Challenge 14 (2024)

Problem Statement

The CloudForceSky company, a leading provider of cloud-based services, is experiencing significant performance bottlenecks and reliability issues in their current infrastructure. Their platform, which hosts a wide range of applications and services for clients globally, is struggling to cope with increasing user demand, resulting in frequent downtime, slow response times, and degraded user experience.

The key challenges they face include:

1. Scalability: The current infrastructure lacks the scalability needed to handle sudden surges in traffic, especially during peak periods or when new clients are onboard.

2. Performance Optimization: Applications are not optimised for efficiency, leading to high resource consumption, inefficient code execution, and sluggish response times.

3. Reliability and Availability: Downtime and service disruptions are impacting client satisfaction and causing revenue loss. High availability and robust disaster recovery mechanisms are essential but currently lacking.

4. Security Concerns: With the growing threat landscape, ensuring data security, compliance with regulations, and protecting against cyber attacks is a critical concern.

5. Cost Efficiency: Managing infrastructure costs while ensuring optimal performance and reliability is a balancing act that requires strategic planning and resource utilisation.

Project Objective

The CloudForceSky company seeks a solution architect to assess their current infrastructure, identify pain points, and design a comprehensive solution that addresses these challenges. This includes:

- *Scalable Architecture Design:* Develop a scalable architecture that can dynamically allocate resources based on demand, leveraging cloud services and containerization for agility and efficiency.

- *Performance Tuning:* Optimise applications and services for performance, including database optimization, caching strategies, and code refactoring where necessary.
- *High Availability and Disaster Recovery:* Implement redundant systems, load balancing, failover mechanisms, and automated recovery processes to ensure high availability and minimise downtime.
- *Security Implementation:* Design and implement robust security measures, including data encryption, access control, threat monitoring, and incident response protocols to safeguard against cyber threats.
- *Cost Optimization:* Analyse cost implications of the proposed architecture and recommend cost-effective solutions, such as reserved instances, resource tagging, and efficient resource utilisation strategies.

The solution architect will work closely with the CloudForceSky company's IT team, stakeholders, and external vendors to ensure a seamless transition to the new architecture, mitigate risks, and achieve business objectives of improved performance, reliability, security, and cost efficiency."

Requirements

1. Draw.oi / Lucidchart
2. AWS Well Architected FrameWork

Note: As a solution architect, the goal is to tailor solutions to the specific needs and contexts of customers. The idea of "it depends on" is central to this approach, emphasizing that each solution must be customised based on various factors such as the customer’s business requirements, technical environment, budget, and long-term goals.