# Docker/Kubernetes

1. Here's a docker-compose.yml file that meets your requirements for an Nginx server on Ubuntu 20 LTS with Docker 19 or above:

version: '3'

services:

nginx:

image: nginx:latest

ports:

- "80:80"

volumes:

- nginx\_logs:/var/log/nginx

networks:

nginx\_net:

ipv4\_address: 172.20.8.2

volumes:

nginx\_logs:

networks:

nginx\_net:

driver: bridge

ipam:

config:

- subnet: 172.20.8.0/24

1. To identify the reason for a pod restart in the project "internal" under the namespace "production", you would use the following Kubernetes command:

kubectl describe pod <your pod name> -n production

1. From the Kubernetes configuration perspective, several factors could contribute to the Java application pod (java-app) restarting randomly. Like:
2. Memory Request and Limit: The memory request is set to 1000 MiB, and the limit is set to 1500 MiB. If the application consistently uses more than 1500 MiB of memory, Kubernetes may kill the pod due to exceeding its memory limit which can lead to a restart. Similarly, if the application frequently requires more memory than the request but less than the limit, Kubernetes may not schedule the pod on nodes with sufficient resources, causing it to fail to start properly.
3. Xmx Setting: The Xmx setting (1000M) is very close to the total memory usage (1142Mi). This leaves little room for non-heap memory, which could lead to Out of Memory errors in the Java application, causing restarts.
4. Log Rotation and Fluentd Configuration: The presence of java-app-logrotate and java-app-fluentd containers suggests logging and monitoring configurations. Misconfigurations here could lead to excessive log file sizes, filling up disk space and causing the pod to restart. Additionally, if Fluentd encounters issues processing logs, it could impact the main application pod indirectly.
5. Node Resource Pressure: If the node where this pod is running is under resource pressure, it might cause pods to be rescheduled, appearing as restarts.
6. External Dependencies: Since there's a mongos container running within the same pod, issues with MongoDB connectivity or performance could affect the Java application, especially if the application relies heavily on database interactions.