kenet
Kenya Education Network

Federated Identity and Trust

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Transforming Learning, Research and Working Environments using ICT

What is Federated Identity?

Digital identity linking across multiple independent systems

Single set of credentials to access resources across organizational boundaries

Trust-based framework where identity providers (IdPs) and service providers (SPs) establish secure relationships

Terminologies:

Identity Provider (IdP): Authenticates users and provides identity information

Service Provider (SP): Provides services and trusts the IdP

Federation: Group of organizations with established trust relationships

Trust Framework: Policies and standards governing the federation

The Core Components of Federation

Identity Provider (IdP):

- The system that authenticates the user.
- It retrieves the user’s information in form of attributes.
- It issues a digital token to confirm the user’s identity.

Service Provider (SP):

- The application or service that the user wants to access.
- It trusts the Identity Provider's token to grant access.

What is Trust in Federation?

Trust = Confidence that identity assertions are valid

Built on:

- Shared policies
- Technical standards (SAML, OIDC)
- Metadata exchange

The Core Components of Federation (Contd.)

Federation Operator (The "Trust Broker")

Central entity that manages the trust relationships between the IdPs and SPs.

- Provides the legal, technical, and governance framework.
- Publishes and maintains the **metadata** (like public keys and endpoints) for all members of the federation.
- It also ensures all members comply with the federation's rules and policies.

Authentication at Home IdP

IdP Authentication:

i. User is redirected to home organization’s login page

ii. Standard authentication methods (password, MFA, etc)

iii. IdP creates authentication assertion

Attribute Release & Trust Validation

Critical Trust Decisions:

i. IdP releases required attributes to SP

ii. SP validates signatures against federation metadata

iii. Attribute filtering based on federation policies

Access Granting at SP

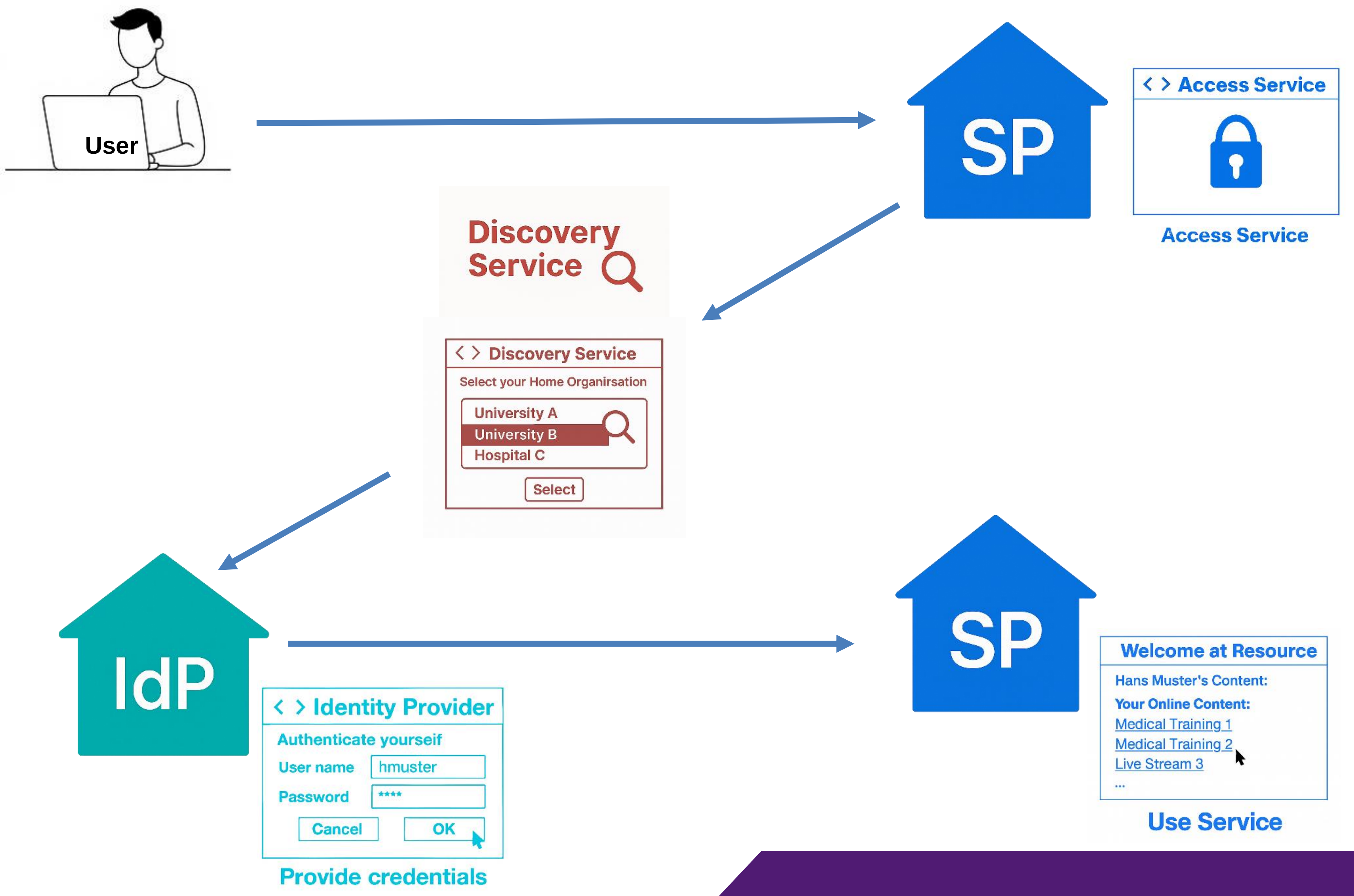
SP Final Authorization:

i. Maps received attributes to local roles/entitlements

ii. Applies access control policies

iii. Creates user session

Authentication Flow



< > Access Service

Access Service

< > Discovery Service

Select your Home Organirsation

University A
University B
Hospital C

Select

< > Identity Provider

Authenticate yourseif

User name: hmuster

Password: ****

Cancel OK

Provide credentials

Welcome at Resource

Hans Muster's Content:

Your Online Content:

Medical Training 1
Medical Training 2
Live Stream 3
...

Use Service

Key Software and Technologies

Identity Providers:

- Shibboleth IdP (most common in eduGAIN)
- SimpleSAMLphp
- ADFS (Microsoft)
- Keycloak

Service Providers:

- Shibboleth SP (Apache/Nginx modules)
- SimpleSAMLphp SP
- Commercial products

Federation Infrastructure:

- MDX (Metadata aggregators)
- COmanage (organization management)
- SATOSA (protocol translation)

Key Benefits for Education and Research:

- **Seamless Access to Global Resources**
  - **Access to Federation** (e.g., eduGAIN, InCommon)
  - **Reduced Friction**, Users avoid creating, managing, and remembering
  - **Access to High-Value Services** (e.g., High-Performance Computing (HPC) resources, e-portfolios, digital library collections)

- **Enhanced Security and Compliance**
  - **Centralized Credential Control**
  - **MFA Enforcement**
  - **Identity Assurance**
  - **Instant De-provisioning**

- **Reduced Administrative and Operational Cost**
  - **Zero Account Creation on External Systems**
  - **Simplified Auditing**, all authentications are logged centrally by the home IdP
  - **Standardized Interoperability**, integration with other academic services is fast, cheap and reliable

RAFIKI

Kenya Identity Federation for Research and Education Federation – RAFIKI

RAFIKI: Kenya's national identity federation.

Part of eduGAIN: An international **interfederation** service interconnecting research and education identity federations.

Enables Kenyan researchers, educators, and students to access global resources securely.

https://rafiki.ke

Interfederation is the process that allows a user from one identity federation to access a service registered in a different federation, enabling cross-border access to online resources.

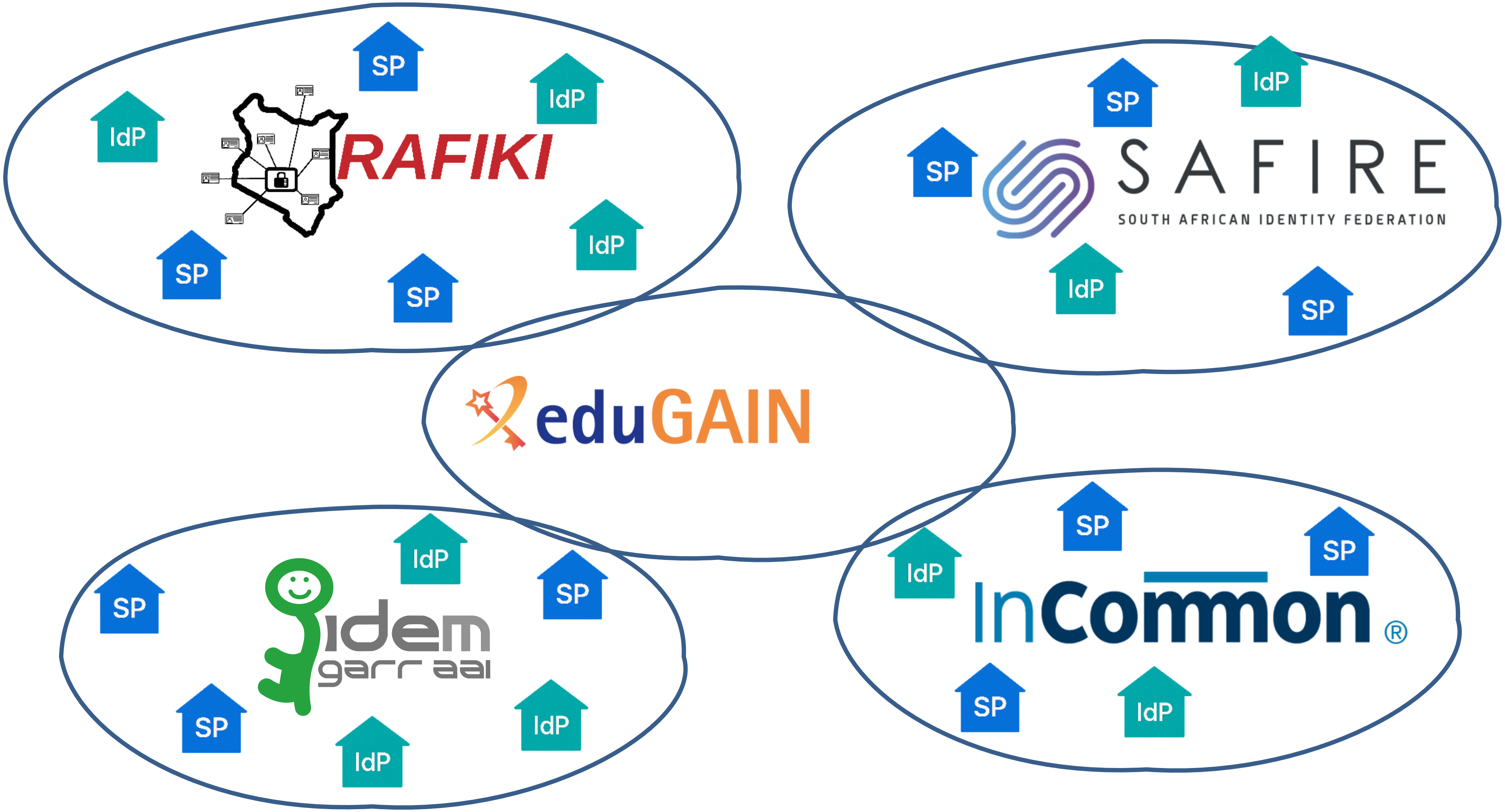
eduGAIN

It is an international **interfederation** service interconnecting **research** and **education** identity **federations**.

eduGAIN solves the **"trust problem"** between national federations

Extends the reach of a single login across international borders.

https://edugain.org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Thank You

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