Upgrade2Architect Program(AWS)

Title: Final Assessment Case Study

Name : Md Kamran Uddin

Advantages of migrating to the cloud and changing its technology operations, ABC Inc.

By migrating to the cloud and changing its technology operations, ABC Inc. has been able to scale to meet demand and move faster in a variety of ways.

- ABC Inc. was able to reduce its data center footprint from eight in 2014 to zero in 2020, significantly cutting infrastructure and maintenance costs.
- Applications use as much or as little computing and storage as they need and pay for only what they use.
- The use of RESTful APIs, microservices, open source and DevOps processes are all greatly accelerated in the cloud. These elements are essential to modern software architecture.
- New offerings are being introduced all the time, allowing us to leverage the newest tech, immediately and at a significant discount to doing the same in our own data centers.
- Third party providers can realize economies of scale that we could not realize on our own.
- Through cloud migration, we can help ensure applications and services consistently operate at their peak. This enhances user experience, boosts productivity, and provides a competitive advantage.
- Migration frees skilled employees from data center administration tasks and allows them to focus on business development. The savings in human resources are significant. Cloud provider fees are typically lower than the cost of running a local data center.

Scalability to meet demand

- First, on AWS, ABC Inc. can provision infrastructure almost instantly at a virtually unlimited scale, using as much or as little computing and storage as its applications need—and paying only for what it uses.
- The company could easily adjust its resource usage based on demand, ensuring optimal performance at all times.
- ABC Inc. technologists are using real-time, streaming data at scale, machine learning and the power of the cloud to solve unique, challenging technology and data problems to deliver intelligent solutions that benefit millions of customers.
- With its AWS infrastructure, ABC Inc. can actively monitor performance and dynamically scale resources based on need during the holiday and festive periods, thereby helping customers to make the most of its applications and providing a sense of satisfaction.
- AWS Auto Scaling helps monitor our applications and automatically adjusts capacity to maintain steady, predictable performance at the lowest possible cost. Using AWS Auto Scaling, it’s easy to setup application scaling for multiple resources across multiple services in minutes. The service provides a simple, powerful user interface that lets you build scaling plans for resources including Amazon EC2 instances and Spot Fleets, Amazon ECS tasks, Amazon DynamoDB tables and indexes, and Amazon Aurora Replicas.

Automated provisioning of infrastructure at a virtually unlimited scale

Most important, though, is that AWS has provided ABC Inc. the flexibility, capacity, and microservices architecture it needs to create at scale the experiences that its customers want.

- Increased resiliency - If one region were to go down, we can stand up in another region on AWS. If a data center goes down, there's no alternative.
- The company has also seen an increase in its pace of innovation, going from quarterly and monthly application updates to releasing new code multiple times per day. Moreover, ABC Inc. has reduced the average time needed to build a development environment from 3 months to only minutes.
- Business can easily adjust our IT resources in response to fluctuating workloads without undergoing costly and time-consuming infrastructure upgrades. This dynamic scalability helps ensure that our applications perform optimally during peak times, and we don't waste resources during off-peak hours.
- AWS CloudFormation - It is an Infrastructure As Code (IaC) Provisioning service that helps us model and set up our AWS resources so that we can spend less time managing those resources and more time focusing on our applications that run in AWS. We create a template that describes all the AWS resources that we want (like Amazon EC2 instances or Amazon RDS DB instances), and CloudFormation takes care of provisioning and configuring those resources for us.

System availability and disaster recovery with business continuity

- The company performs regular business continuity exercises and technical recovery exercises to ensure resiliency, but on AWS, it has shifted to active-active architecture with automated failover. As a result, ABC Inc. has cut its disaster recovery time in these testing exercises by 70 percent, and it has reduced both critical incident resolution time and the number of transaction errors by 50 percent.
- We've also seen dramatic improvements in system availability and disaster recovery, including cutting both the number of transaction errors and critical incident resolution time in half.
- AWS provides us with robust security measures, including encryption, multi-factor authentication (MFA), and regular security audits. Additionally, several backup and disaster recovery mechanisms exist to protect all digital assets.
- AWS delivers the highest network availability of any cloud provider. Each region is fully isolated and comprised of multiple AZs, which are fully isolated partitions of our infrastructure. To better isolate any issues and achieve high availability, we can partition applications across multiple AZs in the same region.
- Elastic Disaster Recovery is a disaster recovery service that reduces downtime and data loss with the fast, reliable recovery of on-premises and cloud-based applications. It can decrease our RPO (Recovery Point Objective) to seconds and RTO (Recovery Time Objective) to just a few minutes. We can quickly recover operations after unexpected events, such as software issues or data center hardware failures. It is also a flexible solution, so we can add or remove replicating servers and test various applications without specialized skill sets.

Use as many AWS services as possible to include the flexibility and capacity in microservices architecture

- Amazon Elastic Compute Cloud (Amazon EC2): Amazon Elastic Compute Cloud (Amazon EC2) offers the broadest and deepest compute platform, with over 500 instances and choice of the latest processor, storage, networking, operating system, and purchase model to help you best match the needs of your workload.
- Amazon Relational Database Service (Amazon RDS): Amazon Relational Database Service (Amazon RDS) is a collection of managed services that makes it simple to set up, operate, and scale databases in the cloud.
- Amazon S3: Amazon Simple Storage Service (Amazon S3) is an object storage service offering industry-leading scalability, data availability, security, and performance.
- AWS Lambda: AWS Lambda is a serverless, event-driven compute service that lets you run code for virtually any type of application or backend service without provisioning or managing servers.
- Amazon Connect: Provide superior customer service at a lower cost with an easy-to-use omnichannel cloud contact center. Easily scale up or down to meet demand, with the flexibility to onboard tens of thousands of agents working from anywhere.
- Amazon DynamoDB is a serverless, NoSQL database service that enables you to develop modern applications at any scale. As a serverless database, you only pay for what you use and DynamoDB scales to zero, has no cold starts, no version upgrades, no maintenance windows, no patching, and no downtime maintenance. DynamoDB offers a broad set of security controls and compliance standards. For globally distributed applications, DynamoDB global tables is a multi-Region, multi-active database with a 99.999% availability SLA and increased resilience.

Outcome of the Solutions

ABC Inc.'s digital transformation began with the ambition to become a modern technology company that could develop its own applications and lead the banking industry in innovating for customers. Along the way, though, the company completely reinvented itself—its talent, culture, operations, and technology infrastructure. As a result, its cloud migration became a foundation for building the bank of the future, one that could quickly and continuously innovate to meet changing customer needs and preferences.

"ABC Inc. today is an entirely different company from what it was 8 years ago," says Ian, senior vice president of cloud and productivity engineering at ABC Inc. "We can now build new experiences that are powered by more data and available in real time with algorithms and artificial intelligence."

Moreover, ABC Inc. has proven that a Fortune 100 company in a highly regulated industry can make the leap from legacy, on-premises data centers to modern architectures in the cloud. The key to doing so, for ABC Inc., was approaching the move holistically. It not only went all in on migrating to AWS—it also reimagined its entire organization, hiring and developing a diverse group of data scientists, developers, and experts in human-centered design who could work together to transform ABC Inc. into a pioneering technology company.

"We've unleashed the power of our 50,000 associates and unlocked innovative, new capabilities for our customers," Ian says. "We can't wait for what's possible next on AWS."

Thank you