

LIVE STREAMING ON AWS

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About Our Client: -

The client is committed to providing the most seamless end-to-end launch services and consultation. They provide secure transport pathways for space vehicles and payloads from any launch location on Earth, thanks to our mission-tailored design and spaceport experience. To ensure safe passage for the launch vehicle and its payload, their commercial system intelligently integrates data from the National Airspace System, the Marine Transportation System, and the leading orbital object database, maximising launch possibilities (windows) and mission assurance.



Problem Statement: -

To build a Live streaming data feed on Cloud with centralized application consisting of multiple channels

Solution:-

- Amazon EC2
- IVS
- Document DB
- Media live
- Media Converter
- Cloud Front
- Simple Storage Service (S3)
- IAM
- Elastic Load Balancer

Amazon Elastic Cloud Compute (EC2):-

Amazon Elastic Compute Cloud (EC2) is a component of Amazon.com's Amazon Web Services (AWS) cloud computing platform that allows users to rent virtual computers on which to run their own computer applications. EC2 facilitates scalable application deployment by offering a web service that allows users to boot an Amazon Machine Image (AMI) and configure a virtual machine, which Amazon refers to as an "instance," with any software they choose. The phrase "elastic" refers to the ability of a user to construct, launch, and terminate server instances as needed, with active servers being charged by the second. EC2 gives users control over where their instances are physically located, allowing for latency optimization and high degrees of redundancy. Amazon migrated its own retail website platform to EC2 and AWS in November 2010.

The following features are available using Amazon EC2:

- Instances are virtual computing environments
- Amazon Machine Images (AMIs) are preconfigured templates for your instances that package the parts you need for your server (including the operating system and additional software)
- Instance kinds are different configurations of CPU, memory, storage, and networking capabilities for your instances
- Key pairs are used to safeguard login information for your instances (AWS stores the public key, and you store the private key in a secure place)
- Instance store volumes are storage volumes for transitory data that is destroyed when you stop, hibernate, or terminate your instance
- Amazon EBS volumes are persistent storage volumes for your data created with Amazon Elastic Block Store (Amazon EBS)

Amazon Interactive Video Services (IVS):-

Amazon Interactive Video Service (Amazon IVS) is a managed live streaming solution that allows you to create interactive video experiences quickly and easily. Send your live streams to Amazon IVS using streaming software, and the service will take care of everything else, allowing you to focus on creating interactive activities alongside the video. The Amazon IVS player SDK, timed metadata APIs, and stream chat APIs allow you to modify and enhance the audience experience on your own websites and applications, allowing you to develop a more value relationship with your viewers.

Benefits of IVS:-

Live video streaming that is simple to use

With just a few clicks, you can create and configure live streams and begin streaming in seconds. Send video to Amazon IVS, and the service will handle all of the logistics for getting your live broadcast to your audience.

low latency without configuration

Amazon IVS streams are pre-configured to deliver low-latency live video. With a latency of less than three seconds between the streamer and the viewer, you may create interactive experiences alongside live video.

Designed to be streamed live

Amazon IVS, which is based on the same live streaming technology that powers Twitch, improves service and experience by receiving and distributing streams through a managed global infrastructure that is optimised for live video ingest, processing, and delivery.

Integration into websites and apps is simple

The Amazon IVS player and broadcast SDKs make it simple to integrate live broadcasts into your iOS, Android, and web apps. The SDKs ensure that your streamers and viewers have a uniform experience and low-latency live streaming across platforms, without sacrificing video quality or increasing buffering.

Create a memorable audience experience

Using scalable stream chat APIs to develop chat rooms to accompany your live streaming video, you may build community interactions with your audience.

The Amazon Interactive Video Service can make new live video available to viewers in seconds, making it suitable for situations when new feeds are required quickly. These are some examples of use cases and applications you can develop alongside your Amazon IVS streams to create interesting interactive experiences, thanks to the low-latency live video's ease of use.

Create communities by using social chat rooms

Add a virtual environment with stream chat alongside your live streaming content to allow your viewers to communicate with one another.

Document DB:-

Amazon Document DB is a managed proprietary NoSQL database service that supports document data types and offers limited support for MongoDB workloads, with some compatibility with MongoDB version 3.6 (issued by MongoDB in 2017) and version 4.0 (published by MongoDB in 2018). Amazon Document DB is a document database that can store, query, and index JSON data. It can be found on Amazon Web Services.

JSON data is naturally stored in a document database. Single document lookups, index scans, regular expression queries, and aggregations are all available in Document DB. To increase the performance of query patterns, it can generate single field, compound, and multi-key indexes. Users can delete or create new indexes at any time, and reads from the indexes on the primary instance are read-after-write consistent.

AWS Elemental Media Live:-

AWS Elemental Media Live is a live video processing service for broadcasters. It enables you to create high-quality video streams for broadcast televisions and internet-connected multiscreen devices such as connected TVs, tablets, smartphones, and set-top boxes. The service works by real-time encoding your live video feeds, compressing a bigger live video source into smaller ones for dissemination to your audience. With extensive broadcasting options, high availability, and pay-as-you-go pricing, you can simply set up streams for both live events and 24x7 channels with AWS Elemental Media Live. AWS Elemental Media Live allows you to focus on producing great live video experiences for your audience without having to worry about the hassles of setting up and maintaining broadcast-grade video processing equipment.

AWS Elemental Media Convert:-

AWS Elemental Media Convert is a broadcast-grade file-based video transcoding service. It enables you to quickly and easily generate video-on-demand (VOD) content for broadcast and multiscreen distribution. Advanced video and audio capabilities are combined with a simple web services interface and pay-as-you-go pricing in this service. You can focus on creating captivating media experiences instead of worrying about the complexity of establishing and managing your own video processing infrastructure with AWS Elemental Media Convert.

Cloud Front:-

Amazon Cloud Front is an Amazon Web Services content delivery network (CDN). Content delivery networks (CDNs) are a worldwide distributed network of proxy servers that cache content, such as web videos or other large files, closer to customers, boosting download speeds.

Cloud Front has servers in Europe (UK, Ireland, Netherlands, Germany, and Spain), Asia (Hong Kong, Singapore, Japan, Taiwan, and India), Australia, South America, Africa, and numerous major US cities. The service was available from 205 edge sites across six continents in July 2020. Cloud Front is a pay-as-you-go platform.



Benefits:-

Rapid and international

The Amazon Cloud Front content delivery network (CDN) is globally dispersed and enormously scalable. For enhanced performance and availability for your end customers, the Cloud Front network includes 310+ Points of Presence (300+ Edge locations and 13 regional mid-tier caches) in 90+ cities across 47 countries, and uses the highly-resilient private backbone network.

At the Extremes of Security

Amazon Cloud Front is a highly secure CDN that protects both your network and your applications. A variety of built-in protections, such as Amazon Shield Standard, benefit your traffic and applications at no additional cost.

Amazon Web Services is deeply integrated

Amazon Web Capabilities services such as Amazon S3, Amazon EC2, and Elastic Load Balancing are all connected with Amazon Cloud Front China. All features in the CDN can be programmatically configured using SDKs or the Amazon Web Services Management Console, and they're all available through the same console. Finally, you don't have to pay for data moved between Cloud Front and Amazon Web Services origins like Amazon S3, Amazon EC2, or Elastic Load Balancing.

Amazon Simple Storage Service (S3):-

Amazon S3, also known as Amazon Simple Storage Service, is an Amazon Web Services (AWS) service that provides object storage via a web service interface. Amazon S3 is built on the same scalable storage infrastructure as Amazon.com's e-commerce platform. Amazon S3 can store any form of object, making it ideal for applications including Internet storage, backups, disaster recovery, data archives, analytical data lakes, and hybrid cloud storage.

AWS IAM:-

AWS Identity and Access Management (IAM) is a web service that allows you to manage access to AWS services in a secure manner. IAM allows you to manage who is authenticated (signed in) and allowed (granted permissions) to access resources.

When you first create an AWS account, you get a single sign-in identity with full access to all of the account's AWS services and resources. This identity is known as the AWS account root user, and it may be accessed by entering the email address and password you used to create the account. We strongly advise you not to utilise the root user for any of your daily duties, including administrative ones. Instead, stick to the best practise of just creating your account as the root user.

Elastic Load Balancer:-

Elastic Load Balancing spreads your incoming traffic over different targets in one or more Availability Zones, such as EC2 instances, containers, and IP addresses. It keeps track of the health of its registered targets and only sends traffic to those who are in good shape. Elastic Load Balancing automatically adjusts the capacity of your load balancer in response to variations in incoming traffic.

Benefits of a load balancer:-

Workloads are distributed among numerous compute resources, such as virtual servers, via a load balancer. Your applications' availability and fault tolerance improve when you use a load balancer.

- As your needs change, you may add and subtract compute resources from your load balancer without interrupting the overall flow of requests to your apps.
- You can set up health checks to monitor the health of computing resources so that the load balancer only sends requests to those that are in good shape. You can also use your load balancer to handle encryption and decryption so that your computational resources can focus on their primary tasks.

ABOUT ACC

ACC is an AWS Advance Partner with AWS Mobility Competency. Awarded The Best BFSI industry Consulting Partner for the year 2019, ACC has had several successful cloud migration and application development projects to its credit.

Our business offerings include Digitalisation, Cloud Services, Product Engineering, Big Data & Analytics and Cloud Security. ACC has developed several products to its credit. These include Ottohm – Enterprise Video and OTT Platform, Atlas API – API Management and Development Platform, Atlas CLM – Cloud Life Cycle Management, Atlas HCM – HR Digital Onboarding and Employee Management, Atlas ITSM – Vendor Onboarding and Service Management and Smart Contracts – Contract Automation and Management.



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