

# Deploying a Three-Tier Application using Docker Stack

## Prerequisites:

- Docker installed (Docker Swarm must be enabled)
- A Docker Hub or Private Registry Account to push images

## Step 1:

- Clone the Repository:
- Run the following command to clone the application repository:

```
Unset
git clone
https://github.com/Aakibgithuber/Three-tier-Application-Deployment-.git

cd Three-tier-Application-Deployment
```

## Step 2:

- Initialize Docker Swarm (If not already)

```
Unset
docker swarm init
```

## Step 3:

- Navigate to the backend directory to build and push the image.

Unset

```
cd backend
docker build -t <your-dockerhub-username>/backend:1 .
docker push <your-dockerhub-username>/backend:1
cd ..
```

## Step 4:

- Navigate to the frontend directory to build and push the image.

Unset

```
cd frontend
docker build -t <your-dockerhub-username>/frontend:1 .
docker push <your-dockerhub-username>/frontend:1
cd ..
```

## Step 5:

- Create the Docker Stack File named stack.yml in the root of your project directory with the following content:

Unset

```
version: "3.8"

volumes:
  mongo_data:

services:
  mongo:
    image: mongo:latest
    networks:
      - webapp-network
    volumes:
```

```

    - mongo_data:/data/db
environment:
  - MONGO_INITDB_ROOT_USERNAME=admin
  - MONGO_INITDB_ROOT_PASSWORD=admin123
deploy:
  replicas: 1
  restart_policy:
    condition: on-failure

backend:
  image: prags2207/backend:1
  networks:
    - webapp-network
  environment:
    - NODE_ENV=production
    - USE_DB_AUTH=true
    - MONGO_USERNAME=admin
    - MONGO_PASSWORD=admin123
    -
MONGO_CONN_STR=mongodb://admin:admin123@mongo:27017/mydatabase?authSource=admin
  ports:
    - "9091:8080"
  depends_on:
    - mongo
  deploy:
    replicas: 2
    restart_policy:
      condition: on-failure

frontend:
  image: prags2207/frontend:1
  networks:
    - webapp-network
  environment:
    - REACT_APP_BACKEND_URL=http://20.62.44.245:9091/api/tasks
  ports:
    - "3001:3000"
  depends_on:
    - backend
  deploy:
    replicas: 2
    restart_policy:
      condition: on-failure

```

```
networks:
  webapp-network:
    driver: overlay
    attachable: true
```

## Step 6:

- Deploy the stack using the following command:

```
Unset
docker stack deploy -c stack.yml three-tier-app
```

## Step 7:

- Verify the Deployment by checking the status of the services to ensure they are running:

```
Unset
docker service ls
```

## Step 8:

- You can access the frontend of your application by navigating to:

```
Unset
http://20.62.44.245:3001
```

The backend of your application can be accessed by navigating to:

Unset

<http://20.62.44.245:9091/api/tasks>