7 tips and tricks on how to make the most of your Kubernetes journey
Daniele Polencic
Take it easy
Learning curves of some Container Orchestration Engines
Learning curves of some Container Orchestration Engines

- **Mesos**
- **Docker Swarm**
- **Rancher 1.x**
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- **Mesos**
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Time spent using

Features Implemented
Learning curves of some Container Orchestration Engines

- Mesos
- Docker Swarm
- Rancher 1.x
Boosting productivity
$ kubectl get de
$ kubectl get de
$ kubectl get deployment
kubectl autocompletion
1. kubectl explain
1. kubectl explain

2. kubectx, kubens
1. kubectl explain
2. kubectlx, kubens
3. krew
1. kubectl explain
2. kubectx, kubens
3. krew
4. kube-ps1
https://learnk8s.io/blog/kubectl-productivity
https://itnext.io/pimp-my-kubernetes-shell-f144710232a0
Don’t drop connections
Readiness & Liveness probes
apiVersion: v1
kind: Pod
metadata:
  name: readiness-pod
spec:
  containers:
  - name: sise
    image: learnk8s/demo:1.0.0
    ports:
    - containerPort: 3000
readinessProbe:
  initialDelaySeconds: 2
  periodSeconds: 5
  httpGet:
    path: /health
    port: 3000
Click’n’play
Cluster templates
Select a template with preconfigured settings, or customize a template to suit your needs.

- Clone an existing cluster
  Select one of your existing clusters to populate fields

- Standard cluster
  Continuous integration, web serving, backends. Best choice for further customization or if you are not sure what to choose.

- Your first cluster
  Experimenting with Kubernetes Engine, deploying your first application. Affordable choice to get started.

- CPU intensive applications
  Web crawling or anything else that requires more CPU.

- Memory intensive applications
  Databases, analytics, things like Hadoop, Spark, ETL, or anything else that requires more memory.

- GPU Accelerated Computing
  Machine learning, video transcoding, scientific computations or anything else that is compute-intensive and can utilize GPUs.

'Standard cluster' template
Continuous integration, web serving, backends. Best choice for further customization or if you are not sure what to choose.

- Some fields can't be changed after the cluster is created. Hover over the help icons to learn more.

Name
standard-cluster-2

Location type
Zonal

Zone
us-central1-a

Master version
1.9.7 (gke.6 (default))

Node pools
Node pools are separate instance groups running Kubernetes in a cluster. You may add node pools in different zones for higher availability, or add node pools of different type machines. To add a node pool, click Edit. Learn more.

- default-pool
  Number of nodes
  3

Machine type
Customize to select cores, memory and GPUs

Create Cancel
EKS-Testing-Cluster

General configuration

Kubernetes Version: 1.11
Platform Version: eks.2
Status: ACTIVE

API server endpoint:
https://72009B88C160E08F072C2AA319AEA547.yl4.us-east-1.eks.amazonaws.com

Certificate authority:
LS0tLS1CRUdJTiBDRVJUSUZJQ0FURSoLS0tCk1JSUN5RENDQWJDZ0F3SUJBZ0ICQURBTkJna3Foa2IHOXcwQkFRc0ZBRFZFWTVJNd0VRWURUFERXdwmRXSmwKY201bGRHVnNQjRYRFRFNU
Azure Kubernetes Service (AKS) manages your hosted Kubernetes environment, making it easy to run containerized applications without container orchestration expertise. It also eliminates the need for maintenance by provisioning, upgrading, and scaling resources on demand, without the need for an AKS Service.

**PROJECT DETAILS**

Select a subscription to manage deployed resources and costs. Use resources with a subscription.

1. **Subscription**
   - Azure Pass

2. **Resource group**
   - coolapp

**CLUSTER DETAILS**

1. **Kubernetes cluster name**
   - coolk8s

2. **Region**
   - East US

3. **Kubernetes version**
   - 1.9.6

4. **DNS name prefix**
   - coolk8s

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**Microsoft Azure**

- **Create a resource**
  - All services
  - FAVORITES
    - Overview
    - Activity log
    - Access control (IAM)

- **Dashboard**
  - Move
  - Delete
  - Refresh

- **Azure Cosmos DB**
  - Location
  - East US
  - Subscription
    - change

- **Subscription ID**

**Rene Azure Sponsorship - Resource providers**

- **Microsoft**
  - Re-register
  - Re-register
  - Re-register

**Settings**

- Programmatic deployment
- Access control (IAM)
- Resources
- Management certificates
- My permissions
1. sync changes manually
1. sync changes manually

2. harder to create more clusters
1. sync changes manually
2. harder to create more clusters
3. time to market
$ cd dev
$ terraform apply -var 'nodes=10'
$ cd prod
$ terraform apply -var 'nodes=50'
5 Exposing services
<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
<th>H</th>
<th>I</th>
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<tbody>
<tr>
<td>1</td>
<td>ingress-nginx</td>
<td>kong</td>
<td>traefik</td>
<td>haproxy</td>
<td>voyager</td>
<td>contour</td>
<td>ambassador</td>
<td>istio ingress</td>
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<td>dynamic</td>
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<td>kong + nginx</td>
<td>traefik</td>
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<td>host, path (with regex)</td>
<td>host, path, method, header (enterprise)</td>
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<td>rate limit, retries</td>
<td>active and passive health check, circuit break, rate limit, retries</td>
<td>circuit break, retries</td>
<td>-</td>
<td>-</td>
<td>retries</td>
<td>rate limit</td>
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<td>rr, ewma, ip_hash</td>
<td>rr, hash-based</td>
<td>rr, wrr</td>
<td>-</td>
<td>-</td>
<td>leastconn.first-source.on, url, param, hdr, rdp, cookies</td>
<td>wrr, wrr, ring hash, maglev, random</td>
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<td>auth</td>
<td>basic, digest, external auth</td>
<td>Basic Auth, HMAC, JWT, Key, LDAP, OAuth 2.0, PASETO, plus paid Kong Enterprise options like OpenID Connect</td>
<td>basic, digest and forward auth in alpha</td>
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</table>
Automate Governance
1. validate schema
1. validate schema
2. enforce best practice
1. validate schema
2. enforce best practice
3. standardise YAML
1. validate schema
2. enforce best practice
3. standardise YAML
4. catch errors earlier
Kubeval

kubeval is a tool for validating a Kubernetes YAML or JSON configuration file. It does so using schemas generated from the Kubernetes OpenAPI specification, and therefore can validate schemas for multiple versions of Kubernetes.

$ kubeval my-invalid-rc.yaml
The document my-invalid-rc.yaml contains an invalid ReplicationController
---> spec.replicas: Invalid type. Expected: integer, given: string
$ echo $
1

For full usage and installation instructions see kubeval.instrumenta.dev.
Make new friends
Thanks!