

# PACSTAR Authentication System

## 1. Directory Structure

```
pacstar-auth-service/
├── backend/
│   ├── app/
│   │   ├── api/
│   │   │   ├── v1/
│   │   │   │   ├── endpoints/
│   │   │   │   └── __init__.py
│   │   ├── core/
│   │   │   ├── config.py
│   │   │   ├── security.py
│   │   │   ├── logging.py
│   │   │   ├── rate_limiter.py
│   │   ├── db/
│   │   │   ├── init_db.py
│   │   │   ├── migrations/
│   │   │   │   └── models/
│   │   │   └── middleware/
│   │   │       ├── rbac.py
│   │   │       ├── audit.py
│   │   │       └── error_handler.py
│   │   ├── schemas/
│   │   │   └── services/
│   │   │       ├── auth_service.py
│   │   │       ├── user_service.py
│   │   │       └── role_service.py
│   │   ├── utils/
│   │   │   ├── password_validator.py
│   │   │   ├── token_utils.py
│   │   │   └── sanitizer.py
│   │   ├── tests/
│   │   │   ├── test_auth.py
│   │   │   ├── test_roles.py
│   │   │   ├── test_rate_limit.py
│   │   │   └── test_tls.py
│   │   ├── main.py
│   │   └── __init__.py
│   ├── requirements.txt
│   └── Dockerfile
|
└── traefik/
    ├── providers/
    │   └── dynamic/
    │       ├── middleware.yml
    │       └── routers.yml
    ├── limits
    └── traefik.yml
```

# FastAPI backend

# API routes

# Versioned APIs

# Route handlers

# Core configs

# Core Env & settings

# Password, JWT, CORS, CSRF

# Logging & audit setup

# Brute force protection

# Database layer

# Initial setup

# Migration scripts

# MongoDB models

# Middlewares

# Role-based Access controls

# Audit logging

# Secure Error Handling

# Pydantic Models

# Business Logic

# Utilities

# Input Sanitization

# Backend unit tests

# FastAPI entrypoint

# Reverse proxy

# Static config (entrypoints, ...)

# Dynamic configs

# Security headers, rate

# Routers and services

```
|- certs/
|   |- ca.crt
|   |- ca.key
|   |- server.crt
|   |- server.key
|   Dockerfile

|- deploy/
|   docker-compose.yml
|(FastAPI, Mongo, Traefik)
|   .env
|   init/
|       generate_certs.sh
|       renew_certs.sh
|       init_db.py
|   admin/user)
|   backup/
|       mongo_backup.sh
|       mongo_restore.sh
|   migration/
|       migrate_v1_to_v2.py
|       rollback_v2_to_v1.py

|- docs/
|   ARCHITECTURE.md
|   DEPLOYMENT.md
|   SECURITY.md
|   API_REFERENCE.md
|   TESTING.md

|- tests/
|   e2e/
|   performance/
|   security/
|       test_bruteforce.sh
|       test_tls_config.sh
|       test_sql_injection.py
|   integration/
tests

|- ci-cd/
|   github-actions.yml
|   gitlab-ci.yml
|   scripts/
|       run_tests.sh
|       build_and_push.sh
|       deploy.sh

# TLS certs
# Local CA cert
# Local CA key
# Server cert
# Server key

# Deployment Automation
# Multi-service stack

# Environment variables
# Init scripts
# Self-signed certs with SAN
# Renewal automation
# DB seeding (roles,
# Backup & Recovery

# Schema update scripts

# Documentation
# System Design
# Deployment Guide
# Security practices
# OpenAPI/Swagger details
# Testing Strategy

# End-to-end & security tests
# End-to-end auth flow tests
# Load testing scripts
# Security scanning

# Multi-service Integration

# CI/CD pipelines
# GitHub Actions workflow
# GitLab pipeline (optional)
```