Kubernetes Pod Troubleshooting Guide

Step-by-Step Troubleshooting Process

1. Initial Pod Status Check

- **kubectl get pod <pod-name> -n <namespace>**

Note: add your pod name and namespace in which you had done the deployment
- Check the STATUS column
- Look for patterns like CrashLoopBackOff, Error, or ImagePullBackOff
- Note the RESTARTS count

2. Detailed Pod Information

- **kubectl describe pod pod-name -n namespace**

Note: add your pod name and namespace in which you had done the deployment
Review:
- Events section for error messages
- State and Last State sections
- Container status and restart count
- Resource constraints
- Node assignment

3. Pod Logs Investigation
-> Current pod logs

kubectl logs <pod-name> -n <namespace>

Note: add your pod name and namespace in which you had done the deployment

-> Previous container logs if crashed

kubectl logs <pod-name> -n <namespace> --previous

Note: add your pod name and namespace in which you had done the deployment
Look for:
- Error messages
- Stack traces
- Application-specific issues
- Resource exhaustion indicators

4. Check Resource Usage

kubectl top pod <pod-name> -n <namespace>

Note: add your pod name and namespace in which you had done the deployment
Monitor:
- CPU usage
- Memory usage
- Compare against resource limits/requests

5. Node Status Check
->Get node name
NODE_NAME=$(kubectl get pod <pod-name> -n <namespace> -o jsonpath='{.spec.nodeName}')

kubectl describe node $NODE_NAME

Verify:
- Node conditions
- Resource pressure
- Events
- Taints and tolerations

6. Common Issues and Solutions

CrashLoopBackOff
- Check application logs
- Verify command and arguments
- Ensure proper resource limits
- Check for missing dependencies

ImagePullBackOff
- Verify image name and tag
- Check image registry access
- Verify pull secrets
- Check network connectivity

Error State
- Review container exit codes
- Check for configuration issues
- Verify volume mounts
- Check service dependencies

Also automating this whole stuff, I have written a script as well which helps you in that.