KCNA Q&As

Kubernetes and Cloud Native Associate (KCNA)

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QUESTION 1

What is the main difference between Argo vs. Flux CD?

A. Argo is pull-based, and Flux is push-based

B. No difference; both are pull-based

C. Argo is push-based, and Flux is pull-based

D. No difference; both are push-based

Correct Answer: C

Explanation: AgroCD: https://argo-cd.readthedocs.io/en/stable/developer-guide/ci/#can-i- retrigger-thechecks-without-pushing-a-new-commit FluxCD: https://fluxcd.io/

QUESTION 2

Flux is built using which toolkit?

A. CI/CD

B. DevSecOps

C. GitOps

D. DevOps

Correct Answer: C

Explanation: https://fluxcd.io/

Flux provides GitOps for both apps and infrastructure	Flux and Flagger deploy apps with canaries, feature flags, and A/B rollouts. Flux can also manage any Kubernetes resource. Infrastructure and workload dependency management is built in.
Just push to Git and Flux does the rest	Flux enables application deployment (CD) and (with the help of Flagger) progressive delivery (PD) through automatic reconciliation. Flux can even push back to Git for you with automated container image updates to Git (image scanning and patching).

QUESTION 3

Which Kubernetes resource creates Kubernetes Jobs?

A. JobFactory

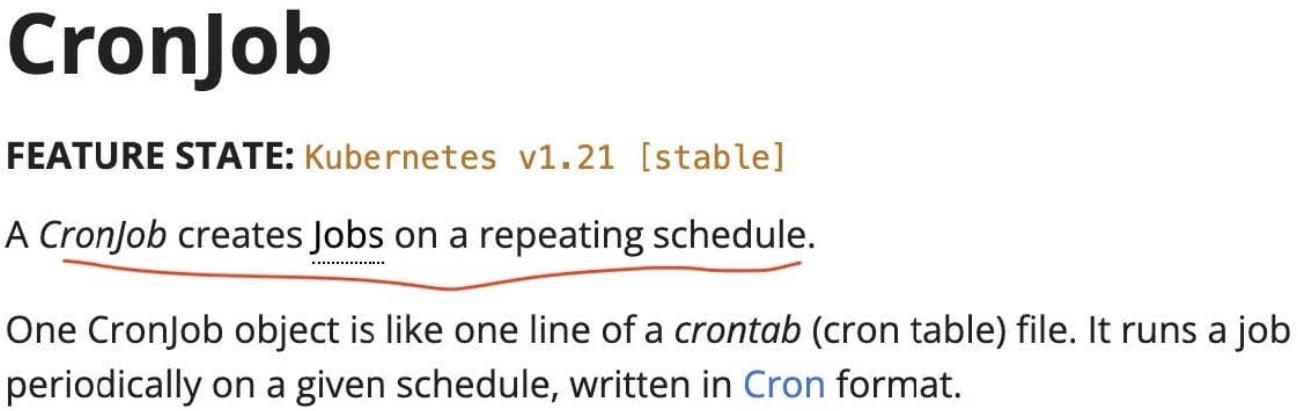
B. CronJob

C. Task

D. JobDeployment

Correct Answer: B

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



QUESTION 4

Which kubernetes resource type allows defining which pods are isolated when it comes to network-ing?

A. Network policy

B. Domain Name System \\'DNS\\'

C. Role Binding

D. Service

Correct Answer: A

Explanation: https://kubernetes.io/docs/concepts/services-networking/network- policies/#the-two-sorts-ofpod-isolation

The Two Sorts of Pod Isolation

There are two sorts of isolation for a pod: isolation for egress, and isolation for ingress. They concern what connections may be established. "Isolation" here is not absolute, rather it means "some restrictions apply". The alternative, "non-isolated for $direction", means that no restrictions apply in the stated direction. The two sorts of isolation (or not) are declared independently, and are both relevant for a connection from one pod to another.

By default, a pod is non-isolated for egress; all outbound connections are allowed. A pod is isolated for egress if there is any NetworkPolicy that both selects the pod and has "Egress" in its `policyTypes`; we say that such a policy applies to the pod for egress. When a pod is isolated for egress, the only allowed connections from the pod are those allowed by the `egress` list of some NetworkPolicy that applies to the pod for egress. The effects of those `egress` lists combine additively.

By default, a pod is non-isolated for ingress; all inbound connections are allowed. A pod is isolated for ingress if there is any NetworkPolicy that both selects the pod and has "Ingress" in its `policyTypes`; we say that such a policy applies to the pod for ingress. When a pod is isolated for ingress, the only allowed connections into the pod are those from the pod's node and those allowed by the `ingress` list of some NetworkPolicy that applies to the pod for ingress. The effects of those `ingress` lists combine additively.

QUESTION 5

What command can you use to get documentation about a resource type from the command line?

A. kubectl api-resources

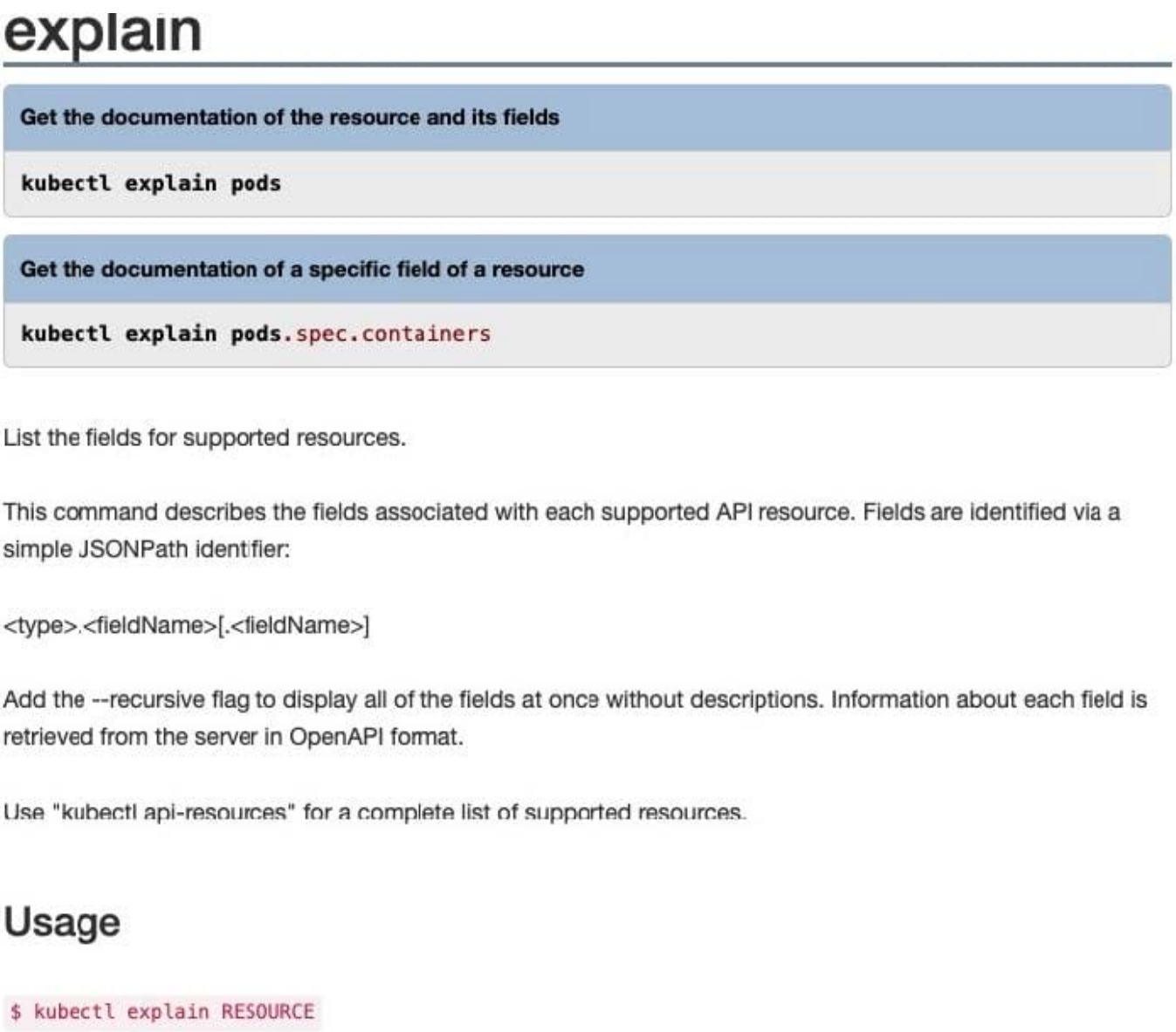
B. kubectl explain

C. kubectl get

D. kubeadm get-resource

Correct Answer: B

Explanation: https://kubernetes.io/docs/reference/generated/kubectl/kubectl- commands#explain



QUESTION 6

The Kubernetes rolling update is used for __.

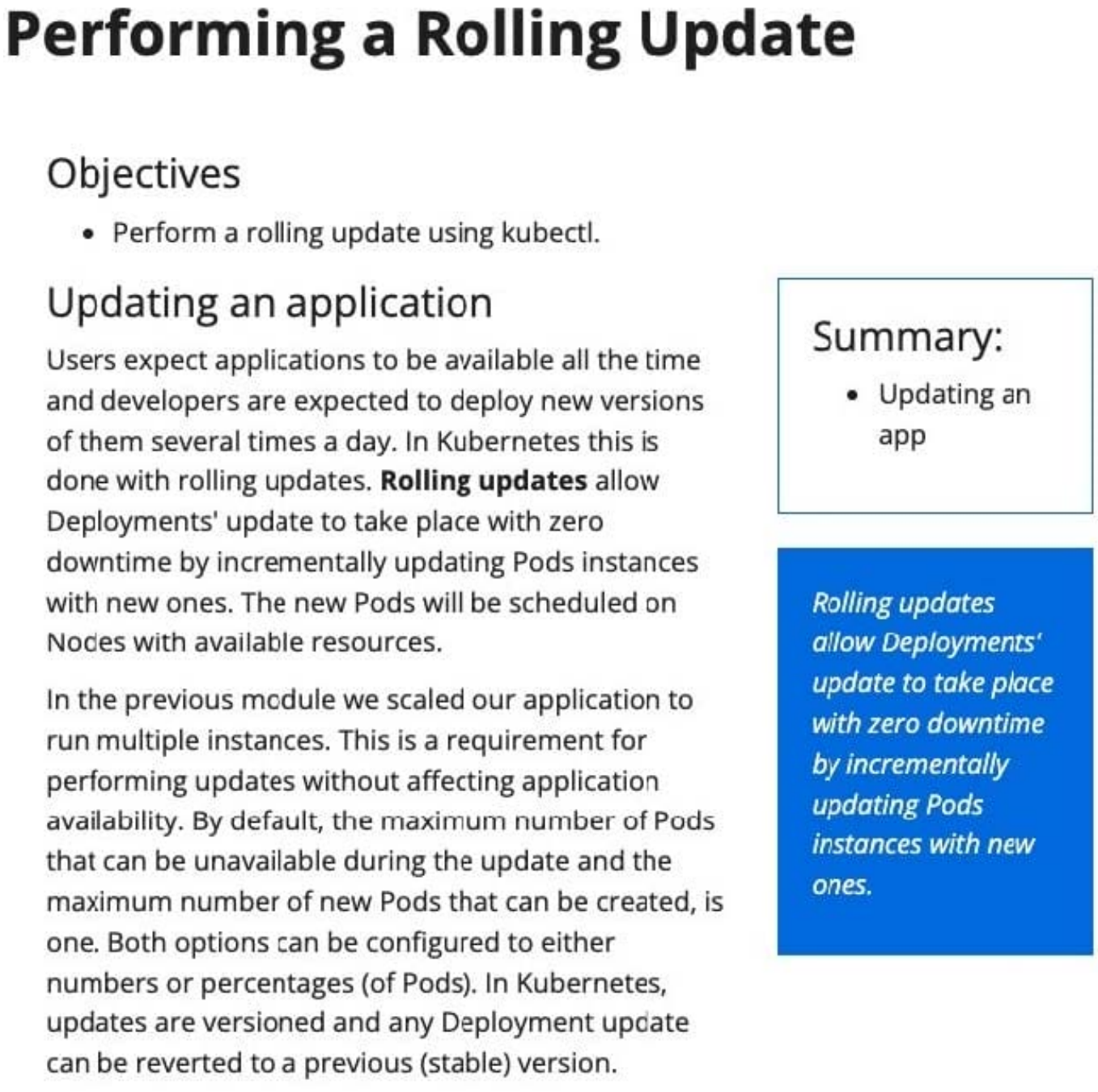
A. Updating a service

B. Scaling an application

C. Updating a deployment

Correct Answer: C

Explanation: https://kubernetes.io/docs/tutorials/kubernetes-basics/update/update-intro/



QUESTION 7

What command use to get documentation about kubernetes resource type

A. alias k=\\'kubectl\\' k api-resources

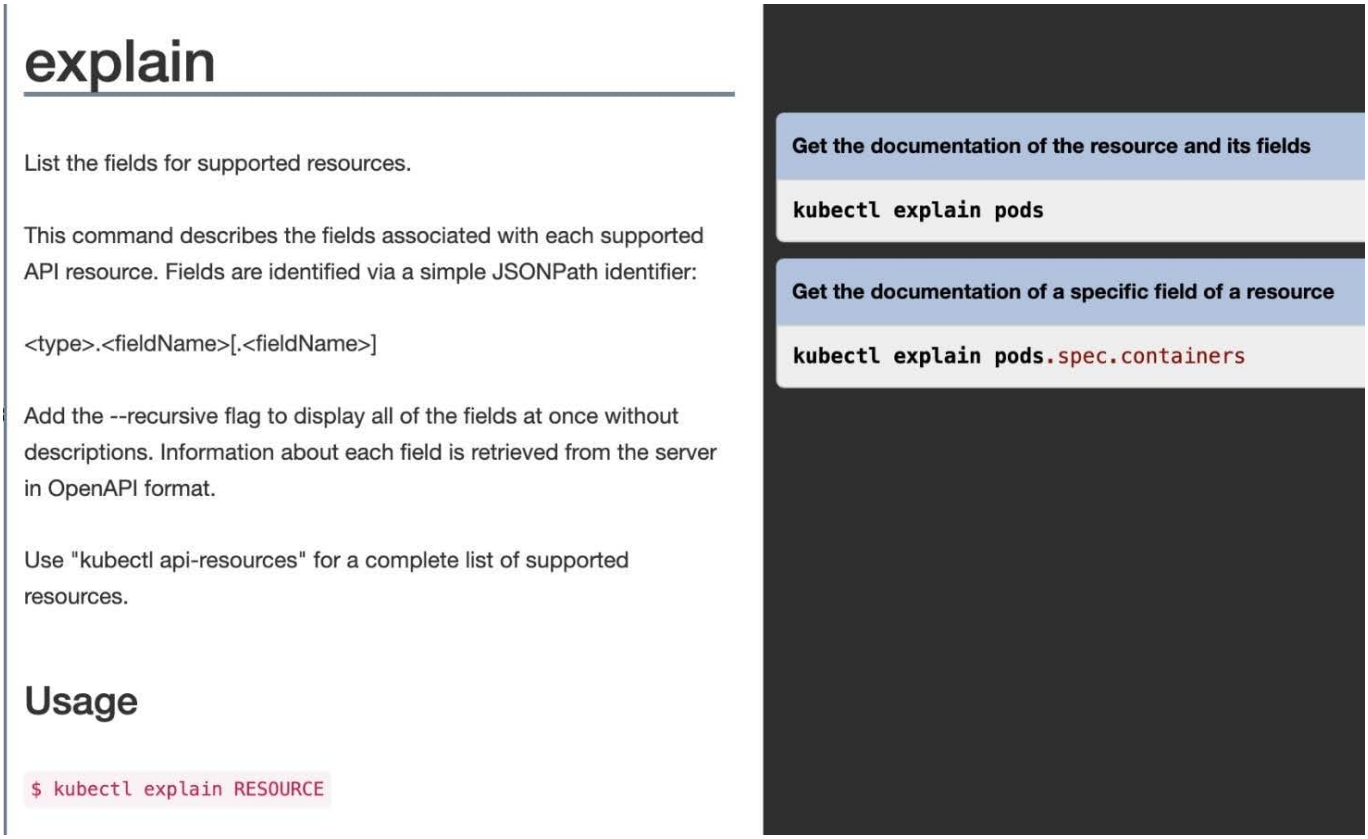
B. alias k=\\'kubectl\\' k api-list

C. alias k=\\'kubectl\\' k explain

D. alias k=\\'kubectl\\' k get resource

Correct Answer: C

Explanation: https://kubernetes.io/docs/reference/generated/kubectl/kubectl- commands#explain



QUESTION 8

Open Container Initiative set container standards for

A. Code, Build, Distribute, Deploy containers

B. Run, build, and image

C. Code, Build, Distribute containers

D. Run, Build, Distribute containers

Correct Answer: D

QUESTION 9

Which control plane component is responsible for scheduling pods?

A. kube-proxy

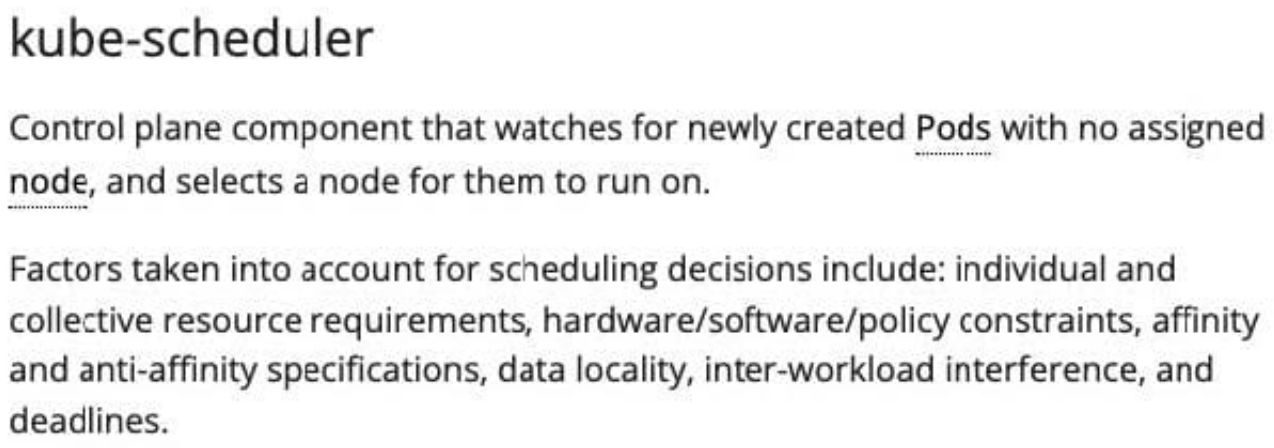
B. kube scheduler

C. kubelet

D. kube api-server

Correct Answer: B

Explanation: https://kubernetes.io/docs/concepts/overview/components/



QUESTION 10

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

Correct Answer: A

Explanation: https://kubernetes.io/docs/concepts/overview/working-with- objects/namespaces/

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.

QUESTION 11

Which component of the kubernetes control-plane (master) are all requests to deploy and manage objects posted to?

A. ETCD

B. Controller Manager

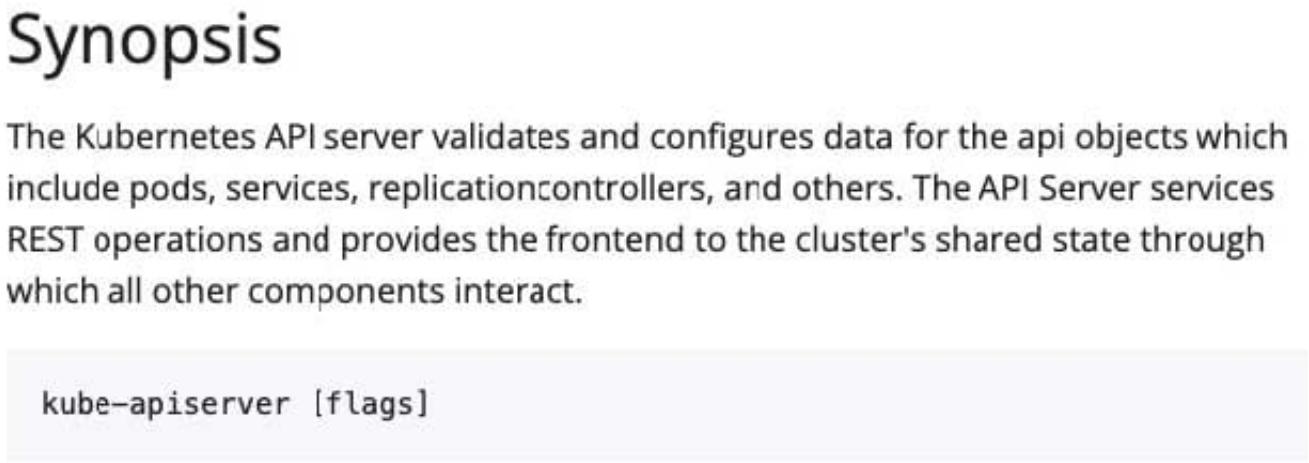
C. Kube-proxy

D. API Server

E. Kubelet

Correct Answer: D

Explanation: https://kubernetes.io/docs/reference/command-line-tools-reference/kube- apiserver/



QUESTION 12

How can you achieve cost optimization in the cloud environment?

A. Use On Demand instances

B. Use Spot Instances

C. Use Reserved Instances

D. Use Bare Metal

Correct Answer: C

QUESTION 13

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

A. Site reliability engineer \\'SRE\\'

B. DevOps

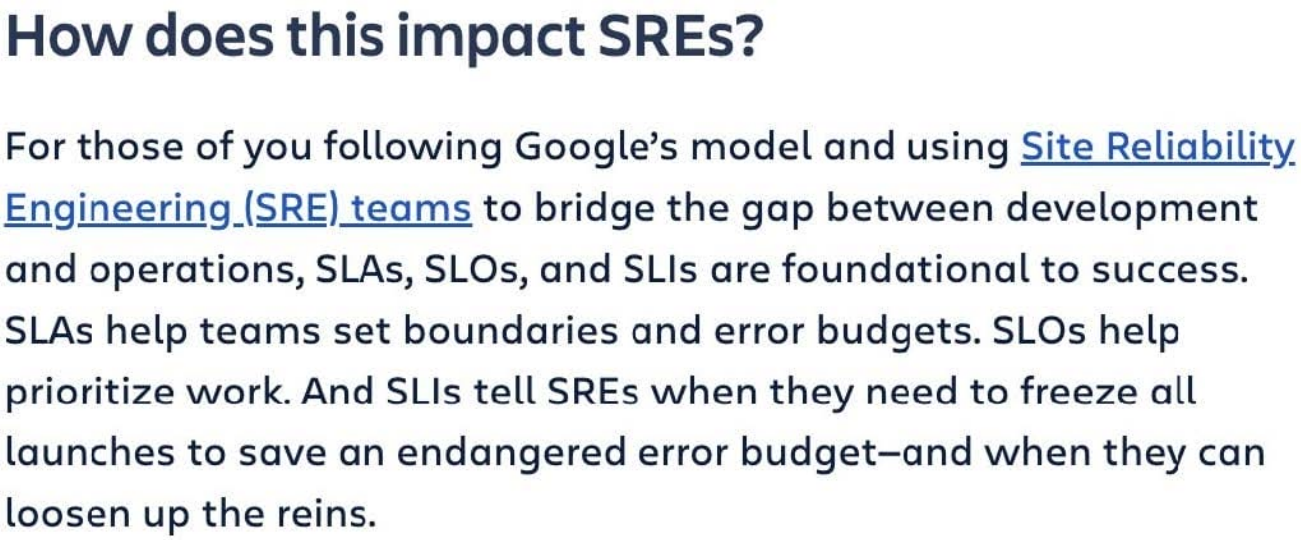
C. GitOps

D. Security and compliance engineer

E. Developer

Correct Answer: A

Explanation: https://www.atlassian.com/incident-management/kpis/sla-vs-slo-vs-sli



QUESTION 14

What CNCF project is the leading DNS project in the CNCF landscape?

A. Kubernetes

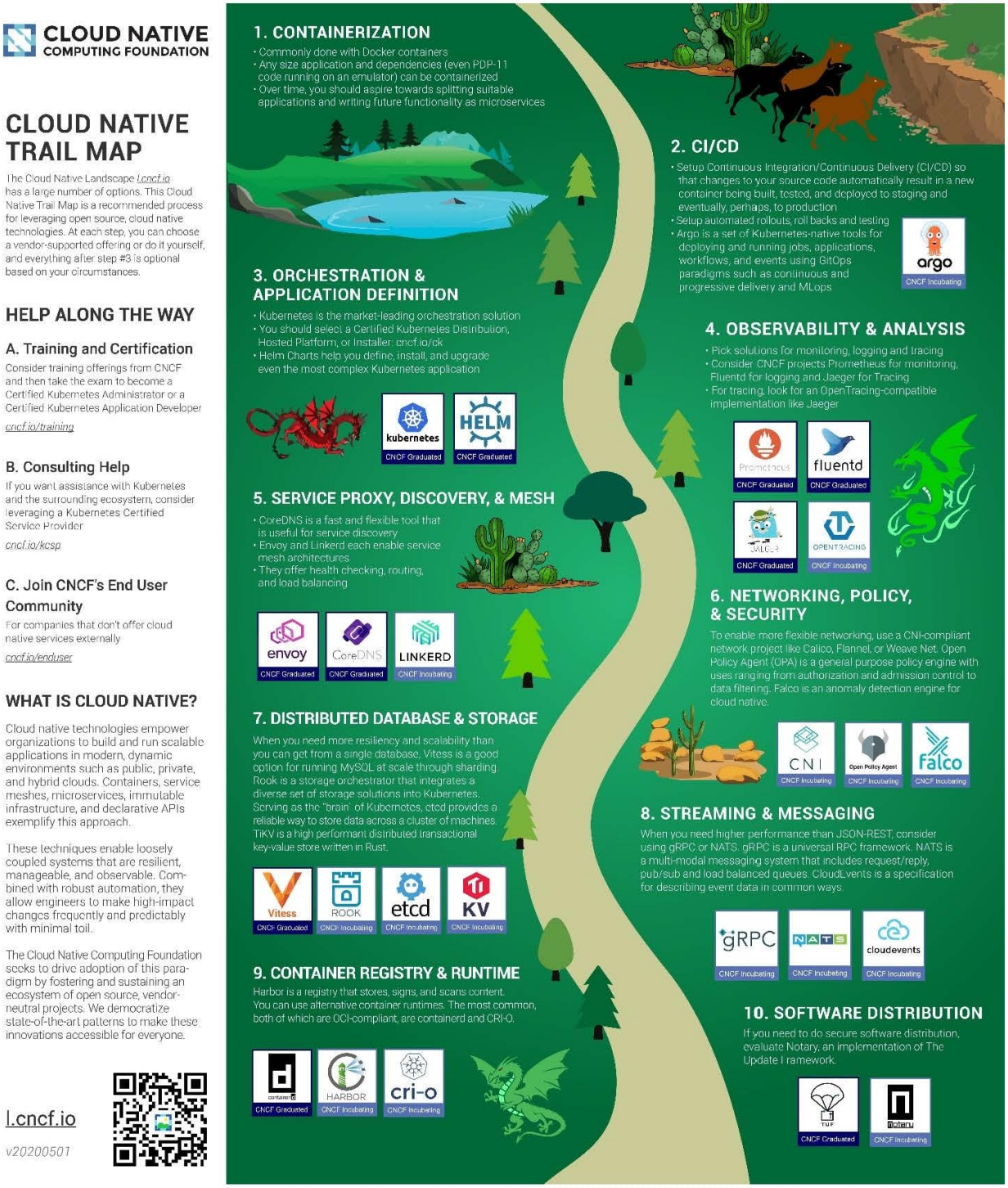
B. gRPC

C. KubeDNS

D. CoreDNS

Correct Answer: D

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


CLOUD NATIVE COMPUTING FOUNDATION
CLOUD NATIVE TRAIL MAP
The Cloud Native Landscape l.cncf.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/kcsp
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.
l.cncf.io
v20200501
1. CONTAINERIZATION
• Commonly done with Docker containers
• Any size application and dependencies (even PDP-11 code running on an emulator) can be containerized
• Over time, you should aspire towards splitting suitable applications and writing future functionality as microservices
2. CI/CD
• Setup Continuous Integration/Continuous Delivery (CI/CD) so that changes to your source code automatically result in a new container being built, tested, and deployed to staging and eventually, perhaps, to production
• Setup automated rollouts, roll backs and testing
• Argo is a set of Kubernetes-native tools for deploying and running jobs, applications, workflows, and events using GitOps paradigms such as continuous and progressive delivery and MLops
argo
CNCF Incubating
3. ORCHESTRATION & APPLICATION DEFINITION
• Kubernetes is the market-leading orchestration solution
• You should select a Certified Kubernetes Distribution, Hosted Platform, or Installer: cncf.io/ck
• Helm Charts help you define, install, and upgrade even the most complex Kubernetes application
kubernetes
CNCF Graduated
HELM
CNCF Graduated
4. OBSERVABILITY & ANALYSIS
• Pick solutions for monitoring, logging and tracing
• Consider CNCF projects Prometheus for monitoring, Fluentd for logging and Jaeger for Tracing
• For tracing, look for an OpenTracing-compatible implementation like Jaeger
Prometheus
CNCF Graduated
fluentd
CNCF Graduated
CNCF Graduated
OPENTRACING
CNCF Incubating
5. SERVICE PROXY, DISCOVERY, & MESH
• CoreDNS is a fast and flexible tool that is useful for service discovery
• Envoy and Linkerd each enable service mesh architectures
• They offer health checking, routing, and load balancing
envoy
CNCF Graduated
CoreDNS
CNCF Graduated
LINKERD
CNCF Incubating
6. NETWORKING, POLICY, & SECURITY
To enable more flexible networking, use a CNI-compliant network project like Calico, Flannel, or Weave Net. Open Policy Agent (OPA) is a general purpose policy engine with uses ranging from authorization and admission control to data filtering. Falco is an anomaly detection engine for cloud native.
CNI
CNCF Incubating
Open Policy Agent
CNCF Incubating
falco
CNCF Incubating
7. DISTRIBUTED DATABASE & STORAGE
When you need more resiliency and scalability than you can get from a single database, Vitess is a good option for running MySQL at scale through sharding. Rook is a storage orchestrator that integrates a diverse set of storage solutions into Kubernetes. Serving as the "brain" of Kubernetes, etcd provides a reliable way to store data across a cluster of machines. TiKV is a high performant distributed transactional key-value store written in Rust.
Vitess
CNCF Graduated
ROOK
CNCF Incubating
etcd
CNCF Incubating
KV
CNCF Incubating
8. STREAMING & MESSAGING
When you need higher performance than JSON-REST, consider using gRPC or NATS. gRPC is a universal RPC framework. NATS is a multi-modal messaging system that includes request/reply, pub/sub and load balanced queues. CloudEvents is a specification for describing event data in common ways.
gRPC
CNCF Incubating
NATS
CNCF Incubating
cloudevents
CNCF Incubating
9. CONTAINER REGISTRY & RUNTIME
Harbor is a registry that stores, signs, and scans content. You can use alternative container runtimes. The most common, both of which are OCI-compliant, are containerd and CRI-O.
containerd
CNCF Graduated
HARBOR
CNCF Incubating
cri-o
CNCF Incubating
10. SOFTWARE DISTRIBUTION
If you need to do secure software distribution, evaluate Notary, an implementation of The Update Framework.
TUF
CNCF Graduated
Notary
CNCF Incubating

QUESTION 15

Which of the following best describes a cloud-native app?

A. An application where all logic is coded into a single large binary.

B. An application that publishes an HTTPS web front-end.

C. An application that takes advantages of cloud computing fromworks and their loosely coupled cloud services.

D. An application that leverages services that are native to public cloud platforms such as Azure, GCP, and/or AWS.

Correct Answer: C

Explanation: Cloud-native apps leverage cloud computing frameworks and tend to be microservices based, where individual components of the app are coded as individual.