

This document provides an overview of the functionality and configuration of the services within the **Liberty Framework**, including **Node.js**, **PostgreSQL**, **pgAdmin**, **Airflow**, **OIDC**, and **Gitea**. These services are integrated with **Traefik** as a reverse proxy, enabling both HTTP and HTTPS access with automated routing.



1. Node.js Service (`liberty-node`) 🟢

- **Image:** `ghcr.io/fblettner/liberty-node:latest`
- **Command:** Runs the Node.js app (`app.js`) on port `3002` .
- **Security Options:**
 - 🛡️ `label:disable` : Disables SELinux labels.
 - ⚙️ `cap_drop` : Removes unnecessary Linux capabilities like `MKNOD` and `AUDIT_WRITE` .
- **Networks:** Connected to the `liberty-network` .
- **Working Directory:** `/opt/liberty`
- **Depends on:** PostgreSQL (`pg`) service.
- **Traefik Configuration:**
 - 🌐 **API Routing:** HTTP and HTTPS routing for `/api` using `PathPrefix` .
 - 📡 **Socket Routing:** HTTP and HTTPS routing for `/socket` and `/socket.io` .
 - 🧩 **React Application:** Handles HTTP and HTTPS routing for the React app with a middleware for error pages.
 - 🚀 **Compression:** `compress-middleware` applied to several routes for better performance.
 - 🛜 **Port Configuration:** Node.js runs on port `3002` .

2. PostgreSQL Service (`liberty-pg`) 🐘

- **Image:** `ghcr.io/fblettner/liberty-pg:latest`
- **Command:** Runs the PostgreSQL server with optimized settings for performance:
 - `shared_buffers=2GB`
 - `track_activity_query_size=1MB`
 - `work_mem=256MB`
 - `maintenance_work_mem=128MB`
- Other configurations to optimize WAL size, checkpoint timing, and costs.
- **Volumes:** Data stored in the `pg-data` volume.
- **Networks:** Connected to `liberty-network` .
- **Traefik Configuration:**
 - 🛠️ **TCP Router:** Routes PostgreSQL traffic via `db` entry point.
 - 🛜 **Port:** Exposed on port `5432` .






3. pgAdmin Service (`liberty-pgadmin`) 🖥️

- **User:** Root privileges enabled.
- **Volumes:** pgAdmin data stored in the `pgadmin-data` volume.
- **Environment:** Sets the `SCRIPT_NAME=/pgadmin` for pgAdmin web access.
- **Depends on:** PostgreSQL (`pg`).
- **Networks:** Connected to `liberty-network`.
- **Traefik Configuration:**
-  **HTTP Router:** Routes requests for `/pgadmin`.
-  **Port:** Exposed on port `3003`.


4. Airflow Service (`liberty-airflow`)

- **Image:** `ghcr.io/fblettner/liberty-airflow:latest`
- **Security Options:**
-  Disables SELinux labels.
-  Drops capabilities `MKNOD` and `AUDIT_WRITE`.
- **Volumes:**
- Logs stored in the `airflow-logs` volume.
- **Depends on:** PostgreSQL (`pg`), Gitea (`gitea`).
- **Networks:** Connected to `liberty-network`.
- **Traefik Configuration:**
-  **Routing:** Handles HTTP and HTTPS requests for `/airflow/home`.
-  **Error Pages Middleware:** Applied to both HTTP and HTTPS routes.
-  **Port:** Exposed on port `8080`.

5. OIDC Service (`liberty-keycloak`)

- **Image:** `ghcr.io/fblettner/liberty-keycloak:latest`
- **Command:** Starts the Keycloak OIDC server with proxy headers and hostname settings.
- **Environment Variables:**
-  `PROXY_ADDRESS_FORWARDING` : Enables proxy address forwarding.
-  `KC_HOSTNAME_PATH` and `KC_HTTP_RELATIVE_PATH` : Configured to `/oidc`.
- **Depends on:** PostgreSQL (`pg`).
- **Networks:** Connected to `liberty-network`.
- **Traefik Configuration:**
-  **HTTP and HTTPS Routing:** Routes `/oidc` requests.
-  **Port:** OIDC runs on port `9080` (Keycloak internally uses port `8080`).
-  **CORS Middleware:** Configures Cross-Origin Resource Sharing (CORS) for all origins and credentials.

6. Gitea Service (liberty-gitea)

- **Image:** `ghcr.io/fblettner/liberty-gitea:latest`
- **Healthcheck:** Ensures service health by checking `/` endpoint every 30 seconds.
- **Volumes:**
 - Configuration and data in `liberty-gitea`.
- **Restart Policy:** Set to `unless-stopped`.
- **Networks:** Connected to `liberty-network`.
- **Traefik Configuration:**
 -  **Routing:** Routes HTTP requests to `/gitea`.
 -  **Middleware:** Uses `stripprefix` to remove `/gitea` from the path for internal routing.
-  **Port:** Exposed on port `3000`.

Volumes

- **node-logs:** Stores Logs for backend and frontend.
- **pg-data:** Stores PostgreSQL data.
- **pg-logs:** Stores Logs for database.
- **pgadmin-data:** Stores pgAdmin data.
- **liberty-gitea:** Stores gitea config and data.
- **airflow-logs:** Stores logs for Airflow.
- **airflow-dags:** Stores Dags for Airflow.
- **airflow-plugins:** Stores Plugins for Airflow.
- **traefik-certs:** Stores Traefik certificates (external).
- **traefik-config:** Stores Traefik configuration (external).
- **shared-data:** Stores shared data (external).

Networks

- **liberty-network:** External network for inter-service communication.

This configuration enables a scalable, containerized microservice architecture with **Node.js** for application logic, **PostgreSQL** for database management, **pgAdmin** for database administration, **Airflow** for automation, **Keycloak OIDC** for authentication, and **Gitea** for file management and versioning. **Traefik** serves as the reverse proxy, handling routing and applying security middleware for all services.