KUBERNETES (ENGLISH)

2. forduló

A kategória támogatója: Nokia

Ismertető a feladatlaphoz

Please make sure you read the instructions below before starting the worksheet:

> Rankings will be shown after the 4th round, in percentage form: you will be in the top 20-40-60% in a given category.
>
> Any questionnaire solved in a noticeably short time will be disqualified, in any other suspicious case we reserve the right to invalidate the round!

We wish you a good competition!

Relax, this round will be easier! :)

Kubernetes - Storage

In Kubernetes, the term "storage" relates to the management and accessibility of data within the cluster. Persistent Volumes (PVs) and Persistent Volume Claims (PVCs) decouple storage provisioning from pod specification, enabling dynamic allocation of volumes. Storage Classes define storage requirements and properties, ensuring proper volume provisioning. StatefulSets and Deployments allow applications to use and maintain persistent storage volumes, making it suitable for stateful workloads such as databases.

Before you start, please read the following hint:

KDiff3 is a free and open-source diff and merge tool that can be helpful during the solution of coding-related exercises.
Download link: https://sourceforge.net/projects/kdiff3/files/

1. feladat 1 pont

An application's storage requirement has grown, and you want to expand the below PVC to accommodate the additional data. Which of the following steps are accurate for resizing the PVC and ensuring the application can use the additional storage?

```
apiVersion: v1
kind: PersistentVolumeClaim
metadata:
  annotations:
    pv.kubernetes.io/bind-completed: "yes"
    pv.kubernetes.io/bound-by-controller: "yes"
    volume.beta.kubernetes.io/storage-provisioner: rbd.csi.ceph.com
  finalizers:
  - kubernetes.io/pvc-protection
  labels:
  name: application-data
spec:
  accessModes:
  - ReadWriteOnce
  resources:
    requests:
      storage: 100Gi
  storageClassName: ceph-csi-rbd
  volumeMode: Filesystem
  volumeName: pvc-52db4d1a-aaed-4981-9105-4685b3df9aef
status:
  accessModes:
  - ReadWriteOnce
  capacity:
    storage: 100Gi
  phase: Bound
```

Válaszok

- [ ] Create a new PVC with the desired size and copy the data from the old PVC to the new one

- [ ] Edit the PVC's spec.resources.requests.storage field with the new size
- [ ] Manually extend the filesystem on the Persistent Volume
- [ ] Restart the pods associated with the PVC to recognize the new size
- [ ] The associated StorageClass must have the allowVolumeExpansion set to true

2. feladat 2 pont

You have deployed a new application in a Kubernetes cluster and its Persistent Volume Claim (PVC) is stuck in the Pending state. Which of the following could be potential reasons for the PVC not binding to a Persistent Volume (PV)?

Válaszok

- [ ] The Kubernetes cluster has insufficient CPU resources to handle the PVC-PV binding
- [ ] There is no StorageClass associated with the PVC
- [ ] The access mode defined in the PVC doesn't match any available PVs
- [ ] The storage request size in the PVC is larger than the available PVs
- [ ] The application deployment configuration has syntax errors
- [ ] The Reclaim Policy of the most suitable PV is set to Retain

3. feladat 3 pont

You have been informed by a developer that an application deployed across multiple pods in a StatefulSet is not behaving consistently after a recent update. Each instance of the application reads from a ConfigMap to obtain its configuration. Upon investigation, you notice there have been multiple versions of the ConfigMap, and some pods are still using the old values. Which of the following considerations and actions should you make to ensure all instances of the application behave consistently?

Válaszok

- [ ] Confirm if the ConfigMap is being mounted as a subPath in the pod specification
- [ ] Check if the ConfigMap's data hashes match across all versions
- [ ] Determine if there's a rolling update strategy in place for the StatefulSet
- [ ] Analyze the application logs to ensure it's reloading configurations upon changes

- [ ] Delete and recreate the ConfigMap so that all pods recognize the latest version

Megoldások beküldése