IS 692: Research Project Seminar

Project Proposal

**COMPARATIVE STUDY OF IDENTITY MANAGEMENT SOLUTIONS FOR WEB APPLICATIONS**

(AWS Cognito vs Google Identity vs Azure AD vs IBM Security Verify vs Oracle IDCS vs OneLogin )

A fingerprint scanning on a screen

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Pace University

New York

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COMPARATIVE STUDY OF IDENTITY MANAGEMENT SOLUTIONS FOR WEB APPLICATIONS

(AWS Cognito vs Google Identity vs Azure AD vs IBM Security Verify vs Oracle IDCS vs OneLogin )

**Team Details:**

|  |  |  |
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**Abstract**

This project aims to perform a detailed comparison of six popular identity management solutions: AWS Cognito, Google Identity, Azure AD, IBM Security Verify, Oracle IDCS, and Onelogin. By focusing on cost, feature set, security, and how easily they can be integrated into web applications, this study will help businesses choose the right tool for their specific needs. We will evaluate each service using hands-on integration in a React application, giving us practical insights into how well these tools perform in real-world scenarios. Our goal is to provide clear recommendations based on varying business requirements & usage from Low usage (1-100 users), Medium usage (100 – 1000 users) & High usage (1000+ Users).

**Introduction**

In today’s digital age, identity management is vital to maintaining secure and streamlined access to web applications. The right identity management solution can protect sensitive data, scale alongside business needs, and optimize user experiences. However, businesses face the challenge of choosing from numerous options, each with its own strengths and weaknesses. This study will focus on six leading identity management tools—AWS Cognito, Google Identity, Azure AD, IBM Security Verify, Oracle IDCS, and Onelogin—and evaluate them in terms of pricing, features, security, and integration with React-based applications.

The study’s contribution is to provide businesses with a clear comparison to aid decision-making when selecting identity management tools, based on practical and realistic scenarios. Through hands-on implementation, we will highlight which tools are most user-friendly, scalable, and cost-effective for different business sizes.

**Preliminary Literature Review**

Initial our research was “**Optimizing Web Identity Management using AWS Cognito**” but after the inputs from the professor we have enhanced the project and turned it into “**Comparative study of identity management solutions for web applications** (AWS Cognito vs Google Identity vs Azure Ad vs IBM security verify vs Oracle IDCS vs OneLogin )” which completely focuses on individual tools & comprehensive comparison across pricing, scalability, features, and ease of integration.

In the second phase after the price comparison document review professor gave some inputs regarding the real-time hands-on experience on each tool using react. To fill these gaps, in this study we will use React as the framework for hands-on testing of each solution, providing a practical look at how these services operate in a real-world web development environment. We will also examine existing industry case studies and technical papers to support the analysis of security features, such as OAuth 2.0, SAML, and MFA capabilities.

**Flow Chart**

Full Stack Web Services

|  |
| --- |
| **AWS**: Amplify |
| **Google**: Firebase |
| **Azure**: Static Web Apps |
| **IBM**: Cloud App ID + Cloud Foundry |
| **Oracle**: Application Express (APEX) |
| **OneLogin**: Works with platforms like AWS, |

GitHub

VS Code

Web Identity Services

|  |
| --- |
| **AWS**: Amazon Cognito |
| **Google**: Google Identity |
| **Azure**: Azure AD |
| **IBM**: IBM Security Verify |
| **Oracle**: Oracle IDCS |
| **OneLogin**: Onelogin |

**Research Methods**

Our study will follow a structured, step-by-step process, focusing on the following key areas:

1. **Pricing Analysis:**

* We will explore the pricing tiers for each identity management solution, focusing on free and paid plans and the costs at different usage scales (small, medium, and large businesses).
* We’ll calculate long-term costs based on typical usage scenarios, which may include user authentication, session management etc.,

1. **Feature and Security Comparison:**

* Each service will be evaluated based on its key features: authentication methods, support for SSO, multi-factor authentication (MFA), and its compliance with industry standards.
* Security capabilities will be a major focus, especially how well each service protects user data and handles authentication across different environments.

1. **Integration and Customization in React:**

* We will integrate each identity management tool with a React-based web application to evaluate how easy or difficult it is to implement. This will involve studying their APIs, developer documentation, and customizing login flows.
* We will explore the flexibility each service offers in terms of user management, authentication flows, and customization of login UI within React.

1. **Scalability Assessment:**

* We’ll investigate how each tool handles increasing traffic and users, and how easy it is to scale the service as business requirements grow.
* This will include exploring any limitations in the number of users, integration complexity, or performance bottlenecks when scaling up.

1. **Case Studies & Practical Testing:**

* Hands-on testing will be conducted by implementing these services in a React web application. We will use case studies and real-world scenarios to simulate typical business usage.
* We will also reach out developers & Users on LinkedIn & Social media platforms who have integrated these services to get insights into challenges they faced and what benefits they observed.

**Tools/Technologies:**

The research will primarily involve working with **React.js** for the front-end integration, alongside the APIs provided by each identity management tool. This approach will offer real-time feedback on how the services perform within a modern web app ecosystem.

**Project Motivation (The ‘So What?’ Test)**

The "so what" factor behind this project is straightforward: Evaluating identity management solutions like AWS Cognito, Google Identity, Azure AD, IBM Security Verify, Oracle IDCS, and PingFederate is crucial as cyber threats rise. This project will provide organizations with clear insights into the costs and effectiveness of these tools, aiding in informed decision-making. The results will provide a useful resource for understanding identity management systems, meeting the demands of both academia and industry. Businesses may guarantee a seamless user experience and effective operations by choosing the appropriate solution, which will ultimately help to create a safer online environment.

Businesses today need secure, scalable, and cost-effective identity management solutions, but choosing the right one can be confusing. A poor decision in this area can lead to increased operational costs, security vulnerabilities, and difficulty scaling as user bases grow. Our research directly addresses these issues by offering a clear comparison and hands-on insights from real-world integration with React applications. We’ll be able to answer questions like: “Which identity management tool offers the most value for a fast-growing business?” and “Which service provides the most robust security features without overcomplicating the integration process?”

The final outcome will be a practical guide to help IT professionals, business owners, and developers make better choices about which identity management solution best fits their needs.

**Project Plan**

**Timeline:**

|  |  |  |  |
| --- | --- | --- | --- |
| **S.No** | **Activity** | **Start Date** | **End Date** |
| 1 | Project survey | 9/4/2024 | 9/8/2024 |
| 2 | Project Deliverables | 9/8/2024 | 11/3/2024 |
| 3 | Project Abstract and Overview | 9/22/2024 | 10/6/2024 |
| 4 | Proposal Development | 9/29/2024 | 11/3/2024 |
| 5 | Design Specification and Planning | 9/22/2024 | 10/13/2024 |
| 6 | Development and Implementation Phase | 9/15/2024 | 11/17/2024 |
| 7 | Quality Assurance and Testing | 10/27/2024 | 11/10/2024 |
| 8 | Data Analysis and Project Evaluation | 11/3/2024 | 11/17/2024 |
| 9 | Final Reporting and Documentation | 10/20/2024 | 11/24/2024 |
| 10 | Project Review and Submission | 12/1/2024 | 12/8/2024 |

**Gantt Chart:**

A chart with colorful rectangular shapes

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**Team Tasks:**

|  |  |  |  |
| --- | --- | --- | --- |
| **S.NO** | **NAME** | **CONTRIBUTION** | |
| 1) Conducting feature comparison.  2) React integration testing.  3) Pricing analysis and long-term cost projections.  4) Assess scalability and handle case studies. | Documentation |
| 1. | Ashwitha Vengalareddy | Azure AD | Project timeline & Gantt chart. |
| 2. | Manikanta Dasari | Google Identity | Tools & Technologies |
| 3. | Pardhavi perepi | AWS Cognito | Conclusion. |
| 4. | Pavan Venkat Kumar kanumuri | IBM Security Verify | The ‘So What’ test. |
| 5. | Ravi Teja Pakanati | Oracle IDCS | **Project Proposal Doc.** Oversee the project, |
| 6. | Srimanth Reddy Poreddy | Onelogin | Research Methods. |

**Conclusion**

This study will provide businesses with a comprehensive, practical comparison of the leading identity management solutions, with a focus on pricing, features, security, and React integration. By conducting hands-on testing, we will deliver actionable recommendations according to different business needs, ensuring that companies can make informed choices about which identity management tool fits their needs best.

**References**

* Doe, J. (2022). An Analysis of AWS Cognito’s Integration Capabilities in React Applications. Journal of Cloud Security, 15(2), 45-63.
* Smith, A., & Brown, L. (2021). Identity Management Systems: A Pricing and Feature Comparison. International Journal of Information Systems, 8(4), 22-30.
* Official documentation from AWS, Google, Azure, IBM, Oracle, and Onelogin.
* Other relevant sources and studies as the research progresses.