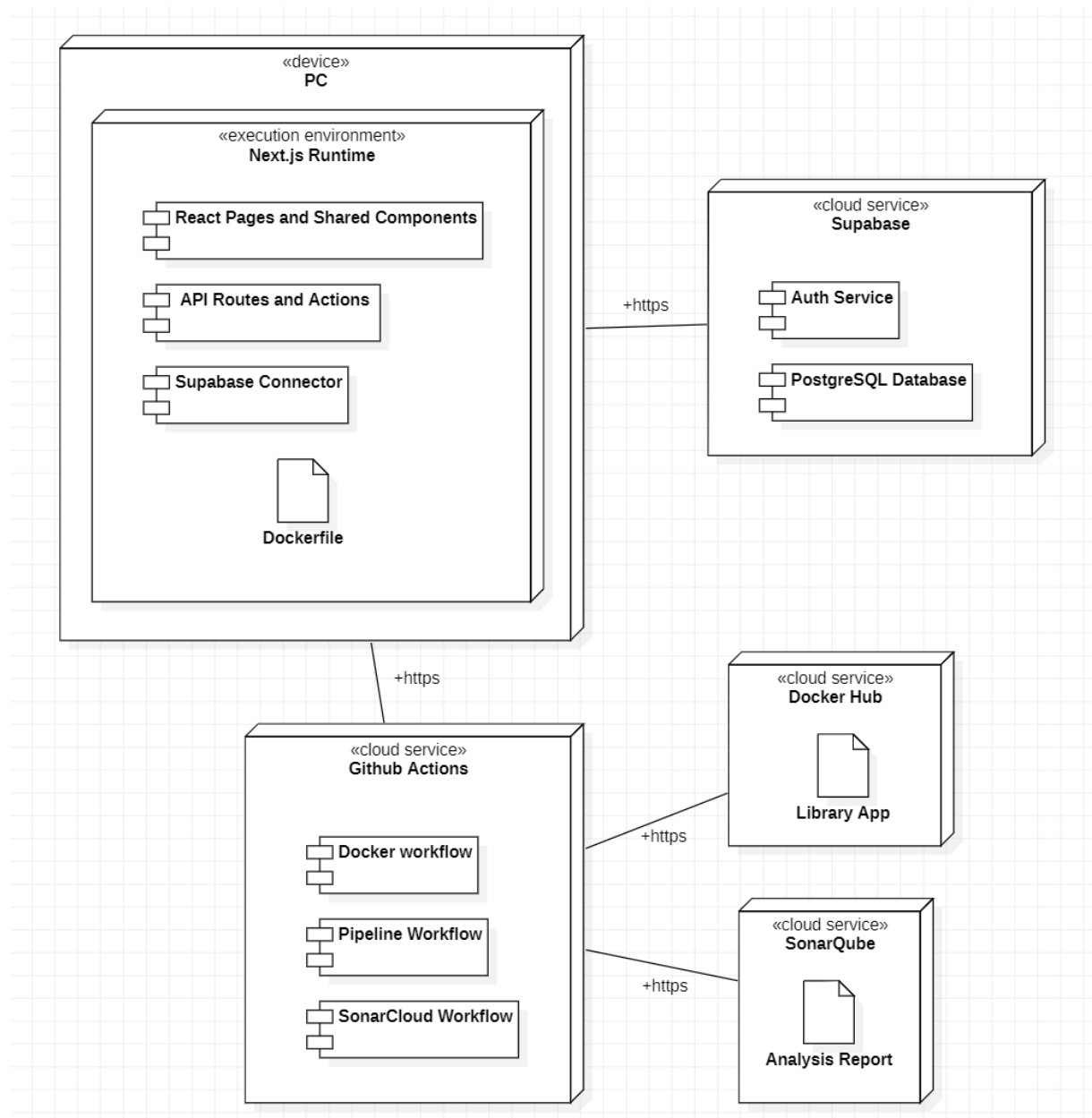# Deployment Diagram

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Next.js Runtime (Node): Application code runs on a full Node server.

React Pages and Shared Components (Component): In Next.js, a page is a React component that lives in the app/ folder as a page file. Components are reusable building blocks that can be used in multiple pages.

API Routes and Actions (Component): In Next.js, API Routes are server-side endpoints (inside app/api/) that handle requests like fetching or saving data. Actions are server functions ('use server') that React components can call directly to run server-side logic.

Supabase Connector (Component): In Next.js, a Supabase Connector is a component that connects to the Supabase database, enabling pages or API routes to read and write data.

Dockerfile (Artifact): The Dockerfile is a build recipe that the pipeline uses to create Docker images. The pipeline reads the Dockerfile, builds the image, optionally tests it, and pushes the final image to a container registry.

GitHub Actions (Node): GitHub Actions is a CI/CD system where workflows run in environments that support Node.js.

Docker workflow (Component): This lets the pipeline build Docker images, test them, and push them to a registry automatically.

Pipeline Workflow (Component): This lets the pipeline run Node scripts to build the app, run tests, install packages, and create reports.

SonarCloud Workflow (Component): The SonarCloud Workflow is a pipeline component that analyzes the codebase for quality, security vulnerabilities, and maintainability issues. It runs automatically in CI, sending reports to SonarCloud where metrics like code smells, test coverage, and duplicated logic are tracked.

Supabase (Node): Supabase is a backend service node that provides authentication, database access, storage, and real-time features. It acts as the main backend platform that the application communicates with through client libraries, server components, API routes, or server actions.

Auth Service (Node): The Auth Service is a node responsible for handling user authentication, including sign-up, login, session management, and token validation. It integrates Supabase Auth.

PostgreSQL Database (Node): The PostgreSQL Database is a data-storage node that stores structured application data. Supabase provides and manages this database behind

the scenes, allowing queries, inserts, updates, and real-time subscriptions through SQL or Supabase client calls.

Docker Hub (Node): Docker Hub is a container registry node where built Docker images are stored. The CI/CD pipeline can push images to Docker Hub, allowing deployments or other services to pull the latest version of the application's container image.

Library App (Artifact): The Library App is the packaged output of the application—such as the compiled Next.js build or the final Docker image—that represents the deployable version of the software. This artifact is produced by the pipeline and used in staging or production environments.

SonarQube (Node): SonarQube is a code-quality analysis node that inspects the project for bugs, vulnerabilities, code smells, and maintainability issues. It processes scans from the CI workflow and provides dashboards, metrics, and quality gates that help maintain high code standards.

Analysis Report (Artifact): The Analysis Report is an artifact generated by the quality and testing workflows. It includes test results, linting output, code coverage data, or SonarQube/SonarCloud findings. This artifact is stored for review in the pipeline and can be used to assess code health before deployment.