












































# PACSTAR Authentication System

## 1. Directory Structure

 pacstar-auth-service/	
├──  backend/	# FastAPI backend
│   ├──  app/	
│   │   ├──  api/	# API routes
│   │   │   ├──  v1/	# Versioned APIs
│   │   │   │   ├──  endpoints/	# Route handlers
│   │   │   │   └──  __init__.py	
│   │   ├──  core/	# Core configs
│   │   │   ├──  config.py	# Core Env & settings
│   │   │   ├──  security.py	# Password, JWT, CORS, CSRF
│   │   │   ├──  logging.py	# Logging & audit setup
│   │   │   └──  rate_limiter.py	# Brute force protection
│   │   ├──  db/	# Database layer
│   │   │   ├──  init_db.py	# Initial setup
│   │   │   ├──  migrations/	# Migration scripts
│   │   │   └──  models/	# MongoDB models
│   │   ├──  middleware/	# Middlewares
│   │   │   ├──  rbac.py	# Role-based Access controls
│   │   │   ├──  audit.py	# Audit logging
│   │   │   └──  error_handler.py	# Secure Error Handling
│   │   ├──  schemas/	# Pydantic Models
│   │   ├──  services/	# Buisness Logic
│   │   │   ├──  auth_service.py	
│   │   │   ├──  user_service.py	
│   │   │   └──  role_service.py	
│   │   ├──  utils/	# Utilities
│   │   │   ├──  password_validator.py	
│   │   │   ├──  token_utils.py	
│   │   │   └──  sanitizer.py	# Input Sanitization
│   │   ├──  tests/	# Backend unit tests
│   │   │   ├──  test_auth.py	
│   │   │   ├──  test_roles.py	
│   │   │   ├──  test_rate_limit.py	
│   │   │   └──  test_tls.py	
│   │   ├──  main.py	# FastAPI endpoint
│   │   └──  __init__.py	
│   ├──  requirements.txt	
│   └──  Dockerfile	
├──  traefik/	# Reverse proxy
│   ├──  traefik.yml	# Static config (entrypoints,
│   └──  dynamic/	# Dynamic configs
│       ├──  middleware.yml	# Security headers, rate
│       └──  routers.yml	# Routers and services
├── providers	
├── limits	

```

graph TD
    Root[secure-web-app] --> Certs[certs/]
    Root --> Deploy[deploy/]
    Root --> Backup[backup/]
    Root --> Migration[migration/]
    Root --> Docs[docs/]
    Root --> Tests[tests/]
    Root --> CICD[ci-cd/]

    Certs --> ca.crt[ca.crt]
    Certs --> ca.key[ca.key]
    Certs --> server.crt[server.crt]
    Certs --> server.key[server.key]
    Certs --> Dockerfile[Dockerfile]

    Deploy --> docker-compose.yml[docker-compose.yml]
    Deploy --> env[.env]
    Deploy --> Init[init/]
    Init --> generate_certs.sh[generate_certs.sh]
    Init --> renew_certs.sh[renew_certs.sh]
    Init --> init_db.py[init_db.py]

    Backup --> mongo_backup.sh[mongo_backup.sh]
    Backup --> mongo_restore.sh[mongo_restore.sh]

    Migration --> migrate_v1_to_v2.py[migrate_v1_to_v2.py]
    Migration --> rollback_v2_to_v1.py[rollback_v2_to_v1.py]

    Docs --> ARCHITECTURE.md[ARCHITECTURE.md]
    Docs --> DEPLOYMENT.md[DEPLOYMENT.md]
    Docs --> SECURITY.md[SECURITY.md]
    Docs --> API_REFERENCE.md[API_REFERENCE.md]
    Docs --> TESTING.md[TESTING.md]

    Tests --> e2e[e2e/]
    Tests --> performance[performance/]
    Tests --> security[security/]
    security --> test_bruteforce.sh[test_bruteforce.sh]
    security --> test_tls_config.sh[test_tls_config.sh]
    security --> test_sql_injection.py[test_sql_injection.py]
    Tests --> integration[integration/]

    CICD --> github_actions.yml[github-actions.yml]
    CICD --> gitlab_ci.yml[gitlab-ci.yml]
    CICD --> scripts[scripts/]
    scripts --> run_tests.sh[run_tests.sh]
    scripts --> build_and_push.sh[build_and_push.sh]
    scripts --> deploy.sh[deploy.sh]
  
```

The diagram illustrates the project structure of a secure web application, organized into several key directories:

- certs/**: Contains TLS certificates and keys (ca.crt, ca.key, server.crt, server.key) and a Dockerfile.
- deploy/**: Focuses on deployment automation and multi-service stack management, including docker-compose.yml, environment variables (.env), and initialization scripts (init/).
- backup/**: Handles backup and recovery operations, specifically for MongoDB (mongo\_backup.sh, mongo\_restore.sh).
- migration/**: Contains scripts for schema updates (migrate\_v1\_to\_v2.py, rollback\_v2\_to\_v1.py).
- docs/**: Provides documentation, including system design, deployment guides, security practices, API references, and testing strategies.
- tests/**: Organized for end-to-end and security testing, including authentication flow tests, load testing, security scanning, and multi-service integration tests.
- ci-cd/**: Manages CI/CD pipelines, including GitHub Actions workflows, GitLab pipelines, and deployment scripts.