

Cloud Cost Optimizer Dashboard

Senior Design Project – Fall 2025

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Problem

- Cloud users struggle to monitor and manage their service usage.
- Leads to unexpected billing and inefficient resource allocation.
- Existing dashboards lack complete features like real-time monitoring,
- forecasting, anomaly detection, and simplified views.

Current System Limitations

- Limited real-time monitoring.
- Missing forecasting/anomaly detection.
- No role-based access.
- Interfaces often not user-friendly for non-technical users.

Requirements

- Secure authentication.
- Display cost and usage metrics.
- Visualize spending (charts, graphs).
- Provide alerts, budgets, recommendations.
- Scalable backend and consistent UI.

System Design Overview

- Frontend (React + Vite):
Real-time data, charts, responsive UI.
- Backend (Flask):
REST API, JWT auth, SQLite users.
- Display:
MTD costs, live metrics, forecasting, alerts.

Implementation

- React frontend with Vite for fast testing.
- Flask backend with authentication.
- REST API for usage metrics and summaries.

Verification

- Manual browser testing.
- API testing with mock data.
- Visualization checks for accuracy.
- Token expiration and error-handling tests.

Summary

- The Cloud Cost Optimizer Dashboard provides real-time visibility
- into cloud spending and usage. With centralized insights, forecasting,
- recommendations, and secure authentication, organizations can better
- manage and optimize cloud costs.