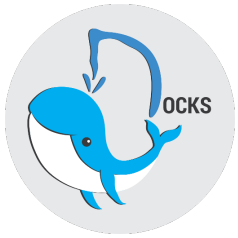
# User Manual for Docks

Team: TripleParity
Client: Compiax




## Contents

# 1 System Overview

This document assumes knowledge of how Docker works. For more information read:

- About Docker Engine
- Docker Overview
- Swarm Mode Key Concepts

Docks provides a web interface for managing a Docker Swarm. Along with an easy to use interface Docks provides security by only allowing registered users to manage Docker. Docks exposes the same functionality as the Docker Command Line Interface.

Docks allows developers and system administrators to manage the deployment of applications without requiring SSH access to a server.

# 2 System Configuration

Docks consists of two subsystems:

- Docks Web Interface
- Docks API Server

The web interface can be served from any static file server such as GitHub pages and will communicate with the Docks API server through the web browser.

The Docks API server is deployed on a Manager Node in the Docker Swarm

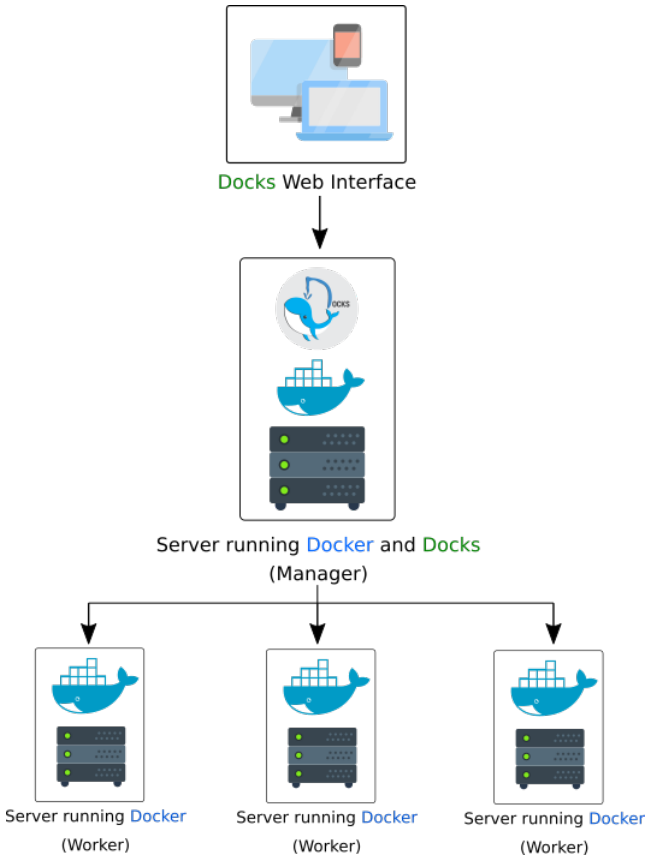



Figure 1: Docks Deployment Diagram

# 3 Installation

1. Install Docker 17.06.2-ce or higher
2. Install Docker Compose
3. Create a Swarm using `sudo docker swarm init`
4. Clone `https://github.com/TripleParity/docks.git`
5. Run `sudo docker-compose pull` to download the required images
6. Run `sudo docker stack deploy -c docker-compose.yml docks` to deploy Docks
7. Run `sudo docker stack deploy -c docker-compose-nginx.yml demo` to deploy a sample application
8. Browse to `http://127.0.0.1:4200` to view the Docks web interface
9. To remove Docks from the system run the following commands:
    - `sudo docker stack rm docks`
    - `sudo docker stack rm demo`

## 3.1 Configuration

### 3.1.1 Docks Web Interface

The following parameters can be configured in the `docker-compose.yml` file

- `DOCKS_API_ADDRESS` - The address of the Docks API server
- `ports` - The ports to listen on

### 3.1.2 Docks API

The following parameters can be configured in the `docker-compose.yml` file

- `JWT_SECRET` - The secret key used during authentication requests
- `DOCKS_DB_ADDRESS` - The address of the database
- `POSTGRES_PASSWORD` - The password for the `postgres` database user
- `ports` - The ports to listen on

# 4 Getting Started

The web interface will be available at `http://127.0.0.1:4200` after following the Installation instructions. The database will automatically be initialized and the default user will be created:

- Username: `admin`
- Password: `admin`

It is strongly recommended to change the password as soon as possible. This will be explained further in User Management

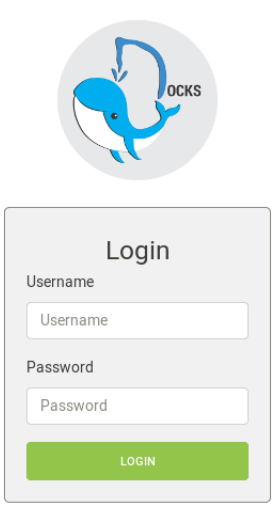



Figure 2: Login Page

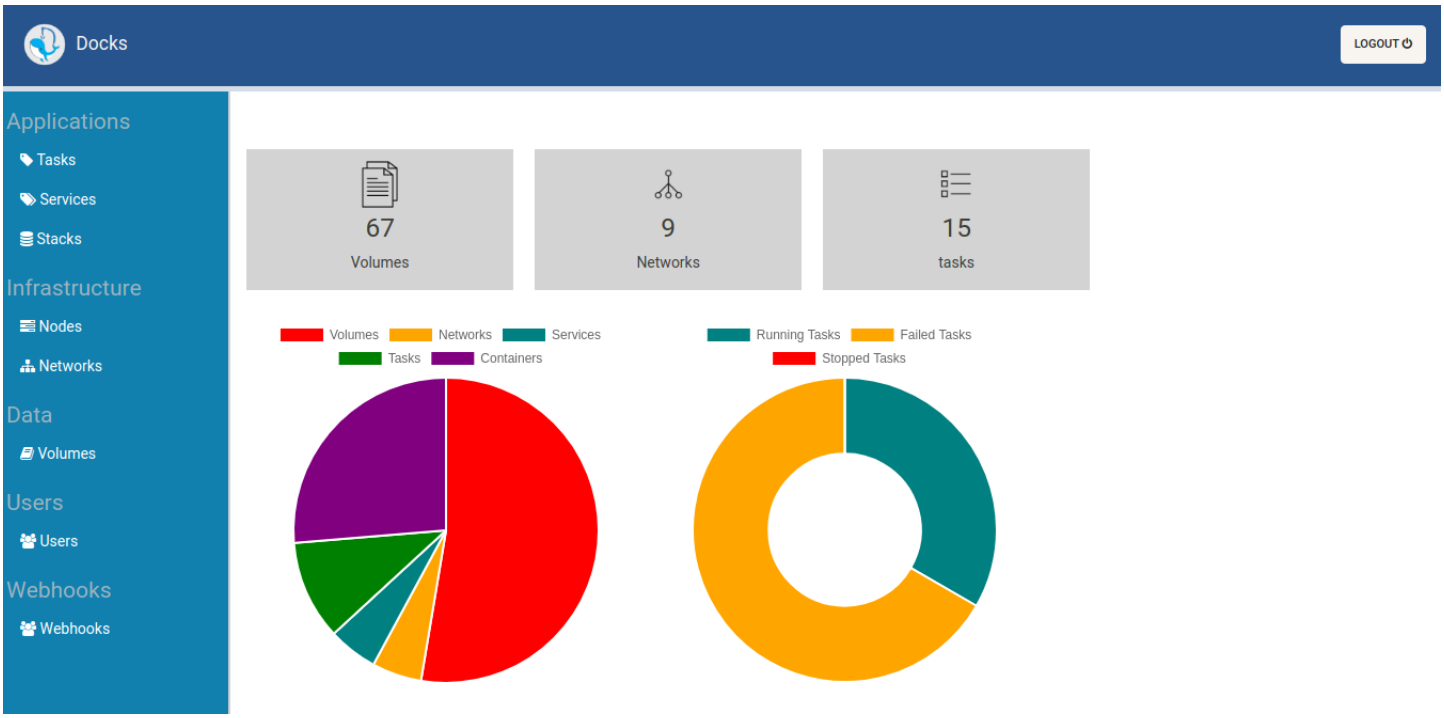



Figure 3: Home Screen

# 5 Using the System

## 5.1 Tasks

A service consists of Tasks. Tasks can only be viewed - they are managed by Docker as part of services.

### 5.1.1 Viewing Tasks

The table displays the following information:

- Name of the task
- Image that the task is running
- State of the task. Green means the task is running, red indicating it has stopped and blue indicating it is preparing
- Node ID on which the task is running

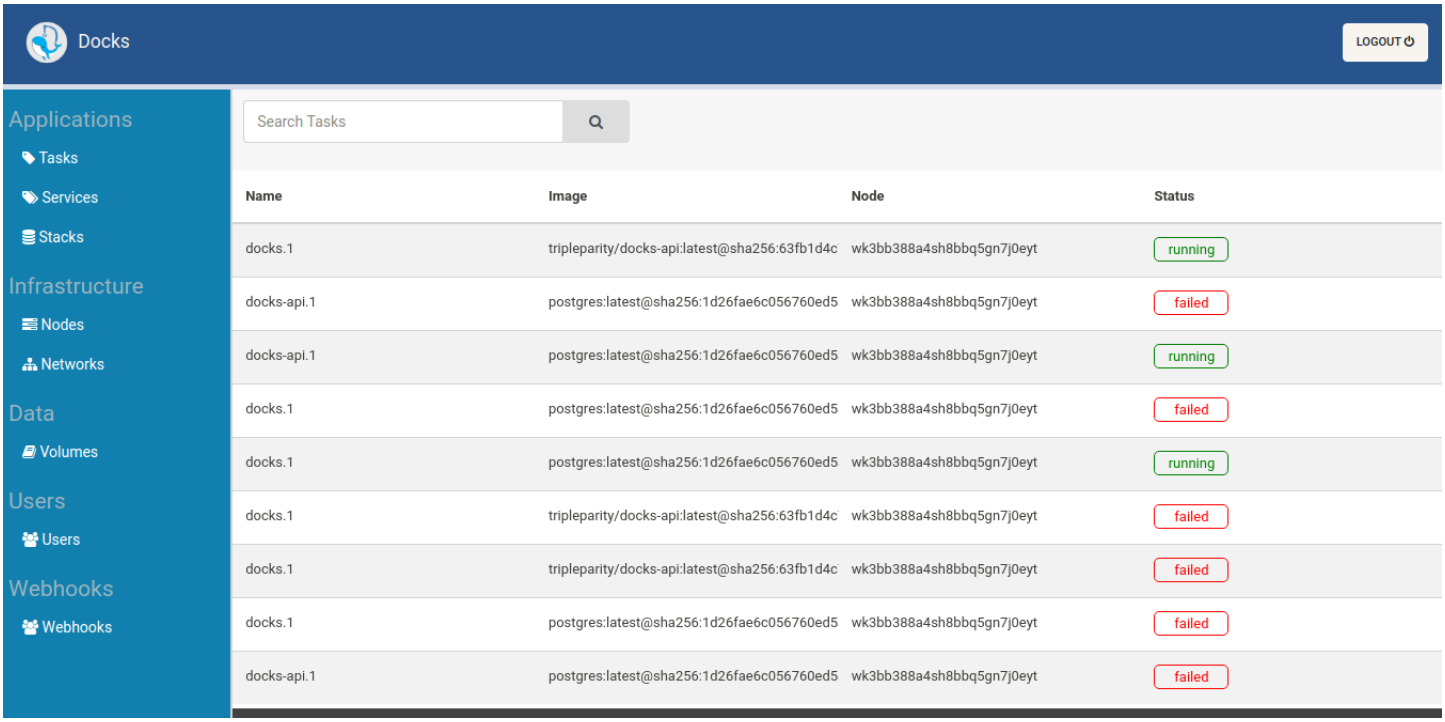



Figure 4: Task View

### 5.1.2 Viewing Task Details

From the task view, a task can be clicked to open up an new page on which details of that specific task is displayed.

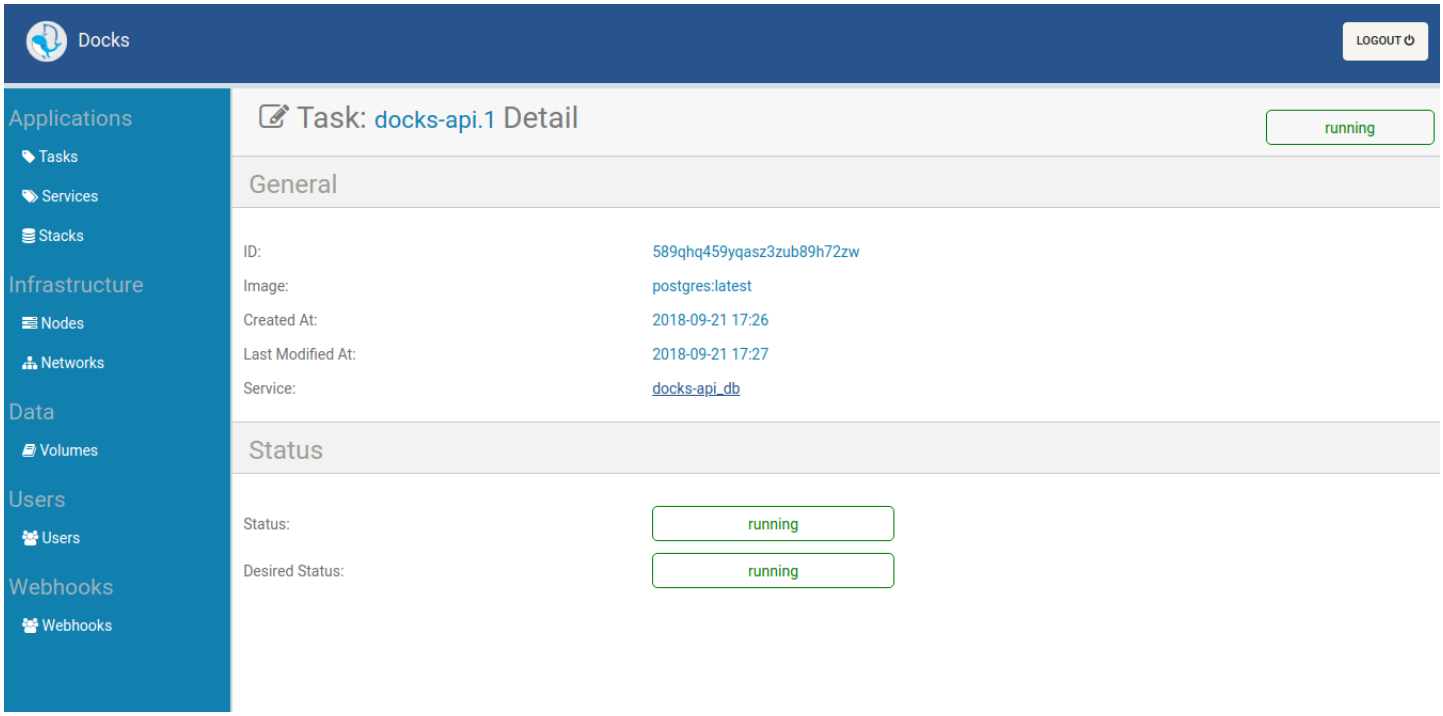



Figure 5: Task Detail View

## 5.2 Services

A stack consists of services. The service list view provides a sortable and searchable table for deployed services.

### 5.2.1 Viewing Services

The table displays the following information:

- Name of the service
- Image that the service is running
- Mode of the service
- Replicas of that services running
- Port of which the service is listening

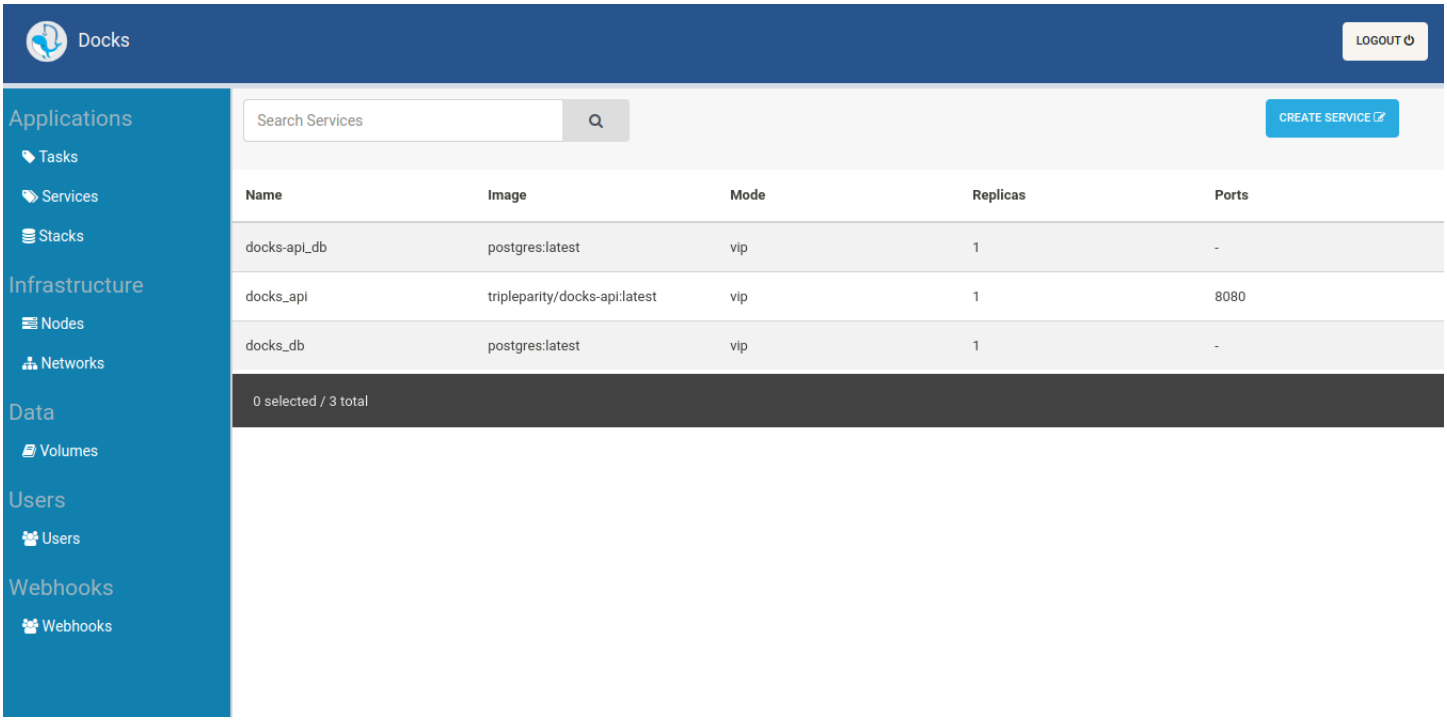



Figure 6: Service View

### 5.2.2 Viewing Service Details

From the service view, a service can be clicked to open up an new page on which details of that specific service are displayed.

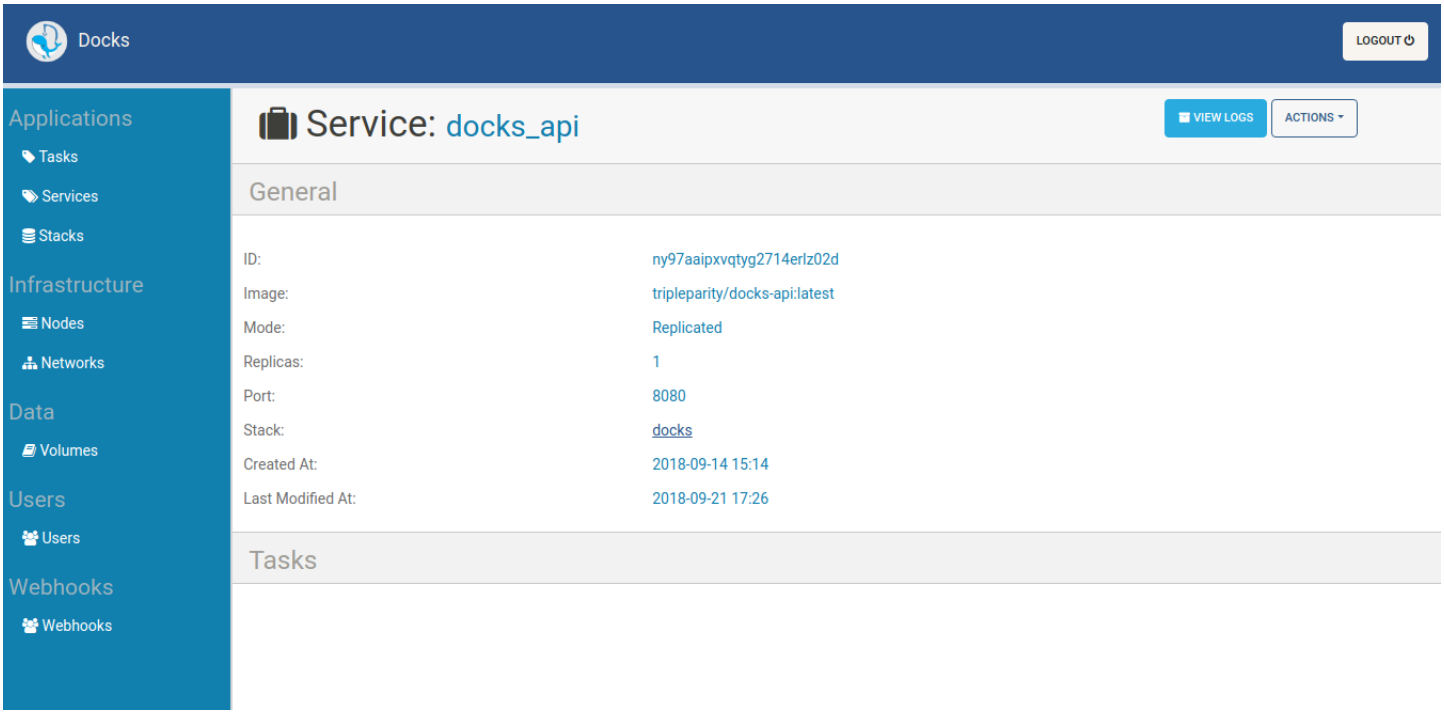



Figure 7: Service Detail View

### 5.2.3 Viewing Service Logs

From the service detail view, the logs page can be opened to view the complete log for that service.


Figure 8: Service Log View

## 5.3 Stacks

The concept of a Stack is the core feature of Docker. A Stack describes Services (applications) and how they should be deployed.

### 5.3.1 Viewing Stack

The table displays the following information:

- Name of the stack
- Number of services that belongs to the stack

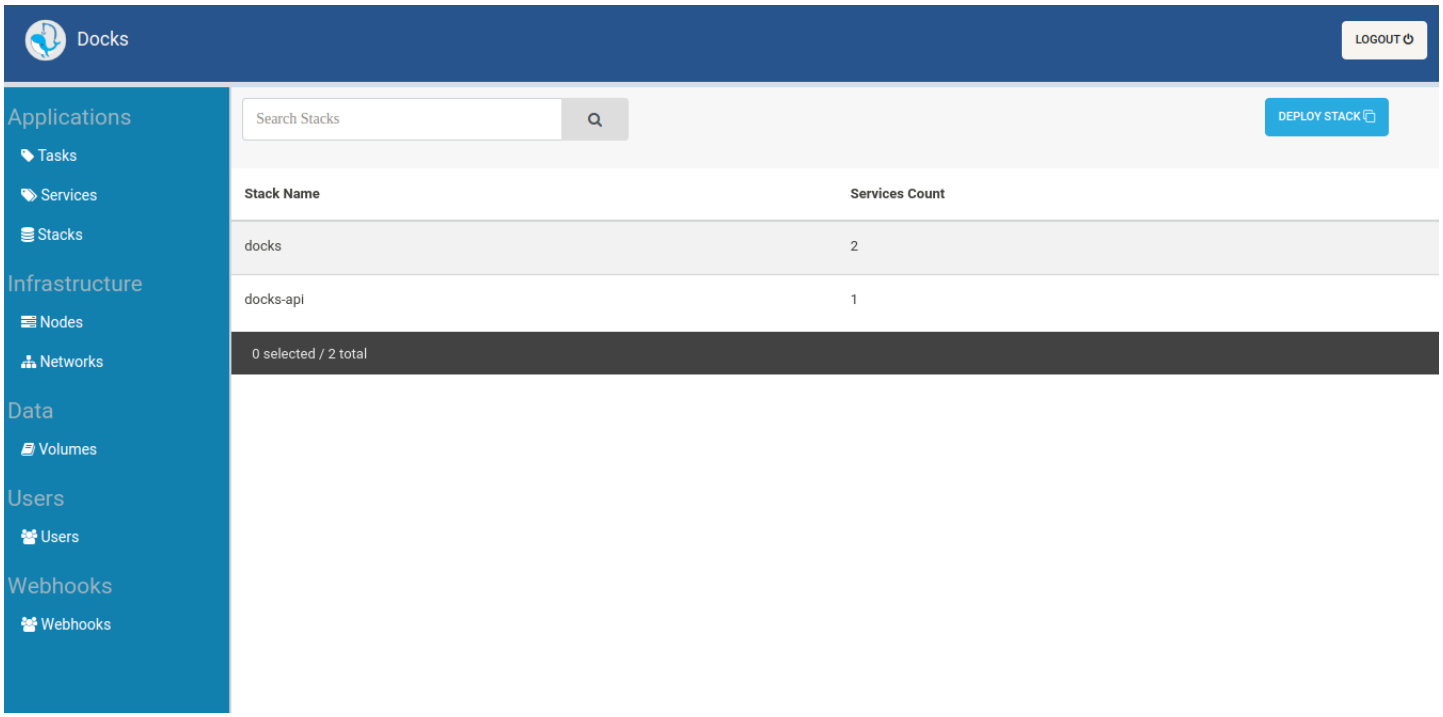



Figure 9: List of Stacks in the Swarm

### 5.3.2 Deploying a Stack

Docks allows the user to deploy their own Stack (Application) by uploading a Stack file. Pre-configured stacks can also be selected for deployment, such as Wordpress, Nginx, and MongoDB. The Stack File should be modified to fit the needs of the administrator and the system.

The Stack should be given a unique name to identify it in the system.

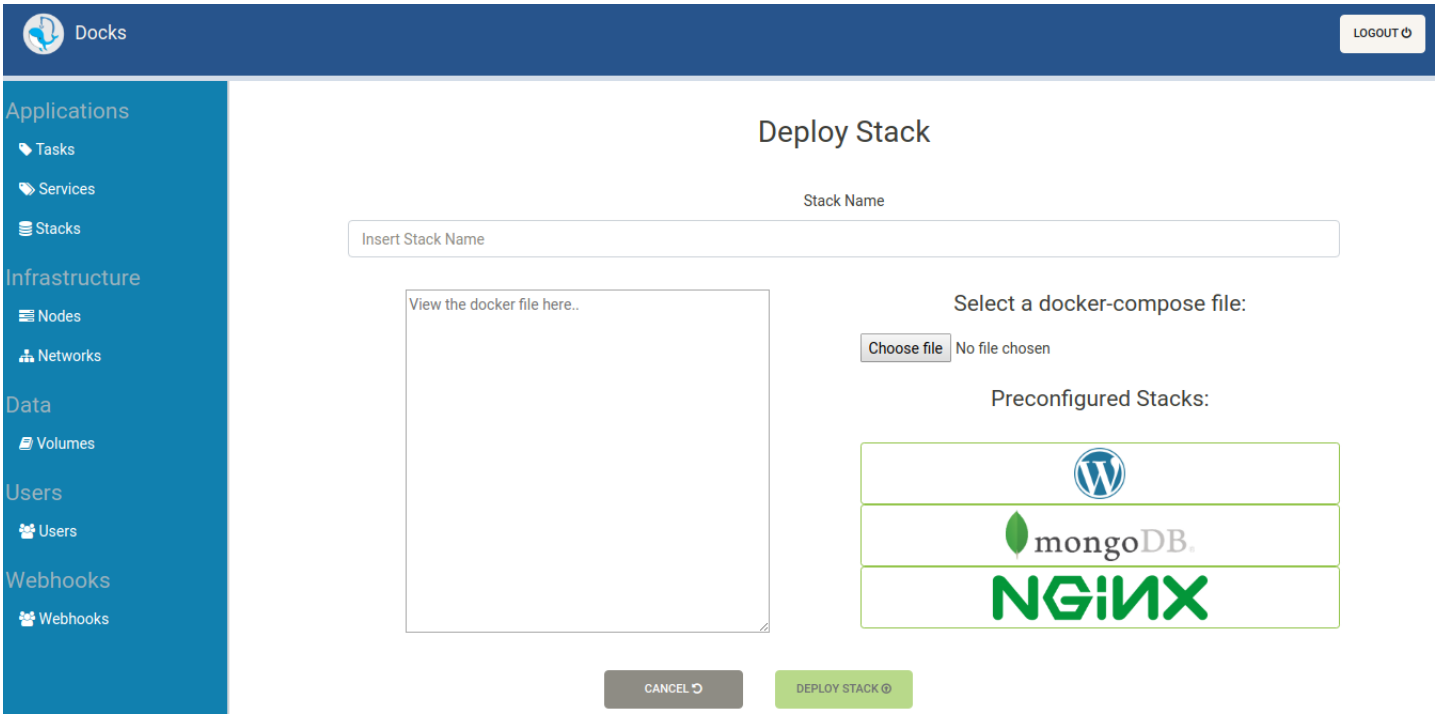



Figure 10: Deploying a Stack

### 5.3.3 Updating a Stack

By uploading a modified Stack file Docker will automatically update the deployed Stack to match the Stack file. Reasons for updating the stack may include:

- Updating to a new version
- Adding a new application to the Stack
- Changing the port for a running application
- Attaching new volumes to applications for extra storage
- Changing environmental variables used for configuration

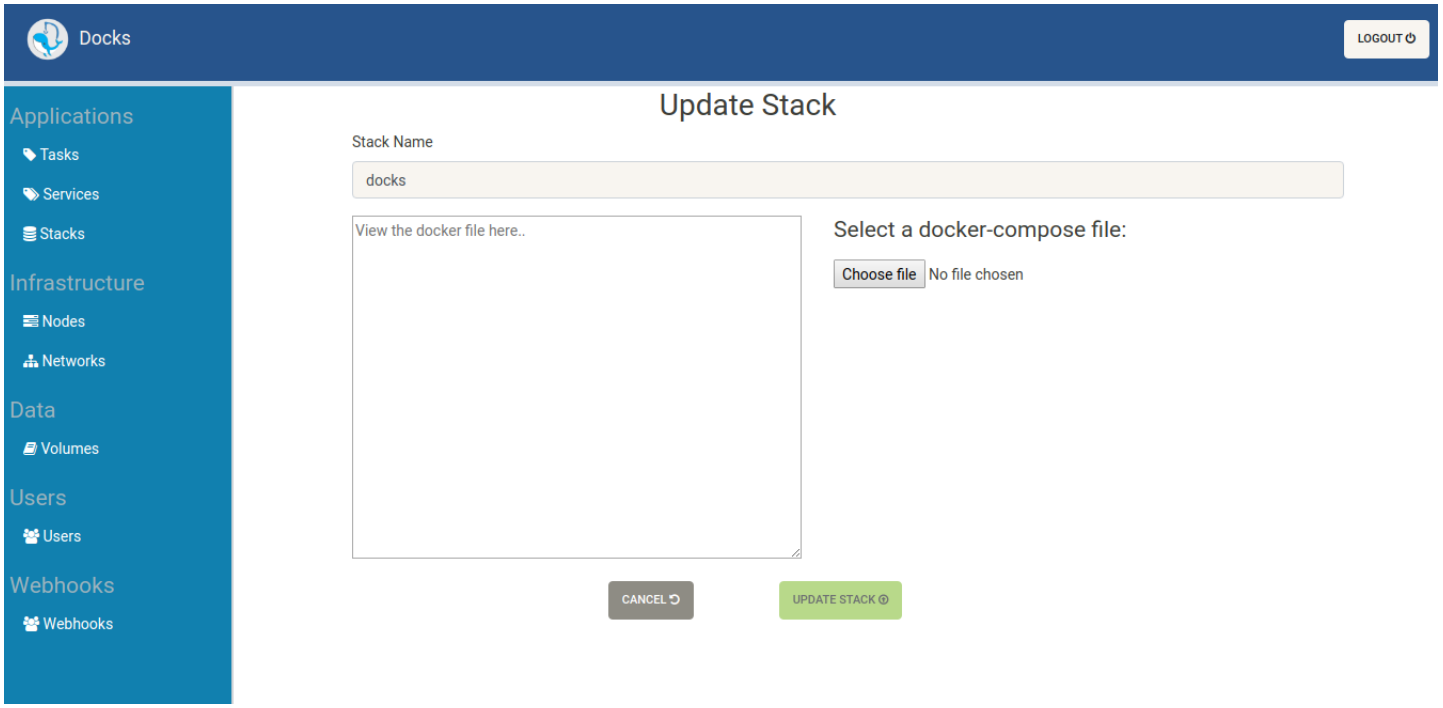



Figure 11: Updating a Stack

## 5.4 Node Management

Docker swarm is a concept that clusters single, separate docker hosts into a single virtual docker host. It consists of manager nodes that delegate jobs and load balance between worker nodes.

### 5.4.1 Viewing Nodes

The table displays the following information:

- Name of the nodes
- Engine version of the node
- IP Address of the node
- Availability of the node Green means the nodes is active, red indicating it has stopped and blue indicating it is preparing
- Role of the node
- State of the node Green means the nodes is active, red indicating it has stopped and blue indicating it is preparing
- Number of CPU's assigned to the node
- Memory assigned to the node

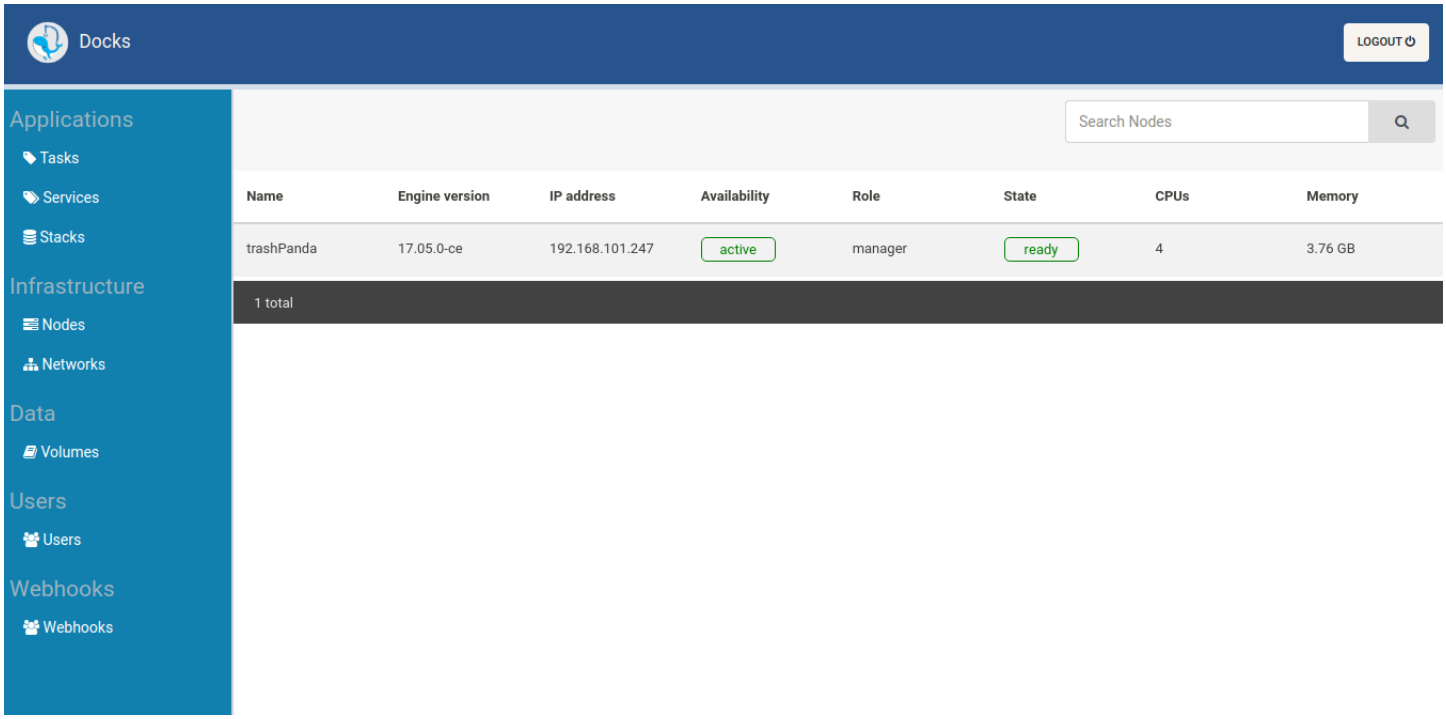



Figure 12: Nodes View

## 5.5 Network Management

Docker networks allow a user to connect containers with services or containers and services to non-Docker workloads.

### 5.5.1 Viewing Networks

The table displays the following information:

- Name of the network
- Driver assigned to the network

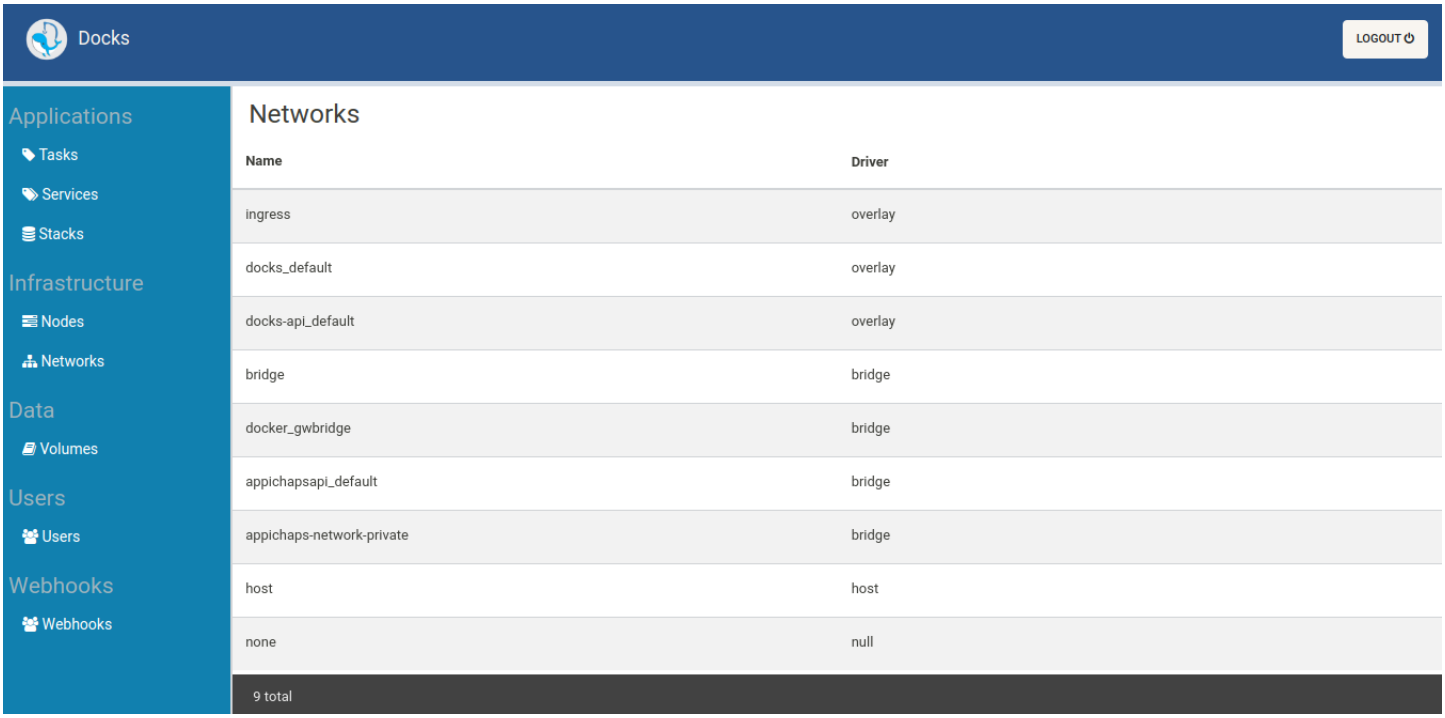



Figure 13: Networks View

## 5.6 Volume Management

Volumes are used with persistent data generated and used by Docker containers.

### 5.6.1 Viewing Volumes

The table displays the following information:

- Name of the volume
- Driver assigned to volume

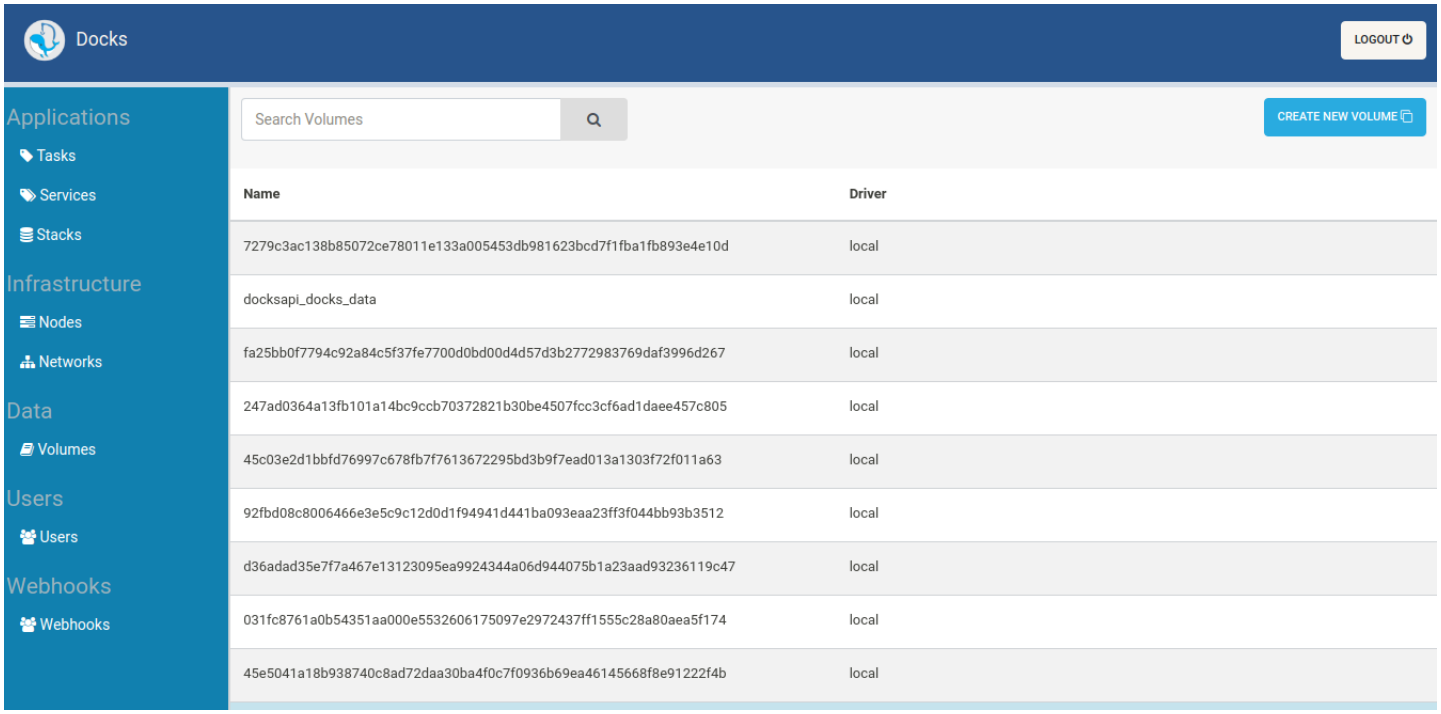



Figure 14: Volumes View

### 5.6.2 Creating Volumes

Docks allows the user to create their own volumes. The Volums should be given a unique name and assigned to a driver.

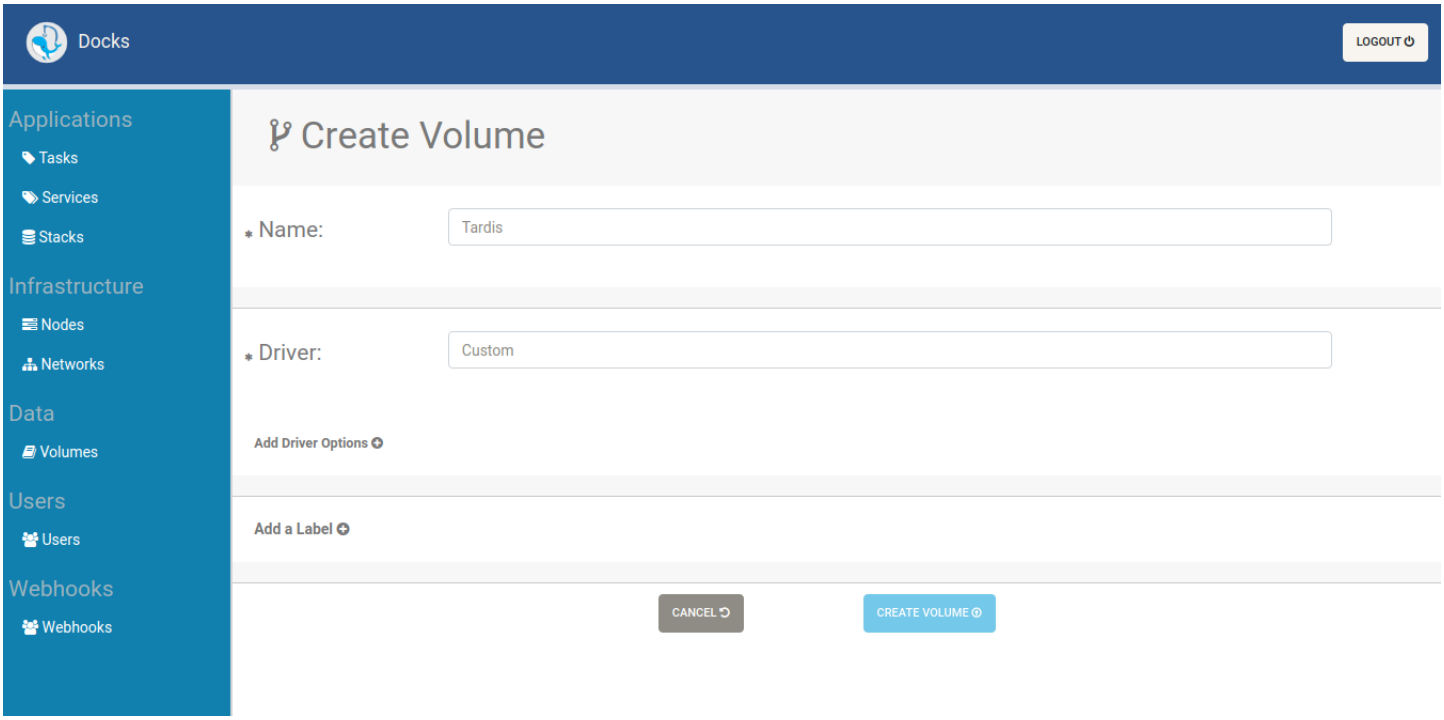



Figure 15: Deploying a Stack

## 5.7 User Management

### 5.7.1 Viewing Users

Only registered users can use Docks. An admin user can create more admin users. Currently there exists only admin users, so be sure to trust the person that will be using the account.

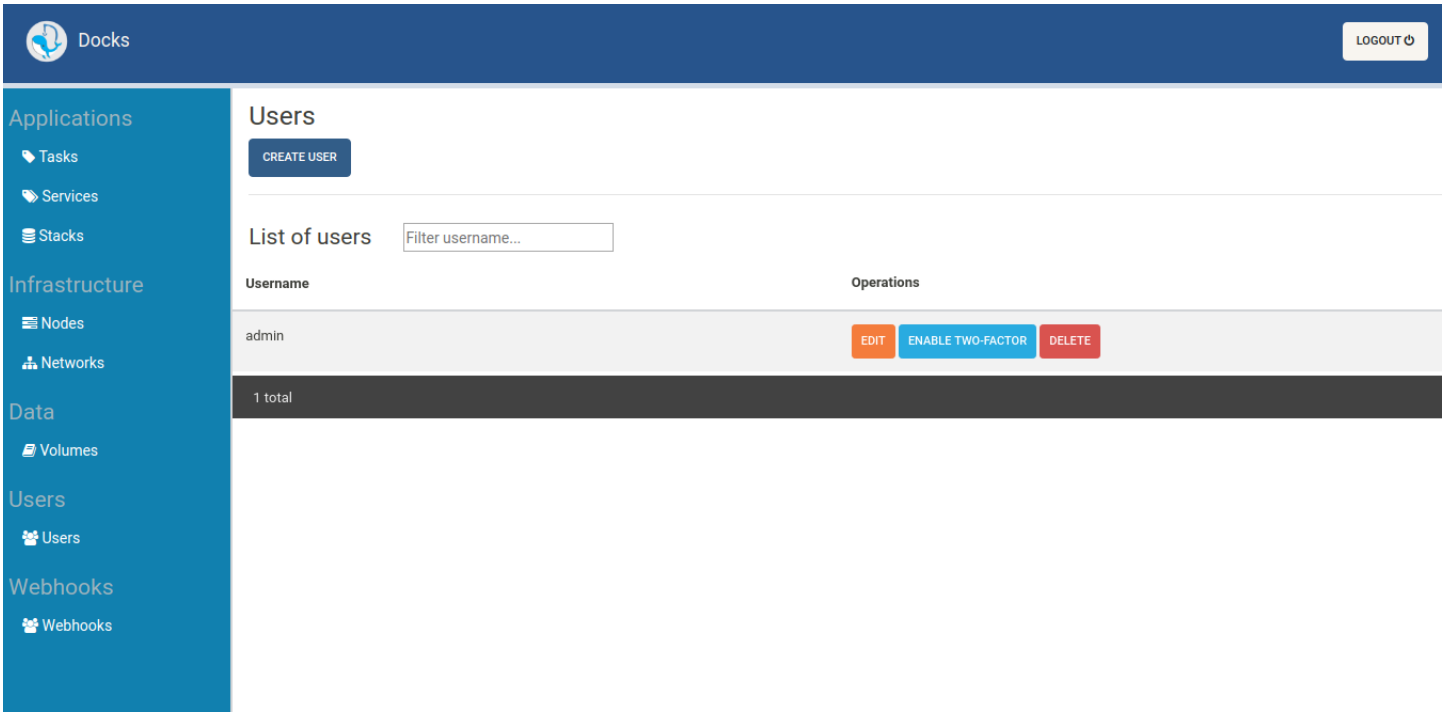



Figure 16: Users

### 5.7.2 Creating Users

Users can be created.

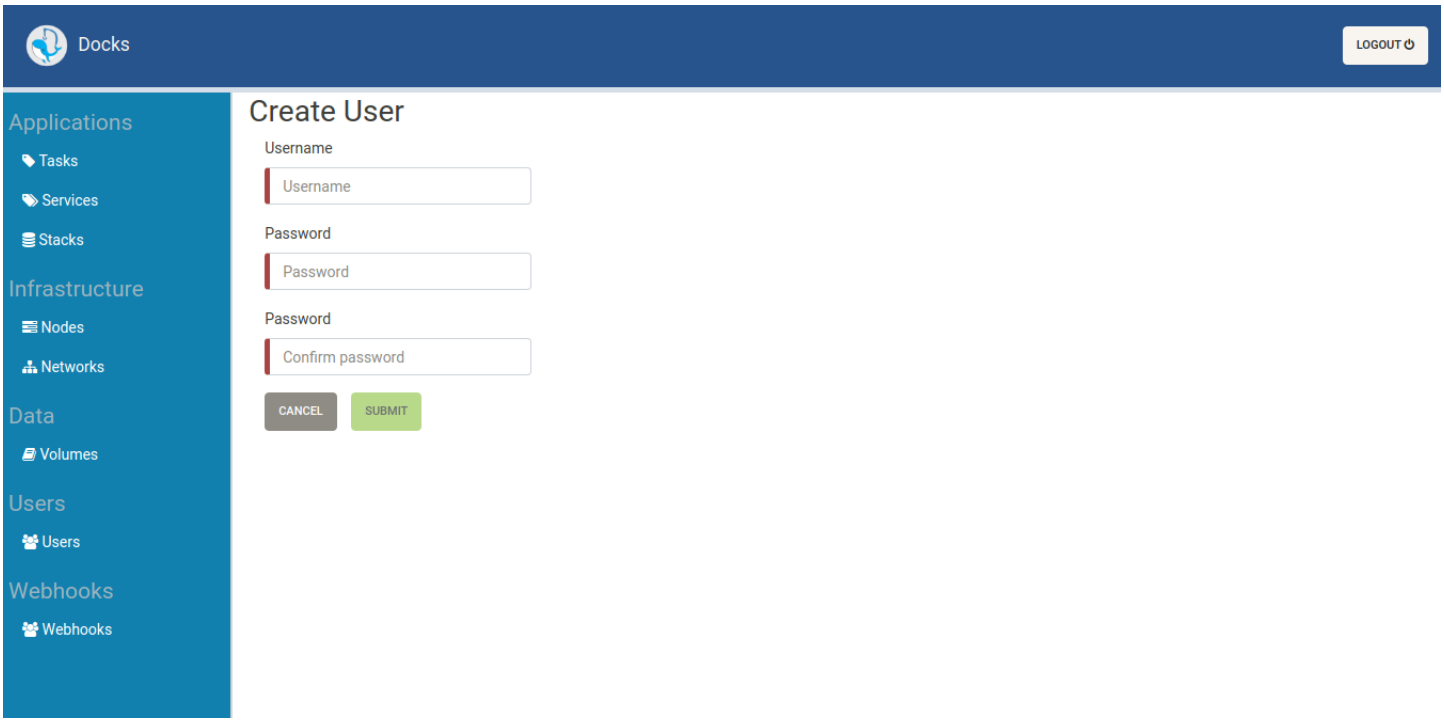



Figure 17: Users

### 5.7.3 Editing Users

Passwords can be changed using the Change Password page (Users -¿ Edit)

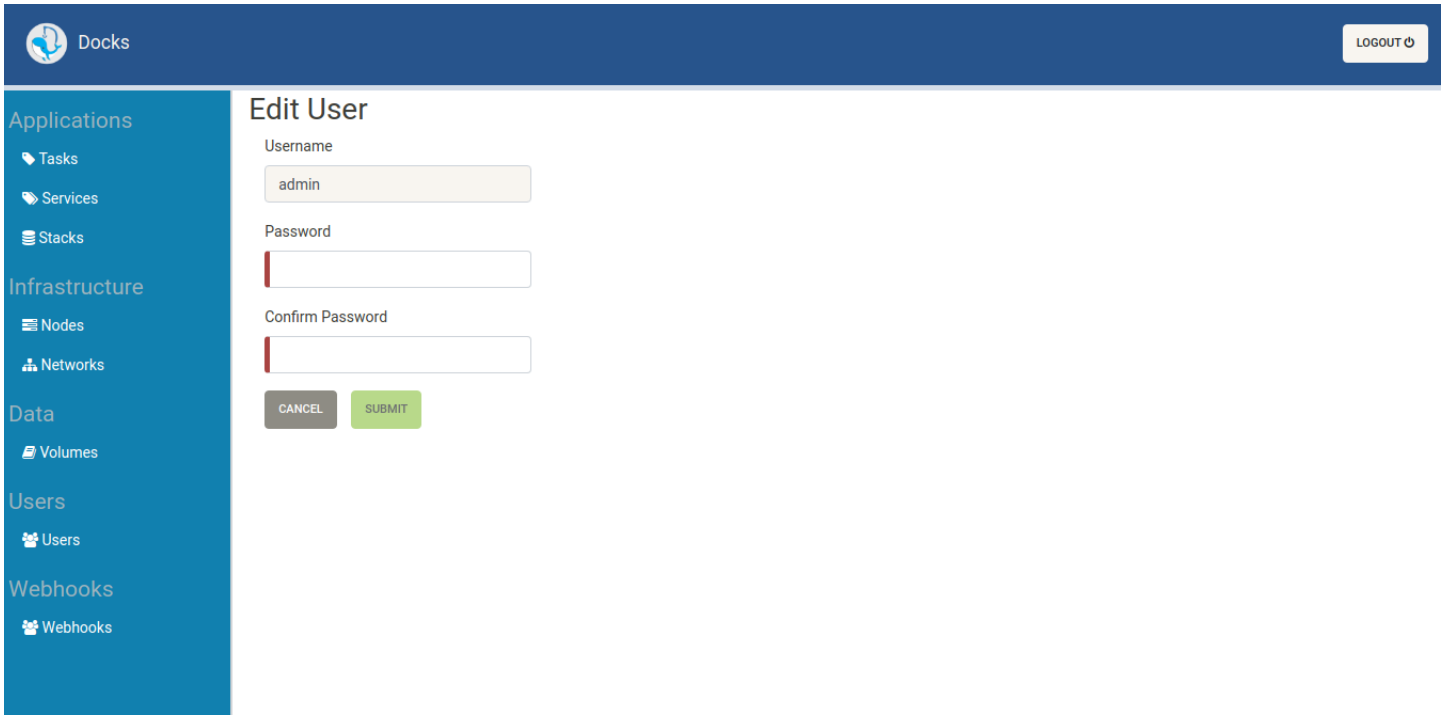



Figure 18: Users

## 5.8 Webhooks Management

Webhooks make it easy for our application to communicate flexibly with external services (such as slack). This allows us to generate slack notifications

### 5.8.1 Creating Webhooks

This pages allows you create webhooks.

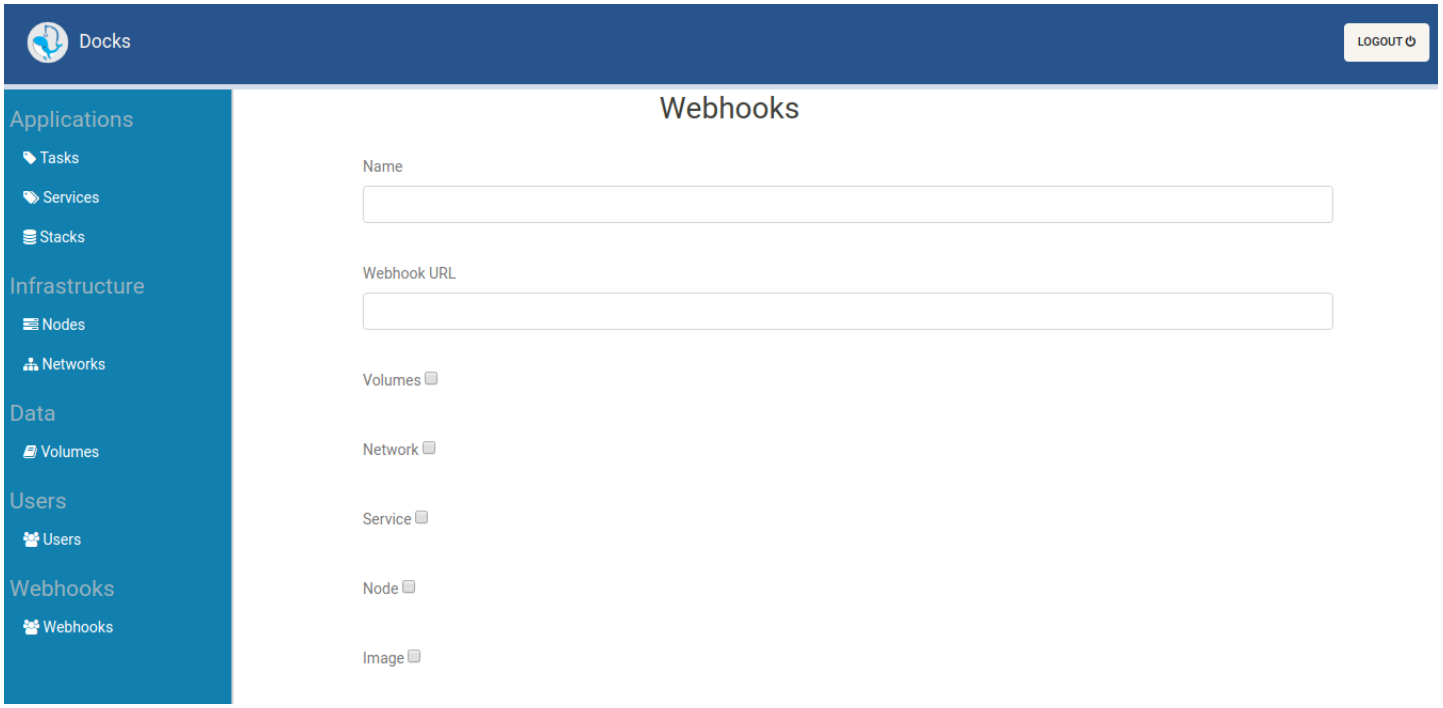



Figure 19: Webhooks Creation

# 6 Updating Docks

Once Docks is deployed, it can be updated as described in Updating a Stack

Alternatively the respective Stack file can be modified locally as deployed using `sudo docker stack deploy -c docker-c`

# 7 Troubleshooting

## 7.1 Error: bind: address already in use

Another service is most likely running on port `4200` , `8080` or `8081` . The ports for Docks and nginx-demo can be specified in the *docker-compose.yml* and *docker-compose-yml* files.

For example to run on port 9000 instead of 4200 make the following changes:

```
ports:
  - 4200:80
```

to

```
ports:
  - 9000:80
```