

🏥 Health Care Management System - Docker Production Architecture

Containerized Multi-Service Architecture with Health Monitoring & Load Balancing

🐳 Docker Host (Ubuntu Linux)

Container Runtime: Docker Engine 24.0+

🌐 Docker Network: healthcare-network (bridge)

Inter-container communication with DNS resolution

🐳 Nginx Proxy

healthcare-nginx
Nginx 1.25 Alpine
Reverse Proxy
Load Balancer
SSL Termination

Ports:
80:80 | 443:443
🟢 Healthy

HTTP/HTTPS
Static Files

🌐 Frontend

healthcare-frontend
React 18 + TypeScript
Vite Build Tool
Tailwind CSS
Redux Toolkit

Ports:
5173:80
🟢 Healthy

API Calls
REST/JSON

🐳 Backend API

healthcare-backend
Node.js 20 LTS
Express.js
Prisma ORM
JWT Auth

Ports:
3002:3002
🟢 Healthy

SQL Queries
Prisma ORM

🐳 Database

healthcare-db
PostgreSQL 15
Alpine Linux
Persistent Storage
Health Checks

Ports:
5432:5432
🟢 Healthy

🌐 Internet

Access Points:

- http://localhost:80
- http://localhost:5173
- http://localhost:3002/api



Users

(Patients/Doctors)

📊 Performance Metrics

- Total Memory Usage: ~107MB
- Startup Time: <12 seconds
- Health Check Interval: 30s
- Container Images: ~515MB total
- Network Latency: <5ms internal
- API Response Time: <100ms avg

🟢 Health Monitoring

- All containers: 🟢 Healthy
- Auto-restart: enabled
- Health check: every 30s
- Logging: centralized
- Backup: automated daily
- Monitoring: real-time