Securing the S/4HANA Extension App

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Securing the Extension App

Authorization and authentication

Authentication

… answers the question “Who is the user?”

Authorization

… answers the question “What is the user allowed to do?”

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Identity Federation

Identity federation is the **concept of linking and reusing electronic identities** of a user **across multiple identity providers**.

This frees an application from the obligation to obtain and store users' credentials for authentication.
Instead, the application reuses an identity provider that is already storing users' electronic identities for authentication, provided that the application trusts this identity provider.

This makes it possible to **decouple and centralize authentication and authorization** functionality.

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SAML

The Security Assertion Markup Language (SAML) is
an **open standard based on XML**
for **exchanging authentication and authorization data** of a user
between an **identity provider (IdP)** and a **service provider (SP)**

The data is exchanged using messages called **bearer assertions.**

A bearer is any party in possession of the assertion.

The integrity of the assertion is protected by XML encryption and an XML signature.

SAML addresses the requirement of web browser **single sign-on** across the Internet.

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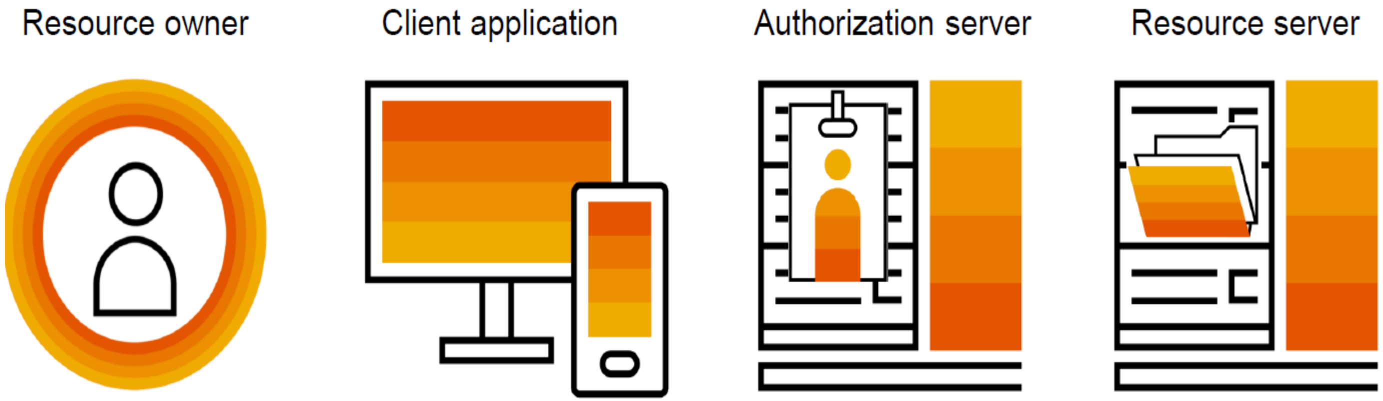
OAuth 2.0 authorization framework



OAuth 2.0 is an open standard framework that can securely issue and validate tokens for services on the Internet.

Resource owner or user who owns the data.
Client application who wants to access or manipulate the user data. It can be a Web or mobile app.
Authorization server that issues access tokens to the client application which are used to request access to the user data.
Resource server retrieves the user data if the Resource Owner authorizes it.

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JWT Token

JSON Web Token (JWT) is an emerging **open standard** that defines
a **compact token format**
for **securely transmitting information** between parties
as a **JSON object**.

This information can be verified and trusted because it is **digitally signed** with the private key of the authorization server (UAA service).

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App Router

App router is
a **Node.js application**
provided by SAP
that is the **central entry point** for our application in SAP Cloud Platform

Using the app router allows us to dissect our application into multiple microservices, while hiding the resulting complexity from our end users.

App router **dispatches requests to our application/micro-service** in SAP CP, and thus, **acting as a reverse proxy**.

The **back-end application/microservices shall not be directly accessible** to the client.

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XSUAA - User Account and Authentication service

XSUAA is an **SAP-specific extension of Cloud Foundry's UAA service** to deal with authentication and authorization.

XSUAA is connected to an identity provider (IdP)

XSUAA acts as a Authorization Server

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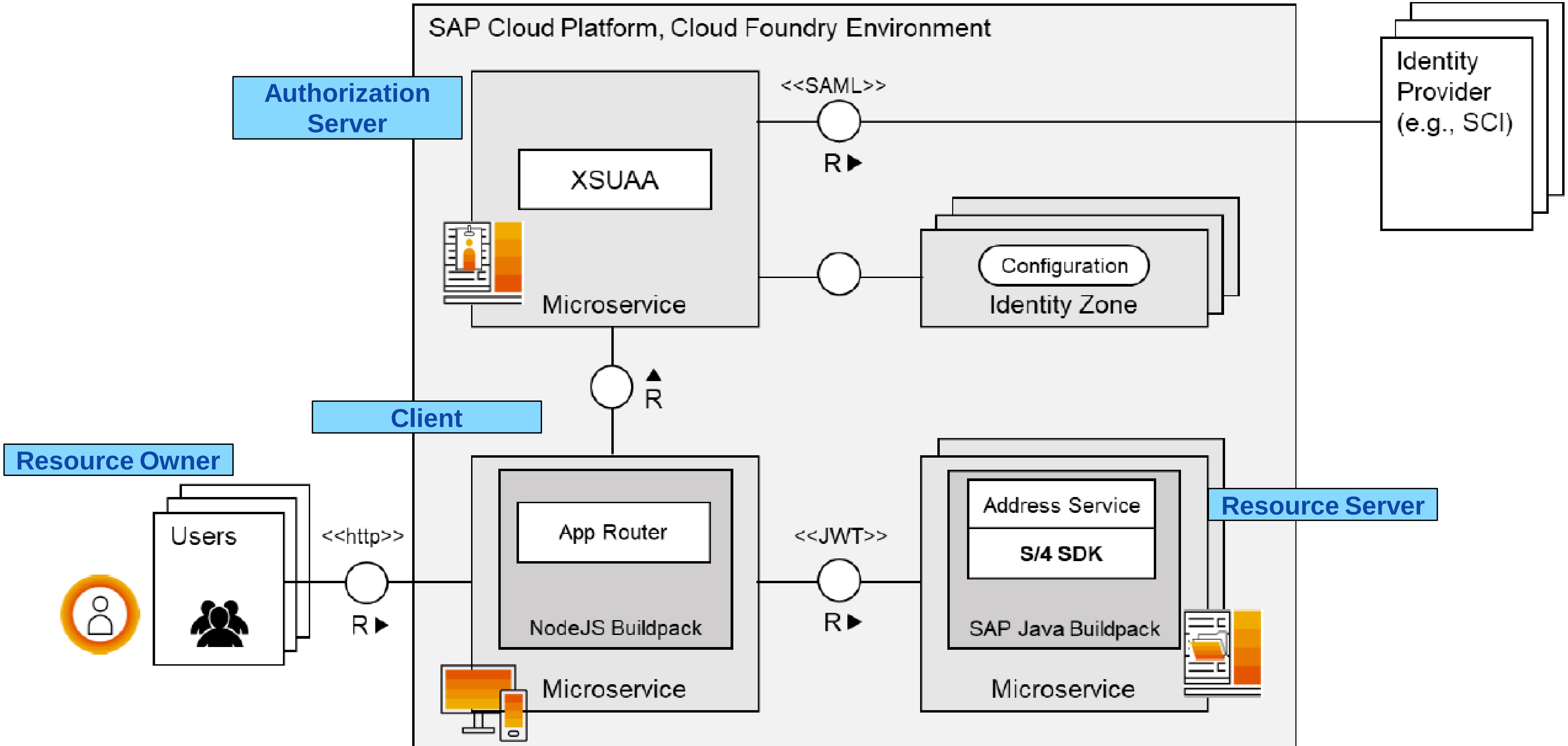
Security on SAP Cloud Platform: high-level authentication setup with app router and XSUAA



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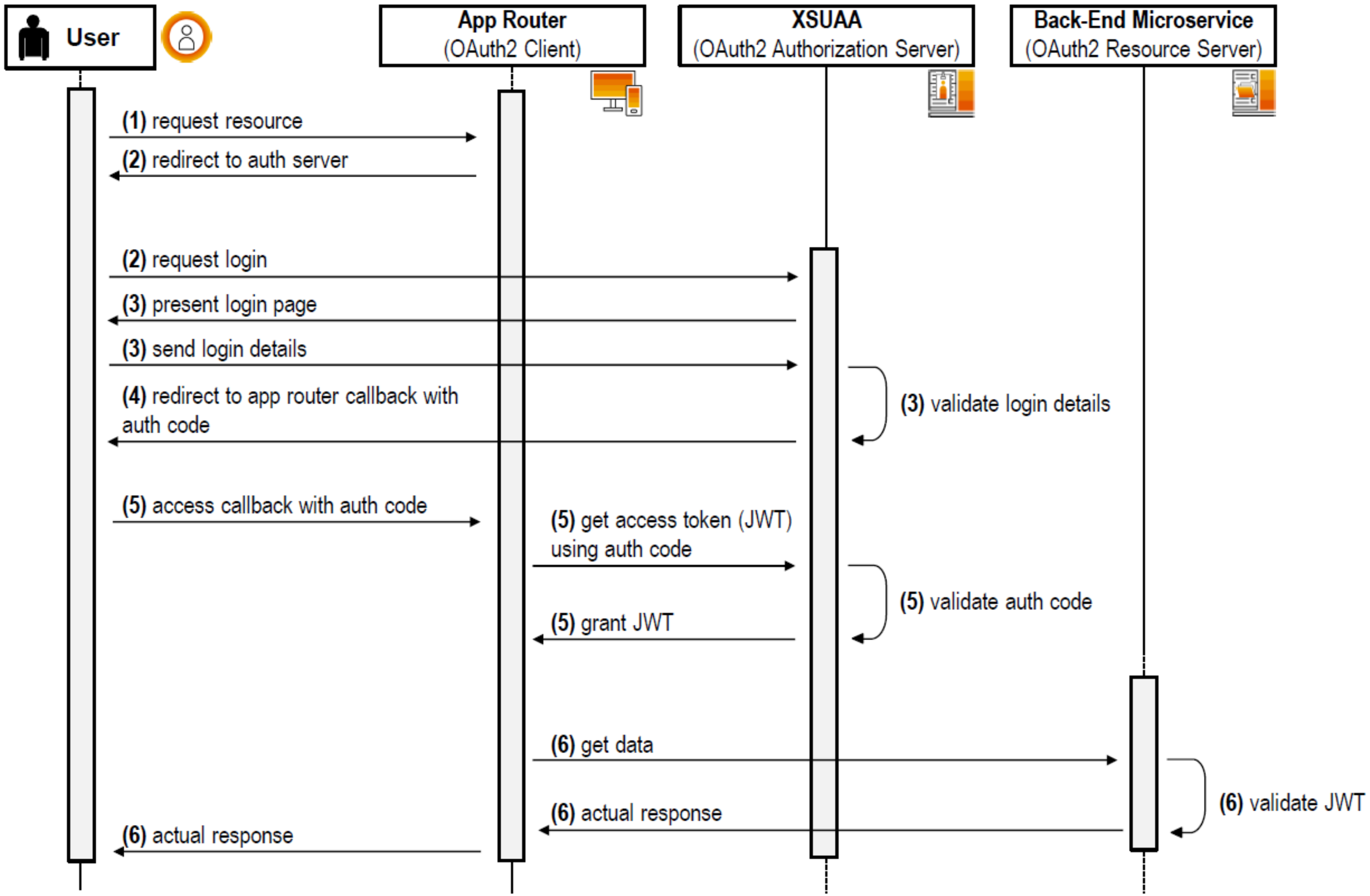
Call Flow



User

App Router
(OAuth2 Client)

XSUAA
(OAuth2 Authorization Server)

Back-End Microservice
(OAuth2 Resource Server)

(1) request resource

(2) redirect to auth server

(2) request login

(3) present login page

(3) send login details

(3) validate login details

(4) redirect to app router callback with auth code

(5) access callback with auth code

(5) get access token (JWT) using auth code

(5) validate auth code

(5) grant JWT

(6) get data

(6) validate JWT

(6) actual response

(6) actual response

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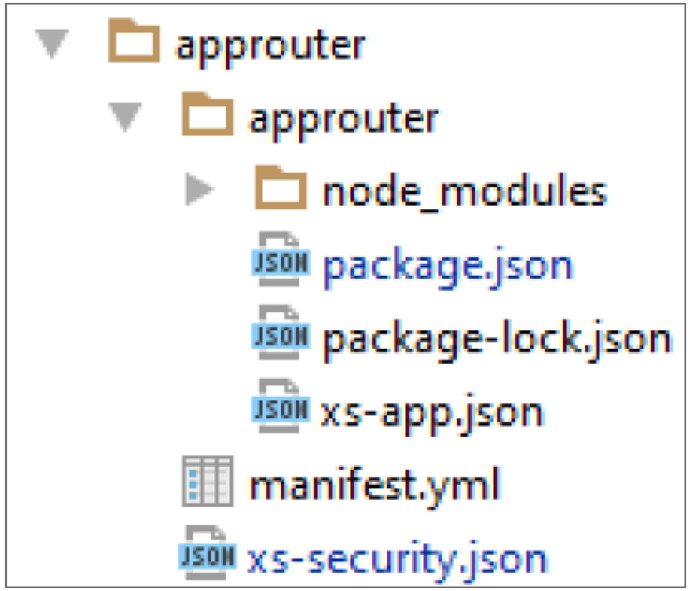
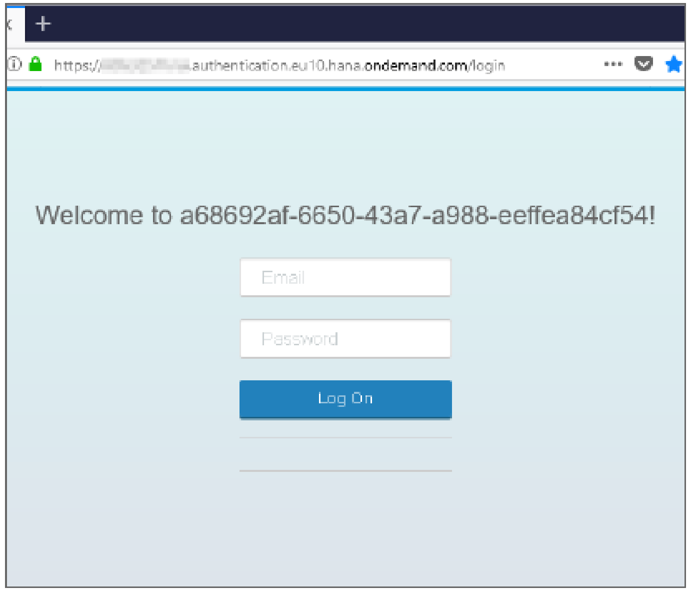
Set up authentication: required steps



```
approuter
  approuter
    node_modules
    package.json
    package-lock.json
    xs-app.json
  manifest.yml
  xs-security.json
```

Set up the app router

- App router is a NodeJS component that is distributed via the publicly available SAP NPM registry. It will play the role of OAuth 2.0 client in our setup

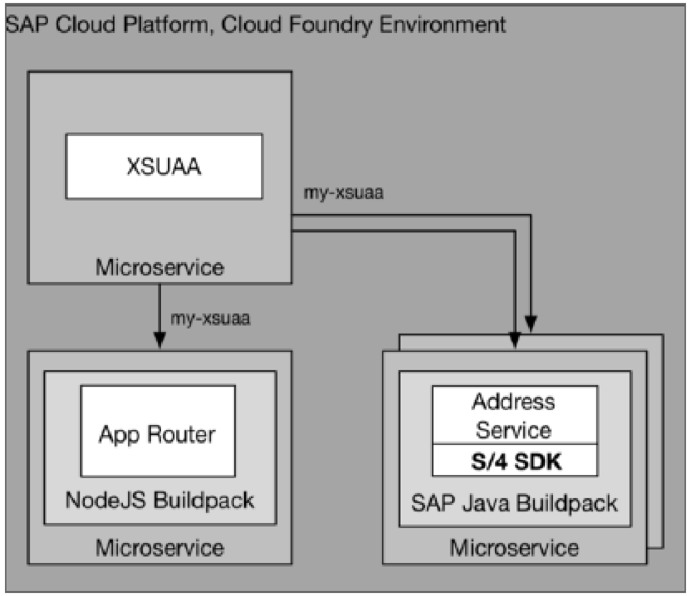


https:/[redacted].authentication.eu10.hana.ondemand.com/login

Welcome to a68692af-6650-43a7-a988-eeffea84cf54!

Protect back-end microservice

- Only accept requests with valid JWTs for the current user provided by the app router



Bind microservices to XSUAA

- This will enable microservices to verify the JWT signatures

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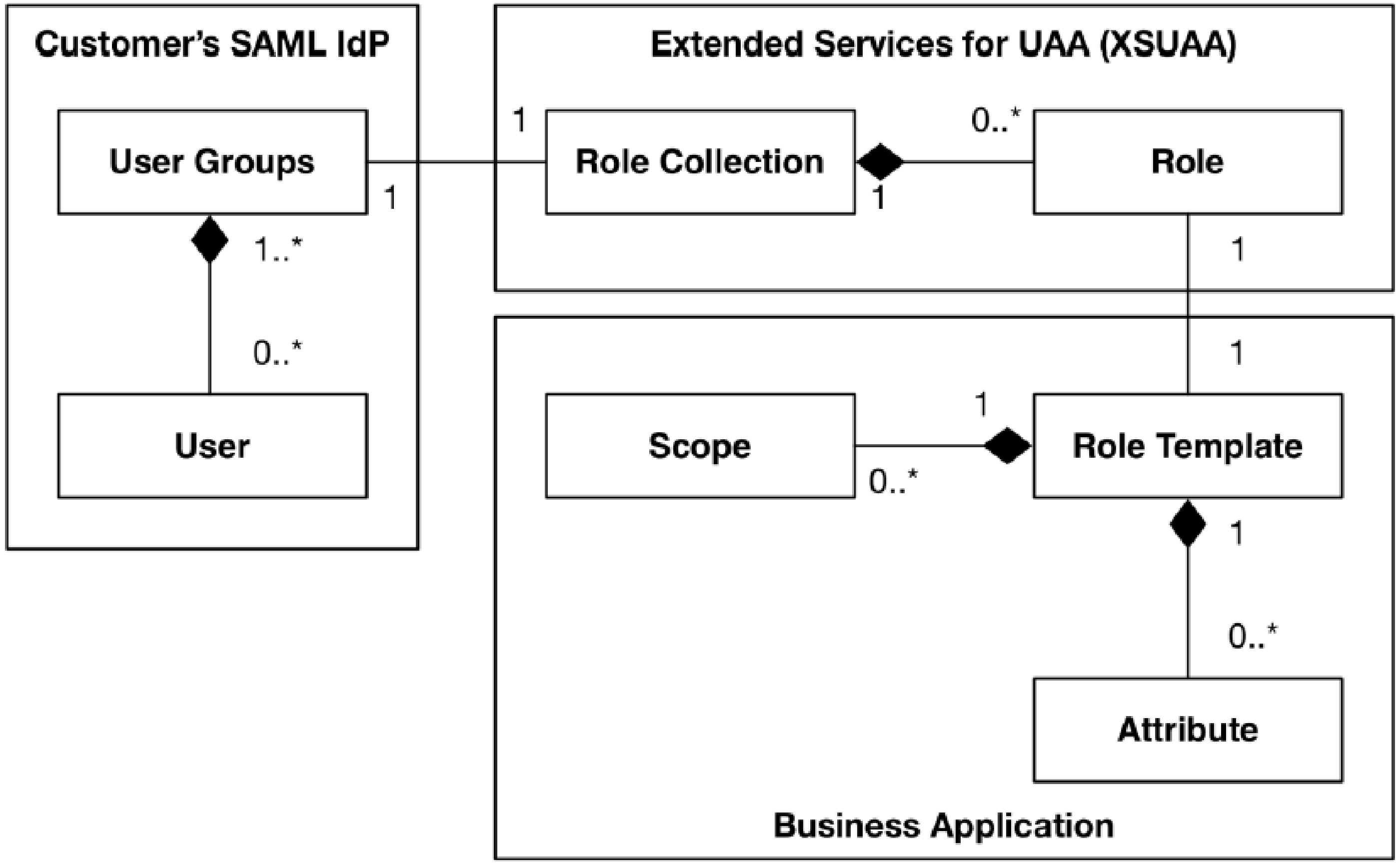
Set up authorization: relationships of authorization concepts on SAP Cloud Platform

Scope: for functional authorization checks

Attribute: for instance-based (data) authorizations (e.g. the name of a cost center)

Role template: description of roles (for example, “employee” or “manager”) to apply to a user and any attributes that apply to the roles

Roles: are created based on role templates at configuration time in the SAP Cloud Platform cockpit



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Demo

Questions & answers

Thank you.

Run Simple

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