



# Part 18: Kubernetes Real-Time Troubleshooting

## Introduction

Welcome to the world of Kubernetes troubleshooting, where every challenge is an opportunity to sharpen your skills and emerge victorious. Join us as we embark on a journey through common real-time scenarios, unraveling mysteries, and uncovering solutions along the way.

**PART 18- KUBERNETES REAL-TIME TROUBLESHOOTING**

- Pod security context violation
- External Service communication issue
- ConfigMap/Secret Volume Mount Failures
- API Server Performance Degradation
- Node OS Package Dependency Issues

### Scenario 86: Pod Security Context Violations

okd-project/okd

## #1423 How to deal with "PodSecurityViolation" warnings and alerts in...

 Q&A  2 comments

 **jacksht** opened on November 28, 2022





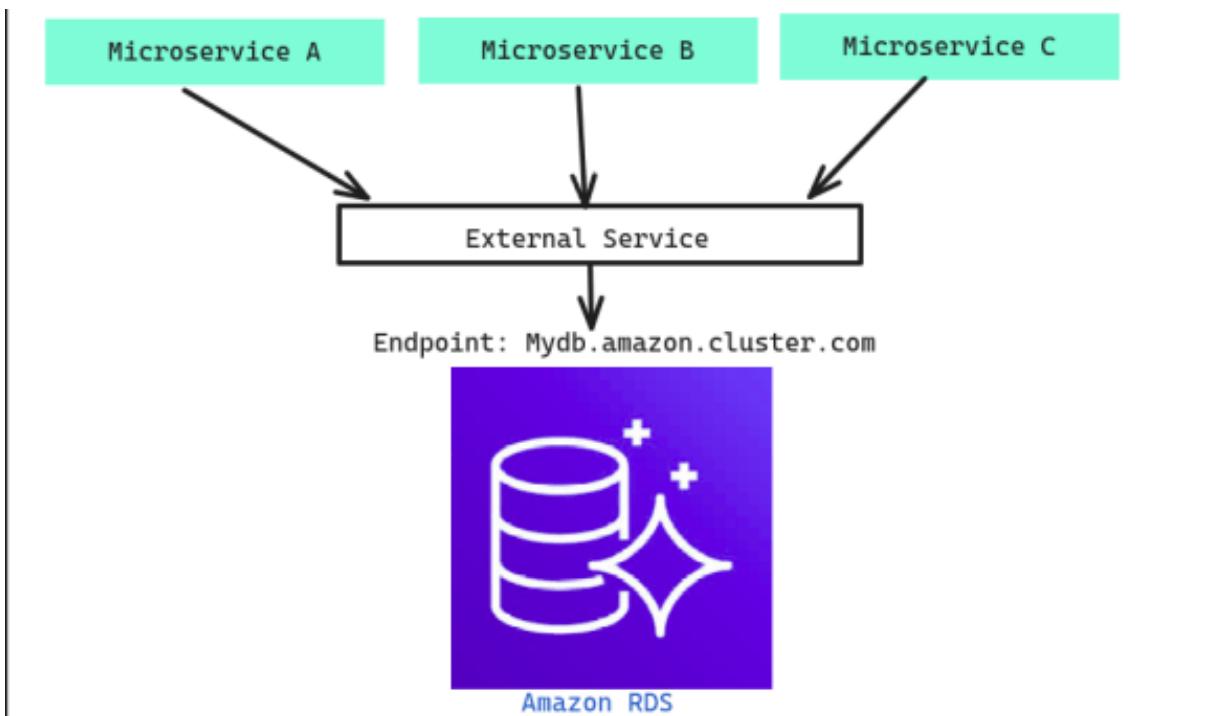
*Symptoms:* Pods fail to start due to violations of Pod Security Context settings.

*Diagnosis:* Describe pod (`kubectl describe pod <pod_name>`) and review Pod Security Context.

*Solution:*

1. Update pod specifications to comply with Pod Security Context requirements (e.g., privilege escalation prevention, run as non-root).
2. Ensure that the underlying container runtime supports the required security features.
3. Use Pod Security Policies (PSP) or Pod Security Admission Controllers to enforce security context across the cluster.

### Scenario 87: External Service Communication Issues



*Symptoms:* Pods cannot communicate with external services outside the Kubernetes cluster.

*Diagnosis:* Verify network policies, egress rules, and external connectivity.

*Solution:*

1. Check network policies to ensure egress traffic is allowed to external destinations.
2. Verify that firewall rules or network security groups are not blocking outbound traffic.
3. Test a connectivity to external services using tools like `curl` or `telnet` from within pods.



## Scenario 88: ConfigMap/Secret Volume Mount Failures

kubeedge/kubeedge

#1736 **Failed to mount configmap/secret volume because of "no...**



28 comments

 **GuestC** opened on May 27, 2020



*Symptoms:* Pods fail to start due to errors mounting ConfigMap or Secret volumes.

*Diagnosis:* Describe the pod (`kubectl describe pod <pod_name>`) and inspect volume mount logs.

*Solution:*

1. Ensure that the ConfigMap or Secret exists in the correct namespace and is accessible to the pod.
2. Check for typos or incorrect volume mount paths in the pod's configuration.
3. Validate the permissions and ownership of ConfigMap or Secret files to ensure they are readable by the pod.

## Scenario 89: API Server Performance Degradation

crossplane/crossplane

#2649 **API Server (and clients) becomes unresponsive with too...**



53 comments

 **ulucinlar** opened on October 21, 2021





*Symptoms:* API server responsiveness is slow, impacting cluster management operations.

*Diagnosis:* Monitor API server metrics (`kubectl top pod -n kube-system`) and review API server logs.

*Solution:*

1. Scale up the API server deployment to handle increased load or traffic spikes.
2. Optimize API server configuration parameters such as request timeouts and concurrency limits.
3. Implement caching mechanisms or offload non-critical API operations to reduce server load.

## Scenario 90: Node OS Package Dependency Issues

eksctl-io/eksctl

# #7062 Problems with nodegroups added into 1.27 cluster -...



6 comments



yoplait opened on September 11, 2023



*Symptoms:* Pods fail to start due to missing OS packages or dependencies on nodes.

*Diagnosis:* Describe pod (`kubectl describe pod <pod_name>`) and inspect node configuration.

*Solution:*

1. Create custom node images with pre-installed OS packages or dependencies required by pods.
2. Use containerization techniques like sidecar or init containers to install missing dependencies at pod startup.
3. Implement node configuration management tools to ensure consistent package installation across the cluster.



In the up-coming parts, we will discuss on more troubleshooting steps for the different Kubernetes based scenarios. So, stay tuned for the and follow @Prasad Suman Mohan for more such posts.

