

Linux-Foundation

Exam Questions CKA

Certified Kubernetes Administrator (CKA) Program



NEW QUESTION 1

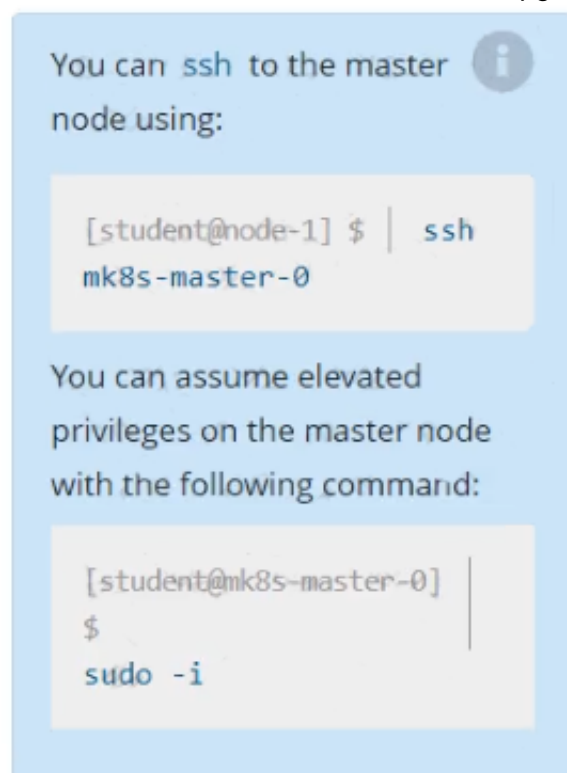
Score: 7%



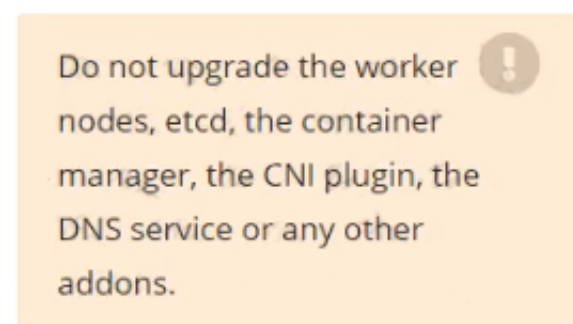
Task

Given an existing Kubernetes cluster running version 1.20.0, upgrade all of the Kubernetes control plane and node components on the master node only to version 1.20.1.

Be sure to drain the master node before upgrading it and uncordon it after the upgrade.



You are also expected to upgrade kubelet and kubectl on the master node.



- A. Mastered
- B. Not Mastered

Answer: A

Explanation:

SOLUTION:

```
[student@node-1] > ssh ek8s
```

```
kubectl cordon k8s-master
```

```
kubectl drain k8s-master --delete-local-data --ignore-daemonsets --force
```

```
apt-get install kubeadm=1.20.1-00 kubelet=1.20.1-00 kubectl=1.20.1-00 --disableexcludes=kubernetes kubeadm upgrade apply 1.20.1 --etcd-upgrade=false
```

```
systemctl daemon-reload systemctl restart kubelet kubectl uncordon k8s-master
```

NEW QUESTION 2

Score: 4%



Task

Create a persistent volume with name app-data , of capacity 1Gi and access mode ReadOnlyMany. The type of volume is hostPath and its location is /srv/app-data .

- A. Mastered
- B. Not Mastered

Answer: A

Explanation:

Solution:

```
#vi pv.yaml apiVersion: v1
kind: PersistentVolume metadata:
name: app-config spec:
capacity: storage: 1Gi accessModes:
- ReadOnlyMany hostPath:
path: /srv/app-config
#
kubectl create -f pv.yaml
```

NEW QUESTION 3

Score: 5%



Task

Monitor the logs of pod bar and:

- Extract log lines corresponding to error file-not-found
- Write them to /opt/KUTR00101/bar

- A. Mastered
- B. Not Mastered

Answer: A

Explanation:

Solution:

```
kubectl logs bar | grep 'unable-to-access-website' > /opt/KUTR00101/bar cat /opt/KUTR00101/bar
```

NEW QUESTION 4

Get list of all pods in all namespaces and write it to file “/opt/pods-list.yaml”

- A. Mastered
- B. Not Mastered

Answer: A

Explanation:

```
kubectl get po --all-namespaces > /opt/pods-list.yaml
```

NEW QUESTION 5

Score: 7%



Task
Reconfigure the existing deployment front-end and add a port specification named http exposing port 80/tcp of the existing container nginx.
Create a new service named front-end-svc exposing the container port http.
Configure the new service to also expose the individual Pods via a NodePort on the nodes on which they are scheduled.

- A. Mastered
- B. Not Mastered

Answer: A

Explanation:

Solution:
kubectl get deploy front-end
kubectl edit deploy front-end -o yaml
#port specification named http
#service.yaml apiVersion: v1
kind: Service metadata:
name: front-end-svc labels:
app: nginx spec: ports:
- port: 80 protocol: tcp name: http selector: app: nginx
type: NodePort
kubectl create -f service.yaml
kubectl get svc
port specification named http
kubectl expose deployment front-end --name=front-end-svc --port=80 --target-port=80 --type=NodePort

NEW QUESTION 6

Create and configure the service front-end-service so it's accessible through NodePort and routes to the existing pod named front-end.

- A. Mastered
- B. Not Mastered

Answer: A

Explanation:

solution
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```
apiVersion: v1 kind: Pod metadata:
name: big-corp-app spec:
containers:
- name: big-corp-app image: busybox
args:
- /bin/sh
- -c
- > i=0;
while true; do
echo "$(date) INFO $i" >> /var/log/big-corp-app.log; i=$((i+1));
sleep 1; done
volumeMounts:
- name: logs mountPath: /var/log
- name: count-log-1 image: busybox
args: [/bin/sh, -c, 'tail -n+1 -f /var/log/big-corp-app.log'] volumeMounts:
- name: logs mountPath: /var/log volumes:
- name: logs emptyDir: {
}
#
kubectl logs big-corp-app -c count-log-1
```

NEW QUESTION 8

List all the pods sorted by name

- A. Mastered
- B. Not Mastered

Answer: A

Explanation:

kubectl get pods --sort-by=.metadata.name

NEW QUESTION 9

Score: 4%



Task
Check to see how many nodes are ready (not including nodes tainted NoSchedule) and write the number to /opt/KUSC00402/kusc00402.txt.

- A. Mastered
- B. Not Mastered

Answer: A

Explanation:

Solution:
kubectl describe nodes | grep ready|wc -l
kubectl describe nodes | grep -i taint | grep -i noschedule |wc -l echo 3 > /opt/KUSC00402/kusc00402.txt

kubectl get node | grep -i ready |wc -l
taintsnoSchedule
kubectl describe nodes | grep -i taints | grep -i noschedule |wc -l

echo 2 > /opt/KUSC00402/kusc00402.txt

NEW QUESTION 10

Create a pod as follows:

- > Name: mongo
- > Using Image: mongo
- > In a new Kubernetes namespace named: my-website

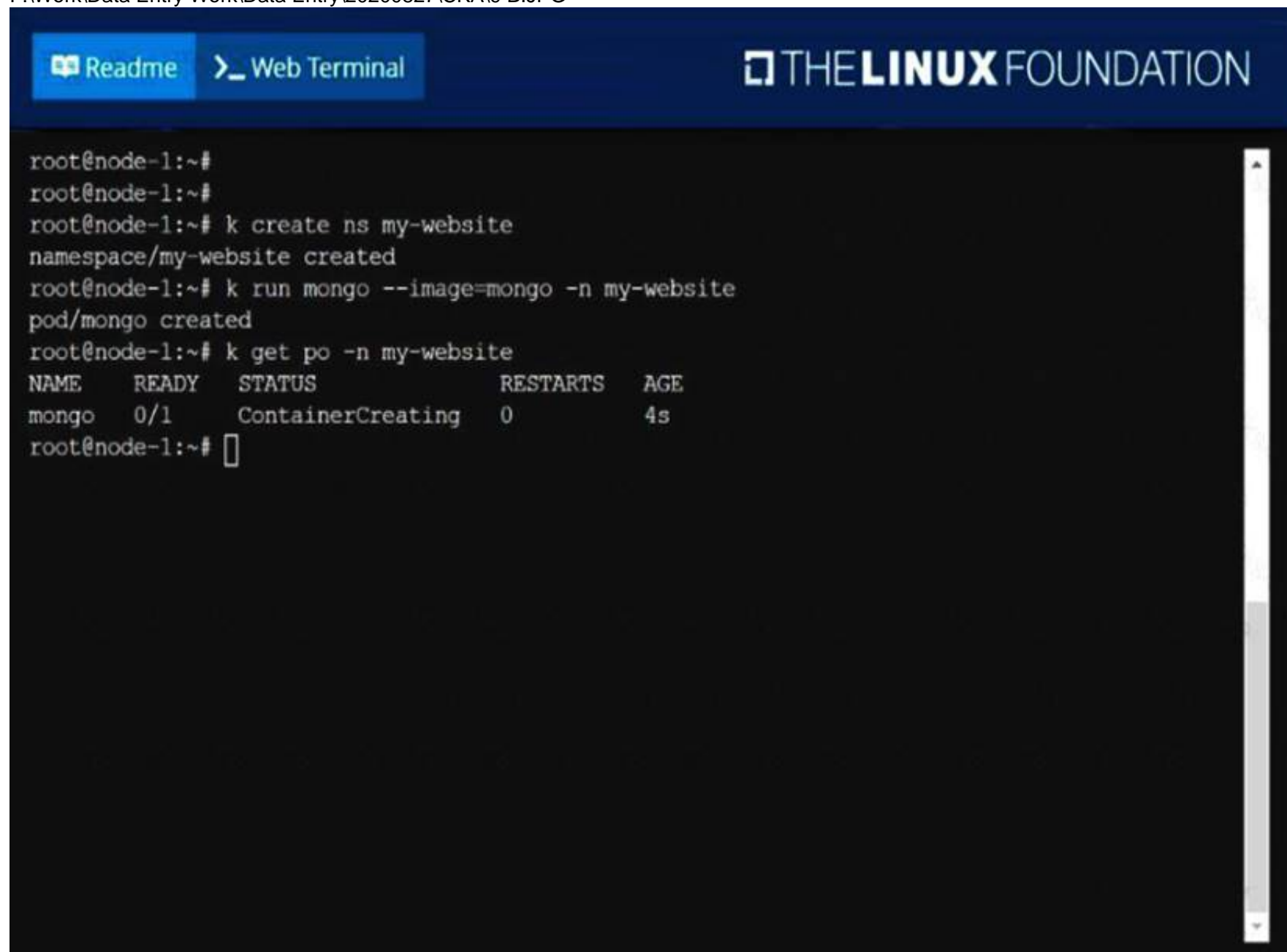
- A. Mastered
- B. Not Mastered

Answer: A

Explanation:

solution

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```
root@node-1:~#  
root@node-1:~#  
root@node-1:~# k create ns my-website  
namespace/my-website created  
root@node-1:~# k run mongo --image=mongo -n my-website  
pod/mongo created  
root@node-1:~# k get po -n my-website  
NAME      READY   STATUS             RESTARTS   AGE  
mongo     0/1     ContainerCreating   0           4s  
root@node-1:~#
```

NEW QUESTION 10

Create an nginx pod and list the pod with different levels of verbosity

- A. Mastered
- B. Not Mastered

Answer: A

Explanation:

// create a pod

kubectl run nginx --image=nginx --restart=Never --port=80

// List the pod with different verbosity kubectl get po nginx --v=7

kubectl get po nginx --v=8 kubectl get po nginx --v=9

NEW QUESTION 11

Create a pod with environment variables as var1=value1. Check the environment variable in pod

- A. Mastered
- B. Not Mastered

Answer: A

Explanation:

kubectl run nginx --image=nginx --restart=Never --env=var1=value1

then

kubectl exec -it nginx -- env

or

kubectl exec -it nginx -- sh -c 'echo \$var1'

or

kubectl describe po nginx | grep value1

NEW QUESTION 16

For this item, you will have to ssh to the nodes ik8s-master-0 and ik8s-node-0 and complete all tasks on these nodes. Ensure that you return to the base node (hostname: node-1) when you have completed this item.

Context

As an administrator of a small development team, you have been asked to set up a Kubernetes cluster to test the viability of a new application.

Task

You must use kubeadm to perform this task. Any kubeadm invocations will require the use of the --ignore-preflight-errors=all option.

- > Configure the node ik8s-master-0 as a master node. .
- > Join the node ik8s-node-0 to the cluster.

- A. Mastered
- B. Not Mastered

Answer: A

Explanation:

solution

You must use the kubeadm configuration file located at /etc/kubeadm.conf when initializing your cluster.

You may use any CNI plugin to complete this task, but if you don't have your favourite CNI plugin's manifest URL at hand, Calico is one popular option:

<https://docs.projectcalico.org/v3.14/manifests/calico.yaml>

Docker is already installed on both nodes and apt has been configured so that you can install the required tools.

NEW QUESTION 17

List all the pods sorted by name

- A. Mastered
- B. Not Mastered

Answer: A

Explanation:

kubect1 get pods --sort-by=.metadata.name

NEW QUESTION 20

Scale the deployment webserver to 6 pods.

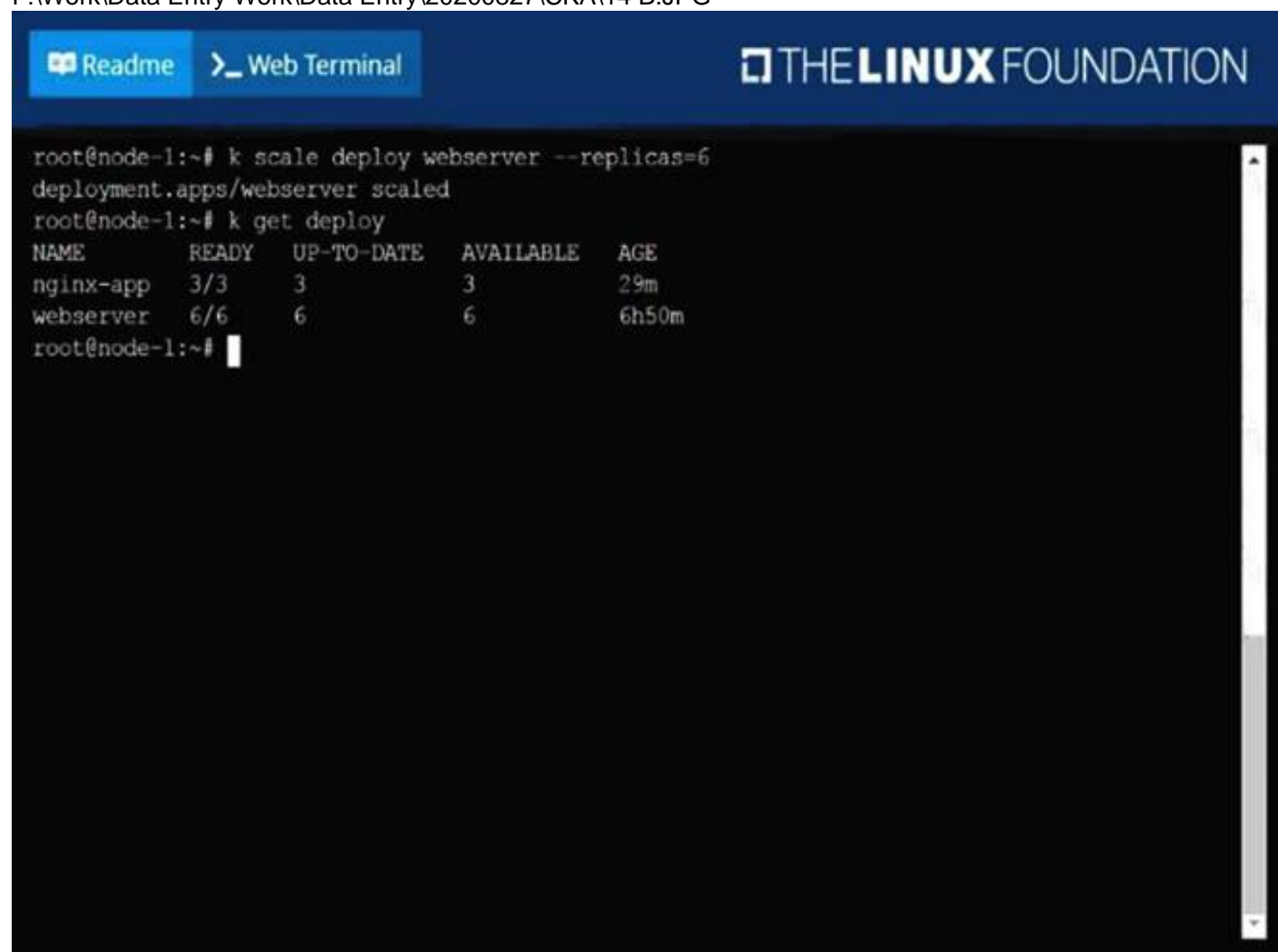
- A. Mastered
- B. Not Mastered

Answer: A

Explanation:

solution

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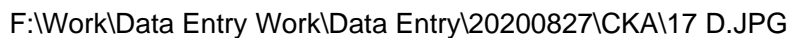
```
root@node-1:~# k scale deploy webserver --replicas=6
deployment.apps/webserver scaled
root@node-1:~# k get deploy
NAME          READY   UP-TO-DATE   AVAILABLE   AGE
nginx-app     3/3     3            3           29m
webserver     6/6     6            6           6h50m
root@node-1:~#
```

NEW QUESTION 23

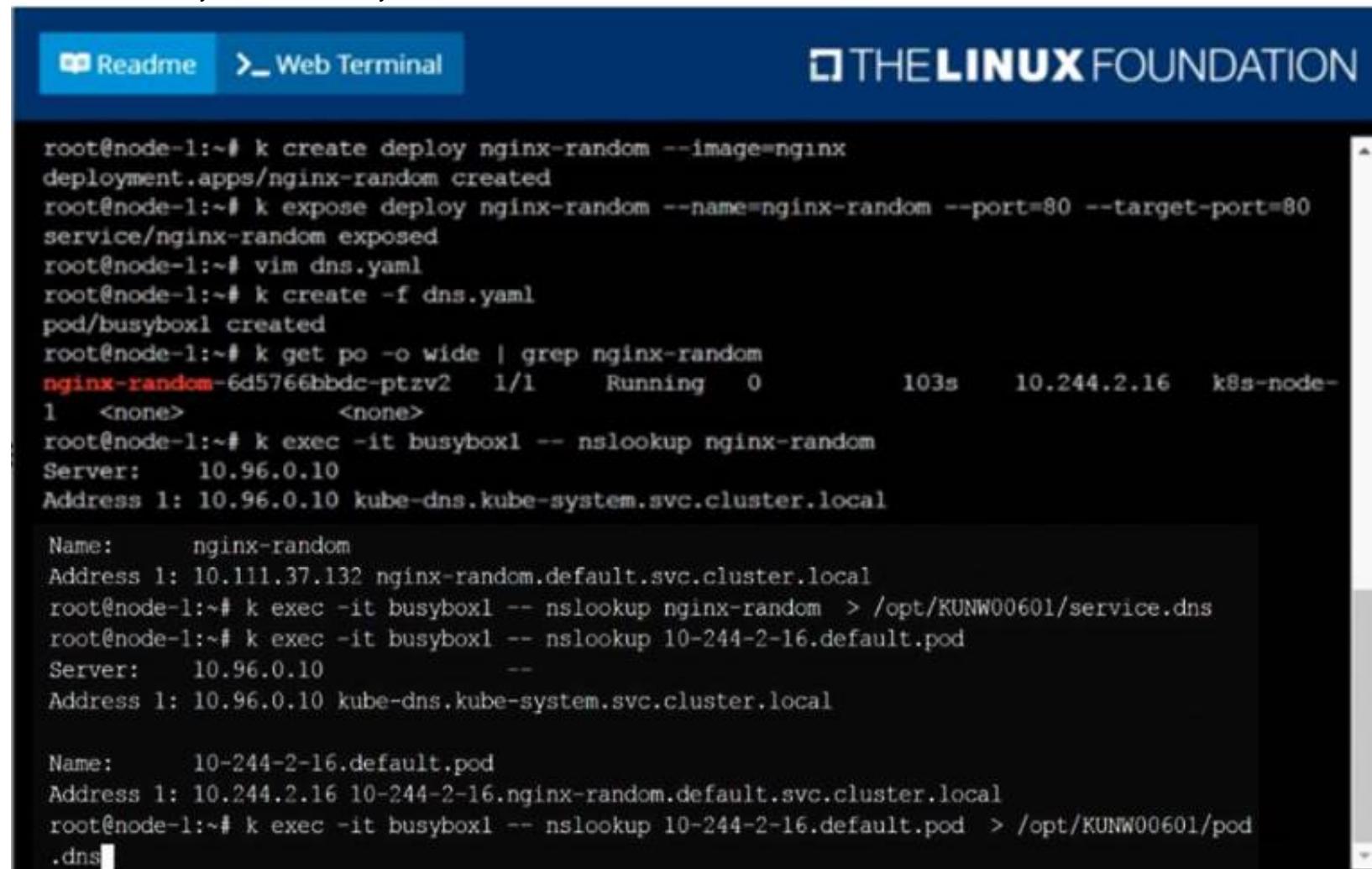
Create a deployment as follows:

- >

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F:\Work\Data Entry Work\Data Entry\20200827\CKA\17 E.JPG



```

root@node-1:~# k create deploy nginx-random --image=nginx
deployment.apps/nginx-random created
root@node-1:~# k expose deploy nginx-random --name=nginx-random --port=80 --target-port=80
service/nginx-random exposed
root@node-1:~# vim dns.yaml
root@node-1:~# k create -f dns.yaml
pod/busybox1 created
root@node-1:~# k get po -o wide | grep nginx-random
nginx-random-6d5766bbdc-ptzv2    1/1    Running    0           103s    10.244.2.16    k8s-node-1
  <none>                <none>
root@node-1:~# k exec -it busybox1 -- nslookup nginx-random
Server:      10.96.0.10
Address 1: 10.96.0.10 kube-dns.kube-system.svc.cluster.local

Name:      nginx-random
Address 1: 10.111.37.132 nginx-random.default.svc.cluster.local
root@node-1:~# k exec -it busybox1 -- nslookup nginx-random > /opt/KUNW00601/service.dns
root@node-1:~# k exec -it busybox1 -- nslookup 10-244-2-16.default.pod
Server:      10.96.0.10
Address 1: 10.96.0.10 kube-dns.kube-system.svc.cluster.local

Name:      10-244-2-16.default.pod
Address 1: 10.244.2.16 10-244-2-16.nginx-random.default.svc.cluster.local
root@node-1:~# k exec -it busybox1 -- nslookup 10-244-2-16.default.pod > /opt/KUNW00601/pod.dns

```

NEW QUESTION 24

Score: 7%



Task

Create a new nginx Ingress resource as follows:

- Name: ping
- Namespace: ing-internal
- Exposing service hi on path /hi using service port 5678



- A. Mastered
- B. Not Mastered

Answer: A

Explanation:

Solution:
vi ingress.yaml
#

```
apiVersion: networking.k8s.io/v1 kind: Ingress
metadata: name: ping
namespace: ing-internal spec:
rules:
- http:
paths:
- path: /hi pathType: Prefix backend: service:
name: hi port:
number: 5678
#
kubectl create -f ingress.yaml
```

NEW QUESTION 29

Create a busybox pod that runs the command “env” and save the output to “envpod” file

- A. Mastered
- B. Not Mastered

Answer: A

Explanation:

```
kubectl run busybox --image=busybox --restart=Never --rm -it -- env > envpod.yaml
```

NEW QUESTION 32

Create a busybox pod and add “sleep 3600” command

- A. Mastered
- B. Not Mastered

Answer: A

Explanation:

```
kubectl run busybox --image=busybox --restart=Never -- /bin/sh -c "sleep 3600"
```

NEW QUESTION 36

Score: 4%



Task

Create a pod named kucc8 with a single app container for each of the following images running inside (there may be between 1 and 4 images specified): nginx + redis + memcached .

- A. Mastered
- B. Not Mastered

Answer: A

Explanation:

Solution:

```
kubectl run kucc8 --image=nginx --dry-run -o yaml > kucc8.yaml
```

```
# vi kucc8.yaml apiVersion: v1 kind: Pod metadata:
```

```
creationTimestamp: null name: kucc8
```

```
spec: containers:
```

```
- image: nginx name: nginx
```

```
- image: redis name: redis
```

```
- image: memcached
```

```
name: memcached
```

```
- image: consul name: consul
```

```
#
```

```
kubectl create -f kucc8.yaml
```

```
#12.07
```

NEW QUESTION 38

Print pod name and start time to “/opt/pod-status” file

- A. Mastered
- B. Not Mastered

Answer: A

Explanation:

kubect1 get pods -o=jsonpath='{range items[*]}{.metadata.name}{\t}{.status.podIP}{\n}{end}'

NEW QUESTION 39

Create a persistent volume with name app-data, of capacity 2Gi and access mode ReadWriteMany. The type of volume is hostPath and its location is /srv/app-data.

- A. Mastered
- B. Not Mastered

Answer: A

Explanation:

solution

Persistent Volume

A persistent volume is a piece of storage in a Kubernetes cluster. PersistentVolumes are a cluster-level resource like nodes, which don't belong to any namespace. It is provisioned by the administrator and has a particular file size. This way, a developer deploying their app on Kubernetes need not know the underlying infrastructure. When the developer needs a certain amount of persistent storage for their application, the system administrator configures the cluster so that they consume the PersistentVolume provisioned in an easy way.

Creating Persistent Volume

kind: PersistentVolume
 apiVersion: v1
 metadata: name: app-data
 spec: capacity: # defines the capacity of PV we are creating storage: 2Gi #the amount of storage we are trying to claim accessModes: # defines the rights of the volume we are creating - ReadWriteMany hostPath: path: "/srv/app-data" # path to which we are creating the volume

Challenge

> Create a Persistent Volume named app-data, with access mode ReadWriteMany, storage classname shared, 2Gi of storage capacity and the host path /srv/app-data.

```
apiVersion: v1
kind: PersistentVolume
metadata:
  name: app-data
spec:
  capacity:
    storage: 2Gi
  accessModes:
    - ReadWriteMany
  hostPath:
    path: /srv/app-data
  storageClassName: shared
```

"app-data.yaml" 12L, 194C

* 2. Save the file and create the persistent volume. Image for post

```
njerry191@cloudshell:~ (extreme-clone-265411)$ kubectl create -f pv.yaml
persistentvolume/pv created
```

* 3. View the persistent volume.

```
njerry191@cloudshell:~ (extreme-clone-265411)$ kubectl get pv
```

NAME	CAPACITY	ACCESS MODES	RECLAIM POLICY	STATUS	CLAIM	STORAGECLASS	REASON	AGE
app-data	2Gi	RWX	Retain	Available		shared		31s

> Our persistent volume status is available meaning it is available and it has not been mounted yet. This status will change when we mount the persistentVolume

to a persistentVolumeClaim.

PersistentVolumeClaim

In a real ecosystem, a system admin will create the PersistentVolume then a developer will create a PersistentVolumeClaim which will be referenced in a pod. A PersistentVolumeClaim is created by specifying the minimum size and the access mode they require from the persistentVolume.

Challenge

➤ Create a Persistent Volume Claim that requests the Persistent Volume we had created above. The claim should request 2Gi. Ensure that the Persistent Volume Claim has the same storageClassName as the persistentVolume you had previously created.

kind: PersistentVolumeapiVersion: v1metadata: name:app-data spec:

accessModes: - ReadWriteMany resources:

requests: storage: 2Gi

storageClassName: shared

* 2. Save and create the pvc

njerry191@cloudshell:~ (extreme-clone-265411)\$ kubectl create -f app-data.yaml persistentvolumeclaim/app-data created

* 3. View the pvc Image for post

```
njerry191@cloudshell:~ (extreme-clone-265411)$ kubectl get pvc
NAME      STATUS    VOLUME   CAPACITY   ACCESS MODES   STORAGECLASS
pv        Bound     pv       512m       RWX            shared
```

* 4. Let's see what has changed in the pv we had initially created.

Image for post

```
njerry191@cloudshell:~ (extreme-clone-265411)$ kubectl get pv
NAME      CAPACITY   ACCESS MODES   RECLAIM POLICY   STATUS   CLAIM       STORAGECLASS   REASON   AGE
pv        512m       RWX            Retain           Bound    default/pv   shared         16m
```

Our status has now changed from available to bound.

* 5. Create a new pod named myapp with image nginx that will be used to Mount the Persistent Volume Claim with the path /var/app/config.

Mounting a Claim

apiVersion: v1kind: Podmetadata: creationTimestamp: null name: app-dataspec: volumes: - name:congigpvc persistenVolumeClaim: claimName: app-data

containers: - image: nginx name: app volumeMounts: - mountPath: "/srv/app-data " name: configpvc

NEW QUESTION 44

List all the pods sorted by created timestamp

- A. Mastered
- B. Not Mastered

Answer: A

Explanation:

kubectl get pods--sort-by=.metadata.creationTimestamp

NEW QUESTION 49

Create a pod with image nginx called nginx and allow traffic on port 80

- A. Mastered
- B. Not Mastered

Answer: A

Explanation:

kubectl run nginx --image=nginx --restart=Never --port=80

NEW QUESTION 54

Given a partially-functioning Kubernetes cluster, identify symptoms of failure on the cluster.

Determine the node, the failing service, and take actions to bring up the failed service and restore the health of the cluster. Ensure that any changes are made permanently.

You can ssh to the relevant I nodes (bk8s-master-0 or bk8s-node-0) using:

[student@node-1] \$ ssh <nodename>

You can assume elevated privileges on any node in the cluster with the following command:

[student@nodename] \$ | sudo -i

- A. Mastered
- B. Not Mastered

Answer: A

Explanation:

solution

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Readme

Web Terminal

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```
root@node-1:~#
root@node-1:~# kubectl config use-context bk8s
Switched to context "bk8s".
root@node-1:~# ssh bk8s-master-0
Welcome to Ubuntu 16.04.6 LTS (GNU/Linux 4.4.0-1109-aws x86_64)

 * Documentation:  https://help.ubuntu.com
 * Management:    https://landscape.canonical.com
 * Support:       https://ubuntu.com/advantage

 * Are you ready for Kubernetes 1.19? It's nearly here! Try RC3 with
   sudo snap install microk8s --channel=1.19/candidate --classic

   https://microk8s.io/ has docs and details.

4 packages can be updated.
1 update is a security update.

New release '18.04.5 LTS' available.
Run 'do-release-upgrade' to upgrade to it.

student@bk8s-master-0:~$ sudo -i
root@bk8s-master-0:~# vim /var/lib/kubelet/config.yaml
```

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Readme


Web Terminal

THE **LINUX** FOUNDATION

```
authorization:
  mode: Webhook
  webhook:
    cacheAuthorizedTTL: 0s
    cacheUnauthorizedTTL: 0s
clusterDNS:
- 10.96.0.10
clusterDomain: cluster.local
cpuManagerReconcilePeriod: 0s
evictionPressureTransitionPeriod: 0s
fileCheckFrequency: 0s
healthzBindAddress: 127.0.0.1
healthzPort: 10248
httpCheckFrequency: 0s
imageMinimumGCAge: 0s
kind: KubeletConfiguration
nodeStatusReportFrequency: 0s
nodeStatusUpdateFrequency: 0s
rotateCertificates: true
runtimeRequestTimeout: 0s
staticPodPath: /etc/kubernetes/manifests
streamingConnectionIdleTimeout: 0s
syncFrequency: 0s
volumeStatsAggPeriod: 0s
:wg
```

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```

https://microk8s.io/ has docs and details.

4 packages can be updated.
1 update is a security update.

New release '18.04.5 LTS' available.
Run 'do-release-upgrade' to upgrade to it.

student@bk8s-master-0:~$ sudo -i
root@bk8s-master-0:~# vim /var/lib/kubelet/config.yaml
root@bk8s-master-0:~# systemctl restart kubelet
root@bk8s-master-0:~# systemctl enable kubelet
root@bk8s-master-0:~# kubect1 get nodes

NAME             STATUS    ROLES    AGE   VERSION
bk8s-master-0    Ready    master   77d   v1.18.2
bk8s-node-0      Ready    <none>   77d   v1.18.2
root@bk8s-master-0:~#
root@bk8s-master-0:~# exit
logout
student@bk8s-master-0:~$ exit
logout
Connection to 10.250.4.77 closed.
root@node-1:~#

```

NEW QUESTION 55

Create a snapshot of the etcd instance running at <https://127.0.0.1:2379>, saving the snapshot to the file path `/srv/data/etcd-snapshot.db`. The following TLS certificates/key are supplied for connecting to the server with `etcdctl`:

- > CA certificate: `/opt/KUCM00302/ca.crt`
- > Client certificate: `/opt/KUCM00302/etcd-client.crt`
- > Client key: `Topt/KUCM00302/etcd-client.key`

- A. Mastered
- B. Not Mastered

Answer: A

Explanation:

solution

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THE LINUX FOUNDATION

```

root@node-1:~# ETCDCTL_API=3 etcdctl --endpoints=https://127.0.0.1:2379 --cacert=/opt/KUCM00302/ca.crt --cert=/opt/KUCM00302/etcd-client.crt --key=/opt/KUCM00302/etcd-client.key snapshot save /srv/data/etcd-snapshot.db
{"level":"info","ts":1598530470.8313155,"caller":"snapshot/v3_snapshot.go:110","msg":"create d temporary db file","path":"/srv/data/etcd-snapshot.db.part"}
{"level":"warn","ts":"2020-08-27T12:14:30.838Z","caller":"clientv3/retry_interceptor.go:116","msg":"retry stream intercept"}
{"level":"info","ts":1598530470.8388612,"caller":"snapshot/v3_snapshot.go:121","msg":"fetchi ng snapshot","endpoint":"https://127.0.0.1:2379"}
{"level":"info","ts":1598530470.8570414,"caller":"snapshot/v3_snapshot.go:134","msg":"fetche d snapshot","endpoint":"https://127.0.0.1:2379","took":0.025676157}
{"level":"info","ts":1598530470.8571067,"caller":"snapshot/v3_snapshot.go:143","msg":"saved","path":"/srv/data/etcd-snapshot.db"}
Snapshot saved at /srv/data/etcd-snapshot.db
root@node-1:~#

```

NEW QUESTION 56

Score:7%



Task

Create a new PersistentVolumeClaim

- Name: pv-volume
- Class: csi-hostpath-sc
- Capacity: 10Mi

Create a new Pod which mounts the PersistentVolumeClaim as a volume:

- Name: web-server
- Image: nginx
- Mount path: /usr/share/nginx/html

Configure the new Pod to have ReadWriteOnce access on the volume.

Finally, using kubectl edit or kubectl patch expand the PersistentVolumeClaim to a capacity of 70Mi and record that change.

- A. Mastered
- B. Not Mastered

Answer: A

Explanation:

Solution:

vi pvc.yaml storageclass pvc apiVersion: v1

kind: PersistentVolumeClaim metadata:

name: pv-volume spec: accessModes:

- ReadWriteOnce volumeMode: Filesystem resources:

requests: storage: 10Mi

storageClassName: csi-hostpath-sc

vi pod-pvc.yaml apiVersion: v1 kind: Pod metadata:

name: web-server spec:

containers:

- name: web-server image: nginx volumeMounts:

- mountPath: "/usr/share/nginx/html"

```
name: my-volume volumes:
- name: my-volume persistentVolumeClaim: claimName: pv-volume
# craete
kubectl create -f pod-pvc.yaml
#edit
kubectl edit pvc pv-volume --record
```

NEW QUESTION 58

Score: 7%



Task

Create a new NetworkPolicy named allow-port-from-namespace in the existing namespace echo. Ensure that the new NetworkPolicy allows Pods in namespace my-app to connect to port 9000 of Pods in namespace echo.

Further ensure that the new NetworkPolicy:

- does not allow access to Pods, which don't listen on port 9000
- does not allow access from Pods, which are not in namespace my-app

- A. Mastered
- B. Not Mastered

Answer: A

Explanation:

Solution:

```
#network.yaml
apiVersion: networking.k8s.io/v1 kind: NetworkPolicy
metadata:
name: allow-port-from-namespace namespace: internal
spec: podSelector: matchLabels: {
}
policyTypes:
- Ingress ingress:
- from:
- podSelector: {
}
ports:
- protocol: TCP port: 8080
#spec.podSelector namespace pod kubectl create -f network.yaml
```

NEW QUESTION 61

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