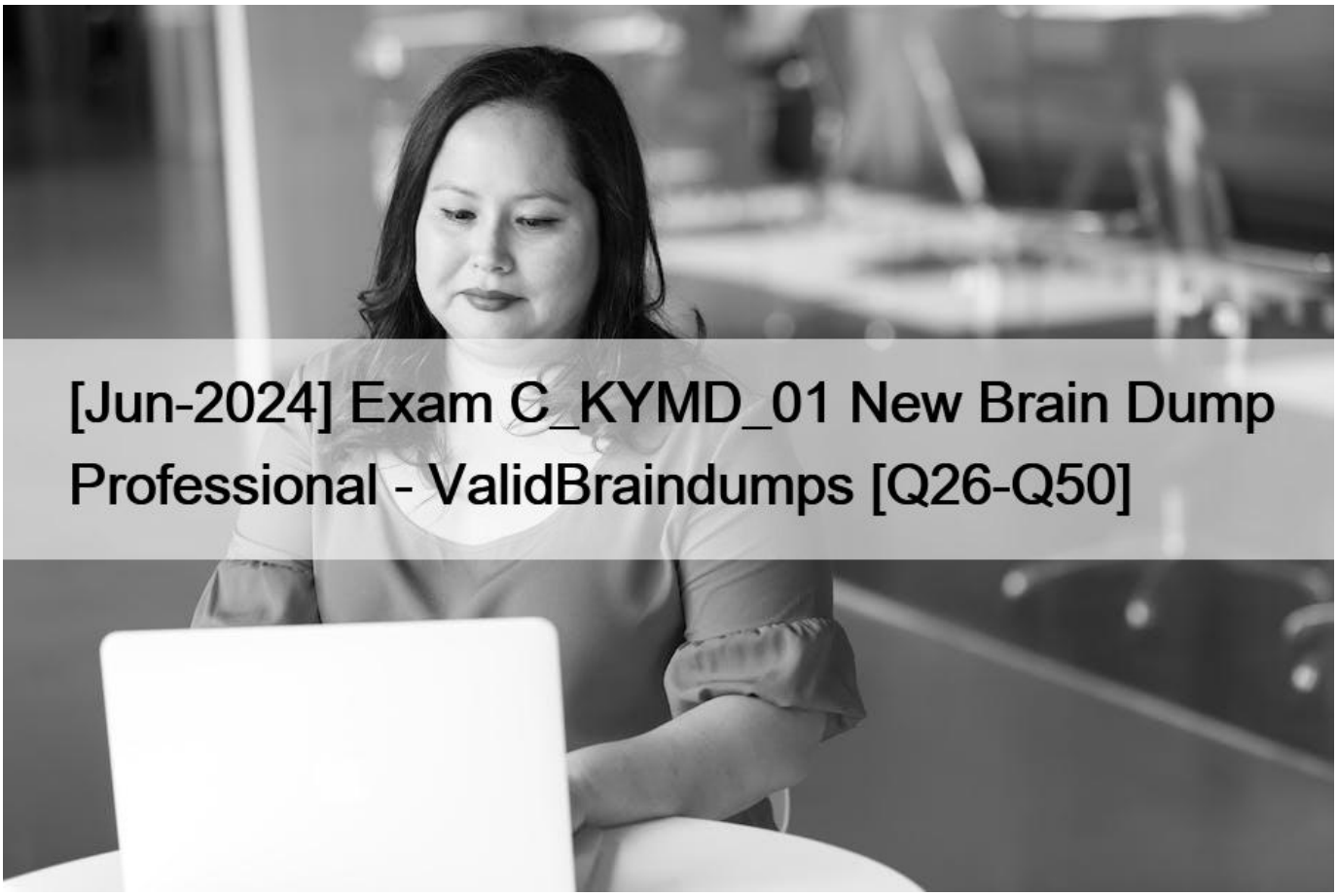
[Jun-2024 Exam C_KYMD_01 New Brain Dump Professional - ValidBraindumps [Q26-Q50



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NO.26 What are some of the components of the architecture of a Kubernetes cluster? Note: There are 3 correct Answers to this question.
* kubelet
* kube-apl
* etcdprovider
* kube-proxy
* etod

Explanation

A Kubernetes cluster consists of two types of components: the control plane and the worker nodes. The control plane is responsible for managing the cluster state and orchestrating the containerized applications. The worker nodes are the machines that run the applications in pods. Some of the components of the architecture of a Kubernetes cluster are:

kubelet: The kubelet is an agent that runs on each worker node and communicates with the control plane. The kubelet ensures that

the pods and containers are running as expected, and reports the node status and resource usage to the control plane1.

kube-proxy: The kube-proxy is a network proxy that runs on each worker node and enables the service abstraction. The kube-proxy maintains the network rules on the nodes, and allows the pods to communicate with each other and with external services2.

etcd: The etcd is a distributed key-value store that stores the cluster configuration and state. The etcd is the source of truth for the cluster, and is accessed by the control plane components. The etcd is designed to be consistent, reliable, and secure3.

References:

1: Kubernetes Components | Kubernetes

2: Services, Load Balancing, and Networking | Kubernetes

3: etcd | Kubernetes

NO.27 What does a service mesh in Kyma typically consist of? Note: There are 2 correct Answers to this question.
* Data plane
* Control plane
* Master node
* Worker node

Explanation

A service mesh in Kyma typically consists of two components: the data plane and the control plane12. The data plane is responsible for handling the communication between the microservices in the cluster. It consists of a set of sidecar proxies (Envoy) that are injected into each pod and intercept the traffic. The control plane is responsible for managing the configuration and policies of the data plane. It consists of a set of components (Istio) that provide features like service discovery, security, traffic management, observability, and more12. References: Discovering the Service Mesh, SAP BTP – KYMA – SERVICE MESH | SAP Blogs

NO.28 What must you do to pull a container image from a private registry? Note: There are 2 correct Answers to this question.
* Create a secret with the type “kubernetes.io/docker configjson”.
* Provide credentials in the pod manifest via image Pull Secrets” in “spec template metadata annotations”
* Create a secret with the type “Opaque”
* Provide credentials in the pod manifest via “image Pull Secrets” in spec. template. spec.

NO.29 Where can you check which SAP BTP services are available to create in your subaccount?
* SAP BTP Service Marketplace
* SAP Help Desk
* SAP Community
* SAP Discovery Center

Explanation

You can check which SAP BTP services are available to create in your subaccount by visiting the SAP BTP Service Marketplace. The Service Marketplace is a page in the SAP BTP cockpit that lists all the services and applications that you can use in your subaccount. You can browse, search, filter, and sort the services and applications by categories, such as databases, analytics, integration, or security. You can also see the details, documentation, and pricing of each service and application, and create instances or subscriptions from the Service Marketplace. The Service Marketplace shows only the services and applications that you have entitlements for in your subaccount. You can manage your entitlements from the Entitlements page in the SAP BTP cockpit. References: SAP BTP Service Marketplace, Create a Service Instance in SAP BTP, Add a New Entitlement to Your Subaccount

NO.30 What are some prerequisites for functions to receive events from Kyma Eventing? Note: There are 2 correct Answers to this question.
* A Cloud Events specification
* An API Rule with Oath keeper Access Rules for GET Requests
* The request to the function contains the event context
* A Subscription CR.

NO.31 Which of the following technologies does the Kyme Eventing process use? Note: There are 3 correct Answers to this question.
* HTTP-post requests
* Apache Kafka
* Jet Stream
* MQTT
* NATS

NO.32 What are some characteristics of the API Gateway? Note: There are 2 correct Answers to this question.
* It is the central point of contact for all internal traffic in the Kyma cluster.
* It uses Ory Oath keeper to manage access to services.
* It uses Envoy Proxy to handle traffic and forward it to the correct service
* It uses a custom-configured Nginx Ingress Gateway.

Explanation

The API Gateway is a component that enables exposing and securing services outside the Kyma cluster using the APIRule custom resource (CR)1. The API Gateway has the following characteristics:

It is the central point of contact for all external traffic that enters the Kyma cluster. The API Gateway is a custom-configured Istio Ingress Gateway that is installed in the kyma-system namespace called kyma-gateway2. The kyma-gateway acts as a reverse proxy that routes the incoming requests to the appropriate services based on the host name and the path specified in the APIRule CR3.

It uses Envoy Proxy to handle traffic and forward it to the correct service. The API Gateway is based on the Istio Gateway, which is a load balancer that operates at the edge of the mesh and enables ingress and egress traffic for the cluster. The Istio Gateway is implemented by a pod that runs an Envoy Proxy container, which is responsible for receiving and forwarding the traffic according to the Istio routing rules.

References:

1: Kyma / API Gateway v2

2: Using the API Gateway to Expose Services – SAP Learning

3: SAP BTP, Kyma Runtime API Gateway future architecture based on Istio | SAP Blogs

[4]: Istio / Gateway

[5]: Istio / Envoy

NO.33 Which of the following metrics are mandatory in a service manifest? Note: There are 3 correct Answers to this question.
* Cluster IP
* ap Version

* Type
* Ports
* Kind

NO.34 Which service does the SAP BTP service operator on SAP BTP, Kyma runtime use to consume services on SAP BTP?
* SAP Service Marketplace
* SAP Service Manager
* SAP API Business Hub

NO.35 In which order are pods created when a StatefulSet is set up?
* Consecutive
* Chronological
* Sequential

Explanation

Pods are created in a sequential order when a StatefulSet is set up. This means that for a StatefulSet with N replicas, the Pods are deployed one by one, starting from the Pod with the index 0 and ending with the Pod with the index N-1. Each Pod has to be in the Running and Ready state before the next Pod is created. This ensures that the Pods have a predictable and unique identity and can be connected to their corresponding persistent volumes. References: https://www.howtoforge.com/create-a-statefulset-in-kubernetes/

https://kubernetes.io/docs/tutorials/stateful-application/basic-stateful-set/

NO.36 Which command lists services in the current namespace?
* kubectl get services
* kubectl print services
* kubectl show services
* kubectl list services

NO.37 Which company initially developed Kubernetes?
* Google
* Oracle
* IBM
* Microsoft

Explanation

Kubernetes is a powerful open-source system for managing containerized applications in a clustered environment. It was originally developed by Google, based on its experience of running production workloads at scale. Google open-sourced Kubernetes in 2014 and donated it to the Cloud Native Computing Foundation (CNCF), a vendor-neutral organization that promotes the development of cloud-native technologies. Since then, Kubernetes has become one of the most popular and widely adopted container orchestration platforms, with a large community of contributors and users. The other options are not correct, as they are not the original developers of Kubernetes, although they may have contributed to or used the project in some ways. References: The History of Kubernetes on a Timeline – RisingStack Engineering, How Kubernetes came to be: A co-founder shares the story – Google Cloud

NO.38 Which proxy pattern is used by the service mesh solution in SAP BTP, Kyma runtime?
* Per-Container
* Shared library
* Per-Node
* Sidecar

Explanation

The service mesh solution in SAP BTP, Kyma runtime is based on Istio, which is one of the most popular service mesh solutions. Istio uses the Sidecar proxy pattern, which means that a proxy is deployed as a sidecar container next to each service. This way, the proxy can intercept and manage the traffic between the services, without requiring any changes in the application code. The proxy also communicates with the Istio control plane, whichprovides configuration and policies for the service mesh. The other options are not valid proxy patterns for the service mesh solution in SAP BTP, Kyma runtime. References: Discovering the Service Mesh

– SAP Learning, Istio Documentation – What is Istio?

NO.39 Which deployment strategy for new versions avoids downtimes?
* Rolling update
* Recreate
* Zero downtime

NO.40 When do you use a Daemon Set as the main workload type?
* To run a workload on every node in the cluster
* To run a batch job
* To run multiple instances of the same container

Explanation

A DaemonSet ensures that all (or some) Nodes run a copy of a Pod. As nodes are added to the cluster, Pods are added to them. As nodes are removed from the cluster, those Pods are garbage collected. Deleting a DaemonSet will clean up the Pods it created2.

Some typical uses of a DaemonSet are: running a cluster storage daemon on every node, running a logs collection daemon on every node, running a node monitoring daemon on every node2.

DaemonSets are ideal in a variety of real-world use cases: Running Node monitoring agents, Running log collection agents, Running network plugins, Running service meshes3.

References:

Kubernetes DaemonSet – What It is & How to Use It (Example)

DaemonSet | Kubernetes

Kubernetes Daemonset: A Practical Guide – Spot.io

NO.41 What are some characteristics of stateless workloads? Note: There are 2 correct Answers to this question.
* Data is shared.
* No references to past transactions are stored.
* No data is persisted.
* References to past transactions are stored.

NO.42 Using the Cloud Events specification, which component must you use to post events to Kyma Eventing?
* service/eventing-event-publisher-proxy
* pod/eventing event publisher proxy
* pods/eventing nats 0
* svc/eventing-nets

Explanation

To post events to Kyma Eventing using the Cloud Events specification, you need to use the service/eventing-event-publisher-proxy component. This component is responsible for validating and forwarding events to the Eventing Controller, which then dispatches them to the subscribers. The other components are not relevant for this purpose. The pod/eventing-event-publisher-proxy is the name of the pod that runs the service, but it is not the component that you use to post events. The pods/eventing-nats-0 and svc/eventing-nats are related to the NATS eventing framework, which is the default eventing backend in Kyma, but they are not the components that you use to post events using the Cloud Events specification. References: Side-by-Side Extensibility Based on SAP BTP, Kyma Runtime – Unit 4 – Lesson 1:

Eventing in Kyma, Kyma Documentation – Event Publisher Proxy

NO.43 Why is a headless service type recommended for StatefulSets in Kubernetes?
* StatefulSets require a load balancer with a single IP address to balance traffic across randomly named pods.
* Pods managed by a StatefulSet have randomly named hashes that CANNOT be used by a regular service for load balancing.
* Pods managed by a StatefulSet have stable names and can be accessed directly without a service IP address.

Explanation

A headless service is defined by setting the clusterIP field to None in the service spec. This tells Kubernetes not to allocate a cluster IP for the service, and to create DNS records only.

For StatefulSets, you can use a headless service to control the domain of the pods. The pods that belong to a StatefulSet have a unique identity that is comprised of an ordinal, a stable network identity, and stable storage. The identity sticks to the pod, regardless of which node it’s (re)scheduled on.

Each pod in a StatefulSet derives its hostname from the name of the StatefulSet and the ordinal of the pod. The pattern for the constructed hostname is (statefulsetname)(ordinal). The example above will create three pods named web-0,web-1,web-2.

A StatefulSet can use a headless service to provide network identity for its pods. The service is responsible for creating a DNS record for each pod in the form (podname).(governing service domain).

For the previous example, the headless service named nginx will create DNS records for web-0.nginx, web-1.nginx, and web-2.nginx.

References:

Headless Services

StatefulSets

Is it required to use a headless service for statefulsets?

NO.44 What are some prerequisites for functions to receive events from Kyma Eventing? Note: There are 2 correct Answers to this question.
* A Cloud Events specification
* An API Rule with Oath keeper Access Rules for GET Requests
* The request to the function contains the event context
* A Subscription CR.

Explanation

To receive events from Kyma Eventing, functions need to meet the following prerequisites12:

A Cloud Events specification: Functions need to comply with the Cloud Events specification, which defines a common format for exchanging events across different systems. Functions need to accept HTTP POST requests with a Cloud Event payload in either binary or structured mode. Functions also need to return a 2xx status code to acknowledge the successful processing of the event.

A Subscription CR: Functions need to create a Subscription custom resource (CR) to subscribe to the events they are interested in. The Subscription CR defines the event source, the event type, and the sink (the function URL) for the events. The Subscription CR also allows functions to specify filters and protocol settings for the events.

References

1(https://blogs.sap.com/2021/06/15/in-cluster-eventing-in-sap-btp-kyma-runtime/), 2(https://learning.sap.com/l

NO.45 When do you use a Daemon Set as the main workload type?
* To run a workload on every node in the cluster
* To run a batch job
* To run multiple instances of the same container

NO.46 A Kubernetes cluster is a set of which of the following?
* Proxies
* Machines
* Data centers

NO.47 What are some characteristics of Kubernetes pods? Note: There are 2 correct Answers to this question.
* They are the smallest deployable unit in Kubernetes.
* They are permanent units in Kubernetes.
* They can be terminated and replaced anytime.
* They can contain deployments.

NO.48 How can you create a Kubernetes object from a file?
* kubectl create -from-file <file>
* kubectl install t <file>
* kubectl install-from-file <file>
* kubectl create -f <file>

Explanation

You can use the kubectl create -f command to create a Kubernetes object from a file. The file can be a YAML or JSON file that specifies the configuration of the object, such as its apiVersion, kind, metadata, and spec.

The file can also be a URL that points to a remote file. The kubectl create -f command will send a POST request to the Kubernetes API server with the content of the file, and the API server will create the object according to the file. The other options are not valid kubectl commands. References: Imperative Management of Kubernetes Objects Using Configuration Files, Kubernetes Object Management

NO.49 Which kubectl command updates objects?
* apply -f <filename>.yaml
* kustomize <filename> yaml
* create – <filename> yam

Explanation

Use kubectl apply to create or update resources from a file or stdin. This command does a three-way diff between the previous

configuration, the input configuration, and the current configuration of the resource, and then applies the changes.

Use kubectl patch to update Kubernetes API objects in place. Do a strategic merge patch or a JSON merge patch.

Use kubectl replace to delete and re-create the resource. You can use this command to update immutable fields of a resource, such as its kind or name.

References:

Manage Kubernetes Objects

Command line tool (kubectl)

kubectl Quick Reference

NO.50 What are some benefits of using the Istio service mesh in SAP BTP, Kyma runtime? Note: There are 3 correct Answers to this question.
* Networking is decoupled from the application logic.
* Networking is coupled to the application logic.
* Mutual TLS is supported for service to service communication.
* Distributed tracing can be used to trace request flows.
* Traffic management between services can be controlled.

Explanation

Istio is a service mesh that provides a uniform way to secure, connect, and monitor microservices running on different platforms and environments1. SAP BTP, Kyma runtime uses Istio as the default service mesh solution to enable the following benefits2:

Networking is decoupled from the application logic. Istio handles the network traffic between services using a data plane composed of Envoy proxies that are injected as sidecars to each service Pod. This way, the application code does not need to deal with networking aspects such as routing, load balancing, authentication, or encryption3.

Mutual TLS is supported for service to service communication. Istio enables mutual TLS (mTLS) by default for all services in the mesh, ensuring that the traffic is encrypted and authenticated. Istio also manages the certificates and keys for mTLS using a control plane component called Istiod4.

Traffic management between services can be controlled. Istio allows defining and applying traffic policies, such as timeouts, retries, circuit breakers, fault injection, mirroring, or routing rules, using custom resources such as VirtualServices and DestinationRules. These policies can be dynamically configured and updated without requiring service restarts.

References:

1: Discovering Istio – SAP Learning

2: Upcoming breaking change in SAP BTP, Kyma Runtime: Enabling the Istio CNI plugin | SAP Blogs

3: Istio / The Istio service mesh

4: Istio / Secure your service mesh

[5]: Istio / Traffic management overview

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