

Architecture



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


- **Image:** `ghcr.io/fblettner/liberty-pgadmin:latest`
 - **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`.
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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`.
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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 `9000` (Keycloak internally uses port `8080`).
 -  **CORS Middleware:** Configures Cross-Origin Resource Sharing (CORS) for all origins and credentials.
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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`.
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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).
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Networks

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