

# Déploiement d'infrastructure locale avec Terraform et Docker

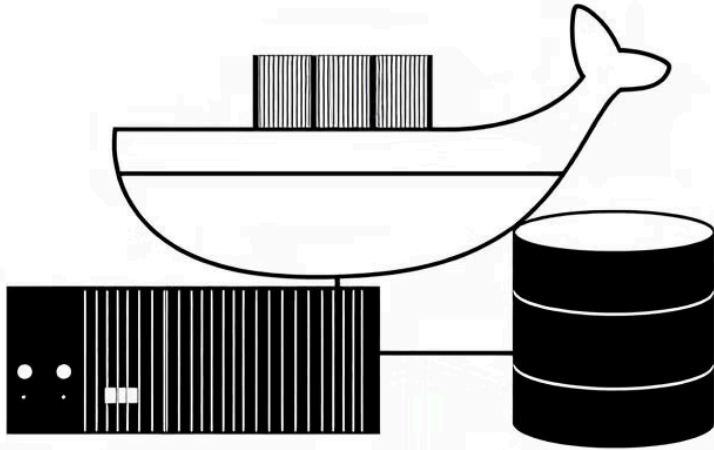
Validation de TP: Projet d'automatisation d'infrastructure multi-services.

Objectif: Environnement de développement rapide et reproductible.

Technologies clés: Terraform et Docker.

**M** par Mathis





# Architecture des services conteneurisés



## Front-end

React, port 3001



## Back-end

API Node.js/Express,  
port 3000



## Base de données

MySQL 8.0, port 3306

Trois conteneurs Docker distincts: Front-end, Back-end, Base de données.  
Interconnexion: Réseau Docker interne pour communication sécurisée.

# Automatisation avancée avec Terraform



## Initialisation DB

Script SQL auto-exécuté au démarrage du conteneur

*project/terraform/docker/database/init.sql*

```
1 CREATE TABLE IF NOT EXISTS users (  
2     id INT AUTO_INCREMENT PRIMARY KEY,  
3     username VARCHAR(100) NOT NULL UNIQUE,  
4     email VARCHAR(255) NOT NULL UNIQUE,  
5     password VARCHAR(255) NOT NULL,  
6     created_at TIMESTAMP DEFAULT CURRENT_TIMESTAMP  
7 );  
8  
9 CREATE TABLE IF NOT EXISTS tasks (  
10    id INT AUTO_INCREMENT PRIMARY KEY,  
11    title VARCHAR(255) NOT NULL,  
12    status ENUM('pending', 'in_progress', 'done') DEFAULT 'pending',  
13    priority ENUM('low', 'medium', 'high') DEFAULT 'medium',  
14    created_at TIMESTAMP DEFAULT CURRENT_TIMESTAMP,  
15    user_id INT NOT NULL,  
16    CONSTRAINT fk_user  
17    FOREIGN KEY (user_id) REFERENCES users(id)  
18    ON DELETE CASCADE  
19    ON UPDATE CASCADE  
20 );  
21  
22 INSERT INTO users (username, email, password) VALUES (  
23     username 'monutilisateur',  
24     email 'utilisateur@example.com',  
25     password 'mon_mot_de_passe_hashé_ou_simple'  
26 );
```

# Génération d'un Terraform output donnant les URLs des services accessibles.

 terraform output

```
backend_url = "http://localhost:3000" ⚙ Start Debugging in Browser "
database_url = <sensitive>
frontend_url = "http://localhost:3001" ⚙ Start Debugging in Browser "
services_info = {
  "backend" = {
    "port" = 3000
    "url" = "http://localhost:3000" ⚙ Start Debugging in Browser "
  }
  "database" = {
    "database" = "appdb"
    "host" = "localhost"
    "port" = 3306
    "user" = "appuser"
  }
  "frontend" = {
    "port" = 3001
    "url" = "http://localhost:3001" ⚙ Start Debugging in Browser "
  }
}
```

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>\_

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backend_url = "http://localhost:3000" ⚙ Start Debugging in Browser "
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    "database" = "appdb"
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    "port" = 3306
    "user" = "appuser"
  }
  "frontend" = {
    "port" = 3001
    "url" = "http://localhost:3001" ⚙ Start Debugging in Browser "
  }
}
```