Lab18 – Troubleshooting an issue with Network Policy

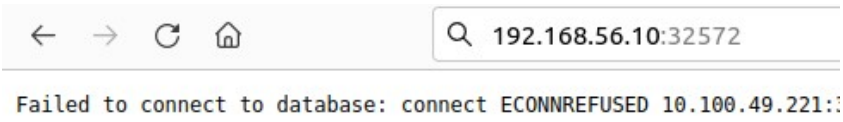
In this exercise, you will create a network policy allowing the web-app to query its database. The application stack consists of a web application implemented using node.js, and a MySQL database. The web application connects to the database upon requesting its endpoint. Web application and MySQL database run in a Pod. Both Pods have been exposed by a Service. The Service for the web application Pod is of type `NodePort`. The Service for the MySQL database is of type `ClusterIP`. By default, all ingress and egress traffic is not allowed in this namespace.

1. Create a new namespace named `network`. Within the namespace, setup the configuration `kubectl -n network apply -f setup.yaml`.

```
brahim@Training:~/lab18-troubleshooting-network-policy$ kubectl create ns network
namespace/network created
brahim@Training:~/lab18-troubleshooting-network-policy$
brahim@Training:~/lab18-troubleshooting-network-policy$ kubectl apply -f setup.yaml -n network
networkpolicy.networking.k8s.io/default-deny created
pod/mysql-db created
service/mysql-service created
pod/web-app created
service/web-app-service created
brahim@Training:~/lab18-troubleshooting-network-policy$
brahim@Training:~/lab18-troubleshooting-network-policy$ kubectl get all -n network
NAME           READY   STATUS              RESTARTS   AGE
pod/mysql-db   0/1     ContainerCreating   0          38s
pod/web-app    0/1     ContainerCreating   0          37s

NAME                        TYPE        CLUSTER-IP       EXTERNAL-IP   PORT(S)          AGE
service/mysql-service       ClusterIP   10.104.234.172   <none>        3306/TCP         38s
service/web-app-service     NodePort    10.100.53.97     <none>        3000:30506/TCP   37s
brahim@Training:~/lab18-troubleshooting-network-policy$
```

2. The Pod running web application exposes the container port 3000. From your machine, use your browser or execute `curl` or `wget` to access the application through the Service endpoint from outside of the cluster. A successful response should render `Successfully connected to database!`, a failure response should render `Failed to connect to database: <error message>`.



3. Add a new NetworkPolicy allowing web-app to connect to mysql-db only on port 3306.

```
apiVersion: networking.k8
kind: NetworkPolicy
metadata:
  name: default-deny
spec:
  podSelector:
    matchLabels:
      app: mysql-service
  ingress:
  - from:
    - podSelector:
        matchLabels:
          app: web-app
    ports:
    - port: 3306
```

```
brahim@Training:~/lab17$ vim setup.yaml
brahim@Training:~/lab17$ kubectl apply -f setup.yaml -n network
networkpolicy.networking.k8s.io/default-deny configured
Warning: Detected changes to resource mysql-db which is currently being deleted.
pod/mysql-db configured
service/mysql-service configured
pod/web-app configured
service/web-app-service configured
brahim@Training:~/lab17$
brahim@Training:~/lab17$
```

4. Use your browser or `curl` or `wget` command should now render the message `Successfully connected to database!`.

5. Delete the namespace `network`.