Certified Kubernetes Administrator

Kubernetes: Logging and Monitoring

simplilearn

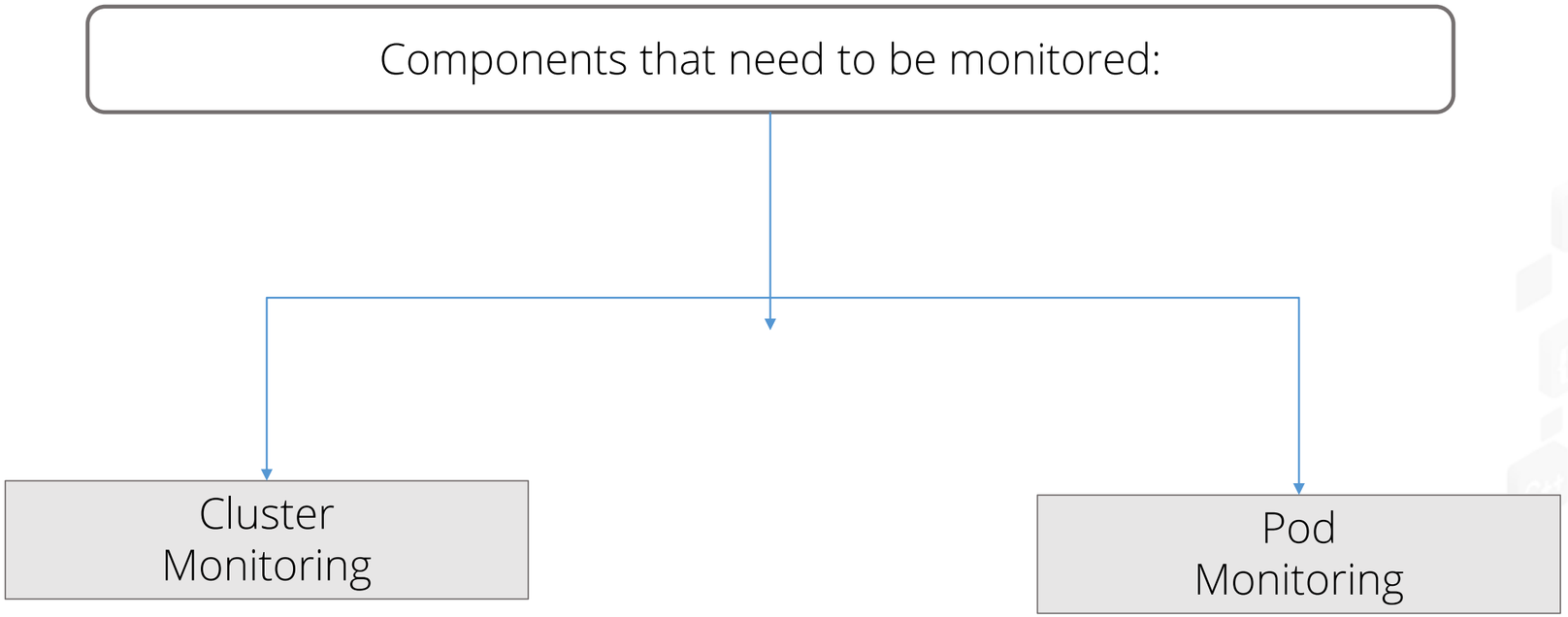
Learning Objectives

By the end of this lesson, you will be able to:

- Identify cluster components and metrics to be monitored
- Install and configure the metrics server
- View logs in multi-container pods

Monitoring Cluster Components

Components to Monitor

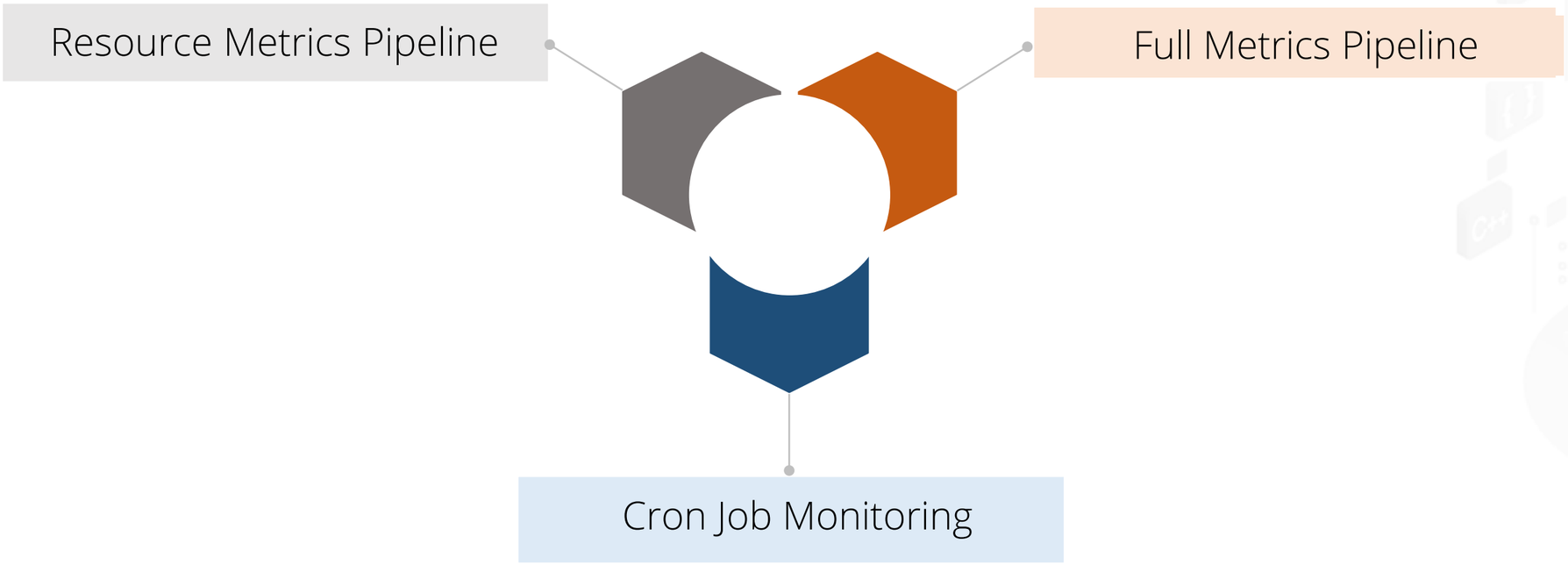


Metrics to Monitor

Here are the metrics to be monitored:

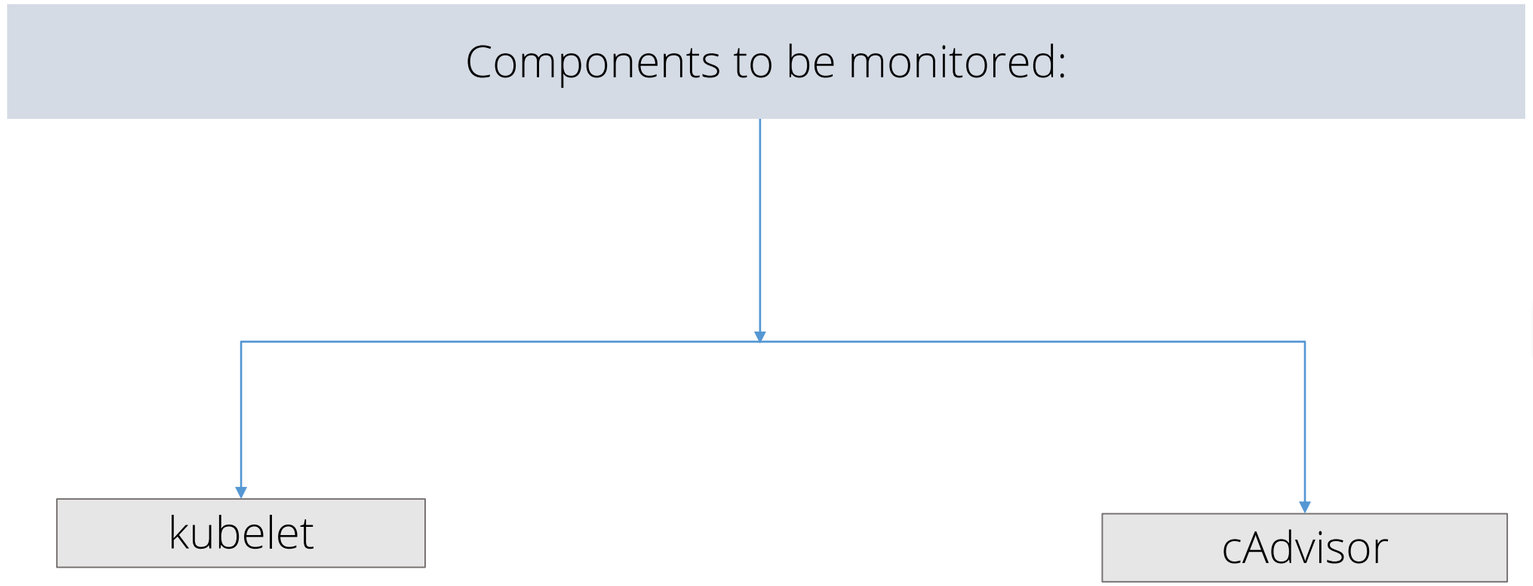
- Node resource utilization
- Number of nodes
- Running Pods

Tools to Monitor Cluster Components



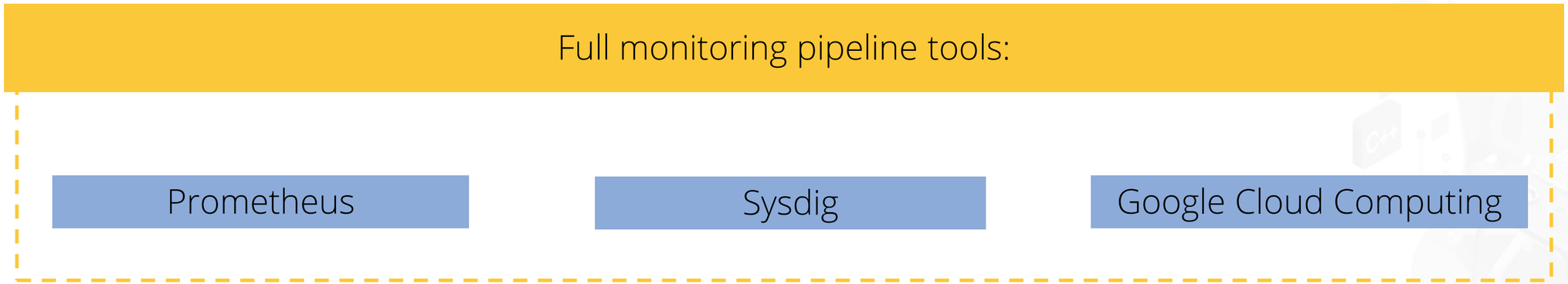
Resource Metrics Pipeline

Provides limited metrices which are collected by the metrics server and are related to cluster components



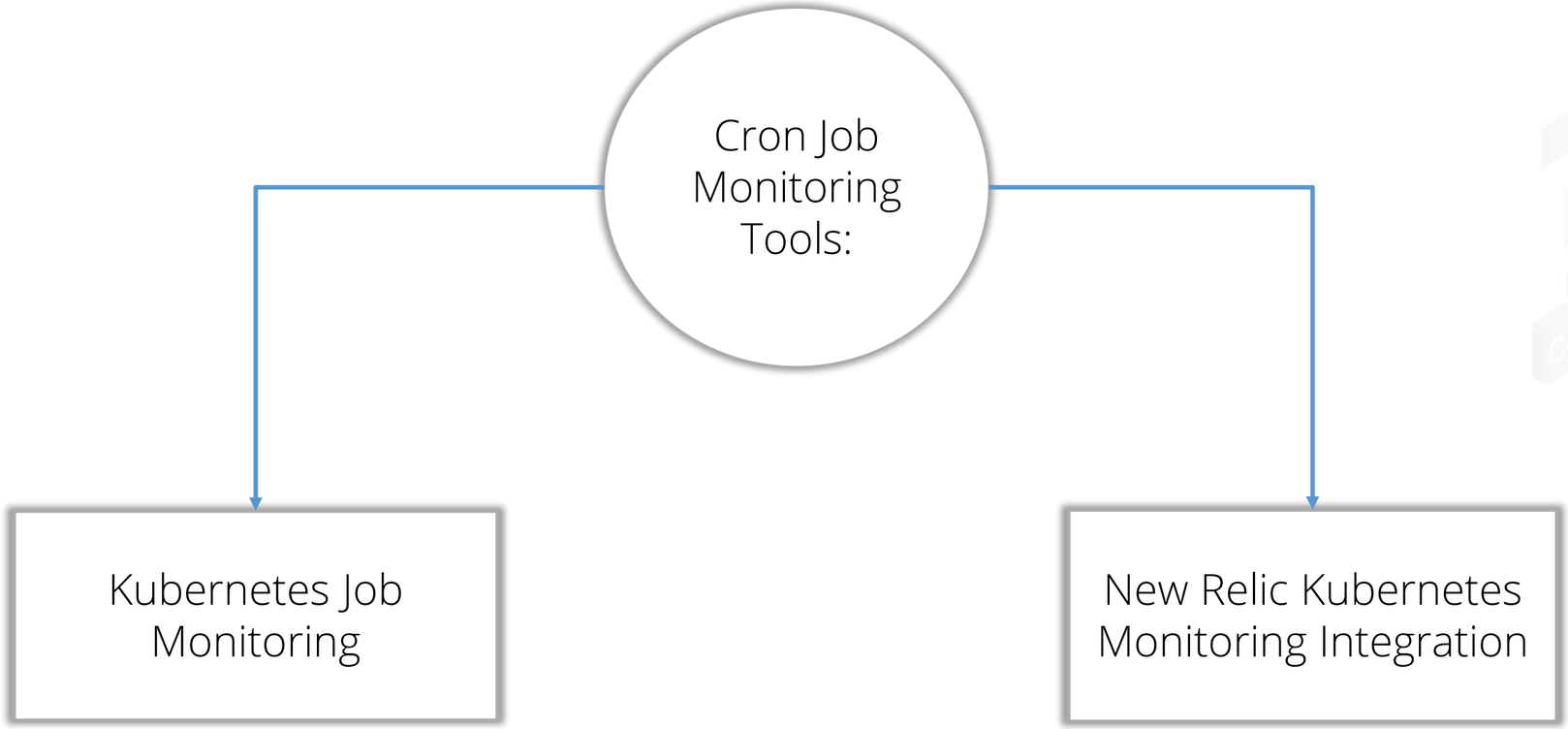
Full Metrics Pipeline

It gives you access to richer metrics and exposes them to Kubernetes which are then fetched by kubelet.



Cron Job Monitoring

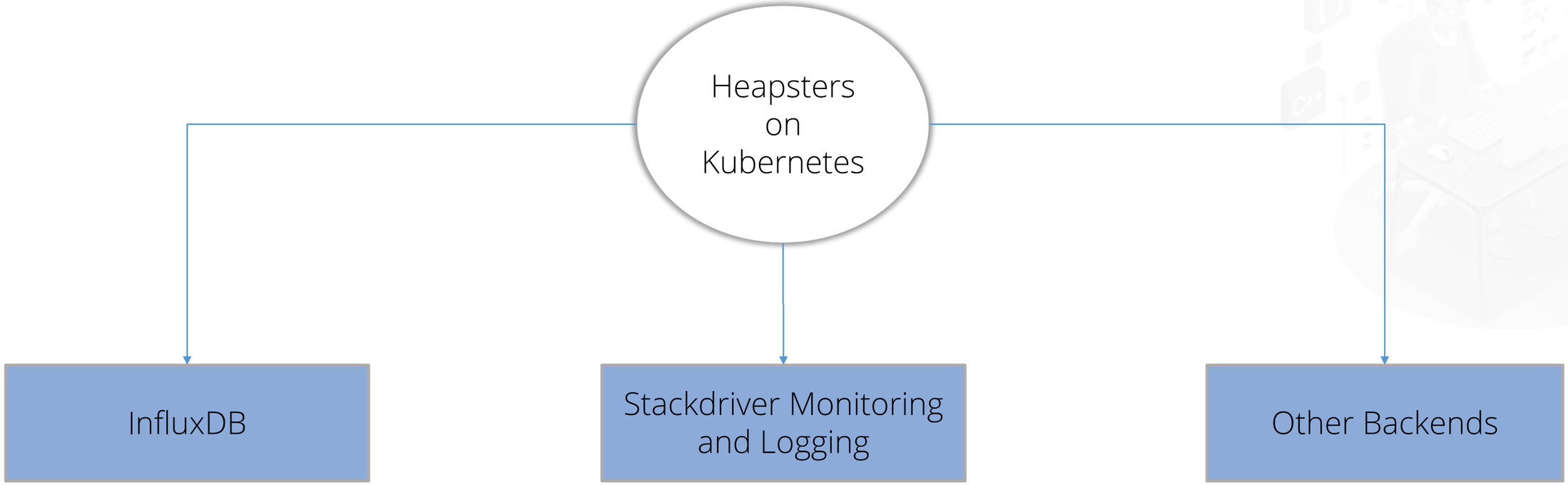
It provides a dashboard to administer jobs that are running and helps monitor their status.



Heapster

Heapster collects data such as resource usage and lifecycle events and enables container cluster monitoring and performance analysis for Kubernetes.

It supports pluggable storage and multiple sources of data.



Metrics Server

Metrics server, a deployment object created by kube-up.sh script, collects resource usage data in a cluster.

It collects metrics from Summary API which is exposed on each node by kubelet.

Disadvantages of Metrics Server

Disadvantages of metrics monitoring:

- It is dependent on the kube-aggregator to redirect the request, otherwise the metrics server gets blocked
- It allows connection only in opposite directions
- Metrics are stored in memory, so all data is lost when the component is restarted

Top Commands of Kubectl

Here are the top commands of kubectl:

Create: Used to create a resource

Get: Used to display the resource

Run: Used to create and run an image

Expose: Used to reveal a resource as a new Kubernetes service

Delete: Used to delete a resource

Assisted Practice: Installing and Configuring Metrics Server

Problem Statement: You are given a project to install and configure the metrics server.

ASSISTED PRACTICE

Managing Application Logs

Viewing Logs in a Pod

Commands used for viewing logs in a pod:

kubectl -n kube-system logs podname: Used to view logs in a pod running a single container inside it

kubectl -n kube-system logs -f podname: Used to show logs appending at run time along with logs of a pod running a single container inside it

kubectl -n kube-system get po -l k8s-app=kube-state-metric: Used to view logs in a pod running multiple containers inside it

kubectl -n kube-system logs -- tail=10 podname: Used to view logs in a Pod based on the number of lines

Viewing Logs in a Pod

Commands used for viewing logs in a pod:

kubectl -n kube-system logs -- since=1h podname: Used to view logs based on time

kubectl -n kube-system log — since-time="2019–07–26T09:49:30.619Z": Used to view logs based on date-time value

kubectl -n kube-system logs -l k8s-app=kube-dns: Used to view logs based on labels available for the pod

kubectl -n kube-system logs -l k8s-app=kube-dns –p: Used to view logs of a previous container of a pod

Assisted Practice: Viewing Logs in Multi-Container Pods

Problem Statement: You are given a project to view logs in multi-container pods.

ASSISTED PRACTICE

Key Takeaways

You are now able to:

- Identify cluster components and metrics to be monitored
- Install and configure the metrics server
- View logs in multi-container pods

Knowledge Check

Knowledge Check

1

Which of the following is a full monitoring pipeline tool?

a. kubelet

b. Prometheus

c. cAdvisor

d. Kubernetes Job Monitoring

Knowledge Check

1

Which of the following is a full monitoring pipeline tool?

a. kubelet

b. Prometheus

c. cAdvisor

d. Kubernetes Job Monitoring

The correct answer is **b**

Prometheus is a full monitoring pipeline tool.

Knowledge Check

2

Which of the following commands is used to reveal a resource as a new Kubernetes service?

a. Create

b. Get

c. Expose

d. Run

Knowledge Check

2

Which of the following commands is used to reveal a resource as a new Kubernetes service?

a. Create

b. Get

c. Expose

d. Run

The correct answer is **c**

Expose command is used to reveal a resource as a new Kubernetes service.

Knowledge Check 3

Which of the following commands is used to view logs in a pod running a single container inside it?

a. kubectl -n kube-system logs podname

b. kubectl -n kube-system logs -f podname

c. kubectl -n kube-system log — since-time="2019–07–26T09:49:30.619Z"

d. kubectl -n kube-system logs -l k8s-app=kube-dns –p

Knowledge Check

3

Which of the following commands is used to view logs in a pod running a single container inside it?

a. kubectl -n kube-system logs podname

b. kubectl -n kube-system logs -f podname

c. kubectl -n kube-system log — since-time="2019–07–26T09:49:30.619Z"

d. kubectl -n kube-system logs -l k8s-app=kube-dns –p

The correct answer is **a**

"kubectl -n kube-system logs podname" command is used to view logs in a pod running a single container inside it.

Knowledge Check

4

Which of the following commands is used to view logs in a pod based on the number of lines?

a. kubectl -n kube-system logs podname

b. kubectl -n kube-system logs -l k8s-app=kube-dns

c. kubectl -n kube-system logs -- tail=10 podname

d. kubectl -n kube-system logs -- since=1h podname

Knowledge Check 4

Which of the following commands is used to view logs in a pod based on the number of lines?

a. kubectl -n kube-system logs podname

b. kubectl -n kube-system logs -l k8s-app=kube-dns

c. kubectl -n kube-system logs -- tail=10 podname

d. kubectl -n kube-system logs -- since=1h podname

The correct answer is **c**

“kubectl -n kube-system logs -- tail=10 podname” is used to view logs in a pod based on the number of lines.

Knowledge Check

5

Which of the following commands is used to show logs appending at run time along with logs in a pod running a single container inside it?

a. kubectl -n kube-system get po -l k8s-app=kube-state-metric

b. kubectl -n kube-system logs -f podname

c. kubectl -n kube-system logs -- since=1h podname

d. kubectl -n kube-system logs -- since=1h podname

Knowledge Check

5

Which of the following commands is used to show logs appending at run time along with logs in a pod running a single container inside it?

a. kubectl -n kube-system get po -l k8s-app=kube-state-metric

b. kubectl -n kube-system logs -f podname

c. kubectl -n kube-system logs -- since=1h podname

d. kubectl -n kube-system logs -- since=1h podname

The correct answer is **b**

“kubectl -n kube-system logs -f podname” is used to show logs appending at run time along with logs in a pod running a single container inside it.

Lesson-End Project

Problem Statement: When working on a large-scale dynamic application, the number of requests/orders processed by the application per second is in lakhs. So, using Kubernetes cluster monitoring, determine if your application's health and performance are monitored.

Objective: Monitor cluster and application performance using Kubernetes.

LESSON-END PROJECT