Linux-Foundation

Exam Questions CKS

Certified Kubernetes Security Specialist (CKS) Exam

NEW QUESTION 1
Given an existing Pod named nginx-pod running in the namespace test-system, fetch the service-account-name used and put the content in /candidate/KSC00124.txt
Create a new Role named dev-test-role in the namespace test-system, which can perform update operations, on resources of type namespaces.
Create a new RoleBinding named dev-test-role-binding, which binds the newly created Role to the Pod's ServiceAccount (found in the Nginx pod running in namespace test-system).

A. Mastered
B. Not Mastered

Answer: A

Explanation:
Send us your feedback on it.

NEW QUESTION 2
A container image scanner is set up on the cluster. Given an incomplete configuration in the directory
/etc/Kubernetes/confcontrol and a functional container image scanner with HTTPS endpoint https://acme.local.8081/image_policy
* 1. Enable the admission plugin.
* 2. Validate the control configuration and change it to implicit deny.
Finally, test the configuration by deploying the pod having the image tag as the latest.

A. Mastered
B. Not Mastered

Answer: A

Explanation:
Send us your feedback on it.

NEW QUESTION 3
Given an existing Pod named test-web-pod running in the namespace test-system
Edit the existing Role bound to the Pod's Service Account named sa-backend to only allow performing get operations on endpoints.
Create a new Role named test-system-role-2 in the namespace test-system, which can perform patch operations, on resources of type statefulsets.
Create a new RoleBinding named test-system-role-2-binding binding the newly created Role to the Pod's ServiceAccount sa-backend.

A. Mastered
B. Not Mastered

Answer: A

Explanation:
Send us your feedback on this.

NEW QUESTION 4
Enable audit logs in the cluster, To Do so, enable the log backend, and ensure that
* 1. logs are stored at /var/log/kubernetes-logs.txt.
* 2. Log files are retained for 12 days.
* 3. at maximum, a number of 8 old audit logs files are retained.
* 4. set the maximum size before getting rotated to 200MB
Edit and extend the basic policy to log:
* 1. namespaces changes at RequestResponse
* 2. Log the request body of secrets changes in the namespace kube-system.
* 3. Log all other resources in core and extensions at the Request level.
* 4. Log "pods/portforward", "services/proxy" at Metadata level.
* 5. Omit the Stage RequestReceived
All other requests at the Metadata level

A. Mastered
B. Not Mastered

Answer: A

Explanation:
Kubernetes auditing provides a security-relevant chronological set of records about a cluster. Kube-apiserver performs auditing. Each request on each stage of its execution generates an event, which is then pre-processed according to a certain policy and written to a backend. The policy determines what’s recorded and the backends persist the records.
You might want to configure the audit log as part of compliance with the CIS (Center for Internet Security) Kubernetes Benchmark controls.
The audit log can be enabled by default using the following configuration in cluster.yml:
services:
kube-api:
audit_log:
enabled:true
When the audit log is enabled, you should be able to see the default values at
/etc/kubernetes/audit-policy.yaml
The log backend writes audit events to a file in JSONlines format. You can configure the log audit backend using the following kube-apiserver flags:
--audit-log-path specifies the log file path that log backend uses to write audit events. Not specifying thi flag disables log backend. - means standard out
--audit-log-maxbackup defines the maximum number of audit log files to retain

--audit-log-maxsize defines the maximum size in megabytes of the audit log file before it gets rotated
If your cluster's control plane runs the kube-apiserver as a Pod, remember to mount the location of the policy file and log file, so that audit records are persisted. For example:-hostPath-to the
--audit-policy-file=/etc/kubernetes/audit-policy.yaml\
--audit-log-path=/var/log/audit.log-

NEW QUESTION 5
Create a new ServiceAccount named backend-sa in the existing namespace default, which has the capability to list the pods inside the namespace default.
Create a new Pod named backend-pod in the namespace default, mount the newly created sa backend-sa to the pod, and Verify that the pod is able to list pods.
Ensure that the Pod is running.

A. Mastered
B. Not Mastered

Answer: A

Explanation:
A service account provides an identity for processes that run in a Pod.
When you (a human) access the cluster (for example, using kubectl), you are authenticated by the apiserver as a particular User Account (currently this is usually admin, unless your cluster administrator has customized your cluster). Processes in containers inside pods can also contact the apiserver. When they do, they are authenticated as a particular Service Account (for example, default).
When you create a pod, if you do not specify a service account, it is automatically assigned the default servic account in the same namespace. If you get the raw json or yaml for a pod you have created (for
example, kubectl get pods/<podname> -o yaml), you can see the spec.serviceAccountName field has been automatically set.
You can access the API from inside a pod using automatically mounted service account credentials, as described in Accessing the Cluster. The API permissions of the service account depend on the authorization plugin and policy in use.
In version 1.6+, you can opt out of automounting API credentials for a service account by setting automountServiceAccountToken: false on the service account:
```
apiVersion:v1
kind:ServiceAccount
metadata:
name:build-robot
automountServiceAccountToken:false
```
In version 1.6+, you can also opt out of automounting API credentials for a particular pod:
```
apiVersion:v1
kind:Pod
metadata:
name:my-pod
spec:
serviceAccountName:build-robot
automountServiceAccountToken:false
```
The pod spec takes precedence over the service account if both specify a automountServiceAccountToken value.

NEW QUESTION 6
Use the kubesec docker images to scan the given YAML manifest, edit and apply the advised changes, and passed with a score of 4 points.
kubesec-test.yaml
```
 apiVersion: v1
 kind: Pod
 metadata:
 name: kubesec-demo
 spec:
 containers:
 - name: kubesec-demo
 image: gcr.io/google-samples/node-hello:1.0
 securityContext:
 readOnlyRootFilesystem:true
```
Hint: docker run -i kubesec/kubesec:512c5e0 scan /dev/stdin< kubesec-test.yaml

A. Mastered
B. Not Mastered

Answer: A

Explanation:
Send us your feedback on it.

NEW QUESTION 7
Create a PSP that will prevent the creation of privileged pods in the namespace.
Create a new PodSecurityPolicy named prevent-privileged-policy which prevents the creation of privileged pods.
Create a new ServiceAccount named psp-sa in the namespace default.
Create a new ClusterRole named prevent-role, which uses the newly created Pod Security Policy prevent-privileged-policy.
Create a new ClusterRoleBinding named prevent-role-binding, which binds the created ClusterRole prevent-role to the created SA psp-sa.
Also, Check the Configuration is working or not by trying to Create a Privileged pod, it should get failed.

A. Mastered
B. Not Mastered

Answer: A

Explanation:
 Create a PSP that will prevent the creation of privileged pods in the namespace.
```
$ cat clusterrole-use-privileged.yaml
--
apiVersion: rbac.authorization.k8s.io/v1
kind: ClusterRole
metadata:
name: use-privileged-psp
rules:
- apiGroups: ['policy']
resources: ['podsecuritypolicies']
verbs: ['use']
resourceNames:
- default-psp
--
apiVersion: rbac.authorization.k8s.io/v1
kind: RoleBinding
metadata:
name: privileged-role-bind
namespace: psp-test
roleRef:
apiGroup: rbac.authorization.k8s.io
kind: ClusterRole
name: use-privileged-psp
subjects:
- kind: ServiceAccount
name: privileged-sa
$ kubectl -n psp-test apply -f clusterrole-use-privileged.yaml
```
After a few moments, the privileged Pod should be created.
 Create a new PodSecurityPolicy named prevent-privileged-policy which prevents the creation of privileged pods.
```
apiVersion: policy/v1beta1
kind: PodSecurityPolicy
metadata:
name: example
spec:
privileged: false # Don't allow privileged pods!
# The rest fills in some required fields.
seLinux:
rule: RunAsAny
supplementalGroups:
rule: RunAsAny
runAsUser:
rule: RunAsAny
fsGroup:
rule: RunAsAny
volumes:
- '*'
```
And create it with kubectl:
```
kubectl-admin create -f example-psp.yaml
```
Now, as the unprivileged user, try to create a simple pod:
```
kubectl-user create -f-<<EOF
```

```
apiVersion: v1
kind: Pod
metadata:
name: pause
spec:
containers:
- name: pause
image: k8s.gcr.io/pause
EOF
```

The output is similar to this:
Error from server (Forbidden): error when creating "STDIN": pods "pause" is forbidden: unable to validate against any pod security policy: []
 Create a new ServiceAccount named psp-sa in the namespace default.

```
$ cat clusterrole-use-privileged.yaml
--
apiVersion: rbac.authorization.k8s.io/v1
kind: ClusterRole
metadata:
name: use-privileged-psp
rules:
- apiGroups: ['policy']
resources: ['podsecuritypolicies']
verbs: ['use']
resourceNames:
- default-psp
--
apiVersion: rbac.authorization.k8s.io/v1
kind: RoleBinding
metadata:
name: privileged-role-bind
namespace: psp-test
roleRef:
apiGroup: rbac.authorization.k8s.io
kind: ClusterRole
name: use-privileged-psp
subjects:
- kind: ServiceAccount
name: privileged-sa
$ kubectl -n psp-test apply -f clusterrole-use-privileged.yaml
```

After a few moments, the privileged Pod should be created.
 Create a new ClusterRole named prevent-role, which uses the newly created Pod Security Policy prevent-privileged-policy.

```
apiVersion:policy/v1beta1
kind:PodSecurityPolicy
metadata:
name:example
spec:
privileged:false# Don't allow privileged pods!
# The rest fills in some required fields.
seLinux:
rule:RunAsAny
supplementalGroups:
rule:RunAsAny
runAsUser:
rule:RunAsAny
fsGroup:
rule:RunAsAny
volumes:
-'*'
```

And create it with kubectl:

```
kubectl-admin create -f example-psp.yaml
```

Now, as the unprivileged user, try to create a simple pod:

```
kubectl-user create -f-<<EOF
apiVersion: v1
kind: Pod
metadata:
name: pause
spec:
containers:
- name: pause
image: k8s.gcr.io/pause EOF
```

The output is similar to this:
Error from server (Forbidden): error when creating "STDIN": pods "pause" is forbidden: unable to validate against any pod security policy: []
 Create a new ClusterRoleBinding named prevent-role-binding, which binds the created ClusterRole prevent-role to the created SA psp-sa.

```
apiVersion:rbac.authorization.k8s.io/v1
# This role binding allows "jane" to read pods in the "default" namespace.
# You need to already have a Role named "pod-reader" in that namespace.
kind:RoleBinding
metadata:
name:read-pods
namespace:default
subjects:
# You can specify more than one "subject"
-kind:User
name:jane# "name" is case sensitive
```

apiGroup:rbac.authorization.k8s.io
roleRef:
# "roleRef" specifies the binding to a Role / ClusterRole
kind:Role#this must be Role or ClusterRole
name:pod-reader# this must match the name of the Role or ClusterRole you wish to bind to
apiGroup:rbac.authorization.k8s.io apiVersion:rbac.authorization.k8s.io/v1
kind:Role
metadata:
namespace:default
name:pod-reader
rules:
-apiGroups:[""]# "" indicates the core API group
resources:["pods"]
verbs:["get","watch","list"]

NEW QUESTION 8
Secrets stored in the etcd is not secure at rest, you can use the etcdctl command utility to find the secret value for e.g:ETCDCTL_API=3 etcdctl get /registry/secrets/default/cks-secret --cacert="ca.crt" --cert="server.crt"
--key="server.key" Output

Using the Encryption Configuration, Create the manifest, which secures the resource secrets using the provider AES-CBC and identity, to encrypt the secret-data at rest and ensure all secrets are encrypted with the new configuration.

A. Mastered
B. Not Mastered

Answer: A

Explanation:
Send us your feedback on it.

NEW QUESTION 9
use the Trivy to scan the following images,
* 1. amazonlinux:1
* 2. k8s.gcr.io/kube-controller-manager:v1.18.6
Look for images with HIGH or CRITICAL severity vulnerabilities and store the output of the same in
/opt/trivy-vulnerable.txt

A. Mastered
B. Not Mastered

Answer: A

Explanation:
Send us your suggestion on it.

NEW QUESTION 10
Create a PSP that will only allow the persistentvolumeclaim as the volume type in the namespace restricted.
Create a new PodSecurityPolicy named prevent-volume-policy which prevents the pods which is having different volumes mount apart from persistentvolumeclaim.
Create a new ServiceAccount named psp-sa in the namespace restricted.
Create a new ClusterRole named psp-role, which uses the newly created Pod Security Policy prevent-volume-policy
Create a new ClusterRoleBinding named psp-role-binding, which binds the created ClusterRole psp-role to the created SA psp-sa.
Hint:
Also, Check the Configuration is working or not by trying to Mount a Secret in the pod maifest, it should get failed.
POD Manifest:
* apiVersion: v1
* kind: Pod
* metadata:
* name:
* spec:
* containers:
* - name:
* image:
* volumeMounts:
* - name:
* mountPath:

* volumes:
* - name:
* secret:
* secretName:

A. Mastered
B. Not Mastered

Answer: A

Explanation:

apiVersion: policy/v1beta1
kind: PodSecurityPolicy
metadata:
name: restricted
annotations:
seccomp.security.alpha.kubernetes.io/allowedProfileNames: 'docker/default,runtime/default'
apparmor.security.beta.kubernetes.io/allowedProfileNames: 'runtime/default' seccomp.security.alpha.kubernetes.io/defaultProfileName: 'runtime/default'
apparmor.security.beta.kubernetes.io/defaultProfileName: 'runtime/default'
spec:
privileged: false
# Required to prevent escalations to root.
allowPrivilegeEscalation: false
# This is redundant with non-root + disallow privilege escalation,
# but we can provide it for defense in depth.
requiredDropCapabilities:
- ALL
# Allow core volume types. volumes:
- 'configMap'
- 'emptyDir'
- 'projected'
- 'secret'
- 'downwardAPI'
# Assume that persistentVolumes set up by the cluster admin are safe to use.
- 'persistentVolumeClaim'
hostNetwork: false
hostIPC: false
hostPID: false
runAsUser:
# Require the container to run without root privileges.
rule: 'MustRunAsNonRoot'
seLinux:
# This policy assumes the nodes are using AppArmor rather than SELinux.
rule: 'RunAsAny'
supplementalGroups:
rule: 'MustRunAs'
ranges:
# Forbid adding the root group.
- min: 1
max: 65535
fsGroup:
rule: 'MustRunAs'
ranges:
# Forbid adding the root group.
- min: 1
max: 65535
readOnlyRootFilesystem: false

NEW QUESTION 10
On the Cluster worker node, enforce the prepared AppArmor profile
 #include<tunables/global>
 profile nginx-deny flags=(attach_disconnected) {
 #include<abstractions/base>
 file,
 # Deny all file writes.
 deny/** w,
 }
 EOF'
Edit the prepared manifest file to include the AppArmor profile.
 apiVersion: v1
 kind: Pod
 metadata:
 name: apparmor-pod
 spec:
 containers:
 - name: apparmor-pod
 image: nginx
Finally, apply the manifests files and create the Pod specified on it. Verify: Try to make a file inside the directory which is restricted.

A. Mastered
B. Not Mastered

Answer: A

Explanation:
Send us your Feedback on this.

NEW QUESTION 12
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