

Linux-Foundation

Exam Questions KCNA

Kubernetes and Cloud Native Associate (KCNA)



NEW QUESTION 1

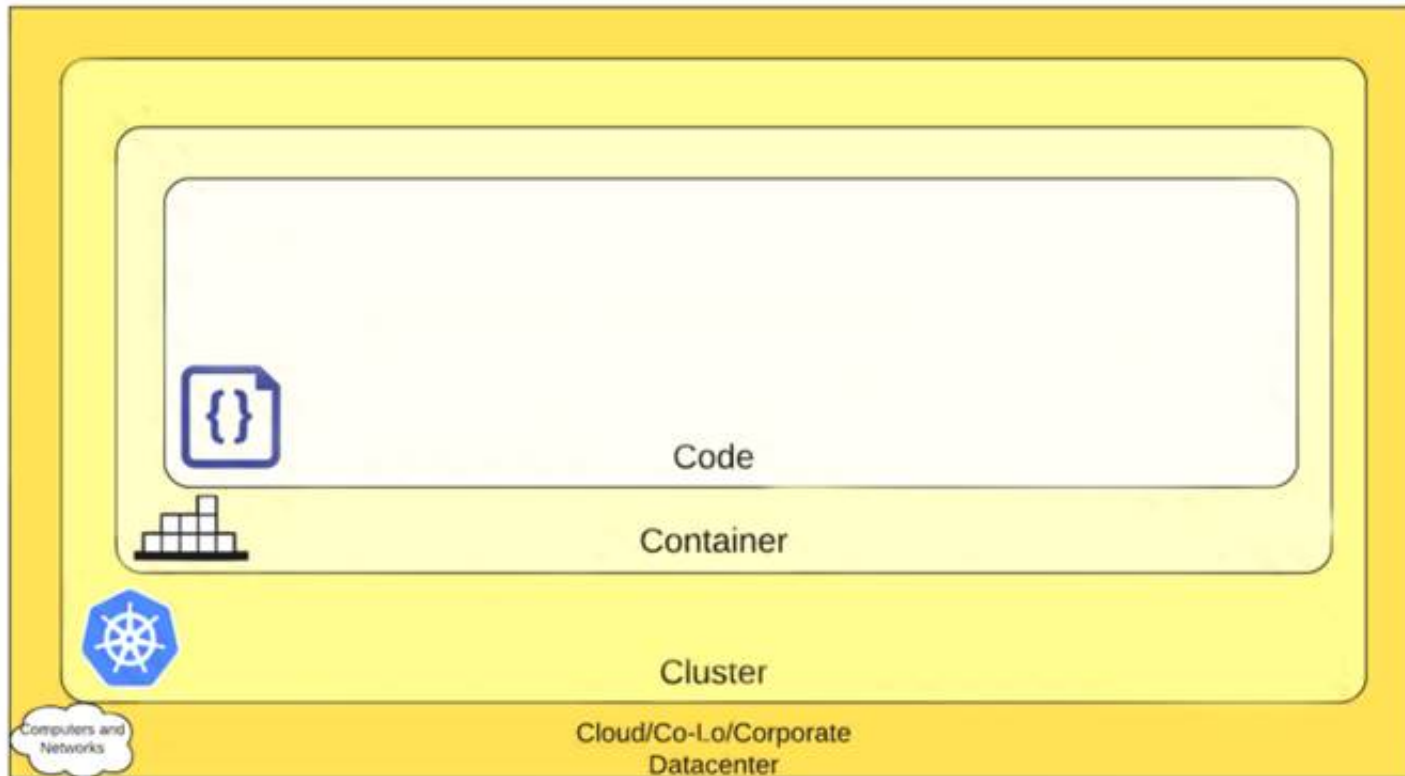
There are three Nodes in a cluster, and want to run exactly one replica of a Pod on each Node. Prefer to automatically create a replica on any new Nodes when they are added. Which Kubernetes re-source should you use?

- A. DaemonSet
- B. ReplicaSet
- C. NodeSet
- D. StatefulSet
- E. Deployment

Answer: A

Explanation:

<https://kubernetes.io/docs/concepts/workloads/controllers/daemonset/>
A DaemonSet runs replicas on all (or just some) Nodes in the cluster.
Table Description automatically generated with medium confidence



NEW QUESTION 2

What standard does kubelet use to communicate with the container runtime?

- A. Service Mesh Interface (SMI)
- B. CRI-O
- C. ContainerD
- D. Container Runtime Interface (CRI)

Answer: D

Explanation:

kubelet can communicate with any runtime that supports the CRI standard.

NEW QUESTION 3

What kind of limitation cgroups allows?

- A. Prioritization
- B. Resource limiting
- C. Accounting
- D. None of the options
- E. Control
- F. Server cpu and memory

Answer: ABCE

NEW QUESTION 4

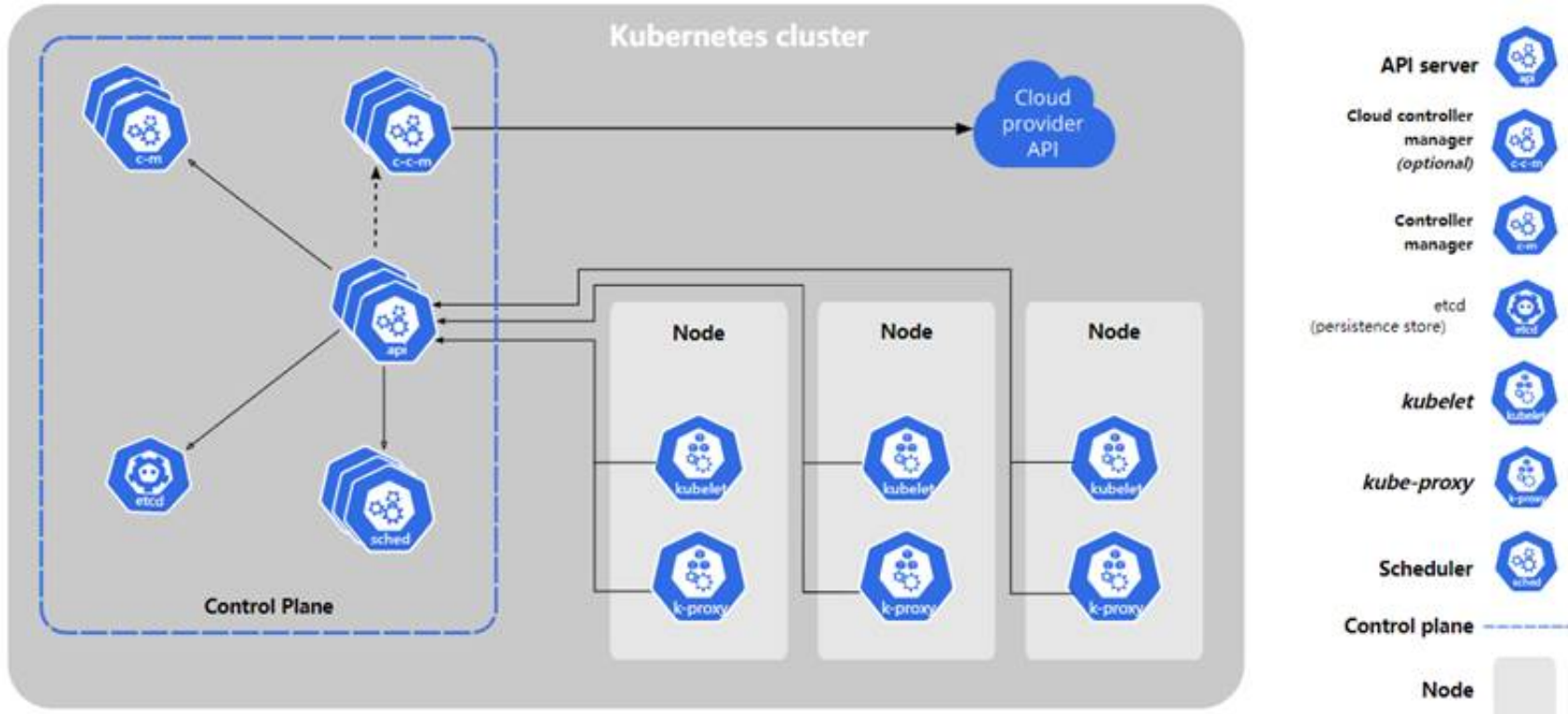
Which of the following components is part of the Kubernetes control panel

- A. kubectl
- B. kube-proxy
- C. Service Mesh
- D. kubelet
- E. Cloud control manager

Answer: E

Explanation:

<https://kubernetes.io/docs/concepts/overview/components/> Diagram Description automatically generated



NEW QUESTION 5

What do control groups provide when it come to containers

- A. Permission
- B. Image Storage
- C. Isolation
- D. Logging

Answer: C

Explanation:

Text Description automatically generated

What is the use of kernel control groups in container technology?

A control group (cgroup) is a Linux kernel feature that limits, accounts for, and isolates the resource usage (CPU, memory, disk I/O, network, and so on) of a collection of processes. Jul 21, 2021

NEW QUESTION 6

Which tool is built on the GitOps toolkit?

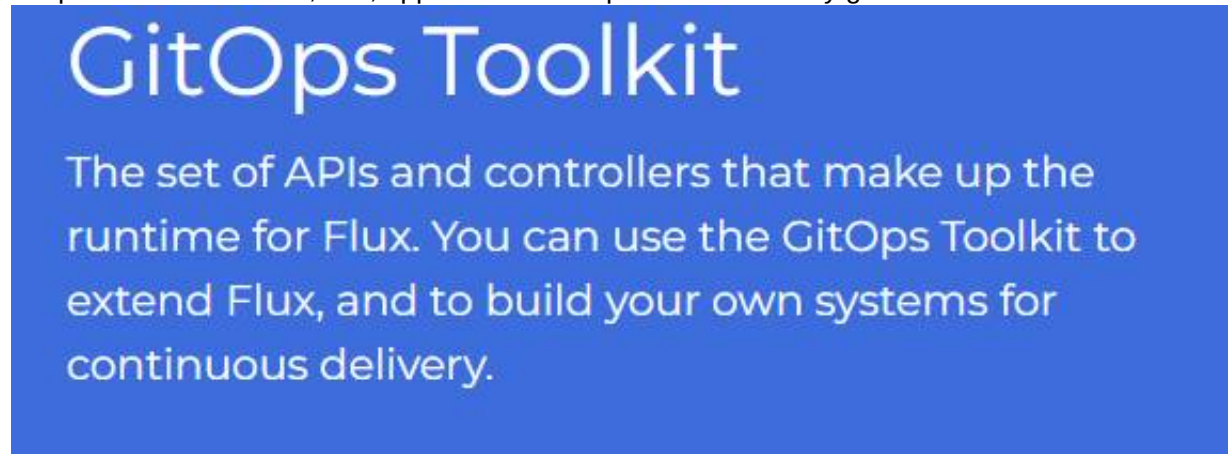
- A. Jenkins-X
- B. GitHub Workflow & Actions
- C. Flux
- D. Jenkins
- E. ArgoCD
- F. Travis CI

Answer: C

Explanation:

<https://fluxcd.io/#gitops-toolkit>

Graphical user interface, text, application Description automatically generated



Note: Argo CD is a GitOps tool and not using GitOps toolkit

NEW QUESTION 7

Which Kubernetes resource creates Kubernetes Jobs?

- A. JobFactory
- B. CronJob
- C. Task
- D. JobDeployment

Answer: B

Explanation:

<https://kubernetes.io/docs/concepts/workloads/controllers/cron-jobs/>

Graphical user interface, text, application, email Description automatically generated

CronJob

FEATURE STATE: Kubernetes v1.21 [stable]

A *CronJob* creates Jobs on a repeating schedule.

One CronJob object is like one line of a *crontab* (cron table) file. It runs a job periodically on a given schedule, written in **Cron** format.

NEW QUESTION 8

What framework allows developers to write code without worrying about the servers and operating systems they will run on?

- A. Virtualization
- B. Docker
- C. Serverless
- D. Kubernetes

Answer: C

NEW QUESTION 9

What are the two goals of Cloud-Native?

- A. Rapid innovation and automation
- B. Slow innovation and stable applications
- C. Frequent deployments and well-defined organizational silos
- D. Rapid innovation and reliability

Answer: D

Explanation:

<https://www.redhat.com/en/topics/cloud-native-apps>

NEW QUESTION 10

What are cluster-wide objects

- A. Service and Pods
- B. Volumes and Nodes
- C. ConfigMaps and Secrets

Answer: B

Explanation:

https://kubernetes.io/docs/concepts/overview/working-with-objects/_print/ Text, letter Description automatically generated

4 - Namespaces

In Kubernetes, *namespaces* provides a mechanism for isolating groups of resources within a single cluster. Names of resources need to be unique within a namespace, but not across namespaces. Namespace-based scoping is applicable only for namespaced objects (*e.g. Deployments, Services, etc*) and not for cluster-wide objects (*e.g. StorageClass, Nodes, PersistentVolumes, etc*).

NEW QUESTION 10

What feature is used for selecting the container runtime configuration?

- A. RuntimeClass
- B. RuntimeContainer
- C. Runtime
- D. RuntimeConfig

Answer: A

Explanation:

<https://kubernetes.io/docs/concepts/containers/runtime-class/>

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Runtime Class

FEATURE STATE: Kubernetes v1.20 [stable]

This page describes the RuntimeClass resource and runtime selection mechanism.

RuntimeClass is a feature for selecting the container runtime configuration. The container runtime configuration is used to run a Pod's containers.

Motivation

You can set a different RuntimeClass between different Pods to provide a balance of performance versus security. For example, if part of your workload deserves a high level of information security assurance, you might choose to schedule those Pods so that they run in a container runtime that uses hardware virtualization. You'd then benefit from the extra isolation of the alternative runtime, at the expense of some additional overhead.

You can also use RuntimeClass to run different Pods with the same container runtime but with different settings.

NEW QUESTION 13

Which role is responsible of creating service level indicator 'SLI', service level objective 'SLO', & Service Level Agreements 'SLA'?

- A. Site reliability engineer 'SRE'
- B. DevOps
- C. GitOps
- D. Security and compliance engineer
- E. Developer

Answer: A

Explanation:

<https://www.atlassian.com/incident-management/kpis/sla-vs-slo-vs-sli> Text Description automatically generated

How does this impact SREs?

For those of you following Google's model and using [Site Reliability Engineering \(SRE\) teams](#) to bridge the gap between development and operations, SLAs, SLOs, and SLIs are foundational to success. SLAs help teams set boundaries and error budgets. SLOs help prioritize work. And SLIs tell SREs when they need to freeze all launches to save an endangered error budget—and when they can loosen up the reins.

NEW QUESTION 17

Which is not a service type in Kubernetes?

- A. ClusterIP
- B. NodePort
- C. Ingress
- D. LoadBalancer
- E. ExternalName

Answer: C

Explanation:

<https://kubernetes.io/docs/tutorials/kubernetes-basics/expose/expose-intro/>

without a Service. Services allow your applications to receive traffic. Services can be exposed in different ways by specifying a type in the ServiceSpec:

- *ClusterIP* (default) - Exposes the Service on an internal IP in the cluster. This type makes the Service only reachable from within the cluster.
- *NodePort* - Exposes the Service on the same port of each selected Node in the cluster using NAT. Makes a Service accessible from outside the cluster using `<NodeIP>:<NodePort>` . Superset of ClusterIP.
- *LoadBalancer* - Creates an external load balancer in the current cloud (if supported) and assigns a fixed, external IP to the Service. Superset of NodePort.
- *ExternalName* - Maps the Service to the contents of the `externalName` field (e.g. `foo.bar.example.com`), by returning a CNAME record with its value. No proxying of any kind is set up. This type requires v1.7 or higher of `kube-dns` , or CoreDNS version 0.0.8 or higher.

More information about the different types of Services can be found in the [Using Source IP](#) tutorial. Also see [Connecting Applications with Services](#).

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NEW QUESTION 21

What does the 'kops' acronym means?

- A. Kubernetes Open Platform Specification
- B. Kubernetes Operations
- C. Kubernetes Operators
- D. Kubernetes Operation Policy Specification

Answer: B

Explanation:

<https://github.com/kubernetes/kops>

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kOps - Kubernetes Operations

go report **A+**  reference

The easiest way to get a production grade Kubernetes cluster up and running.

What is kOps?

We like to think of it as `kubect1` for clusters.

`kops` will not only help you create, destroy, upgrade and maintain production-grade, highly available, Kubernetes cluster, but it will also provision the necessary cloud infrastructure.

AWS (Amazon Web Services) and GCE (Google Cloud Platform) are currently officially supported, with DigitalOcean, Hetzner and OpenStack in beta support, and Azure in alpha.

NEW QUESTION 24

Which of the following is not the required field to describe Kubernetes objects?

- A. metadata
- B. apiVersion
- C. Kind
- D. Container
- E. spec

Answer: D

Explanation:

<https://kubernetes.io/docs/concepts/overview/working-with-objects/kubernetes-objects/> Graphical user interface, text, application Description automatically generated

Required Fields

In the `.yaml` file for the Kubernetes object you want to create, you'll need to set values for the following fields:

- `apiVersion` - Which version of the Kubernetes API you're using to create this object
- `kind` - What kind of object you want to create
- `metadata` - Data that helps uniquely identify the object, including a `name` string, `UID`, and optional `namespace`
- `spec` - What state you desire for the object

The precise format of the object `spec` is different for every Kubernetes object, and contains nested fields specific to that object. The [Kubernetes API Reference](#) can help you find the spec format for all of the objects you can create using Kubernetes.

NEW QUESTION 26

Have a pod 'hello' and a container in that pod 'green'. Which of the following commands would get the logs for that container?

- A. alias k='kubectl'k logs -p hello -c green
- B. alias k='kubectl'k logs hello -c green
- C. alias k='kubectl'k get logs -p hello -c green
- D. alias k='kubectl'k logs -p hello green

Answer: B

Explanation:

<https://kubernetes.io/docs/reference/generated/kubect1/kubect1-commands#logs> Graphical user interface, text, application, email Description automatically generated

logs

Print the logs for a container in a pod or specified resource. If the pod has only one container, the container name is optional.

Usage

```
$ kubectl logs [-f] [-p] (POD | TYPE/NAME) [-c CONTAINER]
```

Flags

Name	Shorthand	Default	Usage
all-containers		false	Get all containers' logs in the pod(s).
container	c		Print the logs of this container
follow	f	false	Specify if the logs should be streamed.

Return snapshot logs from pod nginx with only one container

```
kubectl logs nginx
```

Return snapshot logs from pod nginx with multi containers

```
kubectl logs nginx --all-containers=true
```

Return snapshot logs from all containers in pods defined by label app=nginx

```
kubectl logs -l app=nginx --all-containers=true
```

Return snapshot of previous terminated ruby container logs from pod web-1

```
kubectl logs -p -c ruby web-1
```

Begin streaming the logs of the ruby container in pod web-1

```
kubectl logs -f -c ruby web-1
```

NEW QUESTION 29

What is autoscaling?

- A. Automatically measuring resource usage
- B. Automatically assigning workloads to nodes in a cluster
- C. Automatically repairing broken application instances
- D. Automatically adding or removing compute resources as needed

Answer: D

Explanation:

<https://kubernetes.io/blog/2016/07/autoscaling-in-kubernetes/>
Autoscaling means automatically scaling up or down in response to real-time usage data.

NEW QUESTION 31

What are default kubernetes namespaces?

- A. default, kube-public, kube-system, kube-node-lease
- B. kube-default, kube-public, kube-system, kube-node-lease
- C. default, kube-public, kube-systems, kube-node-lease
- D. default, kube-public, kube-system, kube-node-leases

Answer: A

Explanation:

<https://kubernetes.io/docs/concepts/overview/working-with-objects/namespaces/>
Graphical user interface, text Description automatically generated with medium confidence

You can list the current namespaces in a cluster using:

```
kubectl get namespace
```

NAME	STATUS	AGE
default	Active	1d
kube-node-lease	Active	1d
kube-public	Active	1d
kube-system	Active	1d

Kubernetes starts with four initial namespaces:

- `default` The default namespace for objects with no other namespace
- `kube-system` The namespace for objects created by the Kubernetes system
- `kube-public` This namespace is created automatically and is readable by all users (including those not authenticated). This namespace is mostly reserved for cluster usage, in case that some resources should be visible and readable publicly throughout the whole cluster. The public aspect of this namespace is only a convention, not a requirement.
- `kube-node-lease` This namespace holds [Lease](#) objects associated with each node. Node leases allow the kubelet to send [heartbeats](#) so that the control plane can detect node failure.

NEW QUESTION 32

Notary and the update framework leading security projects in CNCF

- A. TRUE
- B. FALSE

Answer: A

Explanation:

<https://github.com/cncf/landscape#trail-map>

A picture containing timeline Description automatically generated



CLOUD NATIVE TRAIL MAP

The Cloud Native Landscape (cncl.io) has a large number of options. This Cloud Native Trail Map is a recommended process for leveraging open source, cloud native technologies. At each step, you can choose a vendor-supported offering or do it yourself, and everything after step #3 is optional based on your circumstances.

HELP ALONG THE WAY

A. Training and Certification

Consider training offerings from CNCF and then take the exam to become a Certified Kubernetes Administrator or a Certified Kubernetes Application Developer. cncf.io/training

B. Consulting Help

If you want assistance with Kubernetes and the surrounding ecosystem, consider leveraging a Kubernetes Certified Service Provider. cncf.io/csp

C. Join CNCF's End User Community

For companies that don't offer cloud native services externally. cncf.io/enduser

WHAT IS CLOUD NATIVE?

Cloud native technologies empower organizations to build and run scalable applications in modern, dynamic environments such as public, private, and hybrid clouds. Containers, service meshes, microservices, immutable infrastructure, and declarative APIs exemplify this approach.

These techniques enable loosely coupled systems that are resilient, manageable, and observable. Combined with robust automation, they allow engineers to make high-impact changes frequently and predictably with minimal toil.

The Cloud Native Computing Foundation seeks to drive adoption of this paradigm by fostering and sustaining an ecosystem of open source, vendor-neutral projects. We democratize state-of-the-art patterns to make these innovations accessible for everyone.

cncl.io

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NEW QUESTION 35

What is horizontal scaling?

- A. Creating a Deployment
- B. Adding resources to existing apps and servers
- C. Moving workloads from one server to another
- D. Adding additional replicas of apps and servers

Answer: D

Explanation:

<https://kubernetes.io/docs/tasks/run-application/horizontal-pod-autoscale/> Text, letter Description automatically generated

In Kubernetes, a *HorizontalPodAutoscaler* automatically updates a workload resource (such as a Deployment or StatefulSet), with the aim of automatically scaling the workload to match demand.

Horizontal scaling means that the response to increased load is to deploy more Pods. This is different from *vertical* scaling, which for Kubernetes would mean assigning more resources (for example: memory or CPU) to the Pods that are already running for the workload.

If the load decreases, and the number of Pods is above the configured minimum, the HorizontalPodAutoscaler instructs the workload resource (the Deployment, StatefulSet, or other similar resource) to scale back down.

Horizontal pod autoscaling does not apply to objects that can't be scaled (for example: a DaemonSet.)

The HorizontalPodAutoscaler is implemented as a Kubernetes API resource and a controller. The resource determines the behavior of the controller. The horizontal pod autoscaling controller, running within the Kubernetes control plane, periodically adjusts the desired scale of its target (for example, a Deployment) to match observed metrics such as average CPU utilization, average memory utilization, or any other custom metric you specify.

NEW QUESTION 37

What is a commonly used package manager for kubernetes applications?

- A. npm
- B. apt
- C. helm
- D. kubernetes manifest

Answer: C

Explanation:

<https://helm.sh/>

NEW QUESTION 40

Which of the following best describes the way kubernetes Role-based access control (RBAC) works?

- A. Kubernetes does not do RBAC
- B. Kubernetes RBAC states which users can perform which actions against which re-source
- C. Kubernetes RBAC lists which operations on which resources are denied to users
- D. Kubernetes RBAC is responsible for authenticating subjects such as users and groups

Answer: B

Explanation:

<https://kubernetes.io/docs/reference/access-authn-authz/rbac/>

Graphical user interface, text, application, email Description automatically generated

Using RBAC Authorization

Role-based access control (RBAC) is a method of regulating access to computer or network resources based on the roles of individual users within your organization.

RBAC authorization uses the `rbac.authorization.k8s.io` API group to drive authorization decisions, allowing you to dynamically configure policies through the Kubernetes API.

To enable RBAC, start the API server with the `--authorization-mode` flag set to a comma-separated list that includes RBAC ; for example:

```
kube-apiserver --authorization-mode=Example,RBAC --other-options --more-options
```

NEW QUESTION 45

Which statement is true about Pod Networking?

- A. All pod requires an external DNS server to get the hostname
- B. All containers in a pod get a unique IP address
- C. All containers in a pod share a single IP address
- D. All pod requires NAT to get a unique IP address.

Answer: C

Explanation:

<https://kubernetes.io/docs/concepts/workloads/pods/#pod-networking> Text Description automatically generated

Pod networking

Each Pod is assigned a unique IP address for each address family. Every container in a Pod shares the network namespace, including the IP address and network ports. Inside a Pod (and **only** then), the containers that belong to the Pod can communicate with one another using `localhost`. When containers in a Pod communicate with entities *outside the Pod*, they must coordinate how they use the shared network resources (such as ports). Within a Pod, containers share an IP address and port space, and can find each other via `localhost`. The containers in a Pod can also communicate with each other using standard inter-process communications like SystemV semaphores or POSIX shared memory. Containers in different Pods have distinct IP addresses and can not communicate by OS-level IPC without special configuration. Containers that want to interact with a container running in a different Pod can use IP networking to communicate.

Containers within the Pod see the system hostname as being the same as the configured `name` for the Pod. There's more about this in the [networking](#) section.

NEW QUESTION 46

Which of the following is NOT a Kubernetes component?

- A. Scheduler
- B. Docker
- C. Cloud Controller manager
- D. Kube-proxy

Answer: B

Explanation:

Docker is not a Kubernetes component.

NEW QUESTION 50

Which of the following computing model doesn't require you to provision infrastructure?

- A. None of the above
- B. Bare Metal
- C. Compute Engine
- D. Virtual Machines
- E. Serverless

Answer: E

NEW QUESTION 52

Which command-line tool is used to interact with the Kubernetes cluster?

- A. kube-api
- B. kubectl
- C. kube-scheduler

Answer: B

Explanation:

<https://kubernetes.io/docs/reference/kubectl/>

Graphical user interface, text, application, email Description automatically generated

Command line tool (kubectl)

Kubernetes provides a command line tool for communicating with a Kubernetes cluster's control plane, using the Kubernetes API.

This tool is named `kubectl`.

For configuration, `kubectl` looks for a file named `config` in the `$HOME/.kube` directory. You can specify other `kubeconfig` files by setting the `KUBECONFIG` environment variable or by setting the `--kubeconfig` flag.

This overview covers `kubectl` syntax, describes the command operations, and provides common examples. For details about each command, including all the supported flags and subcommands, see the [kubectl](#) reference documentation.

For installation instructions, see [Installing kubectl](#); for a quick guide, see the [cheat sheet](#). If you're used to using the `docker` command-line tool, [kubectl for Docker Users](#) explains some equivalent commands for Kubernetes.

NEW QUESTION 53

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