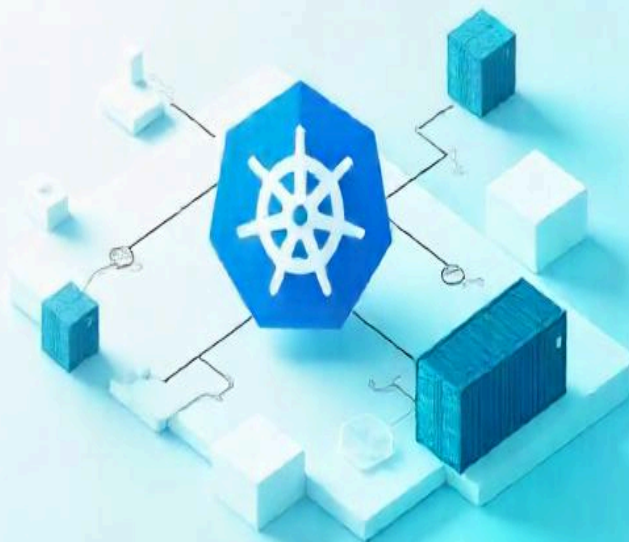




# kubernetes

Real Time Scengario-Based Interview  
Questions Questions & Answers

*Master Real-World Kubernetes Interview Scenarios*



SONALI KURADE



## ◆ 1. Scenario: Blue-Green Deployment Failure in Production

**Q:** Your company uses **blue-green deployment** to update microservices. The new version (green) was deployed, but traffic is still hitting the old (blue) version. What might be the issue?

**A:**

- **Check Service selector:** The service may still point to pods with old labels.
- Use `kubectl get svc` and `kubectl describe svc` to confirm which pods are being selected.
- Solution: Update the `selector` in the Service to point to the new (green) version's labels.

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## ◆ 2. Scenario: CI/CD Pipeline Deploys Broken Image

**Q:** Your Jenkins CI/CD pipeline pushed a broken image to Kubernetes. How do you quickly mitigate the impact?

**A:** Immediately **rollback** the deployment:

```
kubectl rollout undo deployment <app>
```

- Investigate pipeline logs to fix the build step.
- Add `imagePullPolicy: IfNotPresent` or tag management to avoid pulling latest broken image unintentionally.



### ◆ 3. Scenario: Staging Environment Pods are Consistently Crashing

**Q:** QA team reports repeated crashes of a service in the staging namespace. How do you approach?

**A:**

- Run: `kubectl get pod -n staging` → find affected pods
  - Run: `kubectl describe pod + kubectl logs`
  - Most common issues:
    - Misconfigured environment variables (e.g., DB\_HOST)
    - Missing Secrets
  - Validate ConfigMap/Secrets: `kubectl get configmap`, `kubectl get secrets`
  - Fix and reapply correct configuration.
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## ◆ 4. Scenario: Finance App Database Pod Has High Latency

**Q:** Your finance app reports DB performance issues. The DB runs inside Kubernetes. How do you debug?

**A:** Check if pod is under **CPU/memory pressure**: `kubectl top pod`

- Check **PersistentVolume** performance (if running on slow disk).
- Consider pod/node affinity to ensure the DB pod is scheduled on SSD-backed nodes.
- Optionally move DB out of Kubernetes for performance-critical workloads.

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## ◆ 5. Scenario: Payment Gateway Timeout

**Q:** Your payment gateway (running as a pod) is experiencing timeouts. What could cause this?

**A:**

- **Pod readiness probe** could be failing but traffic is being sent.
- DNS resolution failure between services.
- NetworkPolicy blocking the request path.

```
kubectl exec -it <pod> -- curl <target-service>
```

```
kubectl get networkpolicy
```



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## ◆ 6. Scenario: Zero Downtime Deployment Breaks for Critical App

**Q:** Your SRE team wants zero downtime for customer-facing apps, but during deployment users still see downtime.

**A:** Ensure deployment strategy is **RollingUpdate** with enough **maxSurge** and **maxUnavailable**:

yaml

```
strategy:
  type: RollingUpdate
  rollingUpdate:
    maxSurge: 1
    maxUnavailable: 0
```

- Also, ensure your readiness probes are correctly configured so traffic is only routed to healthy pods.



## ◆ 7. Scenario: App Logs Not Visible in Monitoring Tool

**Q:** Your DevOps team deployed Fluentd as a sidecar, but logs are not showing in the central monitoring dashboard.

**A:**

- Check volume mount: Both app and Fluentd should share a volume (`emptyDir`).
- Verify Fluentd config parses logs from the correct path.
- Check if Fluentd is able to send logs to backend (e.g., Elasticsearch).

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## ◆ 8. Scenario: Pods on Specific Node Keep Crashing

**Q:** Your app works fine on most nodes, but on one node the pods always crash. How do you isolate the issue?

**A:** Cordon the node: `kubectl cordon <node>`

Describe the node and check conditions:

```
kubectl describe node <node>
```

- SSH and check OS-level issues:
  - Disk pressure
  - Container runtime issues (containerd/docker)
  - Resource limits or kernel errors in `/var/log`



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## ◆ 9. Scenario: Internal API Calls Failing Across Namespaces

**Q:** Service A in `team1` namespace cannot reach Service B in `team2`. How do you resolve this?

**A:** Check DNS: `service-name.namespace.svc.cluster.local`

Try:

```
kubectl exec -it <pod-in-team1> -- curl service-b.team2.svc.cluster.local
```

- If blocked, check NetworkPolicies in either namespace.

---

## ◆ 10. Scenario: Your Deployment Has High Memory Usage Spikes

**Q:** Your Kubernetes dashboard shows sudden memory usage spikes for a Go microservice. What do you do?

**A:**

- Add memory **limits** to pod to avoid crashing the node.
- Use `kubectl top pod` and Grafana dashboards to analyze patterns.
- Debug memory leaks inside app using `pprof` or switch to a memory-efficient GC configuration.



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## ♦ 11. CI Pipeline Fails on kubectl apply Step

**Q:** Your CI pipeline fails at `kubectl apply -f k8s/` with a “connection refused” error. What might be wrong?

**A:**

- CI environment may not have `KUBECONFIG` or permissions.
- Ensure Service Account or kubeconfig is mounted correctly and the cluster is reachable from runner.

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## ♦ 12. Intermittent 503 Errors from Ingress

**Q:** Your NGINX ingress is returning intermittent 503s. How do you debug?

**A:**

- Check backend pod readiness.
- Ingress may be routing to pods not ready.

Check `kubectl describe ingress`, and NGINX logs:

```
kubectl logs <nginx-pod> -n ingress-nginx
```





---

### ♦ 13. Environment-Specific Configurations Not Loading

**Q:** You use different `ConfigMaps` for `dev`, `qa`, and `prod`, but app loads wrong config. What's the fix?

**A:** Check correct namespace is used.

- Ensure pod spec mounts/uses the correct `ConfigMap` for that environment.
- Also check Helm or Kustomize overlays for proper separation.

---

### ♦ 14. Helm Upgrade Caused Outage

**Q:** A Helm upgrade brought down a live app. What could've gone wrong?

**A:** Helm may have overwritten `readinessProbe`, `replicaCount`, or `PVC` definitions.

Always use `helm upgrade --dry-run --debug` in lower environment first.

---

### ♦ 15. Developer Can't Access Dev Namespace

**Q:** A developer can't list pods in the dev namespace. What should you check?

**A:** Check `RoleBinding` in the dev namespace.

Run:

```
kubectl auth can-i get pods --as=devuser -n dev
```



---

## ♦ 16. TLS Cert in Secret Expired

**Q:** You stored TLS certs in a Kubernetes Secret. The cert expired and your ingress stopped working.

**A:**

- Update the Secret with new cert and key using `kubectl create secret tls`
- Restart ingress controller or trigger reload.

---

## ♦ 17. Application Pods Restart Frequently at Night

**Q:** Your app pods restart every night around 2 AM. How do you investigate?

**A:**

- Check `kubelet` logs or cronjobs running on nodes.
  - May be related to node-level log rotation, backup, or security patching script.
  - Also look into auto-scaling events or probes failing due to downstream maintenance.
-



## ♦ 18. Pod Disappears After Node Reboot

**Q:** A pod disappears after a node reboot. Why?

**A:** If `restartPolicy: Never` or not part of a controller (like Deployment), the pod won't be recreated.

- Always use controllers to manage pod lifecycles.
- 

## ♦ 19. Job Hangs and Never Completes

**Q:** Your CronJob runs but never completes. How to debug?

**A:**

- `kubectl describe job <job>`
  - Check if pod was scheduled, started, or blocked due to missing secrets/config.
- 

## ♦ 20. Cluster Upgrade Broke API Access

**Q:** After cluster upgrade, kubectl commands fail. Why?

**A:**

- Kubeconfig may point to an outdated API server URL.
- Certificates may need renewal.
- Match `kubectl` version with server version.



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