KodeMed

DevOps & Server Administration Guide

For Hospital IT Administrators, DevOps Engineers & System Operators

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Architecture Overview

Four server-side services + Windows desktop client

Service	Port	Technology	Role
KodeMed Server	8080	Spring Boot 3.4	REST API, WebSocket, sessions, audit
KodeMed DataServer	8081	Spring Boot 3.4	ICD-10, CHOP, ATC, SwissDRG catalogs
KodeMed GrouperServer	8082	Spring Boot 3.4	SwissDRG, TARPSY, ST Reha grouping
KodeMed CodingUI	3000	React / nginx	Web frontend

Database: PostgreSQL 16 (shared by Server + DataServer). Authentication: OAuth2 / OpenID Connect.

Deployment Options

Three deployment models for every infrastructure

Docker Compose

Recommended for single-server

- All services in one docker-compose.yml
- PostgreSQL included as container
- Simplest setup and maintenance
- Best for: demo, small-medium hospitals

Linux Native (systemd)

For no-container policies

- JARs run as systemd services
- External PostgreSQL required
- Multi-instance support on same host
- Best for: strict infrastructure policies

Kubernetes / OpenShift

Enterprise, scalable

- Helm chart with all services
- Horizontal pod autoscaling
- Pod disruption budgets, rolling updates
- Best for: large hospitals, multi-site

Docker Compose — Setup

Step-by-step installation on a single server

Installation Steps

- 1. Create directory: mkdir -p /opt/kodemed
- 2. Copy docker-compose.yml, .env, runtime-config.js
- 3. Edit .env: database, OIDC, CORS, encryption keys
- 4. Edit runtime-config.js: API URLs for your domain
- 5. docker login harbor.mieresit.com
- 6. docker compose pull && docker compose up -d

Key Environment Variables

- POSTGRES_PASSWORD — database password
- OIDC_ISSUER_URI — SSO provider URL
- CORS_ALLOWED_ORIGINS — your public domains
- KODEMED_ENCRYPTION_KEY — data encryption (GDPR)
- KODEMED_VERSION — image tag from KodeMed AG

Linux Native — Installation

Automated installer for Ubuntu / Debian

Interactive Installer

- tar -xzf kodemed-linux-<version>.tar.gz
- sudo bash install-kodemed.sh
- Select components (Server, DataServer, Grouper, UI)
- Configure ports, database, OIDC
- systemd services created automatically

Directory Layout

- /opt/kodemed/ — installation (JARs, UI)
- /etc/kodemed/ — configuration files
- /var/log/kodemed/ — application logs
- /var/lib/kodemed/ — data (imports)

Service Management

- systemctl start|stop|restart kodemed-server
- systemctl status kodemed-server
- journalctl -u kodemed-server -f

Reverse Proxy Configuration

HTTPS termination and WebSocket support

Apache (mod_proxy)

- Enable: mod_proxy, mod_proxy_http, mod_proxy_wstunnel, mod_ssl
- ProxyPass /ws/ ws://localhost:8080/ws/ (WebSocket FIRST)
- ProxyPass / http://localhost:8080/ (HTTP after)
- One VirtualHost per service subdomain

nginx

- proxy_http_version 1.1 for WebSocket
- proxy_set_header Upgrade $http_upgrade
- proxy_set_header Connection "upgrade"
- One server block per service subdomain

WebSocket support is mandatory — the CodingClient and UI communicate via /ws/ on the Server.

SSO / OIDC Configuration

OpenID Connect for authentication

Keycloak (Recommended)

- Pre-configured Keycloak stack provided
- Caddy for automatic HTTPS (Let's Encrypt)
- Daily database backups (30-day retention)
- Brute force protection: 5 max failures

Required OIDC Clients

- kodemed-ui — public client, PKCE flow
- kodemed-server — confidential, service account
- Roles: admin, coder, approver, viewer

Alternative Providers

- Azure AD, Okta, Auth0 also supported
- Set OIDC_ISSUER_URI + OIDC_JWK_URI in .env
- Token must include sub + roles/groups claims

Updating KodeMed

Upgrade procedures for each deployment model

Docker Compose Update

- docker compose pull
- docker compose up -d
- curl localhost:8080/actuator/health
- Rollback: set previous version in .env

Linux Native Update

- Stop services: systemctl stop kodemed-*
- Backup: cp -r /opt/kodemed /opt/kodemed.backup
- Extract new version + sudo bash install-kodemed.sh --upgrade
- Start services and verify health

Kubernetes / OpenShift Update

- Update imageTag in values.yaml
- helm upgrade kodemed charts/kodemed/ -f values.yaml
- kubectl rollout status deployment/kodemed-server
- Rollback: helm rollback kodemed 1

Health Checks & Backup

Monitoring endpoints and data protection

Health Endpoints

Service	Endpoint	Expected
Server	/actuator/health	{"status":"UP"}
DataServer	/actuator/health	{"status":"UP"}
GrouperServer	/actuator/health	{"status":"UP"}
CodingUI	/	HTTP 200

Database Backup

- PostgreSQL is the only stateful component
- pg_dump -U kodemed kodemed | gzip > backup.sql.gz
- Schedule daily backups (cron or pg-backup container)
- Test restore procedure regularly

Client Deployment & Troubleshooting

Windows client and common issues

Windows Client (MSI)

- MSI for GPO / SCCM / Intune / Citrix
- msiexec /i KodeMed.msi /quiet SERVERURL="https://..."
- No admin rights for standard installer
- Auto-start, language, custom directory options

Common Issues

- Service won't start: check logs + DB connectivity
- OIDC error: verify issuer URL is reachable
- WebSocket fails: check reverse proxy config
- Port conflict: ss -tlnp | grep 8080

KodeMed

Support & Contact

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