

Introduction

One of our client deals in digital marketing, marketing communication, customized engagement programs, Experimental marketing, Manpower, training etc. Being a digital agency they primarily deals in launching virtual event as part of their marketing campaign. They need virtual event platform which offers various customization to deliver digital experience. All types of events like virtual conference, digital product launch, online training, workshops, panel discussion, etc. can be hosted on the platform. It can manage a small event with 50 attendees or a large one with 5,000. It is equipped with features like multiple tracks, multi-lingual support, social media & networking centre, exhibitor booth, push notifications, analytics & reporting, quizzes, polls, etc.

The challenge

There were two primary requirements the customer wanted to address for running their virtual event web app.

- ✓ ***A secure scalable cloud solution architecture to manage load of up to 2 million concurrent users in an event. The architecture had to be fault tolerant***
- ✓ ***Secondly, a Highly Available and reliable cloud infrastructure with minimal operational overhead.***

The customer application run on .net core and IIS app server. It uses window server 2016 for hosting the application and MS-SQL server 2016 Std. Edition as the backend database.

The hosted virtual events were global in nature with a wide reach of their target audience from US, UK, Australia, India & Singapore.

The Solution

Considering the customers' requirements for running highly scalable, fault tolerant event hosting application, i2k2 proposed the solution architecture which was capable of the running their Windows based application on EC2 using managed AWS services for database. The solution was designed to manage a peak of 2 million+ users with high availability while following AWS Best Practices as per well-architected framework.

- ✓ ***For the application servers we have configured IIS web server with the Auto Scaling on multiple thresholds. We have also deployed ALB which distributes incoming application traffic across multiple EC2 instances running Windows Server 2016 across Availability Zones, to manage the HA.***
- ✓ ***Database is the most significant element of the application architecture. The DB being used is MS-SQL server 2016, which is configured on RDS with Multi-AZ enabled. In addition, one read replica is set up to provide the High Performance for Database.***
- ✓ ***SQS FIFO queue is used before the DB to throttle the large volume of concurrent requests***
- ✓ ***Route53 for DNS Management is configured which is a highly available and scalable cloud Domain Name System (DNS) web service.***
- ✓ ***Cloudfront is configured to cater the global user requirement to access the application with low latency.***
- ✓ ***Further we have configured other AWS services for like CloudWatch for monitoring, CloudTrail, SNS, SQS and S3 for backups.***
- ✓ ***System Manager is configured for patching the server & Microsoft applications on Amazon EC2 instances.***

AWS EC2:

Amazon Elastic Compute Cloud (Amazon EC2) is a web service that provides secure, resizable compute capacity in the cloud. It is designed to make web-scale cloud computing easier

AWS RDS:

Amazon Relational Database Service (Amazon RDS) makes it easy to set up, operate, and scale a relational database in the cloud. It provides cost-efficient and resizable capacity while automating time-consuming administration tasks such as hardware provisioning, database setup, patching and backups.

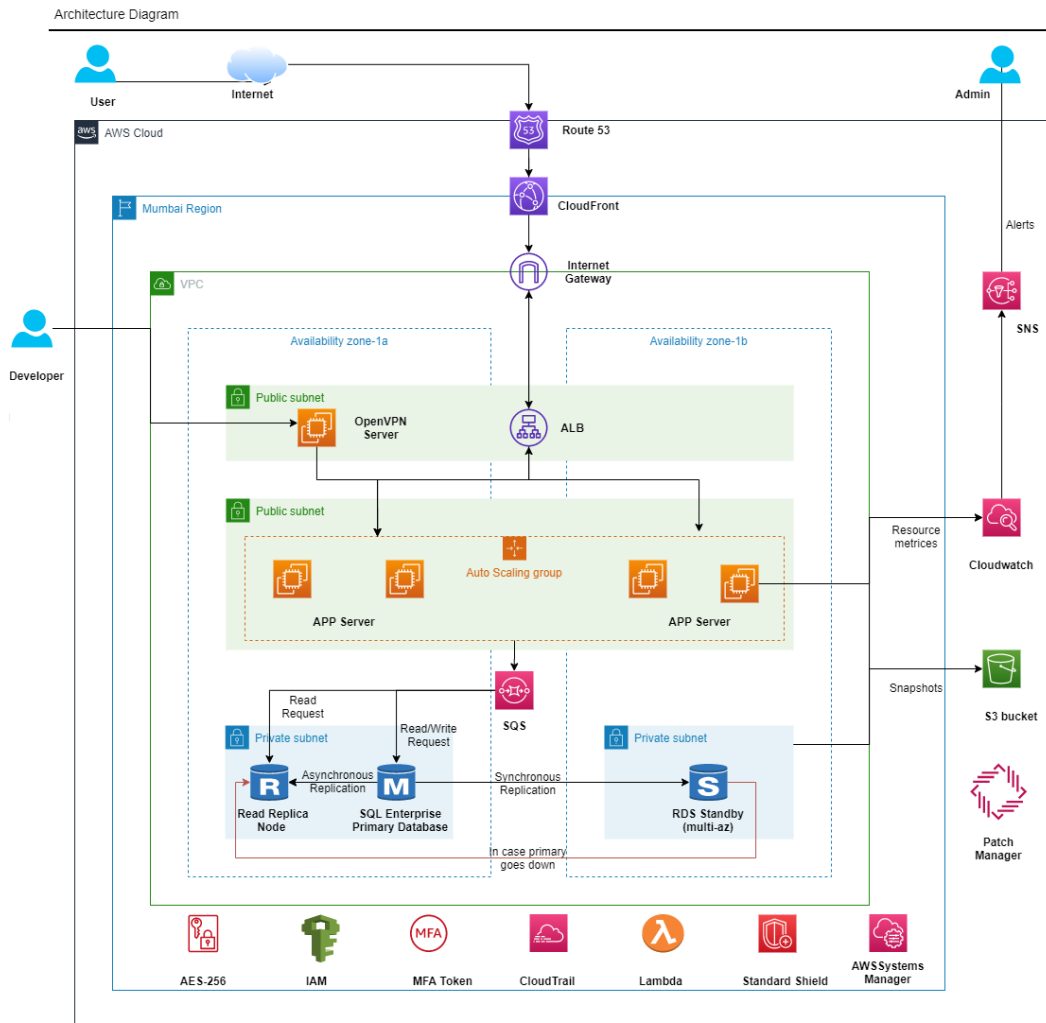
AWS CloudTrail:

It is a service that enables governance, compliance, operational auditing, and risk auditing of your AWS account.

AWS System Manager:

AWS Systems Manager simplifies resource and application management, shortens the time to detect and resolve operational problems, and makes it easy to operate and manage your infrastructure securely at scale.

The Architecture Diagram



Why Amazon Web Services (AWS)

AWS is a secure cloud services environment, offering compute power, database storage, content delivery and other functionality to help businesses scale and grow. Explore how millions of customers are currently leveraging AWS cloud products and solutions to build sophisticated applications with increased flexibility, scalability, and reliability. By moving to AWS, organizations are realizing benefits such as a broad IT infrastructure, support for a variety of use cases, feature sets, enhanced visibility, and the ability to deploy globally within minutes.

Why i2k2 Networks

As an AWS Advanced Consulting Partner & DevOps competent Managed Amazon cloud services provider, i2k2 provides comprehensive folio of cloud solutions along with prompt and reliable support. Our partnership with AWS goes several years back, even before we formalized our association with the company in 2013. Key reason to choose i2k2 was 20+ years of proven business. Talent is vast due to extensive IT exposure in India.

Benefits



Scalability

During virtual events, when the number of audiences increase the resources gets auto scaled to meet the demand by launching new instances. The ALB load balances the traffic among all the instances



High Availability

The infrastructure, both at the Application layer and Database is deployed across AZ's. The servers are checked for health periodically and replaced when issues are detected.



Security & Patching

AWS Systems Manager helps to maintain security and compliance by scanning the instances against patch config, and custom policies. Cloud Trail helps audit any actions on the cloud infrastructure



Cost Management

Scaling the Servers based on Demand using Autoscale policies helps only maintain only the required resources. The DB also allows for single click scaling when required with minimal operational overhead.