Canary deployment with Istio and Kubernetes On DigitalOcean

Mamta Jha
(Sr.Developer Advocate @ DigitalOcean)

Whoami - Mamta Jha

DigitalOcean

Senior Developer Advocate - Review architecture of DigitalOcean customers and suggest best practices that could be applicable.

FLEXTRONICS

Software Developer - C, C++, worked on layer 2 and layer 3 protocol stack development. Worked on Cloud Security for Cloud RNC.

Head of DevOps - Architecting cloud strategy for enterprises which included latest cloud technologies like AWS, GCP, Ansible, Docker, Kubernetes and OpenShift. A Red Hat Certified Instructor who delivered trainings on several Cloud and DevOps courses.

HCL

Senior Tech Specialist- Worked on first ever Cloud RNC (WCE – Wireless Cloud Element) which used VMware products like VM manager, vCenter, ESXi and vSphere 5.5 products. Deployed & managed OpenStack infrastructure primarily on Red Hat.

Agenda:

- Understand Canary Deployment
- Basics of Istio service mesh and Helm
- Deploy app on managed Kubernetes service of DigitalOcean
- Canary release a Node.js app

Agenda

Canary Deployment

K8s Cluster

Helm Installation

Istio Installation

Deployment Strategy : Canary Release

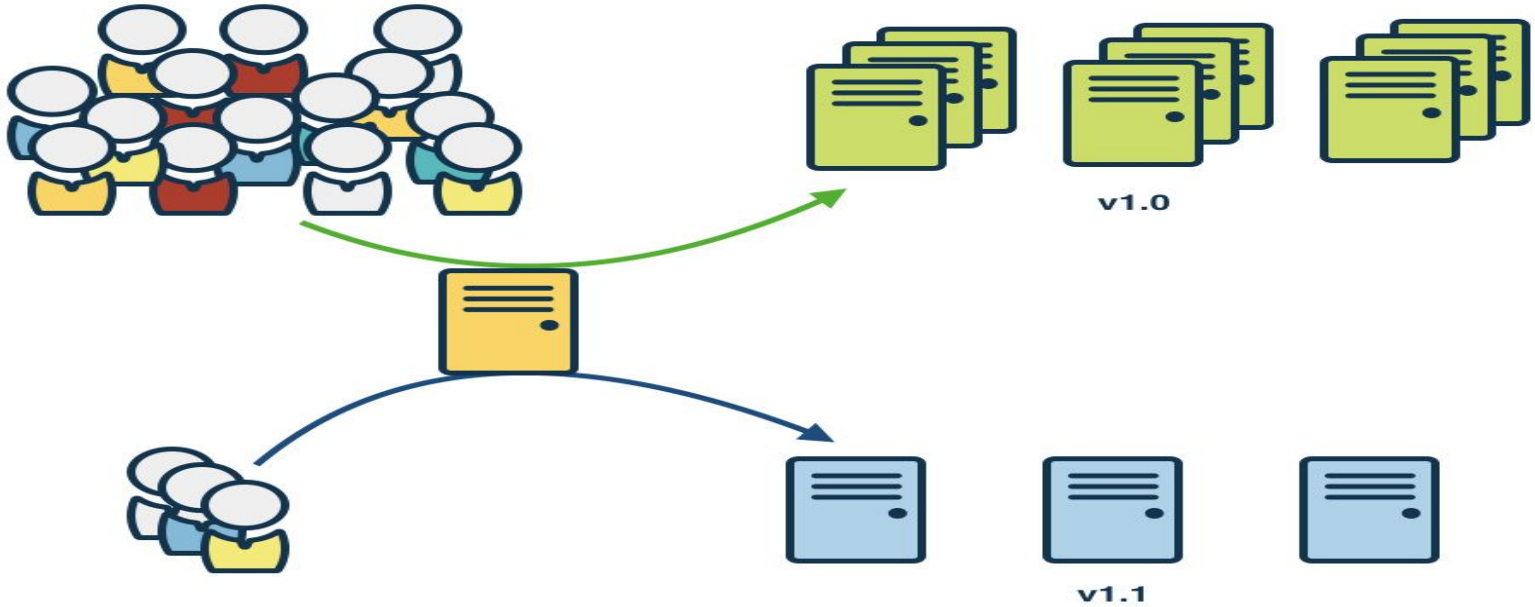

Image Credit - www.gocd.org blog post

How Do We Do Canary Deployments?

- Using Load balancers and Auto Scaling groups
- Kubernetes cluster:
  - Using Labels and Deployments
  - Using Istio service mesh

Canary Deployment

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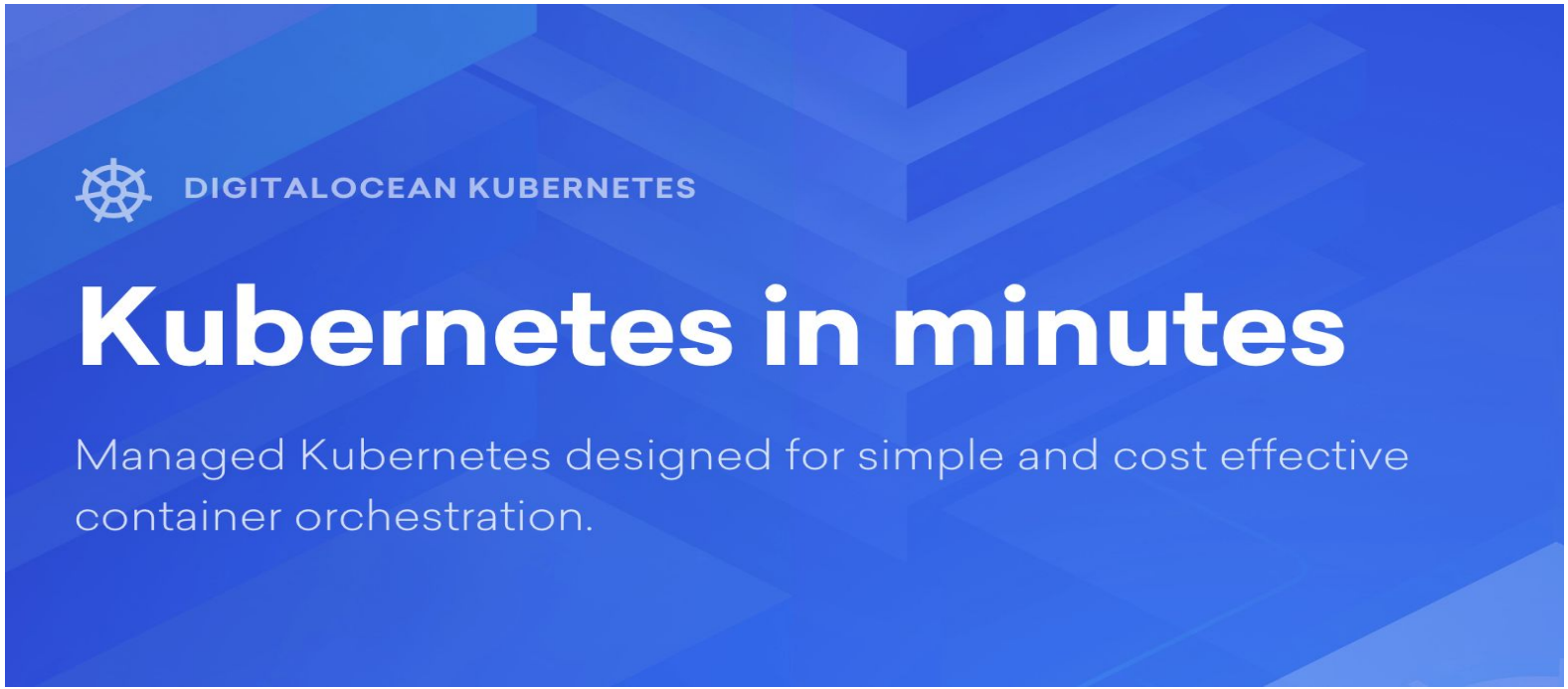
Istio Installation



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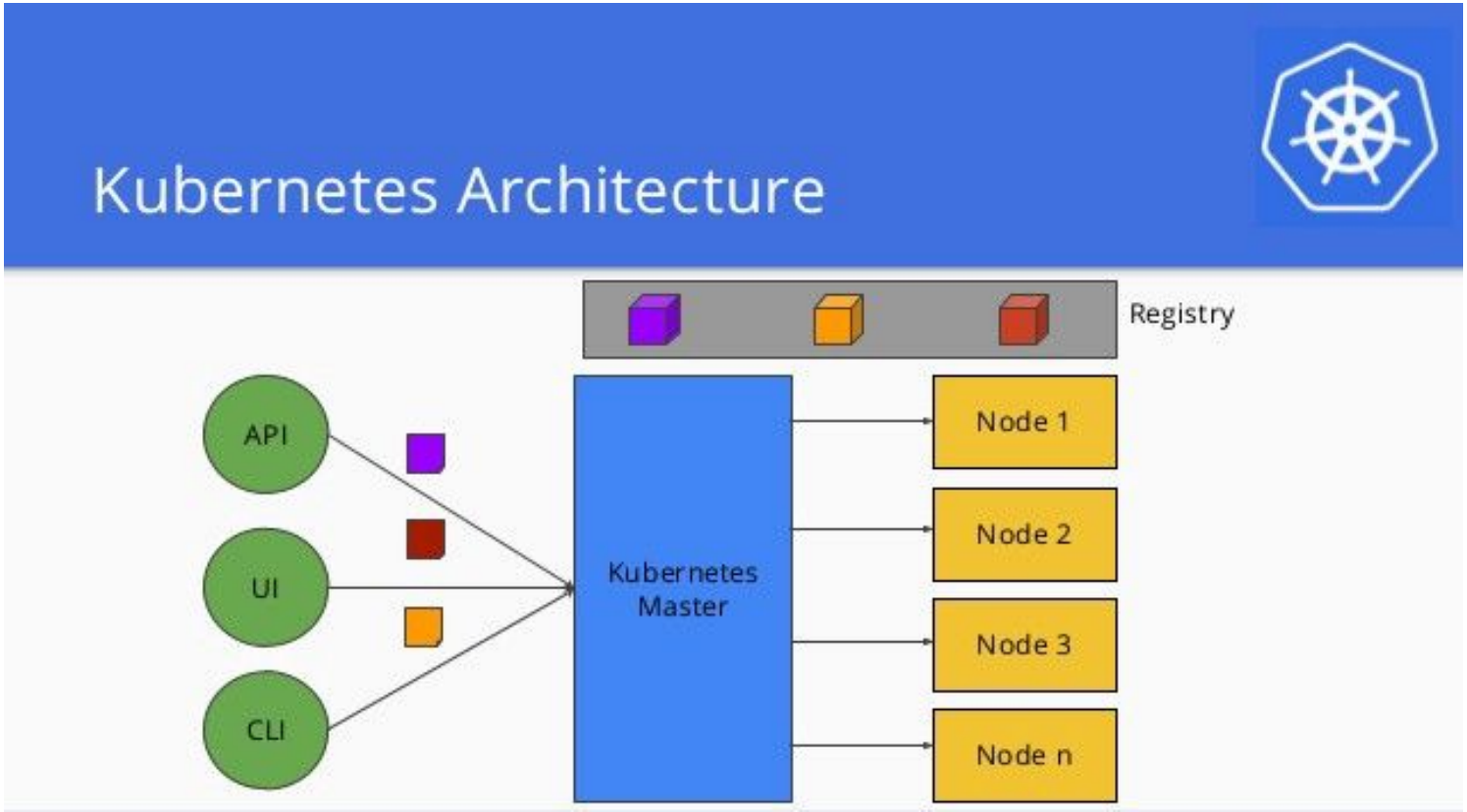

Kubernetes Architecture
Registry
API
UI
CLI
Kubernetes Master
Node 1
Node 2
Node 3
Node n

Canary Deployment

K8s Cluster

Helm Installation

Istio Installation

What is Helm?

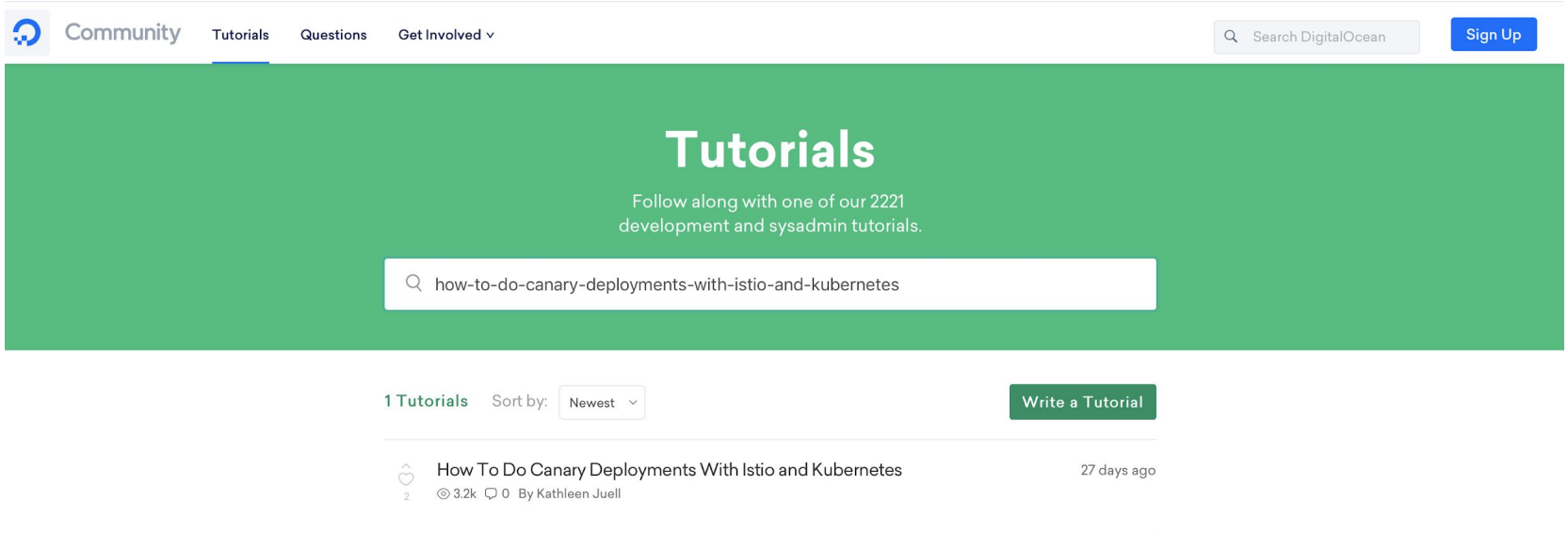
- Package manager for Kubernetes
    - Like apt, yum
- Makes app deployment easy
- Provides ease in managing apps

Helm components

- Helm Client
  - Command line interface
  - Development of charts
  - Interaction with Tiller server
- Tiller server
  - Interacts with Helm client and Kubernetes API server
  - Manages lifecycle

Community Tutorials

https://www.digitalocean.com/community/tutorials



Install Helm

https://www.digitalocean.com/community/tutorials/how-to-install-software-on-kubernetes-clusters-with-the-helm-package-manager

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Istio Installation

Istio

- Service mesh providing for microservices platform
- Traffic management
- Create a network of deployed services with load balancing, service-to-service authentication, monitoring and much more

Istio Architecture

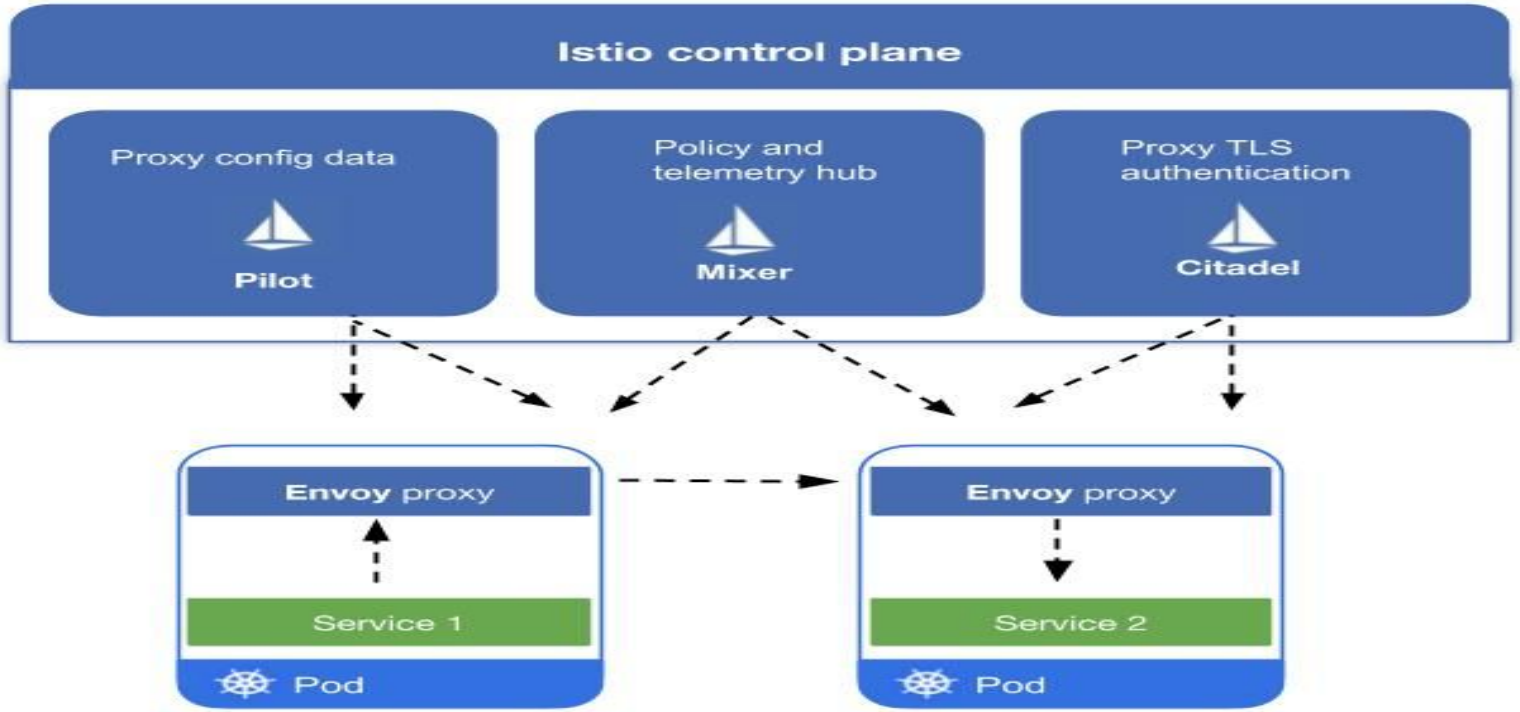

Image Credit - blog.newrelic.com

Advantages of Istio

- Service discovery
- Load balancing
- Traffic routing and control

Traffic Management with Istio

- Istio’s traffic management model relies on the following two components:
  - Pilot : The core traffic management component.
  - Envoy proxies: which enforce configurations and policies set through Pilot.

Traffic Management API resources

- Virtual services
- Destination rules
- Gateway
- Sidecar container

Install Istio with Helm

https://www.digitalocean.com/community/tutorials/how-to-install-and-use-istio-with-kubernetes

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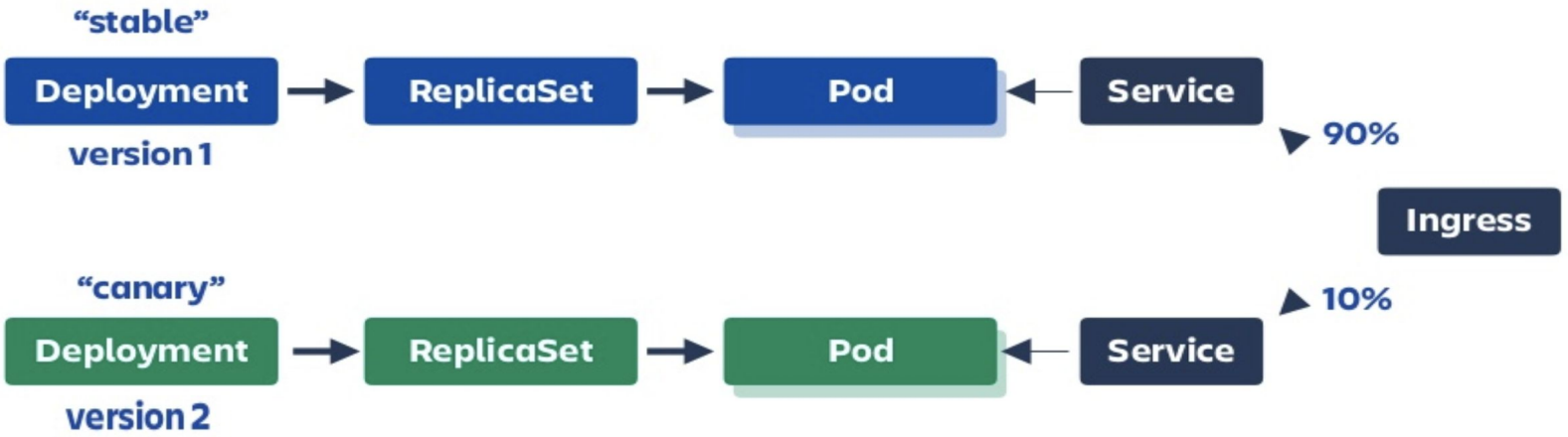

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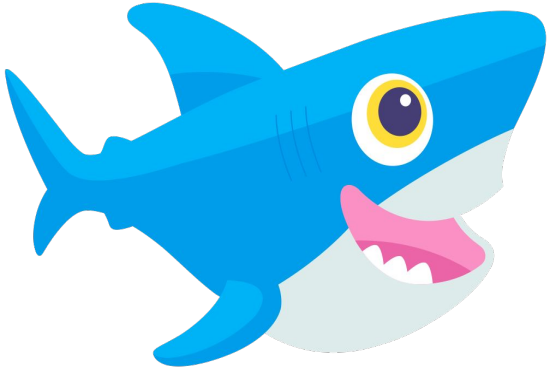

Mamta Jha

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Organized by **Sammy the S.** and **3 others**

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Thank you!