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Keycloak as Big Brother or How to Secure Your Applications?

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Agenda

1. Security Concepts
2. Keycloak Overview
3. Application Demo

Disclaimer

Everything described there is true and complete to the best of author's knowledge. All recommendations and inferences are made without guarantee of the part of the author. The author disclaims any liability in connection with the use of this information.

Security Concepts

IAAA Security Principle

Identification

Email, username,
ID number

Authorization

Access permissions

Authentication

Password, token,
signature

Accountability

Logs, user actions,
traceability of actions

Implementation of Custom Security Layer

1 Authentication for UI

- Manage login/registration forms
- Manage user profiles

2 Authentication for Backend

- Store users, passwords
- Check credentials
- API for token management

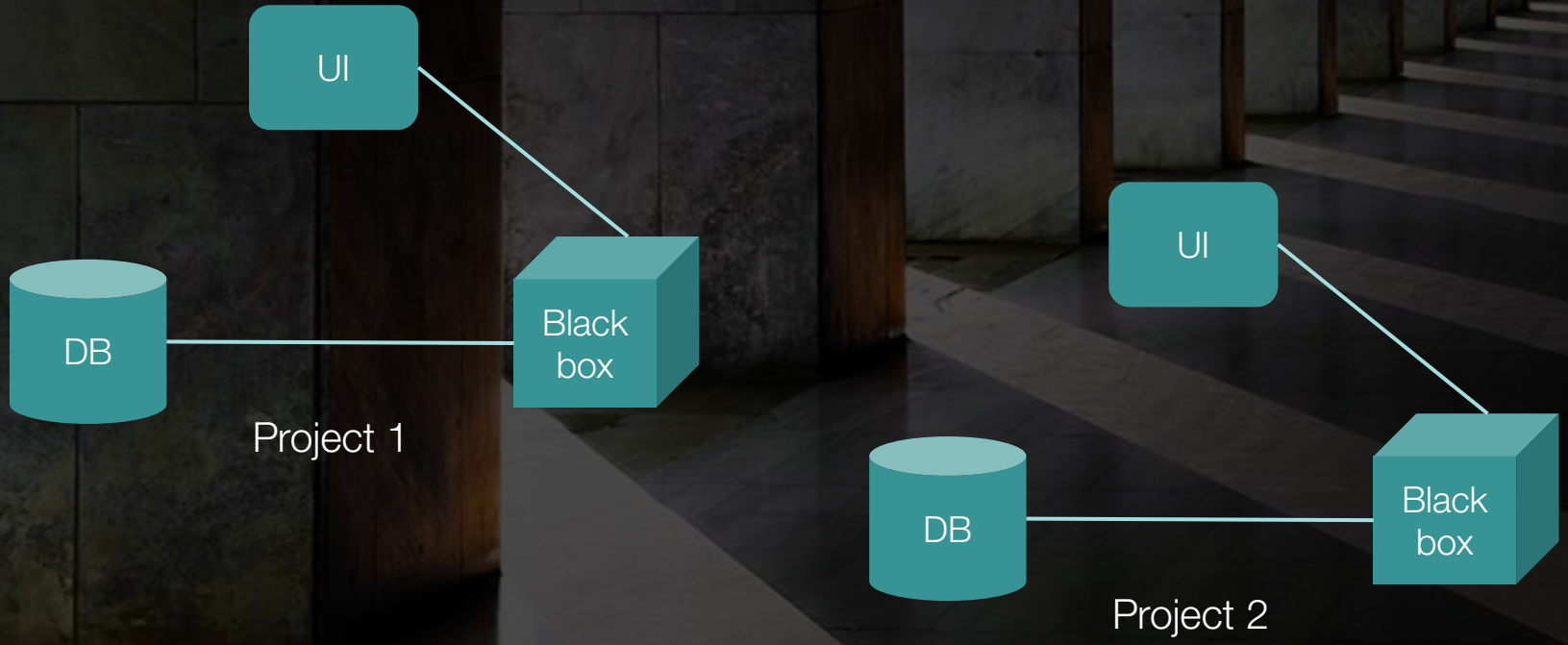
3 Put together

- Combine UI and backend together with authentication flows

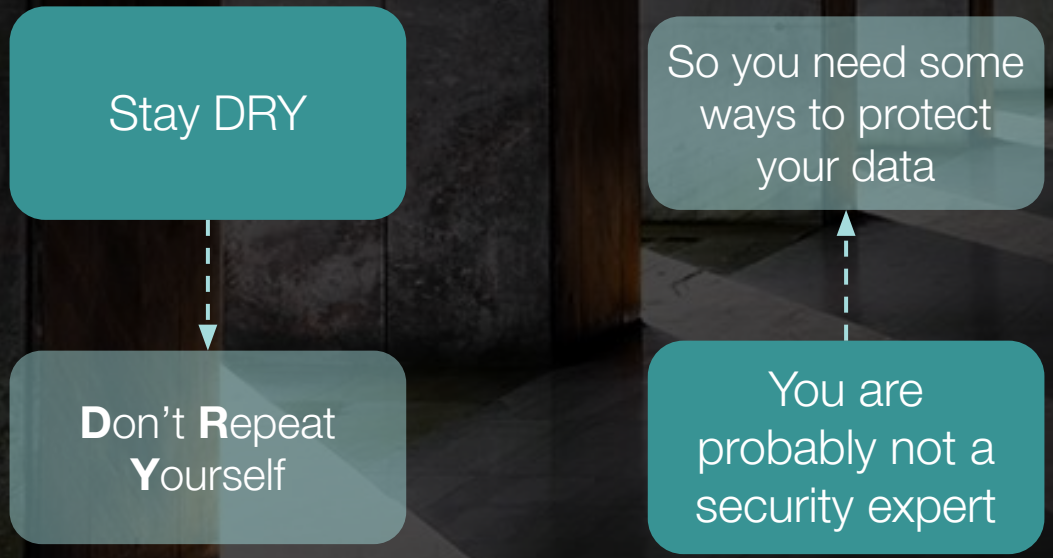
4 Project Integration

- Integrate this into the project

Simple Projects Structure



Reasons to Delegate Your Security



Keycloak

Keycloak Overview

Open-source identity and access management. Features:

Single sign in
Sign in once to multiple applications

Standard protocols
OpenID Connect, OAuth 2.0, and SAML 2.0

Centralized management
Available both for admins and users

Adapters
Secure applications and services

LDAP and Active Directory
Connect to existing user directories

Social login
Easily enable social sign in

Identity brokering
OpenID Connect or SAML 2.0 IdPs

High performance
Easy, fast, and scalable

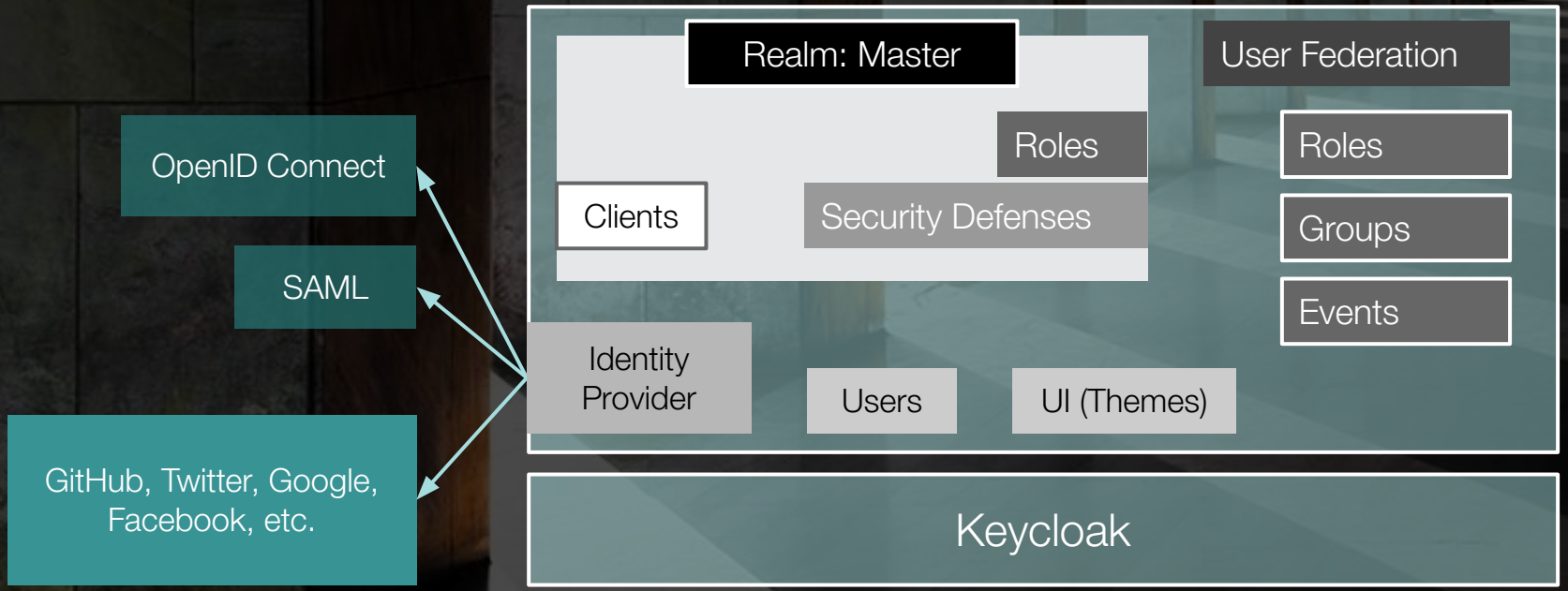
Clustering
Optimize scalability and availability

Themes
Customize look and feeling

Extensible
Customize through code

Password policies
Customize password policies

Core Concepts



Reasons to Use Keycloak

Reliable Solution

- Stable release: 19.0.1
  July 29, 2022
- Issues board
  (https://github.com/keycloak/keycloak/issues)
- Documentation
  (https://www.keycloak.org/documentation.html)

Open Source

- Free product
- Various customizations and contributions
- Open community

Straightforward

- Not reinventing the wheel
- Shared libraries, keys, certificates, and configurations

Launch Keycloak

Launch with JBoss WildFly

1. Download Keycloak from https://www.keycloak.org/downloads.html
2. Use the following command:

```
keycloak-x.x.x.Final/bin>./standalone.sh
```

Launch with Docker

Use the following commands:

1. `docker pull jboss/keycloak`
2. `docker run --rm -d --name keycloak -p 5555:8080 -e KEYCLOAK_USER=admin -e KEYCLOAK_PASSWORD=admin jboss/keycloak`

Prepare to integrate with Keycloak

Integrate with Keycloak

1 Create a realm

- You can use `master` for a dev environment or base it into your business domain (for example, `external-apps` or `internal-apps`).

2 Create a client

- Create a client for your application (for example, `hello-world-app`). Client configuration requires the following details:
  - Protocol — SAML or OIDC).
  - Resource endpoint — the application hostname or REST endpoint.
  - Redirect URL — where to redirect the user when authentication is granted.

3 Provide a client configuration

- Provide the client configuration to your application as input, for example:
  - The client ID (`hello-world-app`).
  - The realm (`external-apps`).
  - The Keycloak server URL.

Application Demo

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Thank you!