# Upgrading Keycloak from 18.0.2 to 25.0 with PostgreSQL 16 on AWS EKS

Current State:

* Keycloak Version: 18.0.2-legacy
* Database: AWS Aurora PostgreSQL 11.21
* Deployment Platform: Amazon EKS
* Integration: SAML for identity management
* Issues: Older Keycloak and PostgreSQL versions, technical debt, performance limitations, potential security vulnerabilities

Target State:

* Keycloak Version: 25.0
* Database: AWS Aurora PostgreSQL 16
* Deployment Platform: Amazon EKS with Helm and ArgoCD for continuous delivery
* Integration: SAML integration with enhanced security and compatibility

Problem Statement

We aim to upgrade our identity management system from Keycloak 18.0.2 to Keycloak 25.0, leveraging an upgraded AWS Aurora PostgreSQL 16 backend. The task involves deploying a new Keycloak instance, migrating existing data, reconfiguring SAML integration, and ensuring seamless integration with our current AWS EKS environment. This upgrade is complex due to potential issues with migrating from old & legacy Keycloak to new Keycloak version, SAML integration, data migration.

Scope & Key Tasks

Key Tasks:

1. Preparation and Planning
   * Documentation of the Current State
2. Database Upgrade to PostgreSQL 16
   * Backup Current PostgreSQL 11.21 Database
   * In-Place Upgrade to PostgreSQL 16
   * Data Integrity Verification
3. Deploy Fresh Keycloak 25.0 Instance
   * Deployment Using Latest Helm Chart
   * Configuration of Secrets, ConfigMaps, Services, and Ingress
   * ArgoCD Integration for Continuous Delivery
4. Configuring Keycloak 25.0
   * Configuring Keycloak with themes
   * Configuring Keycloak image with clamav
5. Data Migration
   * Export Data from Keycloak 18.0.2
   * Import Data into Keycloak 25.0
   * Verification of Data Integrity
6. SAML Integration
   * Reconfigure SAML Integration
   * Testing in Higher Environments
   * Monitoring for Issues Related to Integration
7. Testing and Validation
   * Functional Testing
   * Data Testing
   * Security Testing
8. Final Deployment and Cutover
   * DNS Updates and Load Balancer Configuration
   * Monitoring Post-Cutover Performance

Complexities and Challenges

* SAML Integration Challenges
* Data Import & Export Issues

Not in Scope

* Configuring metrics api explicitly
* Configuring Prometheus for keycloak