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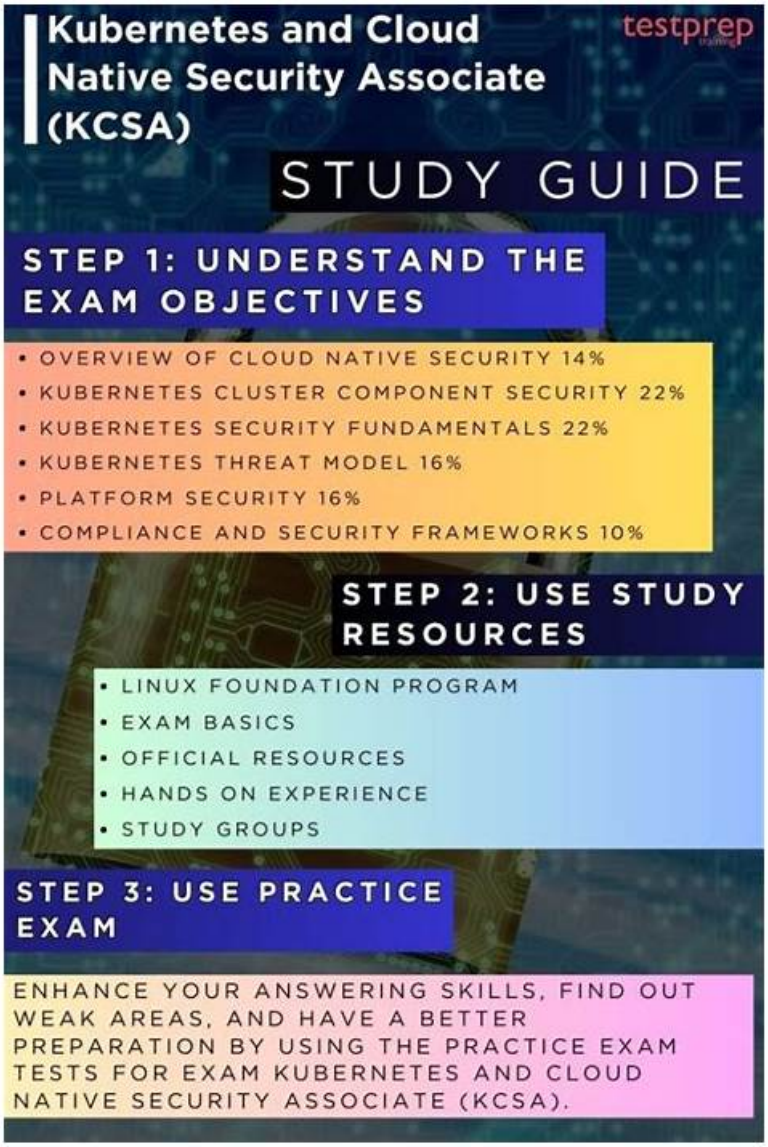

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Linux Foundation KCSA Exam Syllabus Topics:

Topic	Details
Topic 1	• Overview of Cloud Native Security: This section of the exam measures the skills of a Cloud Security Architect and covers the foundational security principles of cloud-native environments. It includes an understanding of the 4Cs security model, the shared responsibility model for cloud infrastructure, common security controls and compliance frameworks, and techniques for isolating resources and securing artifacts like container images and application code.

Topic 2	• Platform Security: This section of the exam measures the skills of a Cloud Security Architect and encompasses broader platform-wide security concerns. This includes securing the software supply chain from image development to deployment, implementing observability and service meshes, managing Public Key Infrastructure (PKI), controlling network connectivity, and using admission controllers to enforce security policies.
Topic 3	• Kubernetes Security Fundamentals: This section of the exam measures the skills of a Kubernetes Administrator and covers the primary security mechanisms within Kubernetes. This includes implementing pod security standards and admissions, configuring robust authentication and authorization systems like RBAC, managing secrets properly, and using network policies and audit logging to enforce isolation and monitor cluster activity.

Newest Reliable KCSA Test Syllabus & Leading Offer in Qualification Exams & Unparalleled Linux Foundation Linux Foundation Kubernetes and Cloud Native Security Associate

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Linux Foundation Kubernetes and Cloud Native Security Associate Sample Questions (Q10-Q15):

NEW QUESTION # 10
Is it possible to restrict permissions so that a controller can only change the image of a deployment (without changing anything else about it, e.g., environment variables, commands, replicas, secrets)?

- A. Not with RBAC, but it is possible with an admission webhook.
- B. No, because granting access to the spec.containers.image field always grants access to the rest of the spec object.
- C. Yes, by granting permission to the /image subresource.
- D. Yes, with a 'managed fields' annotation.

Answer: A

Explanation:
* RBAC in Kubernetesis coarse-grained: it controlsverbs(get, update, patch, delete) onresources(e.g., deployments), butnot individual fieldswithin a resource.
* There isno /image subresource for deployments(there is one for pods but only for ephemeral containers).
* Therefore,RBAC cannot restrict changes only to the image field.
* Admission Webhooks(mutating/validating)canenforce fine-grained policies (e.g., deny updates that change anything other than spec.containers[*].image).
* Exact extract (Kubernetes Docs - Admission Webhooks):
* "Admission webhooks can be used to enforce custom policies on objects being admitted." References:
Kubernetes Docs - RBAC: https://kubernetes.io/docs/reference/access-authn-authz/rbac/ Kubernetes Docs - Admission Webhooks: https://kubernetes.io/docs/reference/access-authn-authz
/extensible-admission-controllers/

NEW QUESTION # 11
What is the difference between gVisor and Firecracker?

- A. gVisor and Firecracker are both container runtimes that can be used interchangeably.

- B. gVisor and Firecracker are two names for the same technology, which provides isolation and security for containers.
- C. gVisor is a user-space kernel that provides isolation and security for containers. At the same time, Firecracker is a lightweight virtualization technology for creating and managing secure, multi-tenant container and function-as-a-service (FaaS) workloads.
- D. gVisor is a lightweight virtualization technology for creating and managing secure, multi-tenant container and function-as-a-service (FaaS) workloads. At the same time, Firecracker is a user-space kernel that provides isolation and security for containers.

Answer: C

Explanation:
* gVisor:
* Google-developed, implemented as auser-space kernelthat intercepts and emulates syscalls made by containers.
* Providesstrong isolationwithout requiring a full VM.
* Official docs: "gVisor is a user-space kernel, written in Go, that implements a substantial portion of the Linux system call interface."
* Source: https://gvisor.dev/docs/
* Firecracker:
* AWS-developed,lightweight virtualization technologybuilt on KVM, used in AWS Lambda and Fargate.
* Optimized for running secure, multi-tenant microVMs (MicroVMs) for containers and FaaS.
* Official docs: "Firecracker is an open-source virtualization technology that is purpose-built for creating and managing secure, multi-tenant container and function-based services."
* Source: https://firecracker-microvm.github.io/
* Key difference:gVisor # syscall interception in userspace kernel (container isolation). Firecracker # lightweight virtualization with microVMs (multi-tenant security).
* Therefore, optionAis correct.
References:
gVisor Docs: https://gvisor.dev/docs/
Firecracker Docs: https://firecracker-microvm.github.io/

NEW QUESTION # 12
A cluster administrator wants to enforce the use of a different container runtime depending on the application a workload belongs to.

- A. By configuring amutating admission controllerwebhook that intercepts new workload creation requests and modifies the container runtime based on the application label.
- B. By configuring avalidating admission controllerwebhook that verifies the container runtime based on the application label and rejects requests that do not comply.
- C. By manually modifying the container runtime for each workload after it has been created.
- D. By modifying the kube-apiserver configuration file to specify the desired container runtime for each application.

Answer: A

Explanation:
* Kubernetes supports workload-specific runtimes viaRuntimeClass.
* Amutating admission controllercan enforce this automatically by:
* Intercepting workload creation requests.
* Modifying the Pod spec to set runtimeClassName based on labels or policies.
* Incorrect options:
* (A) Manual modification is not scalable or secure.
* (B) kube-apiserver cannot enforce per-application runtime policies.
* (C) A validating webhook can onlyreject, not modify, the runtime.
References:
Kubernetes Documentation - RuntimeClass
CNCF Security Whitepaper - Admission controllers for enforcing runtime policies.

NEW QUESTION # 13
A container image istrojanizedby an attacker by compromising the build server. Based on the STRIDE threat modeling framework, which threat category best defines this threat?

- A. Repudiation

- B. Spoofing
- C. Tampering
- D. Denial of Service

Answer: C

Explanation:
* In STRIDE,Tamperingis the threat category forunauthorized modification of data or code/artifacts. A trojanized container image is, by definition, an attacker'smodificationof the build output (the image) after compromising the CI/build system-i.e., tampering with the artifact in the software supply chain.
* Why not the others?
* Spoofingis about identity/authentication (e.g., pretending to be someone/something).
* Repudiationis about denying having performed an action without sufficient audit evidence.
* Denial of Servicetargets availability (exhausting resources or making a service unavailable).The scenario explicitly focuses on analtered imageresulting from a compromised build server-this squarely maps toTampering.
Authoritative references (for verification and deeper reading):
* Kubernetes (official docs)- Supply Chain Security (discusses risks such as compromised CI/CD pipelines leading to modified/poisoned images and emphasizes verifying image integrity/signatures).
* Kubernetes Docs#Security#Supply chain securityandSecuring a cluster(sections on image provenance, signing, and verifying artifacts).
* CNCF TAG Security - Cloud Native Security Whitepaper (v2)- Threat modeling in cloud-native and software supply chain risks; describes attackers modifying build outputs (images/artifacts) via CI
/CD compromise as a form oftamperingand prescribes controls (signing, provenance, policy).
* CNCF TAG Security - Software Supply Chain Security Best Practices- Explicitly covers CI/CD compromise leading tomaliciously modified imagesand recommends SLSA, provenance attestation, and signature verification (policy enforcement via admission controls).
* Microsoft STRIDE (canonical reference)- DefinesTamperingasmodifying data or code, which directly fits a trojanized image produced by a compromised build system.

NEW QUESTION # 14
Why mightNetworkPolicyresources have no effect in a Kubernetes cluster?

- A. NetworkPolicy resources are only enforced if the Kubernetes scheduler supports them.
- B. NetworkPolicy resources are only enforced if the user has the right RBAC permissions.
- C. NetworkPolicy resources are only enforced if the networking plugin supports them.
- D. NetworkPolicy resources are only enforced for unprivileged Pods.

Answer: C

Explanation:
* NetworkPolicies define how Pods can communicate with each other and external endpoints.
* However, Kubernetes itselfdoes not enforce NetworkPolicy. Enforcement depends on theCNI plugin used (e.g., Calico, Cilium, Kube-Router, Weave Net).
* If a cluster is using a network plugin that does not support NetworkPolicies, then creating NetworkPolicy objects hasno effect.
References:
Kubernetes Documentation - Network Policies
CNCF Security Whitepaper - Platform security section: notes that security enforcement relies on CNI capabilities.

NEW QUESTION # 15
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