

Project Design Phase

Solution

Architecture

Date	2 November 2025
Team ID	NM2025TMID06605
Project Name	Optimizing User, Group, and Role Management with Access Control and Workflows
Maximum Marks	4 Marks

Solution Architecture:

Goals of the Architecture:

- Establish a secure and structured framework for managing users, groups, and roles in enterprise systems.
- Implement automated access control workflows to reduce manual intervention and errors.
- Maintain compliance with organizational and data security policies through audit-ready mechanisms.
- Centralize role management to improve visibility and consistency across departments.
- Improve scalability and efficiency by integrating automation with role-based access control (RBAC).

Key Components:

- **User Management Module**— handles user lifecycle operations like creation, modification, and deactivation with proper access validations.
- **Group Management Module** – organizes users into logical groups based on departments, projects, or roles for better administration.
- **Role-Based Access Control (RBAC) Engine**— enforces role-based permissions ensuring users have access only to necessary resources.
- **Workflow Automation Engine** – automates approval, review, and escalation processes for access and role change requests.
- **Access Control Dashboard** – provides administrators with real-time insights into access status, requests, and permissions.
- **Audit and Compliance Module** – ensures all changes are tracked, recorded, and auditable to maintain transparency.

Development Phases:

1. Design database schema for users, groups, and roles.
2. Implement RBAC logic for access control and permission inheritance.
3. Develop automated workflows for access approval and revocation processes.
4. Build centralized dashboard for access management and real-time monitoring.
5. Conduct testing for security, performance, and workflow accuracy.

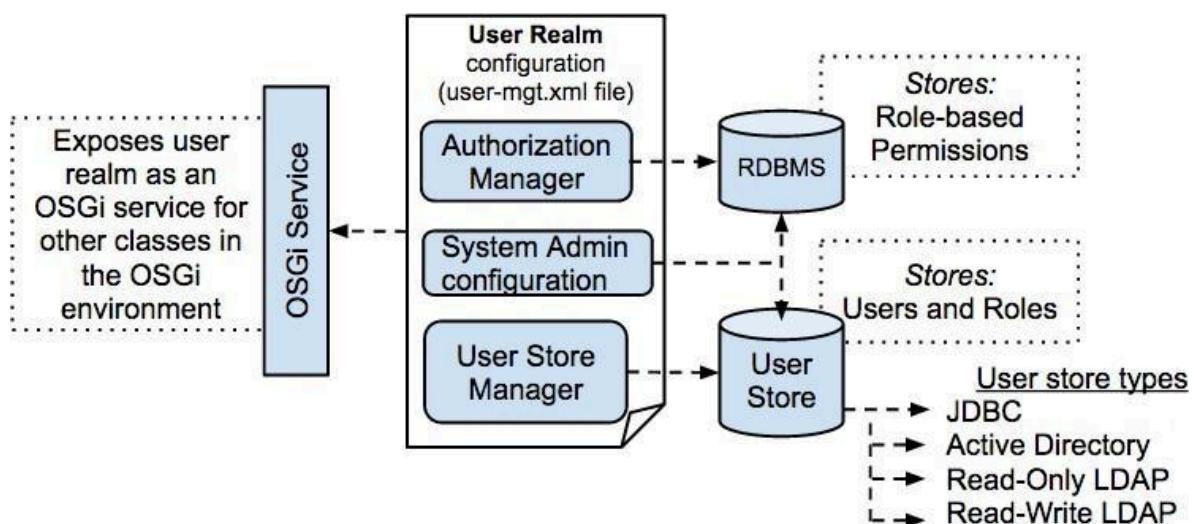
③ Solution Architecture Description:

The architecture for 'Optimizing User, Group, and Role Management with Access Control and Workflows' provides a robust and scalable framework to streamline access governance across enterprise applications. It leverages a modular design combining workflow automation and RBAC to ensure that all user access activities are policy-driven, auditable, and secure.

Each component plays a crucial role in maintaining security and efficiency. The workflow automation engine manages all access-related processes, ensuring that changes to roles or permissions go through predefined approval chains. The centralized dashboard consolidates all user, group, and role data, allowing administrators to monitor and control access across the system in real time.

The architecture's modularity supports integration with HR, CRM, or identity management systems, allowing smooth synchronization of user data. By enforcing automation and audit mechanisms, this solution improves operational efficiency, enhances data integrity, and reduces the risks of unauthorized access.

Example - Solution Architecture Diagram:



References:

1. <https://aws.amazon.com/architecture/>

2.

<https://learn.microsoft.com/en-us/azure/active-directory/role-based-access-control-architecture>