# OCI Registry Service

**Level 100**

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Oracle Cloud Infrastructure

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# Safe harbor statement

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# Objectives

After completing this lesson, you should be able to:

- Use the OCI Registry Service

- Create Policy Requirements for OCIR

- Manage Repos using OCIR

- Pull an image from OCIR with OKE

- Set Global image retention policies

# Introducing Oracle Cloud Infrastructure Registry - OCIR
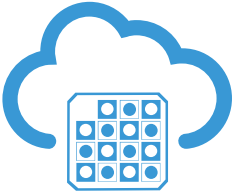
## What is It?

- A high availability Docker v2 container registry service
- Stores Docker Images in Private or Public Repositories.
- Runs as a fully managed service on Oracle Cloud Infrastructure.
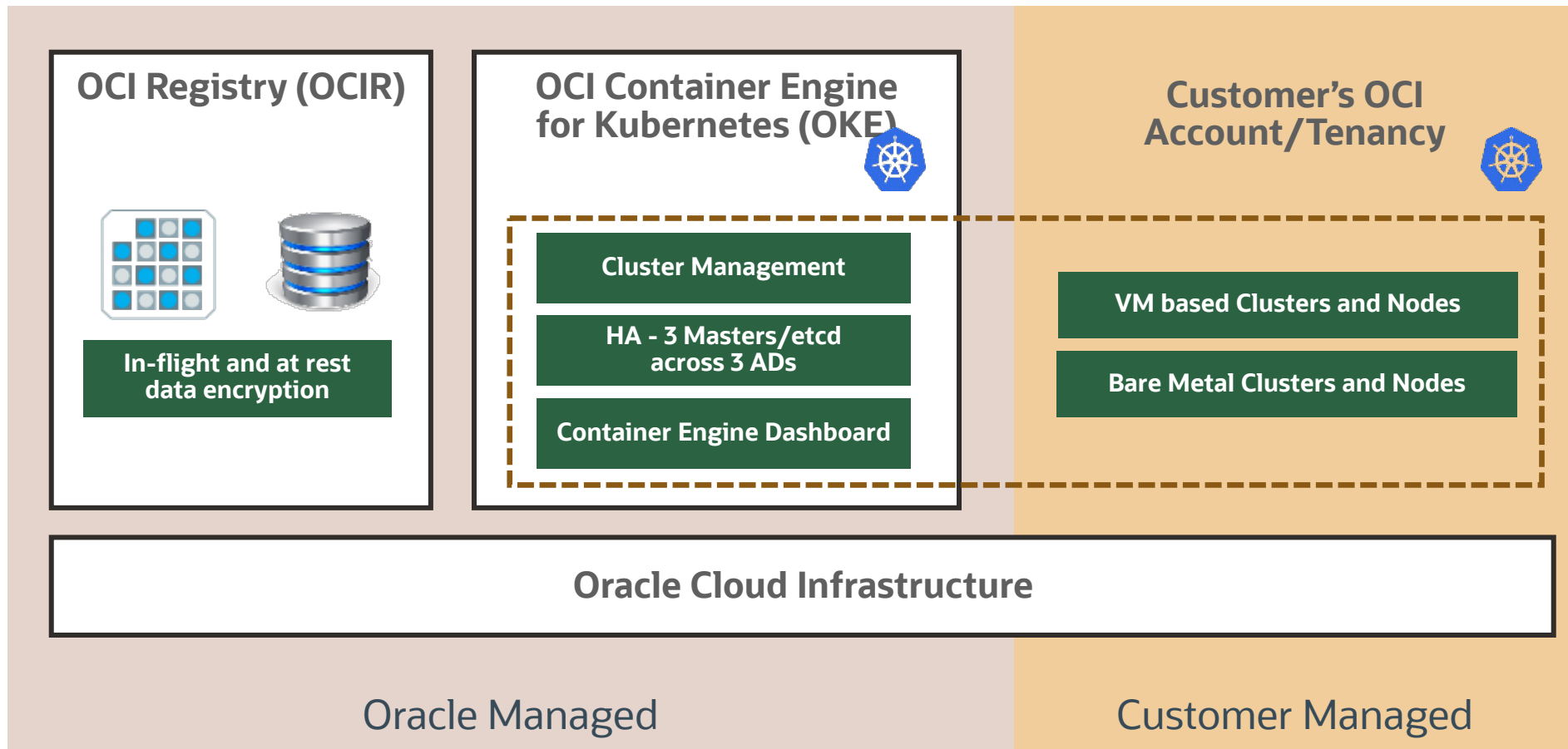
## What Problems Does it Solve?

- Without a registry it is hard for Development teams to maintain a consistent set of Docker images for their containerized applications
- Without a managed registry it is hard to enforce access rights and security policies for images
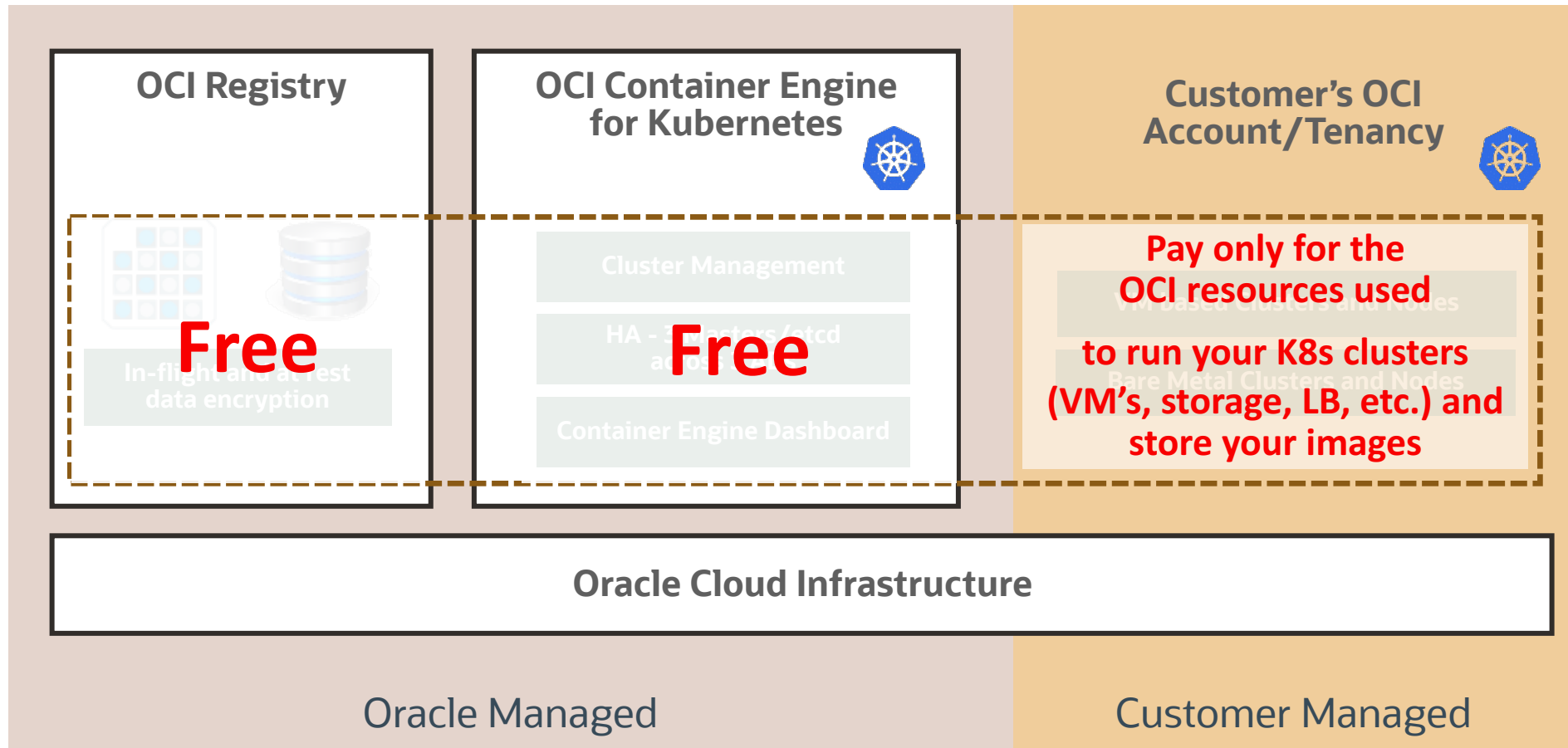- It is hard to find right images and have them available in the region of deployment

## Key Benefits

- Full integration with Container Engine for Kubernetes (OKE)
- Registries are private by default, but can be made public by an admin
- Co-located regionally with Container Engine for low latency Docker image deploys
- Leverages OCI for high performance, low latency and high availability

# Working with OKE and OCIR on OCI



OCI Registry (OCIR)

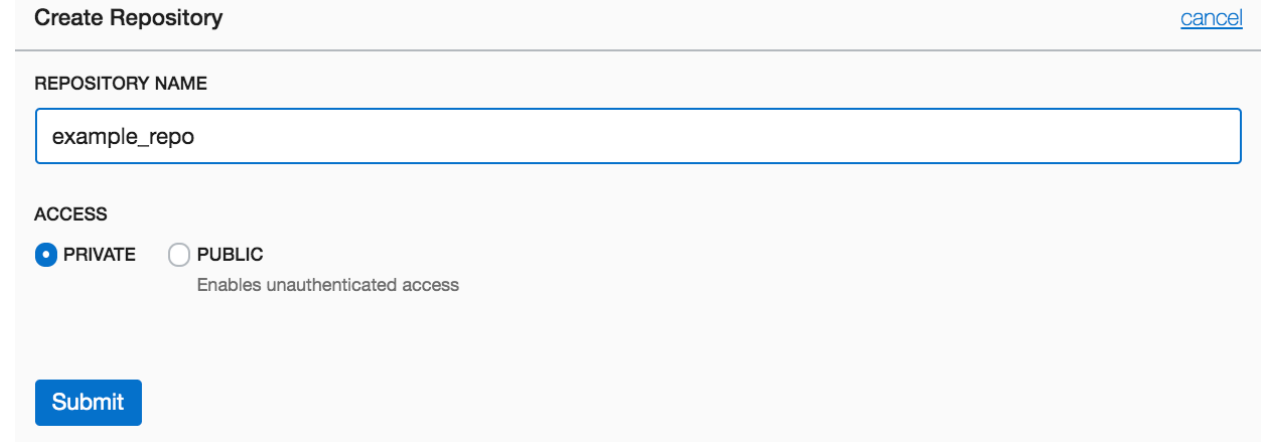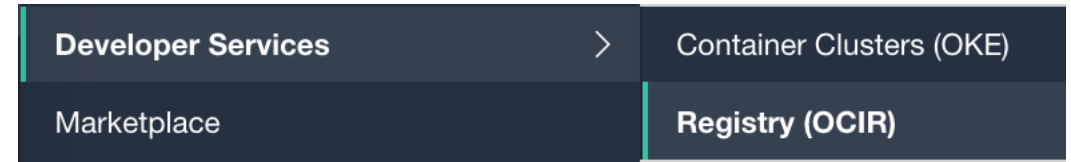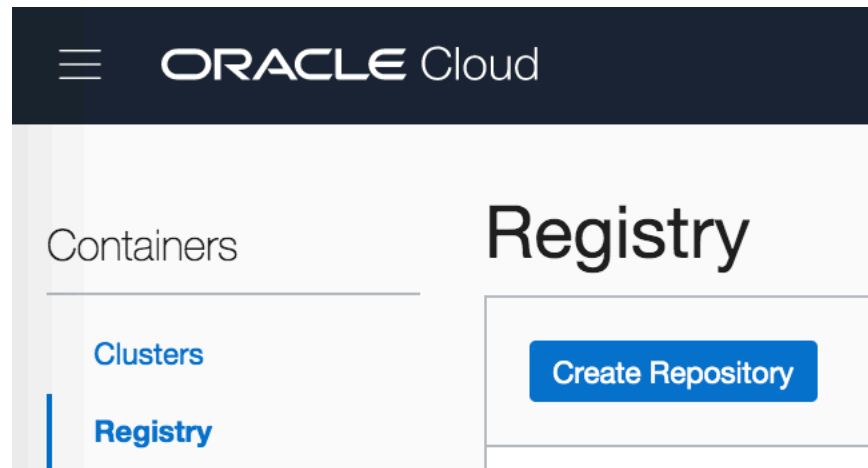In-flight and at rest data encryption

OCI Container Engine for Kubernetes (OKE)

Cluster Management

HA - 3 Masters/etcd across 3 ADs

Container Engine Dashboard

Customer's OCI Account/Tenancy

VM based Clusters and Nodes

Bare Metal Clusters and Nodes

Oracle Cloud Infrastructure

Oracle Managed

Customer Managed

# OKE/OCIR Pricing and Packaging

**OCI Registry**

**Free**

In-flight and at rest data encryption

**OCI Container Engine for Kubernetes**

**Free**

Cluster Management

HA - 3 Masters/etcd across

Container Engine Dashboard

**Customer's OCI Account/Tenancy**

**Pay only for the OCI resources used**

VM based Clusters and Nodes

**to run your K8s clusters (VM's, storage, LB, etc.) and store your images**

Bare Metal Clusters and Nodes

**Oracle Cloud Infrastructure**

Oracle Managed

Customer Managed

# Pre-requisites for OCIR

- To use registry service, user is either a part of the admin group or part of a group to which a policy grants the appropriate permissions

  - `allow group acme-viewers to inspect repos in tenancy` – Ability to see a list of all repositories in Oracle Cloud Infrastructure Registry belonging to the tenancy

  - `allow group acme-managers to manage repos in tenancy` – Ability to perform any operation on any repository in Oracle Cloud Infrastructure Registry that belongs to the tenancy (Pull an image, push an image, create/delete repos etc.)

  - *Note:* repos are tenancy-level resources, policies controlling access to them need to go into the root compartment (i.e., the tenancy).

- User needs to have an OCI **username** and **auth token** before being able to push/pull an image.

# OCIR Repositories

- Repositories can be private or public.

- Any user with internet access and knowledge of the appropriate URL can pull images from a public repository in Oracle Cloud Infrastructure Registry.

- To Create a Repository via Console

    Containers ➔ Registry ➔ Create Repository
        Repository Name
        Public or Private

# Push/Pull images from OCIR

| Region Code | Region Name |
|---|---|
| phx | Phoenix |
| iad | Ashburn |
| fra | Frankfurt |
| lhr | London |
| icn | Seoul |
| nrt | Tokyo |
| yyz | Toronto |

* You use Docker CLI to push/pull images to repos in OCI
* Create a Auth Token for User and copy it
* Login into OCIR

```
docker login <region-code>.ocir.io
       <tenancy_namespace>/<username>
       Auth-token
```

What is Tenancy namespace

* Find images in your local repository to be pushed to OCIR and tag in the format

```
<region-code>.ocir.io/<tenancy-namespace>/<repos-name>/<image-name>:<tag>
docker tag 9f1191b287da iad.ocir.io/jamalarif/testing/tomcat:1.2
```

* Push your tagged image to OCIR

```
docker push iad.ocir.io/jamalarif/testing/tomcat
```

* Similarly images can be pulled using docker pull

```
docker pull <region-code>.ocir.io/<tenancy-namespace>/<repos-name>/<image-
    name>:<tag>
docker pull iad.ocir.io/jamalarif/testing/tomcat:1.2
```

# OCIR Image Layers

# Pulling images from Registry for Kubernetes Deployments
## Step 1: Create an Auth Token
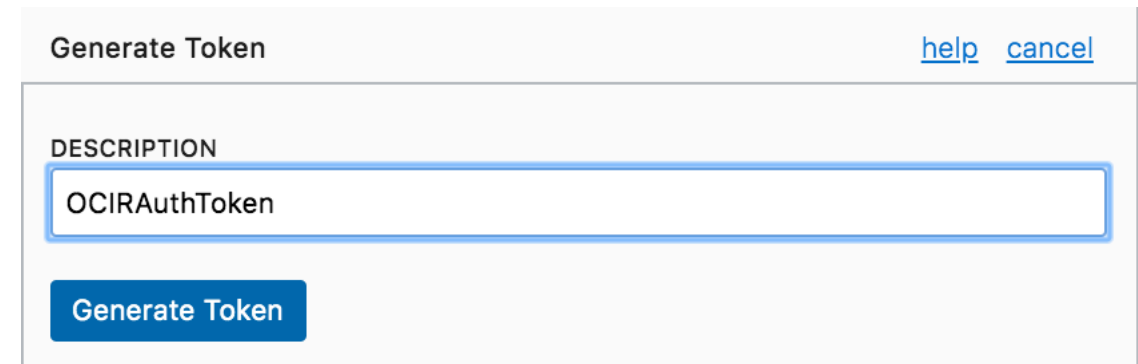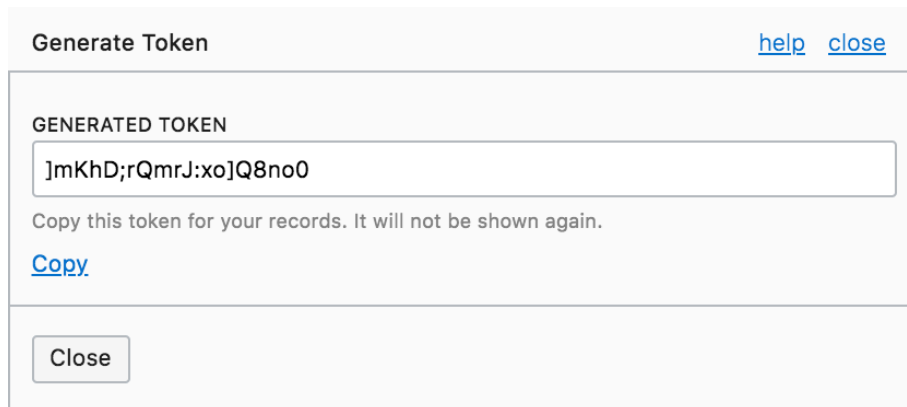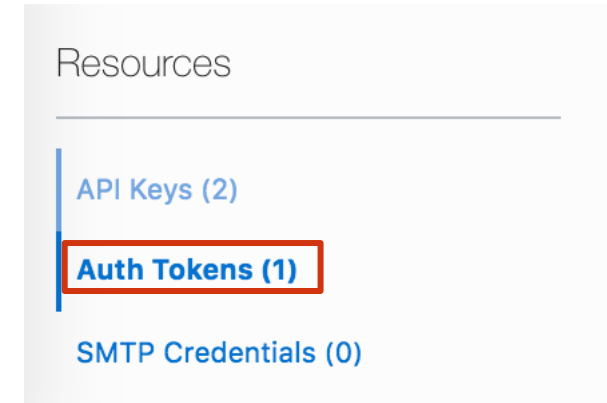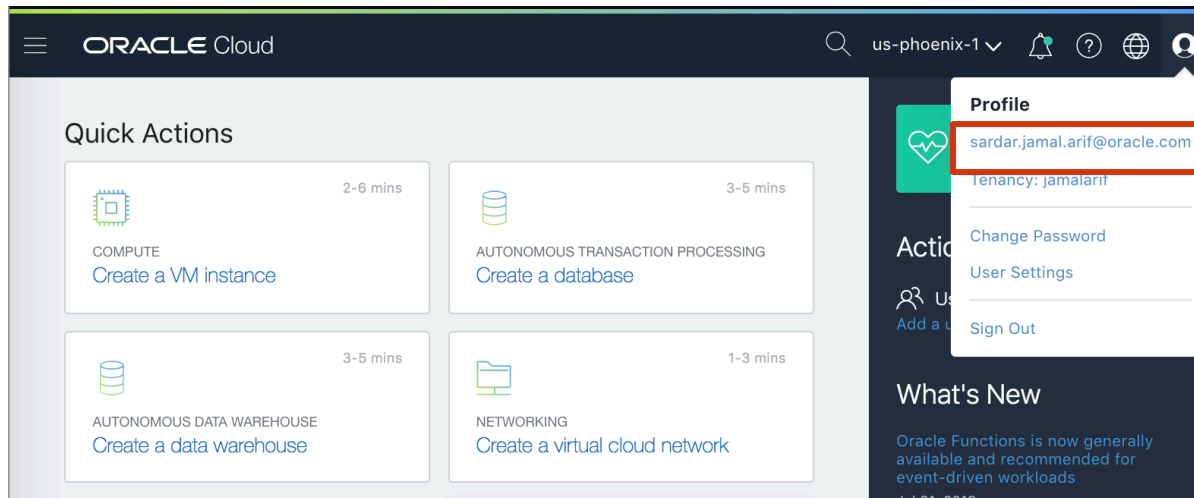
# Pulling images from Registry for Kubernetes Deployments

## Step 2: Create docker registry secret and use Auth Token

- Create a Docker registry secret, containing the Oracle Cloud Infrastructure credentials to use when pulling the image.

```
kubectl create secret docker-registry <secret-name> --docker-
    server=<region-code>.ocir.io --docker-username='<tenancy-
    namespace>/<oci-username>' --docker-password='<oci-auth-token>' --
    docker-email='<email-address>'
```

# Pulling images from Registry for Kubernetes Deployments (2)

- Specify the image to pull from Oracle Cloud Infrastructure Registry, including the repository location and the Docker registry secret to use, in the application's manifest file.

```
apiVersion: v1
kind: Pod
metadata:
  name: ngnix-image
spec:
  containers:
    - name: ngnix
      image: iad.ocir.io/jamalarif/testing/nginx:1.1
      imagePullPolicy: Always
      ports:
      - name: nginx
        containerPort: 8080
        protocol: TCP
imagePullSecrets:
  - name: ocirsecret
```

# OCIR Image Retention Policies

- Set up image retention policies to automatically delete images that meet particular selection criteria. Following rules can be applied

  images that have not been pulled for a certain number of days

  images that have not been tagged for a certain number of days

  images that have not been given particular Docker tags specified as exempt from automatic deletion

- **Hourly process** checks images against the selection criteria and deletes images accordingly.

- A global Image retention policy pre-exists with default selection criteria to retain all images.

- Users can edit global image retention policy or create their own custom policy.

- Policies are regional and applied on repository level.

- Repos can only be part of one image retention policy at a time

- Once the policy is created, first time it can take several hours to take effect known as cooling period to avoid unintentional deletion of images.

# OCIR Image Retention Policies (2)

- On OCIR Home page, Click **Settings**, and then select **Image retention policies**.

# OCIR Image Retention Policies (3)



**Create Image Retention Policy Override**                                    close

Associated repositories are exempt from the global image retention policy.

**POLICY NAME**

Example_policy

☑ Delete any images that haven't been pulled in the specified number of days:  30

☑ Delete any images that haven't been tagged in the specified number of days:  30

**EXEMPT TAGS** *OPTIONAL*

prod,dev,

Enter a comma separated list of tags. You may also use asterisk (*) to match any sequence of characters (e.g. latest,*prod*)

**Save Settings**

---

**Example_policy**                                                          ⋮

**Policy Details:** Delete associated repositories' images if the last pull is older than **30** days
Delete associated repositories' images if untagged for **30** days
Associated repositories are exempt from the global image retention policy

**Exempt Tags:** *No tags*

**Repositories (1)**                                        + Add Repository

example_repo                                                              ✕

- Select the criteria and number of days for each policy
- Provide image tag to prevent images from being deleted

- Once the policy is created, add repositories by clicking on + Add repository
- Remove the repos from the policy by removing them

# Demo

http://bit.ly/2XOQbuC

# Summary

- Use the OCI Registry Service

- Create Policy Requirements for OCIR

- Manage Repos using OCIR

- Pull an image from OCIR with OKE

- Set Global image retention policies

**ORACLE**

**Oracle Cloud always free tier**:
oracle.com/cloud/free/

**OCI training and certification**:
https://www.oracle.com/cloud/iaas/training/
https://www.oracle.com/cloud/iaas/training/certification.html
education.oracle.com/oracle-certification-path/pFamily_647

**OCI hands-on labs**:
ocitraining.qloudable.com/provider/oracle

**Oracle learning library videos on YouTube**:
youtube.com/user/OracleLearning