Introduction to Containers, Kubernetes, and OpenShift
Module 2 Glossary: Understanding Kubernetes Architecture

Term	Definition
Cluster	A deployment of Kubernetes.
Container Orchestration	Aids in the provisioning and deployment of containers to make this a more automated, unified, and smooth process. Container orchestration ensures that containers are redundant and available so that applications experience minimal downtime. It scales containers up and down to meet demand, and it load-balances requests across instances so that no one instance is overwhelmed. It handles the scheduling of containers to underlying infrastructure. Lastly, container orchestration tools can perform health checks to ensure that applications are running, and these tools can take necessary actions when checks fail.
Control Loop	A non-terminating loop that regulates the state of a system. A thermostat is an example of a control loop.
Declarative Management	A desired state that can be expressed (for example, the number of replicas of a specific application),and Kubernetes will actively work to ensure that the observed state matches the desired state.
Deployment	An object that provides updates for both Pods and ReplicaSets. Deployments run multiple replicas of an application by creating ReplicaSets and offering additional management capabilities on top of those ReplicaSets. In addition, deployments are suitable for stateless applications.
Docker	A popular container runtime that is responsible for downloading images and running containers. Rather than providing a single container runtime, Kubernetes implements a Container Runtime Interface that permits pluggability of the container runtime.
etcd	A highly available key value store that contains all the cluster data. When someone tells Kubernetes to deploy an application, that deployment configuration is stored in etcd. It is the source of truth for the state in a Kubernetes cluster, and the system works to bring the cluster state into line with what is stored in etcd.
Imperative Management	Defining steps and actions to get to a desired state.
Kubelet	This controller communicates with the Kubernetes API server to receive new and modified Pod specifications and ensure that Pods and their associated containers

	are running as desired. The kubelet also reports to the control plane on health and status.
Kubernetes	A portable, extensible, open-source platform for managing containerized workloads and services that facilitates both declarative configuration and automation.
Kubernetes Controller Manager	Runs all the controller processes that monitor the cluster state and ensure that the actual state of a cluster matches the desired state. The cloud controller manager runs controllers that interact with the underlying cloud providers. These controllers effectively link clusters into a cloud provider's API.
Kubernetes Proxy	A network proxy that runs on each node in a cluster. This proxy maintains network rules that allow communication to Pods running on nodes—in other words, communication to workloads running on the cluster.
Label Selector	The core grouping primitive in Kubernetes. They identify a set of objects.
Labels	A key/value pair that can be attached to objects in order to identify those objects.
Namespace	Provides a way to make one cluster appear to be several distinct clusters. They provide an isolated workspace for the container. When a container is run, Docker creates a set of namespaces for that container. They provide a layer of isolation. Each aspect of a container runs in a separate namespace, and its access is limited to that namespace.
Node	The worker machine in a Kubernetes cluster. User applications are run on nodes. Nodes can be virtual or physical machines. Each node is managed by the control plane and is able to run Pods.
Persistence	Ensures that an object exists in the system, until the object is modified or removed.
Pod	Represents a process running in a cluster; it also represents a single instance of an application running in a cluster. Usually, a Pod wraps a single container. Although in some cases, a Pod can encapsulate multiple tightly coupled containers that share resources.
ReplicaSet	A group of identical Pods that are running. The object used to scale an application by running replicas of a Pod.
YAML File	Defines the object or objects that you want to create.