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Linux Foundation KCSA Exam Syllabus Topics:

Topic	Details
Topic 1	• Kubernetes Threat Model: This section of the exam measures the skills of a Cloud Security Architect and involves identifying and mitigating potential threats to a Kubernetes cluster. It requires understanding common attack vectors like privilege escalation, denial of service, malicious code execution, and network-based attacks, as well as strategies to protect sensitive data and prevent an attacker from gaining persistence within the environment.
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.
Topic 4	• 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.

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Linux Foundation Kubernetes and Cloud Native Security Associate Sample Questions (Q50-Q55):

NEW QUESTION # 50
By default, in a Kubeadm cluster, which authentication methods are enabled?

- A. X509 Client Certs, Webhook Authentication, and Service Account Tokens
- B. OIDC, Bootstrap tokens, and Service Account Tokens
- C. X509 Client Certs, Bootstrap Tokens, and Service Account Tokens
- D. X509 Client Certs, OIDC, and Service Account Tokens

Answer: C

Explanation:
* In akubeadm cluster, by default the API server enables several authentication mechanisms:
* X509 Client Certs: Used for authenticating kubelets, admins, and control-plane components.
* Bootstrap Tokens: Temporary credentials used for node bootstrap/joining clusters.
* Service Account Tokens: Used by workloads in pods to authenticate with the API server.
* Exact extract (Kubernetes Docs - Authentication):
* "Kubernetes uses client certificates, bearer tokens, an authenticating proxy, or HTTP basic auth to authenticate API requests."
* "Bootstrap tokens are a simple bearer token that is meant to be used when creating new clusters or joining new nodes to an existing cluster."
* "Service accounts are special accounts that provide an identity for processes that run in a Pod." References:
Kubernetes Docs - Authentication: https://kubernetes.io/docs/reference/access-authn-authz/authentication/ Kubeadm - TLS Bootstrapping: https://kubernetes.io/docs/reference/access-authn-authz/bootstrap-tokens/

NEW QUESTION # 51
Which of the following statements regarding a container run with privileged: true is correct?

- A. A container run with privileged: true within a Namespace can access all Secrets used within that Namespace.
- B. A container run with privileged: true within a cluster can access all Secrets used within that cluster.
- C. A container run with privileged: true has no additional access to Secrets than if it were run with privileged: false.
- D. A container run with privileged: true on a node can access all Secrets used on that node.

Answer: C

Explanation:
* Setting privileged: true grants a containerelevated access to the host node, including access to host devices, kernel capabilities, and the ability to modify the host.
* However, Secrets in Kubernetes are not automatically exposedto privileged containers. Secrets are mounted into Pods only if explicitly referenced.
* Thus, being privilegeddoes not grant additional access to Kubernetes Secretscompared to a non- privileged Pod.
* The risk lies in node compromise: if a privileged container can take over the node, it could then indirectly gain access to Secrets (e.g., by reading kubelet credentials).
References:
Kubernetes Documentation - Security Context
CNCF Security Whitepaper - Pod security context and privileged container risks.

NEW QUESTION # 52
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 # 53
An attacker compromises a Pod and attempts to use its service account token to escalate privileges within the cluster. Which Kubernetes security feature is designed tolimit what this service account can do?

- A. PodSecurity admission
- B. NetworkPolicy
- C. Role-Based Access Control (RBAC)
- D. RuntimeClass

Answer: C

Explanation:
* When a Pod is created, Kubernetes automatically mounts aservice account tokenthat can authenticate to the API server.
* TheRole-Based Access Control (RBAC)system defines what actions a service account can perform.
* By carefully restricting Roles and RoleBindings, administrators limit the blast radius of a compromised Pod.
* Incorrect options:
* (A)PodSecurity admissionenforces workload-level security settings but does not control API access.
* (B)NetworkPolicycontrols network communication, not API privileges.
* (D)RuntimeClassselects container runtimes, unrelated to privilege escalation through API tokens.
References:
Kubernetes Documentation - Using RBAC Authorization
CNCF Security Whitepaper - Identity & Access Management: limiting lateral movement by constraining service account permissions.

NEW QUESTION # 54
What mechanism can I use to block unsigned images from running in my cluster?

- A. Configuring Container Runtime Interface (CRI) to enforce image signing and validation.
- B. Using Pod Security Standards (PSS) to enforce validation of signatures.
- C. Using PodSecurityPolicy (PSP) to enforce image signing and validation.
- D. Enabling Admission Controllers to validate image signatures.

Answer: D

Explanation:
* KubernetesAdmission Controllers(particularlyValidatingAdmissionWebhooks) can be used to enforce policies that validate image signatures.
* This is commonly implemented withtools like Sigstore/cosign, Kyverno, or OPA Gatekeeper.
* PodSecurityPolicy (PSP):deprecated and never supported image signature validation.
* Pod Security Standards (PSS):only apply to pod security fields (privilege, users, host access), not image signatures.
* CRI:while runtimes (containerd, CRI-O) may integrate with signature verification tools, enforcement in Kubernetes is generally done viaAdmission Controllersat the API layer.
Exact extract (Admission Controllers docs):
* "Admission webhooks can be used to enforce custom policies on the objects being admitted." (e.g., validating signatures).
References:
Kubernetes Docs - Admission Controllers: https://kubernetes.io/docs/reference/access-authn-authz /admission-controllers/
Sigstore Project (cosign): https://sigstore.dev/
Kyverno ImageVerify Policy: https://kyverno.io/policies/pod-security/require-image-verification/

NEW QUESTION # 55
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