

Kubernetes Basics

OpenShift Applications

Container Orchestration and Platform as a Service Solution Automates the deployment and management of containers

oc new-app

Creates a new application

- API calls in the background:
- BuildConfig
- DeploymentConfig
- ImageStream
- service

oc new-app

Supports different sources

- source
- image
- template

Compare builds

Source to Image (S2I)

Image is built from sources

- automatic recognition of build strategy
- automatic recognition of the programming language
- automatic selection of the build image

```
oc new-app https://github.com/openshift/nodejs-ex
```

Source to Image (S2I)

Track Build Output

```
oc logs -f bc/nodejs-ex
```

Image

Existing image serves as source

OpenShift searches images in:

- local ImageStreams
- Docker Hub

```
oc new-app redis
```


Template

Application is built from OpenShift template

```
oc new-app cakephp-mysql-example  
oc new-app -f example/ose-template.json
```

Template

Integrated OpenShift templates

```
oc get templates -n openshift
```

Application Management

Scaling

Increase in the number of replicas of a Pod

```
oc scale --replicas=3 rc nodejs-ex  
oc scale --replicas=3 dc nodejs-ex
```

Autoscaling

Automatic scaling of pods

- based on CPU utilization
- Resource requests must be set.
- Metrics/Heapster must be installed

```
oc autoscale dc nodejs-ex --min=2 --max=5
```

Autoscaling

Status of the HorizontalPodAutoscaler

```
oc get hpa all
```

Rollout and rollback

manual rollout

```
oc rollout latest dc/ruby-ex
```

Rollback to previous deployment

```
oc rollout history dc/ruby-ex  
oc rollback ruby-ex
```

Deployment strategies

How are application updates deployed?

- Rolling (Default)
- recruit
- manually

Rolling Update

- Stopping a Pod of the Old Version
- Starting a Pod of the new version
- Repeat until no pods of the old version are available

N-1 compatibility!

Recreate Update

When N-1 compatibility is unclear

- Stopping all pods of the old version
- Starting the pods of the new version

Only one version of the application in operation!

Lifecycle Hooks

Rolling and Recreate offer Hooks

rolling * pre * post

Recreate

- pre
- mid
- post

Best practices

configure readinessProbe and livenessProbe

readinessProbe

Pod is ready to accept traffic

livenessProbe

Pod is functional

