CKS Exam Simulator 2026

A comprehensive practice lab for the **Certified Kubernetes Security Specialist (CKS)** exam, featuring 14 real-world security scenarios.

🎯 Overview

This simulator provides hands-on practice questions covering all CKS exam domains:

Domain	Weight	Questions
Cluster Setup	15%	Q02, Q03, Q05, Q07
Cluster Hardening	15%	Q02, Q08, Q13
System Hardening	15%	Q06
Minimize Microservice Vulnerabilities	20%	Q11
Supply Chain Security	20%	Q04, Q10, Q12
Monitoring, Logging & Runtime Security	20%	Q01, Q09, Q14

🚀 Getting Started

Prerequisites

- A Kubernetes cluster (kind, minikube, or real cluster) - **Kubernetes v1.30+**
- `kubectl` configured and working
- Root/sudo access for some questions
- Tools (for specific questions):
  - `falco` - Runtime security monitoring
  - `bom` or `syft` - SBOM generation
  - `trivy` - Image scanning
  - `kube-bench` - CIS benchmarks

Quick Start

```
# Make scripts executable
chmod +x scripts/run-question.sh
find . -name '*.sh' -exec chmod +x {} \;

# List all questions
./scripts/run-question.sh list

# Setup a specific question
./scripts/run-question.sh 1

# Work on the question...
```

```
# Verify your solution
./scripts/run-question.sh 1 verify

# Need help? Show the solution
./scripts/run-question.sh 1 solution

# Reset and try again
./scripts/run-question.sh 1 reset
```

📋 Commands

Command	Description
`list`	List all available questions
`setup <N>`	Setup environment for question N (default)
`verify <N>`	Verify your solution
`solution <N>`	Display the solution
`reset <N>`	Reset the environment
`question <N>`	Display question text only
`exam`	Start full exam simulation (2 hours)

📚 Questions

Question 01 - Falco Runtime Security (7%)

Identify and stop a pod accessing `/dev/mem` using Falco runtime detection.

Question 02 - Worker Node Upgrade (5%)

Upgrade a worker node from Kubernetes 1.34.0 to 1.34.1.

Question 03 - Ingress with TLS (5%)

Configure an Ingress with TLS termination and HTTP to HTTPS redirect.

Question 04 - SBOM Generation (4%)

Generate a Software Bill of Materials in SPDX format.

Question 05 - TLS Secret (2%)

Create a TLS secret from certificate and key files.

Question 06 - Docker Daemon Hardening (5%)

Secure Docker daemon configuration on a cluster node.

Question 07 - Network Policy (7%)

Create NetworkPolicies to deny all ingress and allow specific traffic.

Question 08 - ServiceAccount Token (5%)

Configure projected volume for ServiceAccount token mounting.

Question 09 - Kubernetes Auditing (7%)

Configure kube-apiserver audit logging with custom policy.

Question 10 - ImagePolicyWebhook (7%)

Setup ImagePolicyWebhook admission controller.

Question 11 - Pod Security Admission (7%)

Identify and delete pods violating PSA restricted policy.

Question 12 - Dockerfile Security (7%)

Fix security issues in Dockerfile and Deployment manifest.

Question 13 - Kubelet Security (5%)

Harden kubelet configuration on a worker node.

Question 14 - Container Immutability (7%)

Configure read-only root filesystem with emptyDir for writable paths.

📁 Directory Structure

```
cks-real-exam-questions/
├── scripts/
│   └── run-question.sh       # Main runner script
├── Question-01-Falco/
│   ├── question.txt          # Question description
│   ├── setup.sh              # Environment setup
│   ├── verify.sh             # Solution verification
│   ├── solution.sh           # Step-by-step solution
│   └── reset.sh              # Cleanup
├── Question-02-Upgrade/
│   └── ...
├── Question-03-IngressTLS/
│   └── ...
├── ... (14 questions total)
└── README.md
```

💡 Tips for the CKS Exam

Time Management

- 2 hours for ~15-20 questions
- Average 6-8 minutes per question
- Don't get stuck - flag and move on

Key Resources

- Kubernetes Documentation
- Use `kubectl explain` for quick reference
- Bookmark important pages

Common Patterns

```
# Quick pod with curl for testing
kubectl run test --image=curlimages/curl --rm -it -- curl <service>

# Export resource to YAML
kubectl get deployment <name> -o yaml > deployment.yaml

# Check API server logs
kubectl logs -n kube-system kube-apiserver-<node>

# Verify cluster health
kubectl get nodes
kubectl get pods -A
```

Security Contexts Cheat Sheet

```
securityContext:
  runAsNonRoot: true
  runAsUser: 1000
  allowPrivilegeEscalation: false
  readOnlyRootFilesystem: true
  capabilities:
    drop: ["ALL"]
```

🔧 Troubleshooting

API Server Won't Start

```
# Check static pod logs
sudo cat /var/log/pods/kube-system_kube-apiserver-*/kube-apiserver/*.log

# Restore from backup
sudo cp /etc/kubernetes/manifests/kube-apiserver.yaml.bak
/etc/kubernetes/manifests/kube-apiserver.yaml
```

Kubelet Issues

```
# Check kubelet status
sudo systemctl status kubelet

# View kubelet logs
sudo journalctl -u kubelet -f
```

Reset Everything

```
# Reset all questions
for dir in Question-*/; do
    bash "$dir/reset.sh" 2>/dev/null || true
done
```

📝 License

This project is for educational purposes. Good luck with your CKS exam! 🎉

🤝 Contributing

Feel free to submit issues and enhancement requests!

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