

TechBay - הצעת פרויקט

פיתוח יישומים מתקדם בענן

Project Proposal: TechBay- Cloud-Based E-Commerce Platform for Devices

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Executive Summary:

TechBay is a cloud-based e-commerce platform specializing in the sale of computers, phones, and smart devices. The system is built using AWS serverless architecture to ensure high availability, scalability, and cost-efficiency.

Users can browse through product categories, register and log in securely, add items to their cart, use coupons, and complete a simulated checkout process. The system includes an admin dashboard for managing inventory, prices, and sending announcements or alerts via AWS SNS.

TechBay ensures a responsive user experience by using ElastiCache to cache frequently accessed product data, and utilizes both relational and NoSQL databases to balance structured order tracking with fast, real-time cart handling.

Problem:

Many small-to-medium electronics stores lack an affordable, secure, and scalable online sales system. Existing solutions either do not support modern cloud technologies or require complex infrastructure management.

Solution:

TechBay leverages AWS services to build a fully serverless, cost-effective, and scalable e-commerce solution tailored for computer and phone sales. The platform supports user authentication, admin management, product catalog, cart tracking, and simulated payment functionality — all hosted in the cloud with zero server maintenance.

Key Features of Recipix:

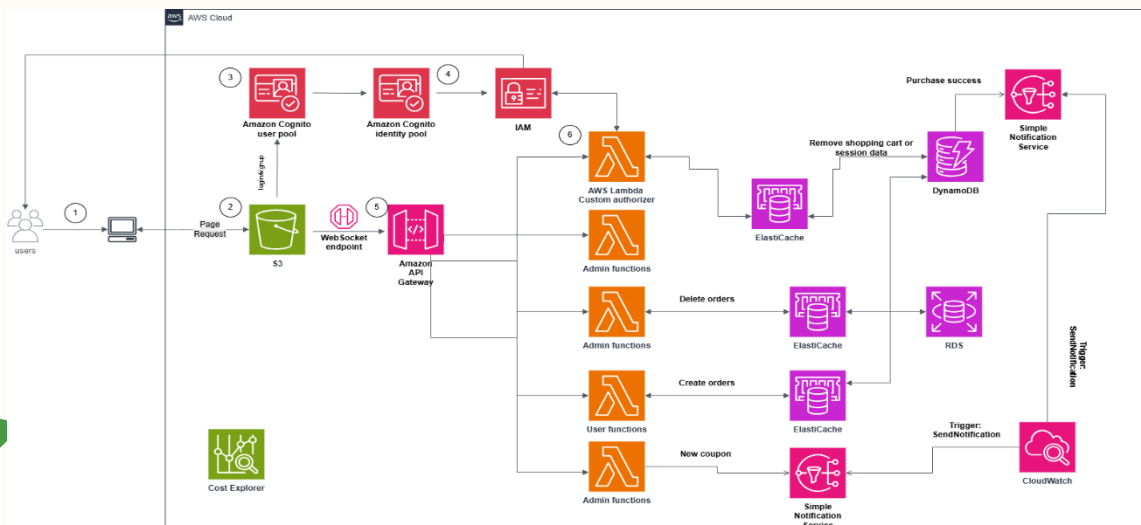
1. **User Authentication:** Sign-up, login, and role-based access using Amazon Cognito.
2. **Product Catalog:** Browse computers, phones, and smart devices.
3. **Shopping Cart:** Add/remove items in real-time, tracked via DynamoDB.
4. **Order Processing:** Store orders in a relational RDS database (Aurora).
5. **Admin Panel:** Add/remove products, edit prices, manage users.

6. **Coupon & Discount System:** One-time-use and limited-condition coupons.
7. **Notifications:** Admin can trigger SNS alerts to notify users of sales.
8. **Simulated Payment:** Secure flow mimicking real payment, integrated with Stripe **sandbox**.
9. **Performance Optimization:** Product data caching with ElastiCache (Redis).
10. **Monitoring:** CloudWatch logs and alerts for Lambda performance.

Solution and Tools/Technologies

TechBay will utilize modern cloud-based technologies, leveraging AWS services to create an efficient, secure, and cost-effective solution. The system will be implemented in a Serverless architecture and include the following components:

1. **AWS Lambda:** Provides serverless computing power to process requests from API Gateway, such as saving a products, uploading images to S3, or retrieving saved products from DynamoDB.
2. **Amazon DynamoDB:** A NoSQL database for managing shopping cart, and tracking.
3. **Amazon RDS (Aurora):** SQL database for managing stores structured order, products, and user profile data
4. **Amazon S3:** For secure storage of product images and static files.
5. **Amazon Cognito:** For user authentication and role-based access control (users and admins).
6. **AWS API Gateway:** To connect the backend services with the front-end interface.
7. **Amazon SNS:** Facilitates sending notifications, such as alerts for new coupons or user purchase success.
8. **ElasticCache:** To improve database query performance, using a caching mechanism (likely Amazon ElastiCache with Redis or Memcached) for frequently accessed data.
9. **CloudWatch:** Logs backend function performance and triggers alerts if needed.
10. **Cost Explorer:** Tracks AWS usage for budget management



<https://github.com/Mohamad-Laham/TechBay.git>