

A person wearing a white lab coat, a blue surgical cap, and a blue face mask is standing in a server room. They are wearing blue gloves and are interacting with a computer monitor. The room has white tiled walls and a ceiling with fluorescent lights. In the foreground, there are several computer monitors and server racks. The overall color scheme is blue and white.

TYPE 1 DIABETES REGISTRY SERVER SPECIFICATION



Type 1 Diabetes Registry Application - Deployment Architecture

This document outlines a deployment architecture for Type 1 Diabetes Registry Application web-based application, suitable for Type 1 Diabetes Registry Application programs. The architecture emphasizes modular design, security, and flexibility, making it adaptable, it highlights core infrastructure components, software layers, integration points, and security measures essential for reliable and efficient application delivery.

The following sections detail the core components, deployment layers, infrastructure specifications, and additional extensions required for successful implementation.

1. Core Components

- Web Application (Backend and Frontend)
- PostgreSQL Database
- OS- Ubuntu-22.04
- Nginx/Apache HTTP Server (Optional for SSL termination)
- Backup & Recovery System
- Domain or Subdomain with SSL certificate
- Email Server (SMTP server details)

2. Deployment Layers

Client Layer (End-Users)

- Devices: Desktop Browsers, Mobile phones, Tablets
- Access via: HTTPS (secured with SSL/TLS)
- Usage: Data entry, reports, dashboards, tracker capture, custom app access

Application Layer (DHIS2 Server)

- Web API (Tomcat)
- Core Application (WAR)
- Web Server (Optional, like Nginx or Apache for load balancing, reverse proxy, SSL)

Tech stack

- Tomcat 9+
- Java 11/17
- DHIS2 (Latest stable version or LTS)

Database Layer

- PostgreSQL (13+, Can be V16)
 - o Data partitions (for large datasets if needed)
 - o Regular Backups (daily incremental, weekly full)

Hosting Option: On the same VM as or separate VM for better performance.

3. Infrastructure Components

App Server VM 8 vCPU, 16-32 GB RAM, 200 GB Disk

DB Server VM 4 vCPU, 8-16 GB RAM, 256 GB SSD Disk

Firewall – as per Network / guidelines

4. Security Layer

- SSL/TLS encryption for all web traffic
- User authentication: Two-factor authentication (2FA) - Email / Google Auth
- Database security: Encrypted backups, secure PostgreSQL access
- Firewall: Restrict access to specific IP ranges

5. Custom Needs/Extensions

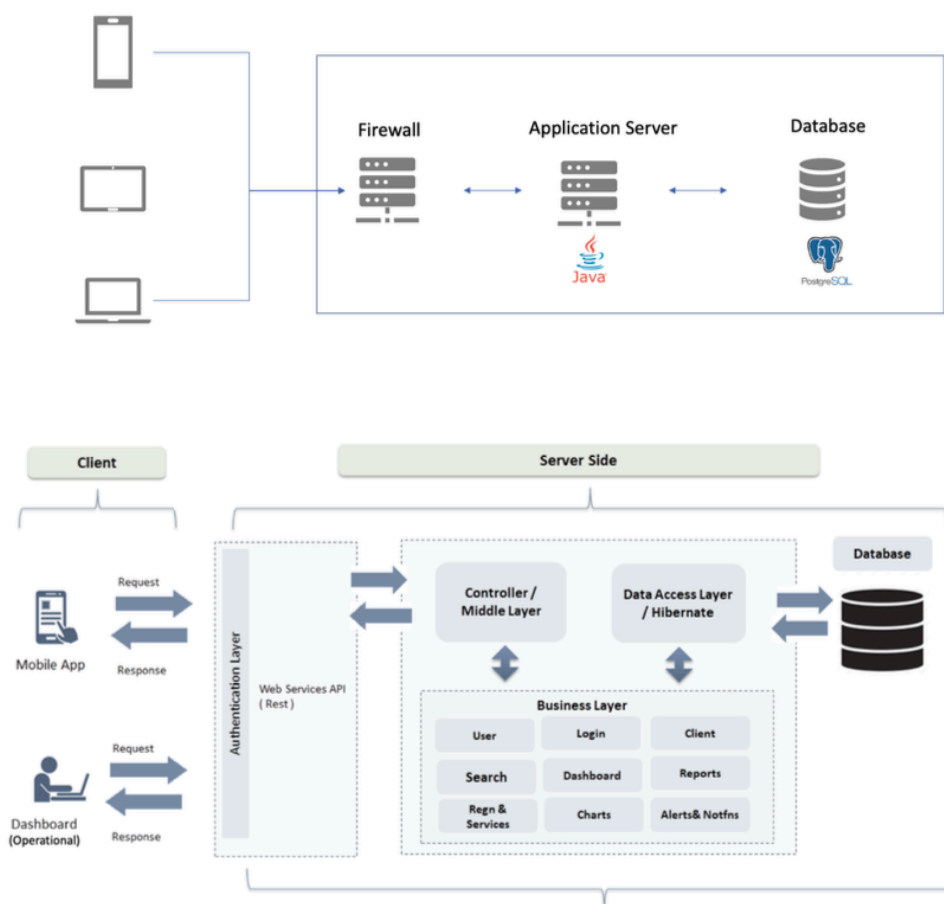
Integrations

- External systems (LMIS, EMR, Lab systems)
- SMS/IVR Gateway (for community health workers)
- Mobile apps (DHIS2 Tracker Android App or custom)

Backup & Monitoring

- Automated backups: pg_dump + rsync to secure storage
- Monitoring: As per guidelines

6. Deployment Diagram



7. Minimum Recommended Versions

- Component Version
- Java 11 or 17
- PostgreSQL 13+ (could be V16)
- Tomcat 9