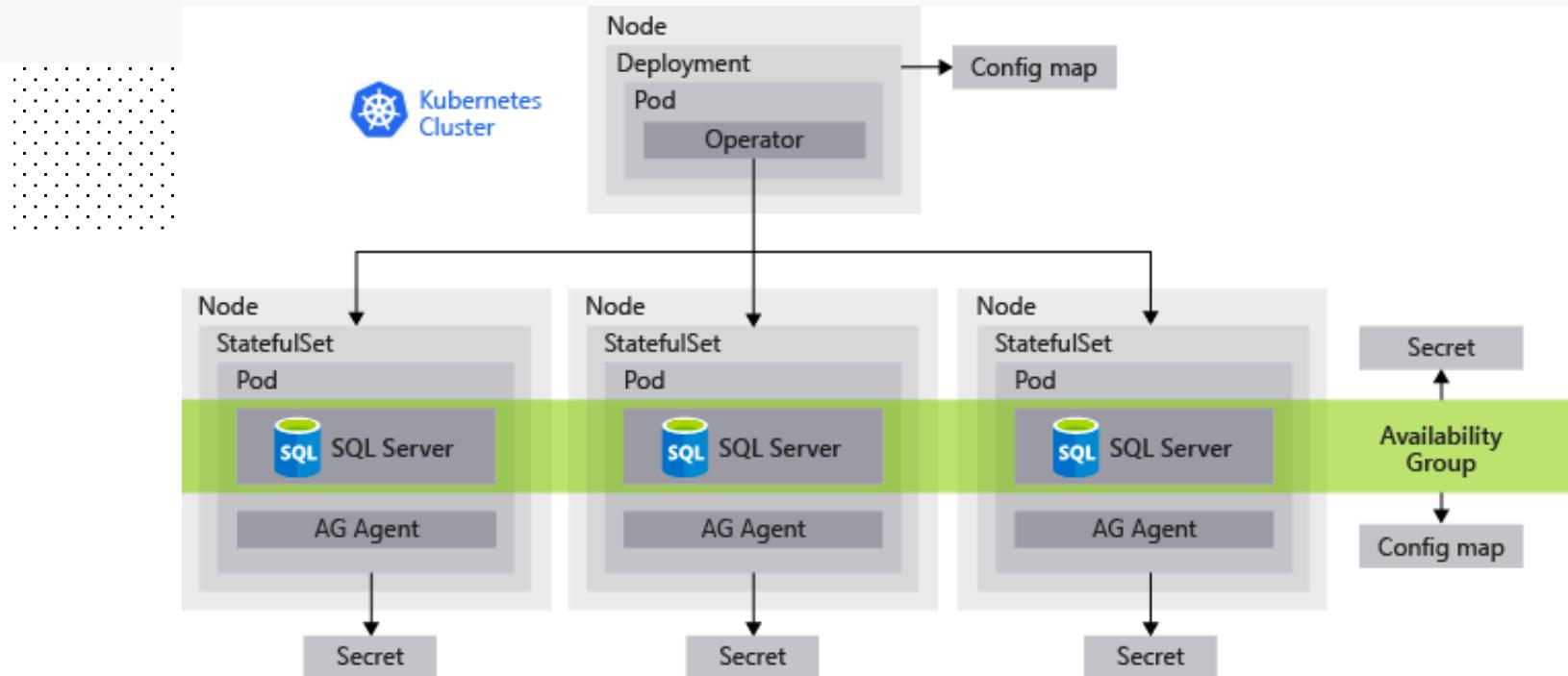
Post

SQL Server Big Data Cluster Layout



Availability Groups on Kubernetes in SQL Server 2019 preview

December 10, 2018





Matt Snider
@MattSnider

Obserwowany



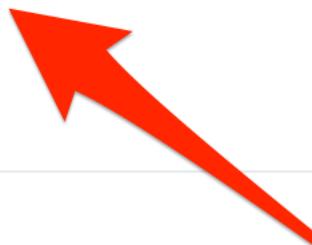
Demos like this make me nuts as they make no mention of persistence or HA/failover.



Andrew Pruski 🇺🇦 @dbafromthecold

Deploying SQL Server to Kubernetes using @HelmPack #SQLBits
#K8sAtSQLBits

buff.ly/2EH2SNX



🌐 Przetłumacz tweetsa

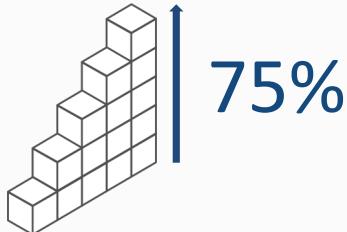
10:05 - 3 mar 2019

Containers and Kubernetes momentum

"By 2020, more than **50%** of enterprises will run **mission-critical, containerized cloud-native applications** in production."

Gartner

The average size of a container deployment has grown 75% in one year.¹



Half of container environment is orchestrated.¹

77% of companies² who use container orchestrators choose Kubernetes.

77%

Larger companies are leading the adoption.¹

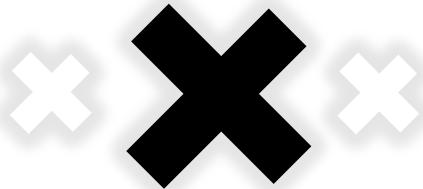
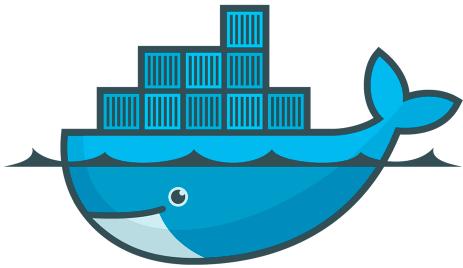
Nearly 50% of organizations¹ running 1000 or more hosts have adopted containers.

50%

¹ Datadog report 8 Surprising Facts About Real Docker Adoption

² CNCF survey: cloud-native-technologies-scaling-production-applications

What is a container?



Not a real thing.

An application delivery mechanism with process isolation.

Based on several Linux kernel features.

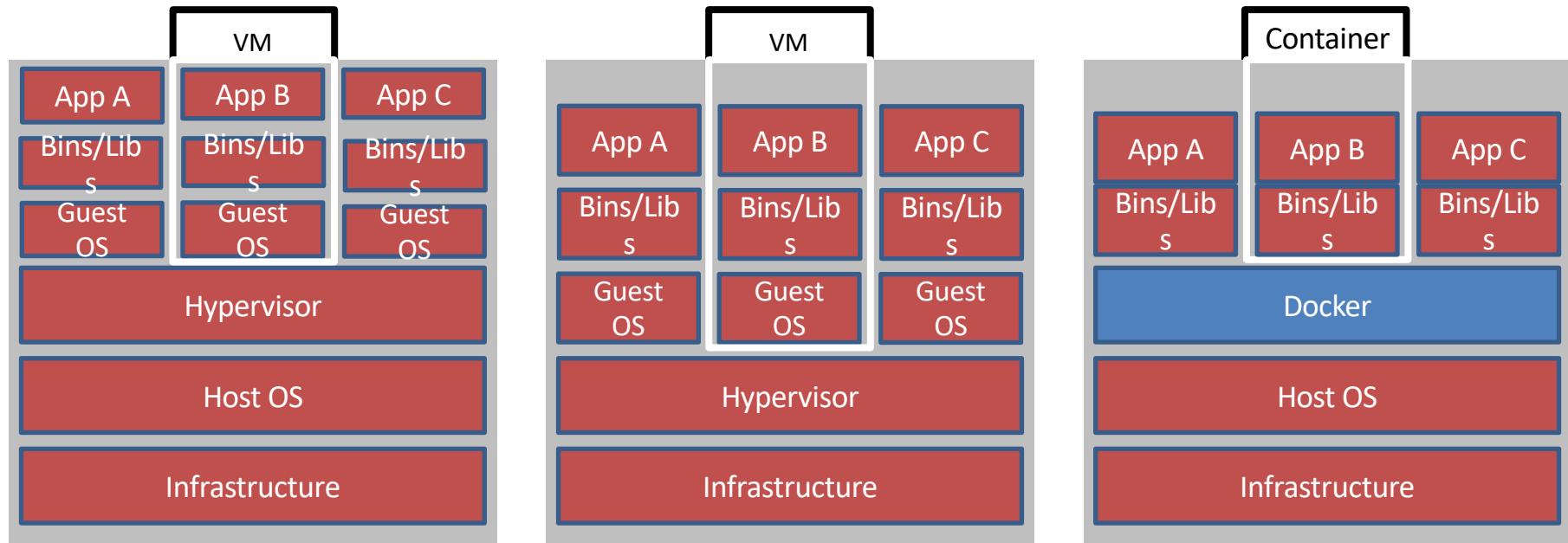
Namespaces (what a process can see)

- Mount
- Network
- Cgroup

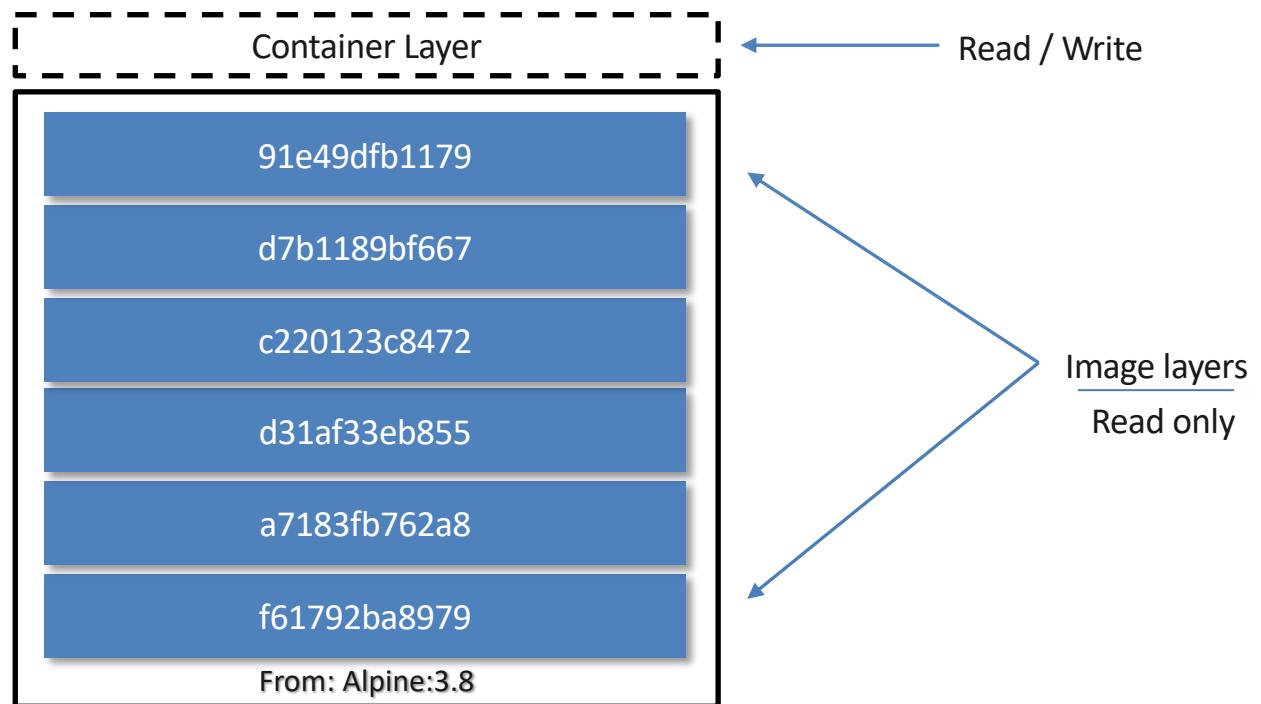
Cgroups (what a process can use)

- Memory
- CPU

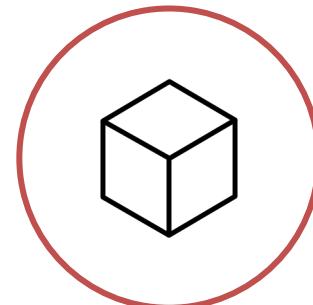
Virtualization vs. Containerization



Still...what is a Container?



The Container Advantage



Fast
iteration



Agile
delivery



Immutability



Cost
savings



Efficient
deployment



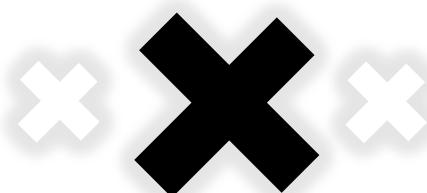
Elastic
bursting

For developers

For IT



What is Kubernetes ?



Open source container orchestrator.
Designed to automate deployment, scaling, and management of applications.

Features Include:

- Self healing
- Automatic Bin Packing
- Service Discovery
- Load Balancing
- Secret Management
- Automated roll backs and roll outs
- Horizontal Scaling

Kubernetes Objects

Key terms

- **ReplicaSet**
- **StatefulSet**
- **DaemonSet**
- **Job**
- **Deployment**
- **Node**
- **Pod**
- **Service**
- **Ingress**
- **Namespace**
- **ConfigMap**
- **Secret**
- **Volume**
- **PersistentVolume**
- **PersistentVolumeClaim**

Reconciliation

Reconciliation Loop

Desired State

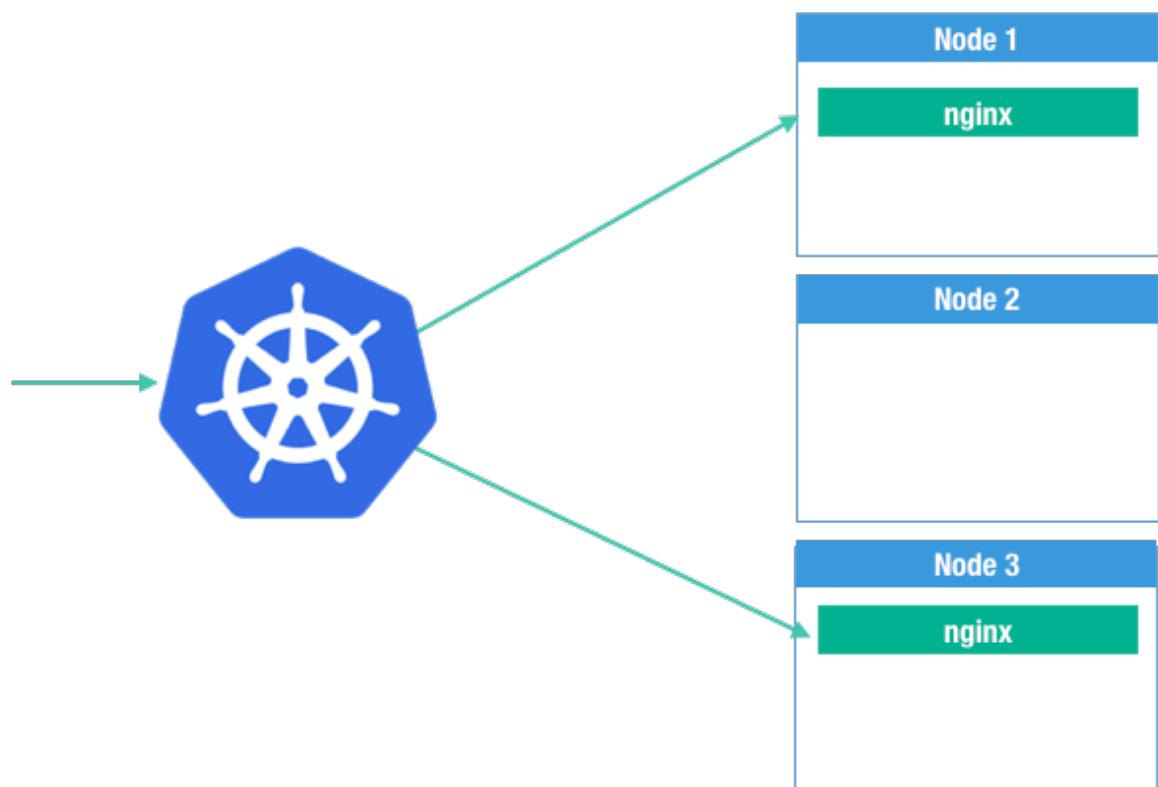


Actual State

Reconciliation

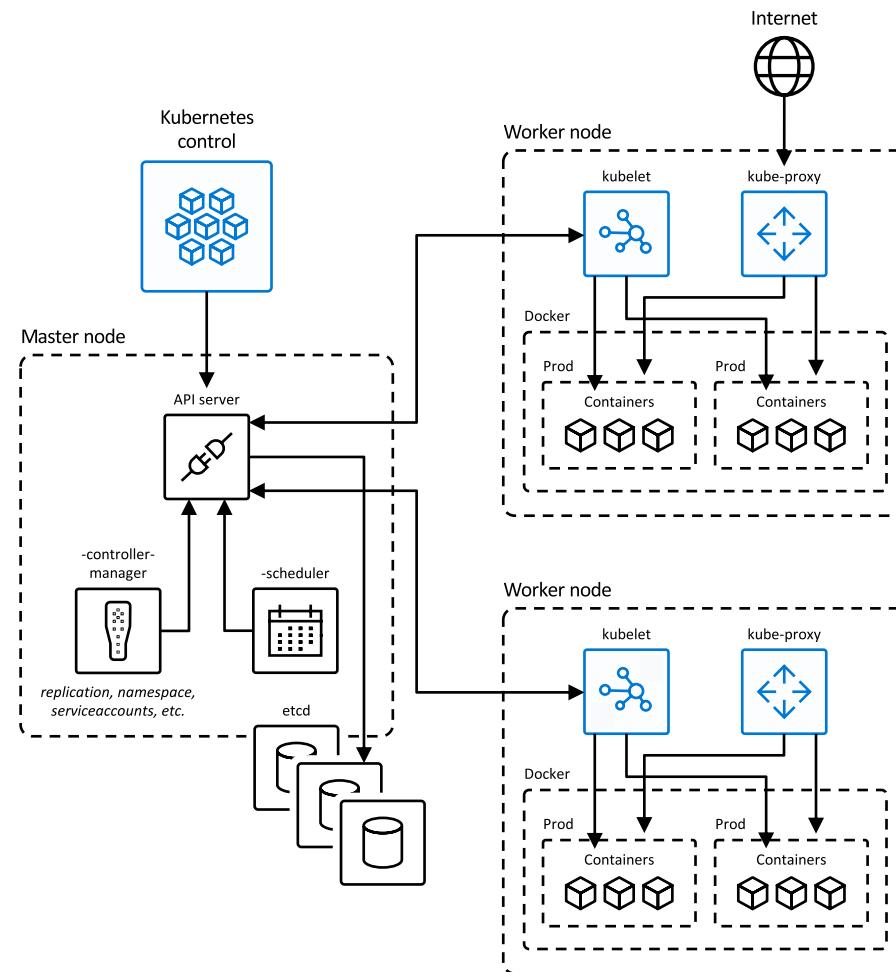
Declarative Syntax

```
apiVersion: apps/v1
kind: Deployment
metadata:
  name: nginx-deployment
  labels:
    app: nginx
spec:
  replicas: 2
  selector:
    matchLabels:
      app: nginx
  template:
    metadata:
      labels:
        app: nginx
    spec:
      containers:
        - name: nginx
          image: nginx:1.7.9
```



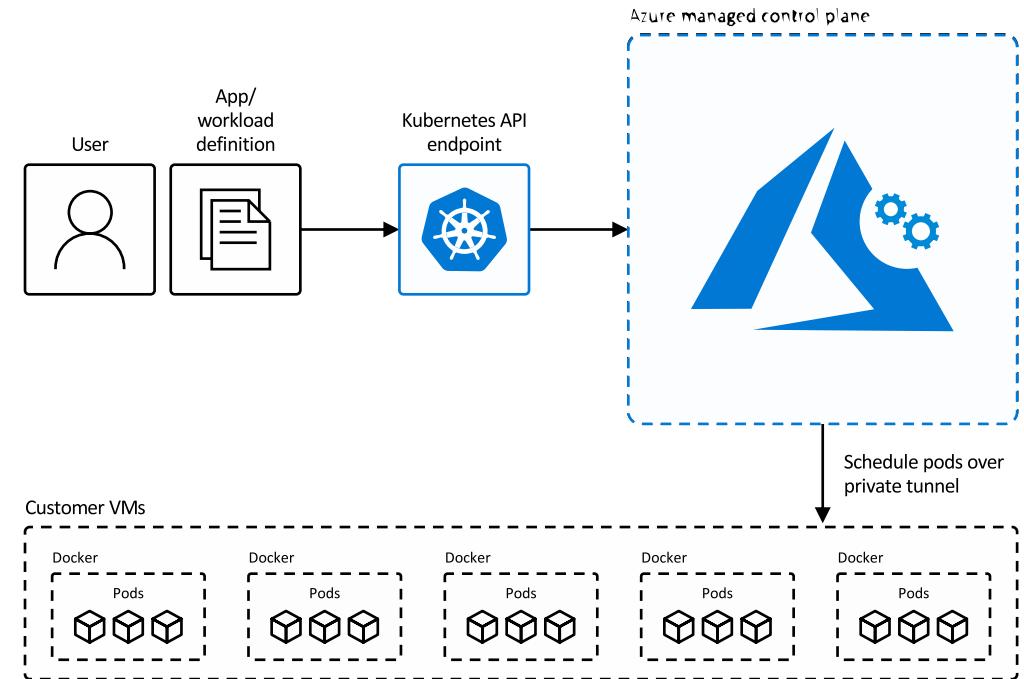
Kubernetes 101

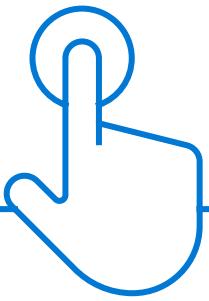
1. Kubernetes users communicate with API server and apply desired state
2. Master nodes actively enforce desired state on worker nodes
3. Worker nodes support communication between containers
4. Worker nodes support communication from the Internet



How managed Kubernetes on Azure works

- Automated upgrades, patches
- High reliability, availability
- Easy, secure cluster scaling
- Self-healing
- API server monitoring
- At no charge





Demo

Get started easily with AKS

Set up CI/CD in simple steps with DevOps Project

From infrastructure to innovation

Managed Kubernetes
empowers you to do more

Focus on your containers and
code, not the plumbing of
them

Responsibilities	DIY with Kubernetes	Managed Kubernetes on Azure
Containerization		
Application iteration, debugging		
CI/CD		
Cluster hosting		
Cluster upgrade		
Patching		
Scaling		
Monitoring and logging		

Customer
 Microsoft

MAKE DEMO GREAT AGAIN!



<https://github.com/kaluzaaa/presentation/tree/master/2019>



PLATINUM SPONSOR

TECHNOLOGY
INNOVATION
DATA
KNOWLEDGE



STRATEGIC PARTNER



GOLD SPONSORS



CLOUDS ON MARS



SILVER SPONSOR



BRONZE SPONSOR

