

Project 2

Project 2: WebSphere Hybrid Edition Overview

Sub-Projects

1. Understand the WebSphere Hybrid Edition value proposition.
2. Describe the components of WebSphere Hybrid Edition
3. Understand the WebSphere Hybrid Edition Licensing Model
4. Articulate the targeted use cases.
5. Exercise- Openshift Platform labs
6. Exercise- Installation of Platform on OCP platform

Sub Project 2.1

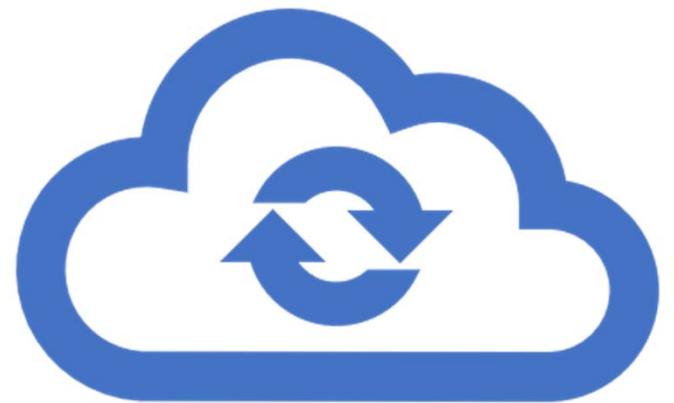
Understand the WebSphere
Hybrid Edition Value
Propositions

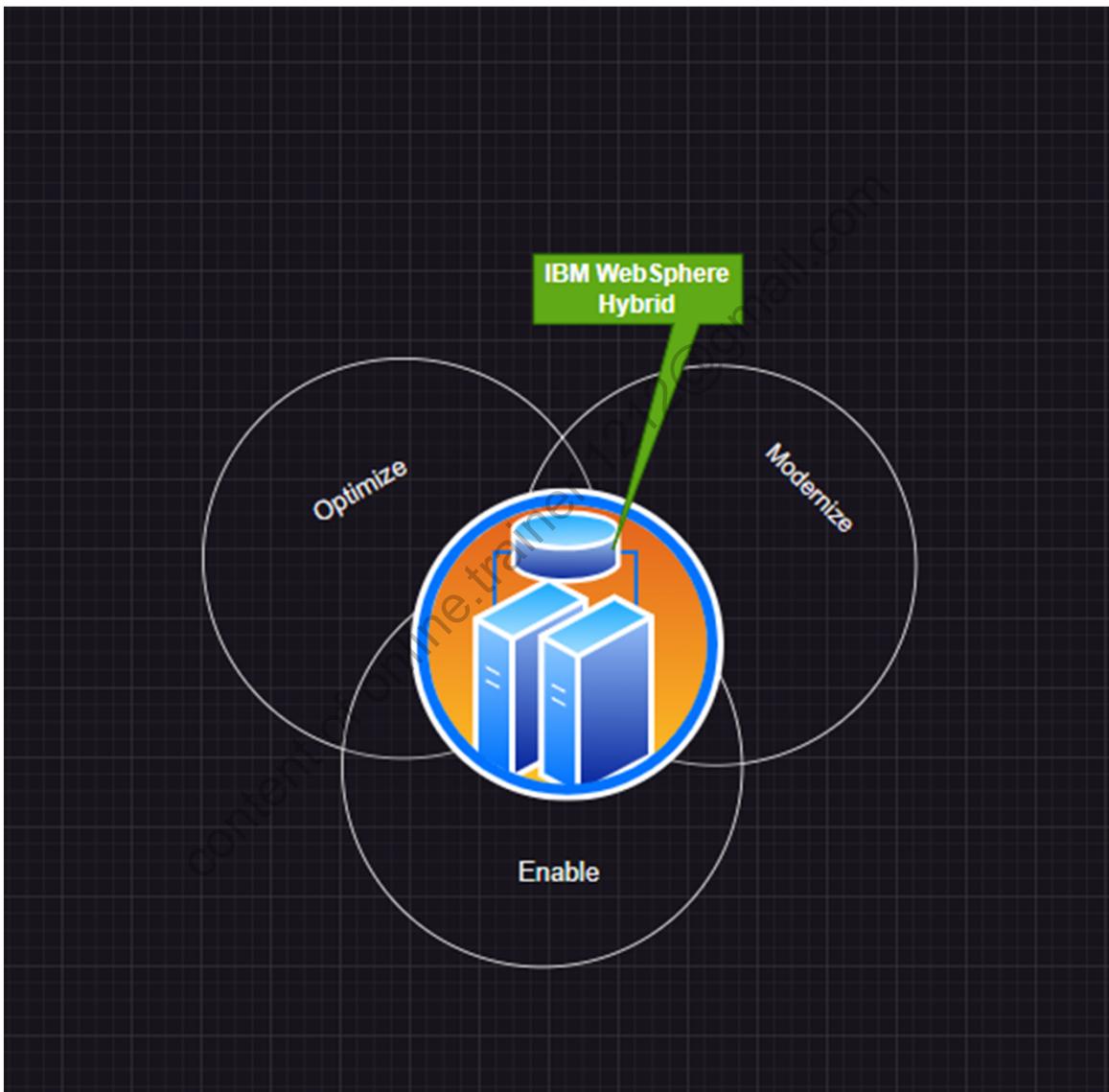


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What Is WebSphere Hybrid Edition

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Components of WebSphere Hybrid Edition

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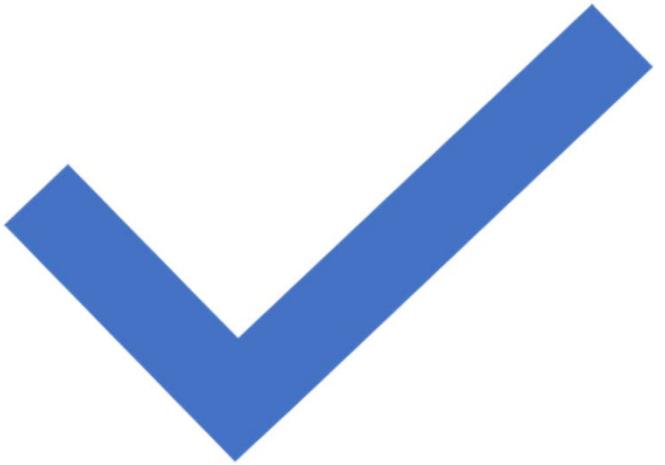


1. WebSphere Application Server
2. WebSphere Liberty
3. WebSphere ND
4. Transformation Advisor
5. Mono2Micro
6. Cloud Foundry Migration Runtime



Summary

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Sub Project 2.3

Understand the
WebSphere Hybrid
Edition Licensing Model



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Sub Project 2.4

Articulate the targeted
use cases.



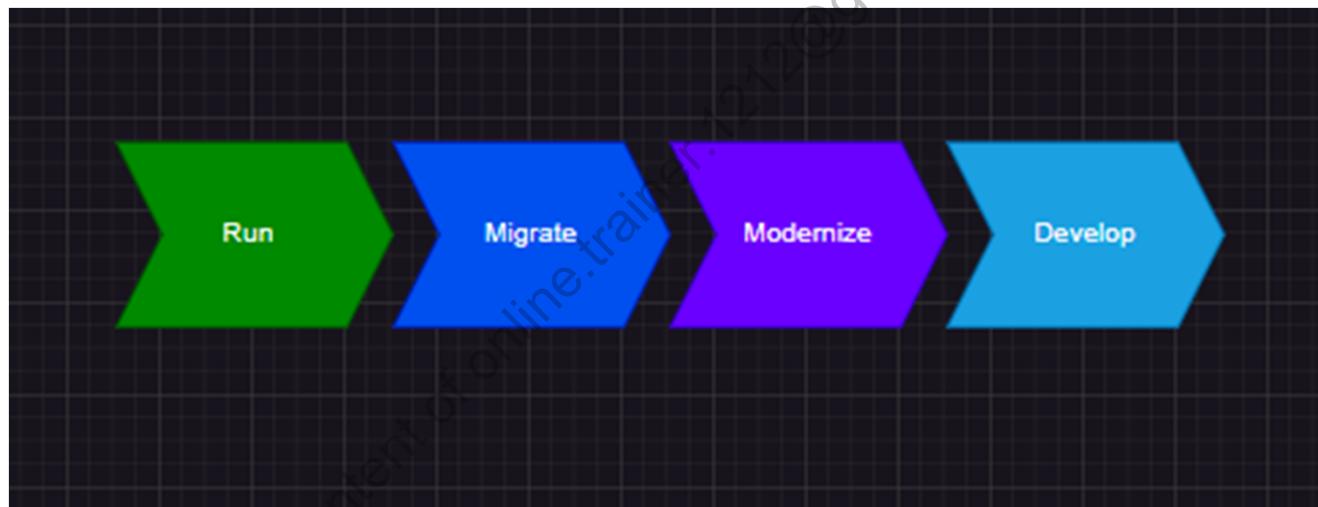
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Use Case

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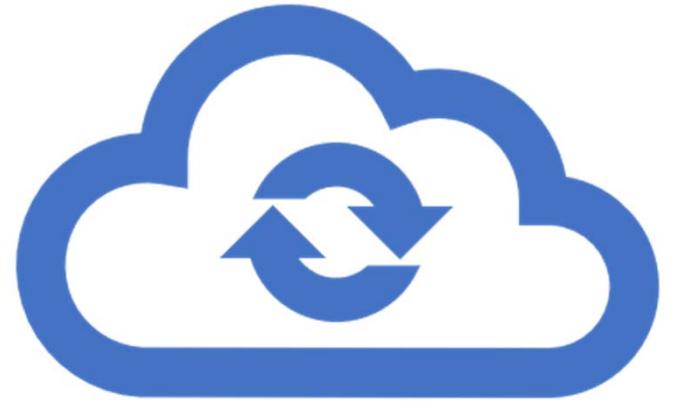


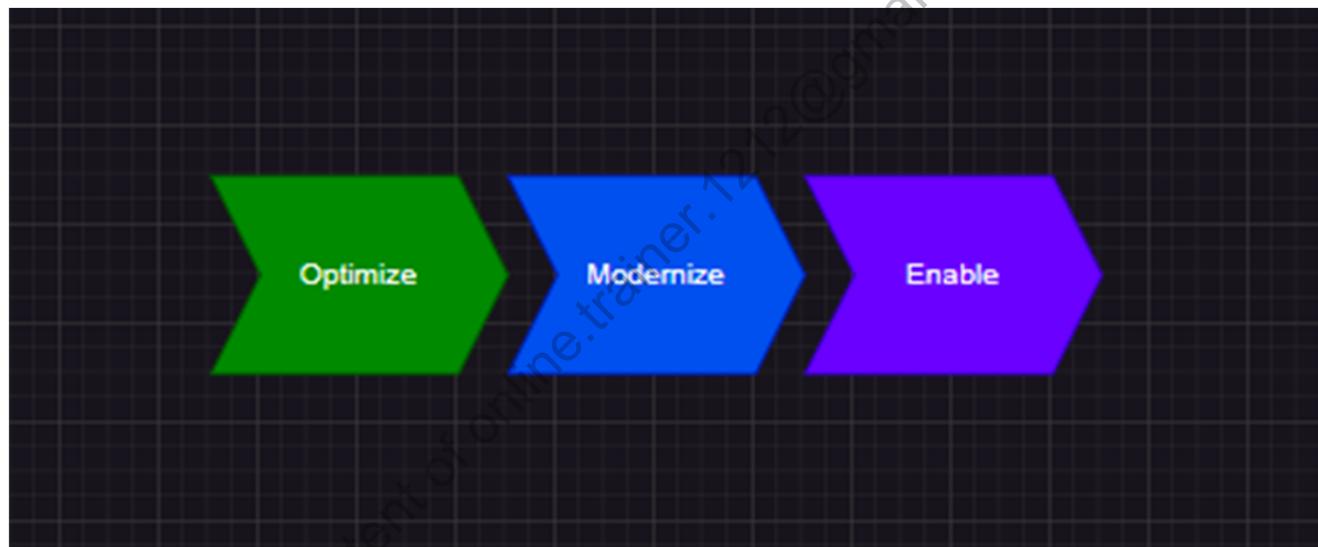


Phased approach

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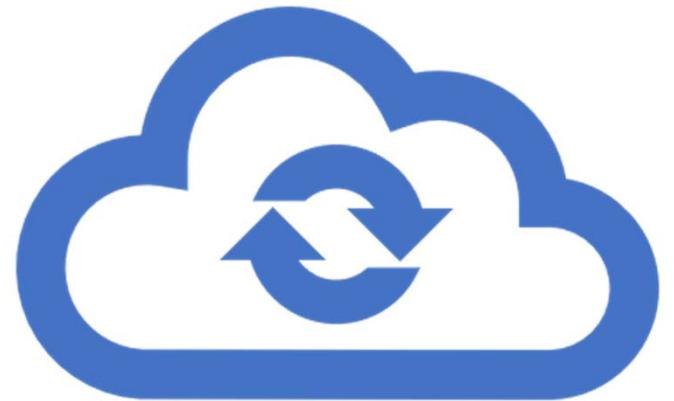


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Sub Project 2.4.c

WebSphere Hybrid Edition
tools

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IBM Cloud Transformation Advisor

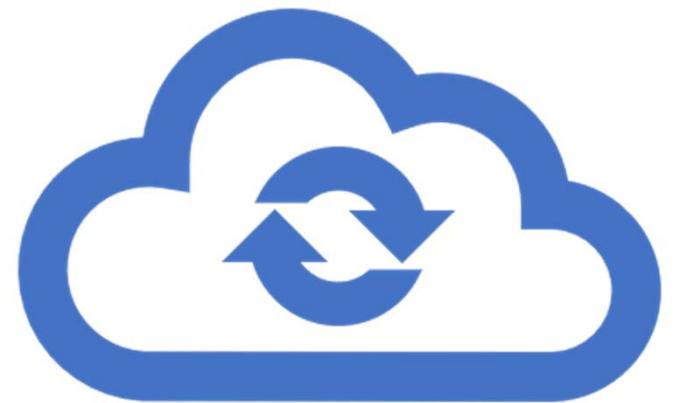
IBM Mono2Micro

WebSphere Application Server Migration Toolkit

Sub Project 2.4.d

Two aspects of
modernization

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Operational Modernization

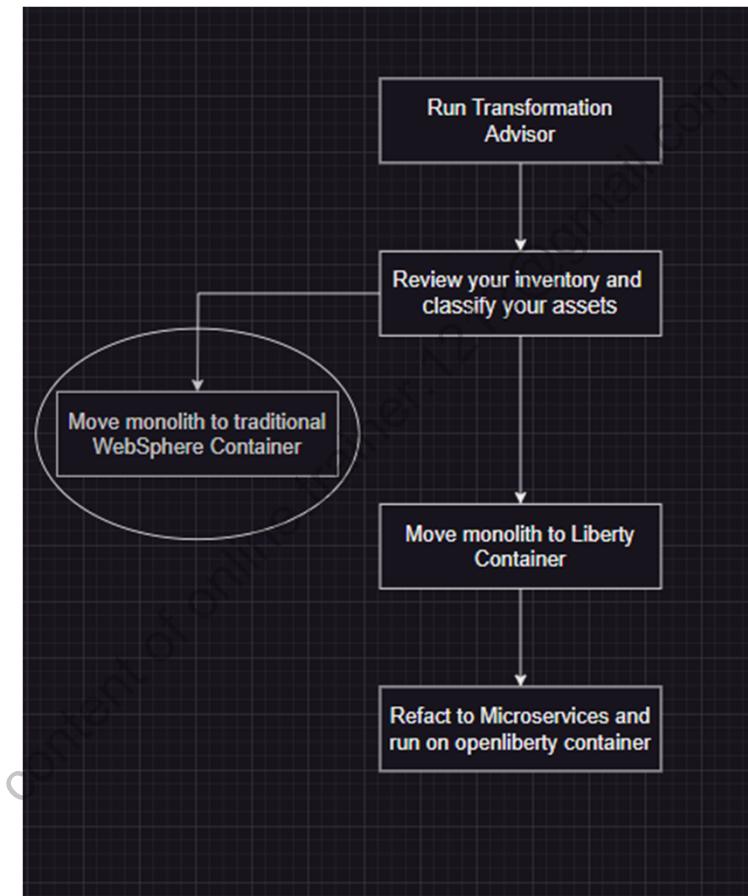
Runtime Modernization

Operational Modernization

Sub Project 2.4.e

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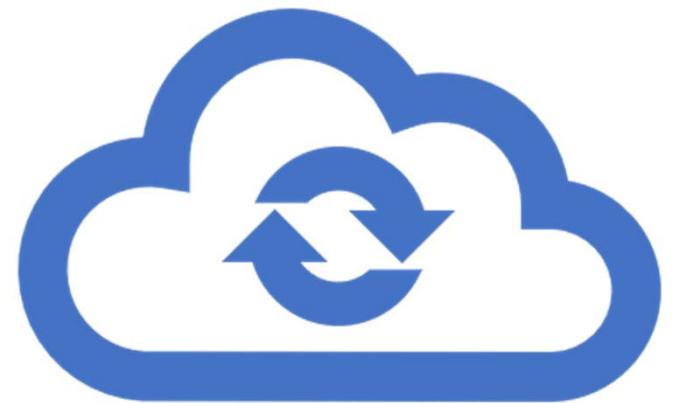


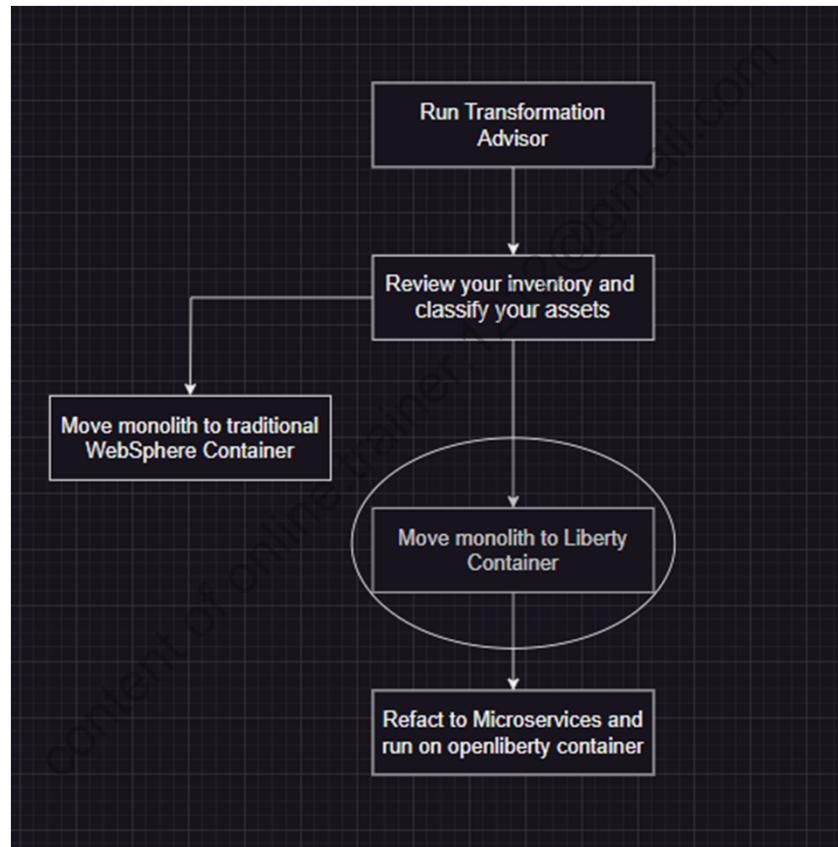


Sub Project 2.4.f

Runtime Modernization

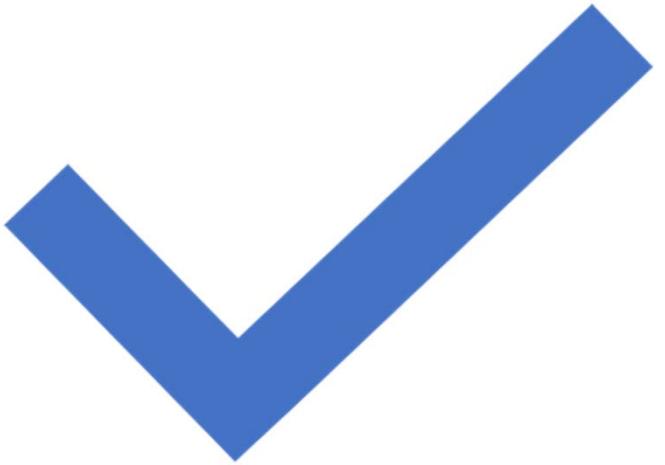
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Summary

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OpenShift

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What is OpenShift

Sub Project 2.5.a

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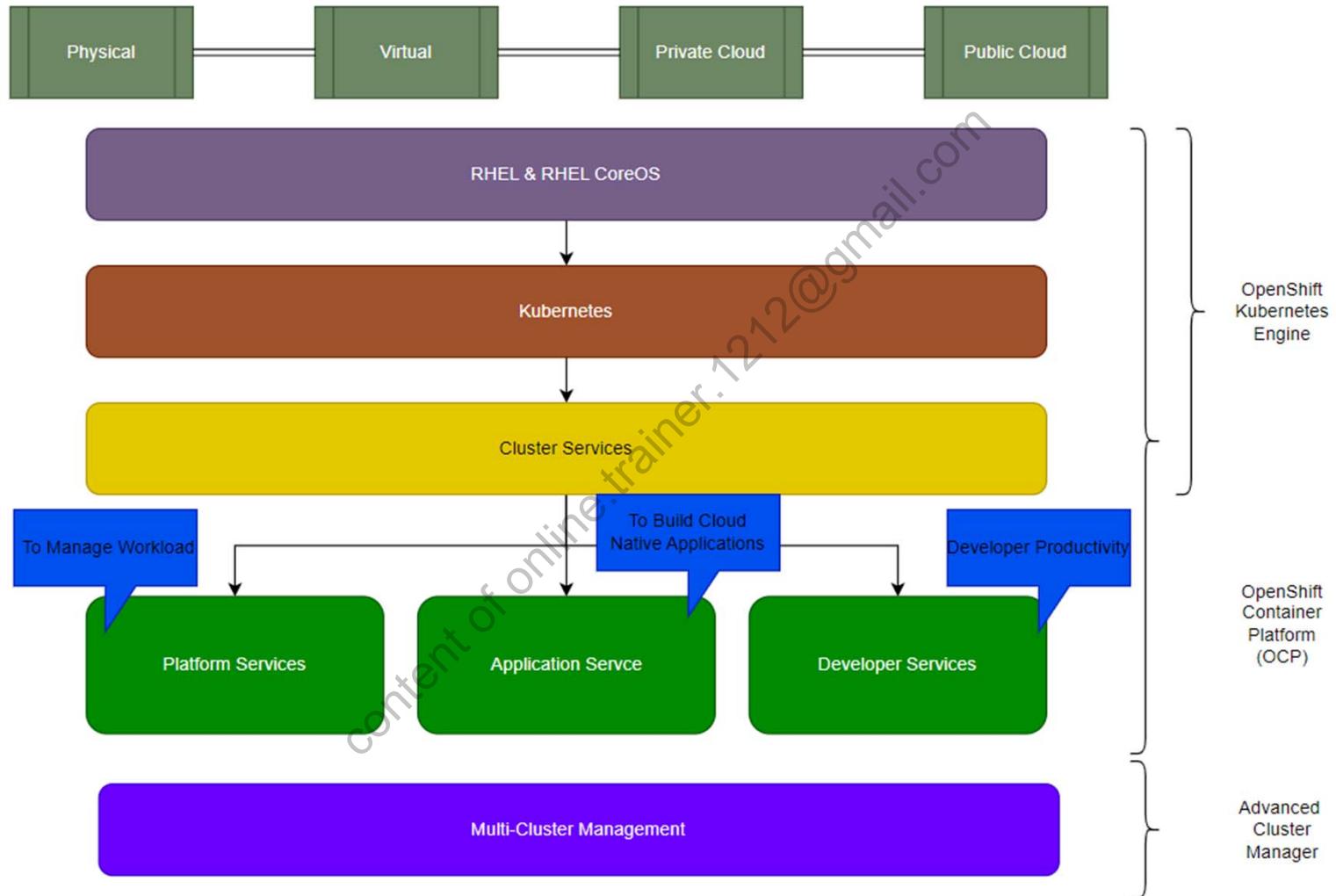


OpenShift Overall Architecture

Sub Project 2.5.b

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Components: Operator

Operators provide:

- Repeatability of installation and upgrade
- Constant health checks of every system component
- Over-the-air (OTA) updates for Red Hat OpenShift components and ISV content
- A place to encapsulate knowledge from field engineers and spread it to all users, not just one or two

Serve as the platform foundation and remove the need for manual upgrades of operating systems and control plane applications

Operator Lifecycle Manager (OLM) and the OperatorHub provide facilities for storing and distributing Operators to people developing and deploying applications

The Red Hat Quay Container Registry is a Quay.io container registry that serves most of the container images and Operators to OpenShift Container Platform clusters

Other OpenShift enhancements to Kubernetes

- Monitoring and log aggregation
- Software defined networking (SDN)
- Routing
- Authentication

Sub Project 2.5.c

Red Hat OpenShift UI

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Accessing the Red Hat OpenShift web console

- Post Installation You will get the below output.

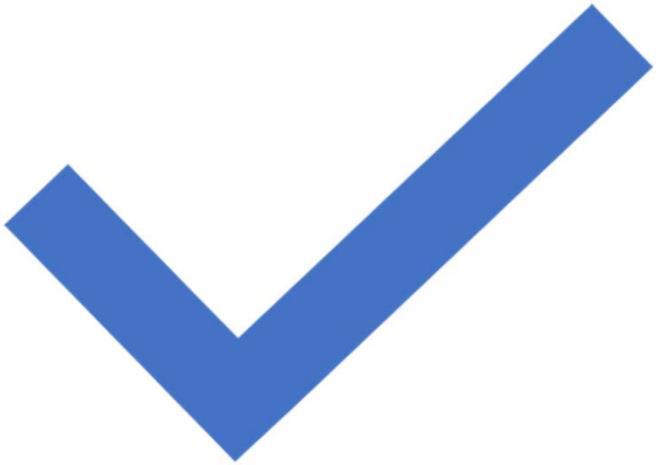
Building custom images

- Podman
- Skopeo
- Buildah
- OCI Runtimes runc

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Summary

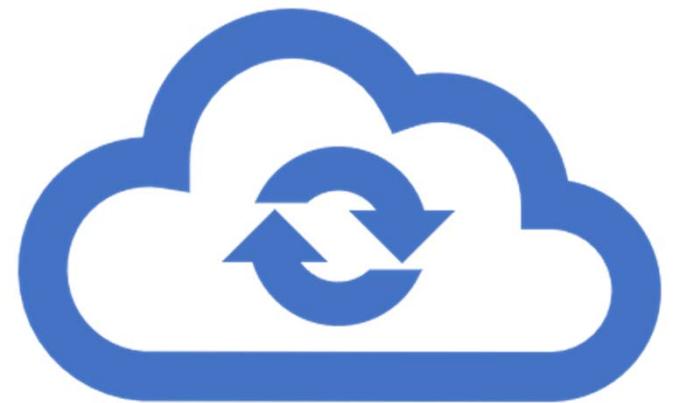
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Sub Project 2.5.d

Red Hat OpenShift Capabilities

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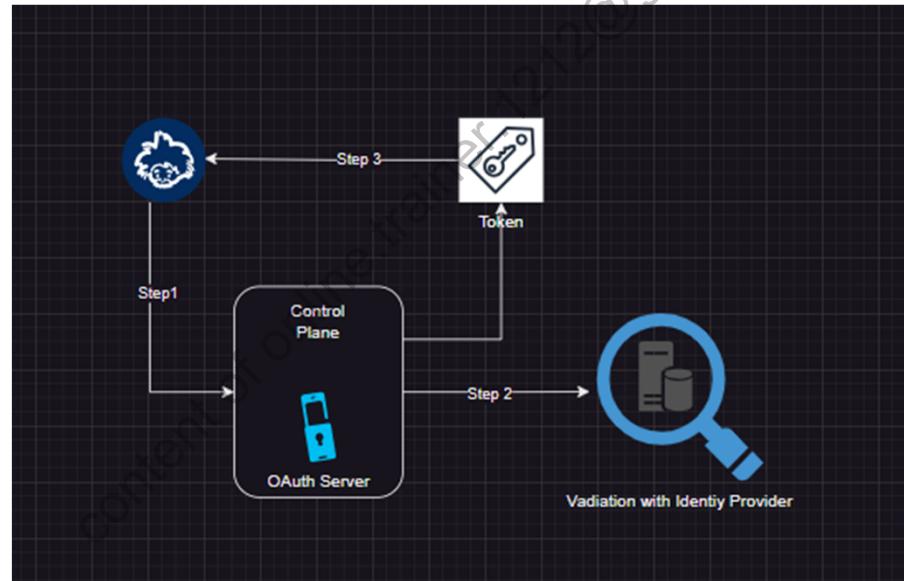


Authentication and security

- OAuth access tokens
- X.509 client certificates
- Logging in to the cluster

```
oc login -u myuser https:example.com
```

OAuth token requests



Identity Provider

- OpenShift supports several identity providers like LDAP

RBAC

Authorization is managed by using:

- Rules
- Roles
- Bindings

Two levels of RBAC roles and bindings:

- Cluster RBAC
- Local RBAC

1. Cluster-wide "allow" rules are checked.
2. Locally-bound "allow" rules are checked.
3. Deny by default

Containers, images, imagestreams, and registries

- An image holds a set of software that is ready to run
- A container is a running instance of a container image
- An imagestream provides a way of storing different versions of the same basic image
- An image registry is a content server that can store and serve container images

Registry types

- **Docker registry:** Internal, open source, stateless, highly scalable server-side application that stores and lets you distribute Docker images
- **Docker Hub:** A free to use, external service provided by Docker for finding and sharing container images with your team
- **Integrated OpenShift Container Platform registry:** Built-in container image registry that runs as a standard workload on the cluster

Red Hat OpenShift registry configuration

- Image registry operator configuration The Image Registry Operator installs a single instance of the Red Hat OpenShift Container Platform registry, and it manages all configuration of the registry, including setting up registry storage.
- Samples Operator configuration Configure and manage an alternate registry by using the Samples Operator and configuring a mirror registry

Networking

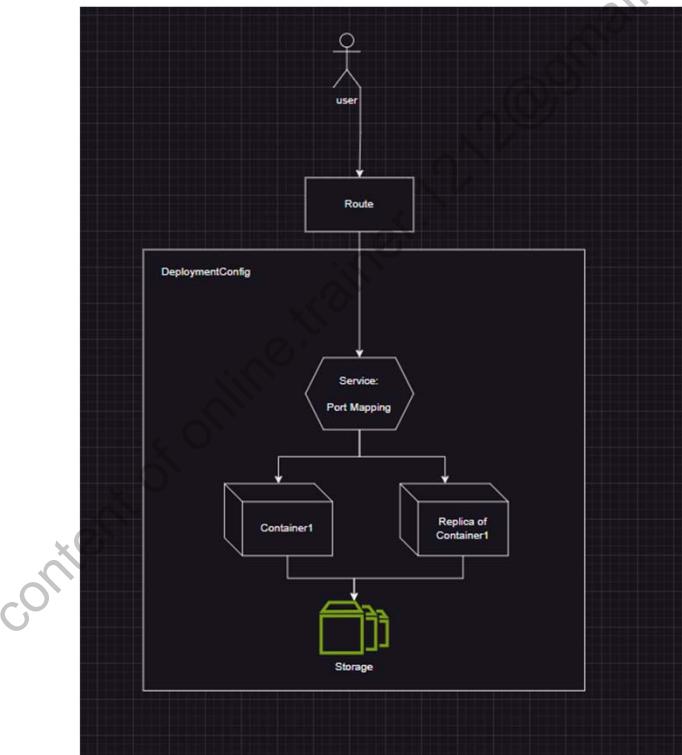
- Red Hat OpenShift Container Platform has a built-in DNS so that the services can be reached by the service DNS as well as the service IP/port

Multi-tenancy

- Bridge
- Host-Device
- MACVLAN
- IPVLAN
- SR-IOV

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Routing



Configuring ingress

- NodePort
- External IP
- Load Balancer
- Ingress Controller

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Cluster logging components

- LogStore
- Collection
- Visualization
- Curation
- Event routing

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Cluster monitoring components

- Prometheus
- Grafana

DaemonSet

Ensures that all (or some) nodes run a copy of a pod

Use DaemonSets to:

- create shared storage,
- run a logging pod on every node in your cluster
- deploy a monitoring agent on every node

Job

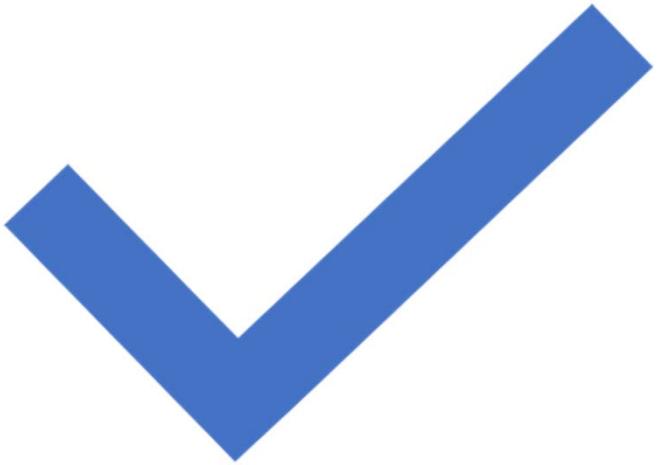
- Tracks the overall progress of a task and updates its status with information about active, succeeded, and failed pods
- Deleting a job will clean up any pod replicas it created
- Can be managed with oc commands like other object types

Scheduler

- Reads data from the pod and tries to find a node that is a good fit based on configured policies
- It is completely independent and exists as a standalone or pluggable solution It does not modify the pod and just creates a binding for the pod that ties the pod to the node

Summary

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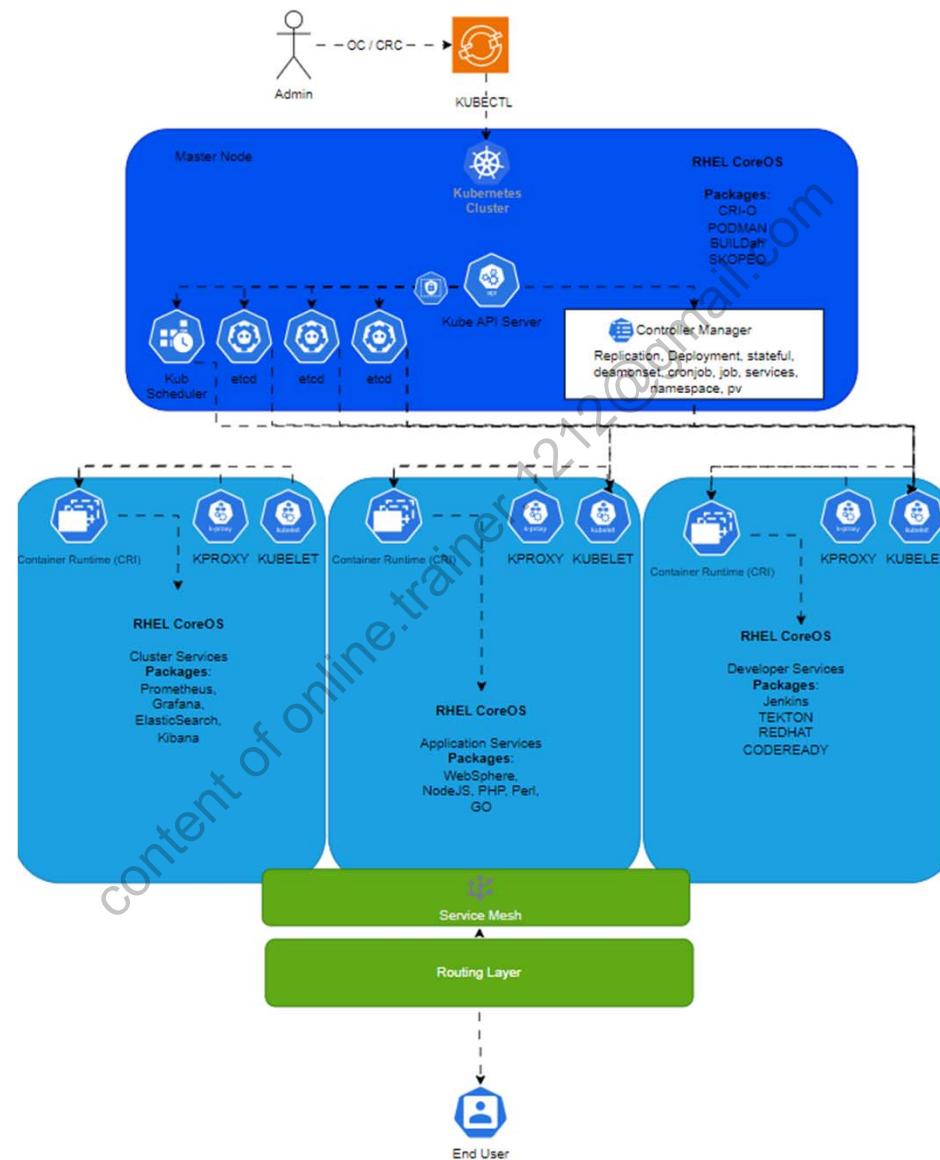


OpenShift Advanced Architecture

Sub Project 2.5.c

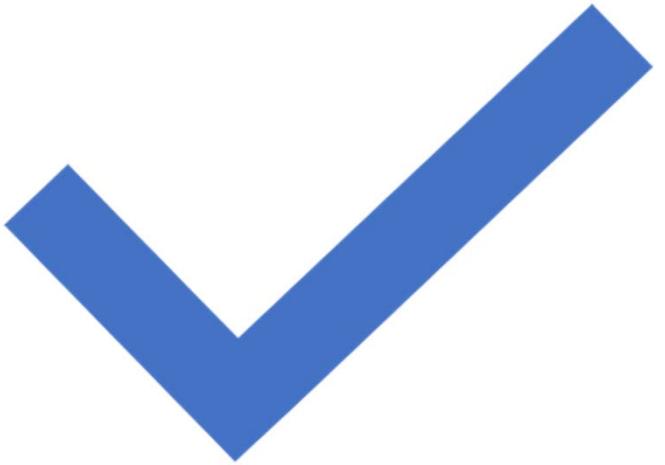
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Sub Project 2.6

Exercise- Installation of
Platform on OCP
platform



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| Number Of Worker Nodes | CPU Cores | Memory In GB |
|------------------------|-----------|--------------|
| 25 | 4 | 16 |
| 100 | 8 | 32 |
| 250 | 16 | 64 |

Advanced Host Practices

- podsPerCore - sets the number of pods the node can run based on the number of processor cores on the node
- maxPods - sets the number of pods the node can run to a fixed value, regardless of the properties of the node

