

Assignment 1

Q1) Use S3 bucket & start Video Streaming
 ⇒ To use Amazon S3 bucket for video streaming, we need to use S3 bucket as a container & CloudFront as a content ^{Delivery} Network (CDN).

Video streaming through Amazon S3 & CloudFront involves leveraging S3 buckets to store video content & CloudFront as a content Delivery Network (CDN) to distribute the video efficiently to viewers. Below is a step-by-step guide on how to set up video streaming using S3 & CloudFront.

Step 1: Set Up Amazon S3 bucket

1) Create an S3 bucket:

- Start by logging into your AWS Management Console.

- In the Services section, search for S3.

- Click on it to open the S3 console.

- Once in the S3 console, click on the Create bucket button. You will be directed to the bucket creation page.

- Provide a unique name for your bucket. It's important to choose a meaningful & recognizable name for future reference.

Important:

It's advisable to block all public access to prevent unauthorized individuals from

accessing the video content. To do this:

- Under the "Block Public Access" settings ensure that "Block all public access" is selected.
- Save the other settings as default unless you have specific customizations to apply. Finally, click on Create Bucket to finish creating S3 bucket.

a) Upload the Video ~~to~~ to the S3 bucket:

- After the bucket has been created, locate it by clicking on the name of your bucket to navigate to the Objects screen. This screen will show the files stored in your bucket.
- To upload your video file, click on the Upload button.
- A new screen will prompt you to add files & browse your local machine for the file or drag & drop the video file directory into the window.
- Once the file is selected, click on Upload to start the process. You will receive a confirmation once the upload is completed.

Step 2: Set Up CloudFront Distribution

1) Open CloudFront Service:

- While your video is being uploaded to the S3 bucket, open a new tab in your AWS console. In the Services section, search for CloudFront & click on it to open the CloudFront service.

2) Grants an Origin Access Identity:

- In CloudFront, on the left pane under the Security section, find & click on Origin access.
- Under the Origin access menu, select Identities (legacy), then click on Create Origin access identity. This identity allows CloudFront to access the S3 bucket securely.

3) Create a CloudFront Distribution:

- Next, navigate back to the left pane & click on Distributions, then click on Create a CloudFront Distribution.

- In the Origin field, select the S3 bucket where you uploaded the video. This associates your CloudFront distribution with the S3 bucket.

4) Configure Cache Behaviour & Security Settings:

In the Default Cache Behaviour Settings:

- Under Viewer Protocol Policy, select Redirect HTTP to HTTPS. This ensures that all content is delivered securely over HTTPS.

Teacher's Sign: _____

Step 3: Accessing the Hosted Video

1) Get the CloudFront Domain Name:

- Once the CloudFront distribution is fully deployed, go back to the CloudFront console.

- Under the Distributions section, you will see a list of your distributions. Find your newly created distribution & copy the Domain Name. This will be used to form the URL for the video.

2) Retrieve the Video Key from S3:

- Now, return to your S3 bucket where the video was uploaded. Click on bucket name, then click on the video file name you uploaded. This will open a details page for the file.

3) Form the Video URL:

- To stream the video, combine the CloudFront domain name & the S3 Video Key as in following format:

(CloudFront Domain Name) / Key of the video
For example:

011111abcd ef8.cloudfront.net/my-video.mp4

The URL can be shared or embedded into a website or video player for streaming.

Assignment 1

Q3) Discuss BMW & Hot Star case studies using AWS.

→ BMW & Hotstar case studies using AWS.

BMW is a renowned global automotive leader, leveraging AWS to drive its digital transformation & enhance its operational efficiency. BMW utilizes AWS to power its ConnectedDrive platform, offering real-time updates, navigation & remote diagnostics by processing vast amounts of vehicle sensor data. AWS services like Amazon SageMaker & AWS IoT enable BMW to perform advanced data analytics & machine learning, optimizing vehicle performance & customer experience.

Hotstar Hotstar, a leading Indian streaming platform, relies on AWS to manage massive traffic spikes, particularly during live events. Using AWS's scalable infrastructure, Hotstar streams seamless content delivery to millions of concurrent viewers through services like Amazon CloudFront, Amazon S3, & Amazon EC2. AWS's pay-as-you-go model optimizes costs by scaling resources according to demand. The global CDN provided by AWS ensures low latency & high performance, delivering high-quality streaming experiences. Additionally, AWS's security features protect Hotstar's content & user data, while the platform's agility allows for rapid feature deployment, keeping pace with the fast-evolving entertainment industry.

Teacher's Sign: _____

Q3) Why Kubernetes & advantage & disadvantages of Kubernetes. Explain how kubernetes uses Kubernetes.

⇒ Kubernetes is a open-source container orchestration platform that automates the deployment, scaling & management of containerized applications.

Advantages of Kubernetes:

- 1) Automation: Automates deployment, scaling & management of containerized applications.
- 2) Portability: Runs on various environments or including public clouds, private clouds & on-premises.
- 3) Scalability: Easily scale applications horizontally to meet increasing demands.
- 4) Self-Healing: Detects & replaces failed containers, ensuring high availability.
- 5) Resource optimization: Efficiently manages resources, reducing costs.

Disadvantages of Kubernetes

- 1) Complexity: It can be complex to set up & manage, especially for beginners.
- 2) Learning Curve: Requires significant time & effort to learn & master.
- 3) Initial Setup: The initial setup can be time-consuming & may require specialized knowledge.

How kubernetes uses Kubernetes

Kubernetes uses Kubernetes to enhance its application scalability & reliability. By

microservices or Kubernetes, Adidas ensures efficient load balancing, automated scaling, & seamless application updates. Kubernetes orchestration capabilities allow Adidas to manage its containerized applications effectively, ensuring high availability & optimized performance across its digital platforms, thus supporting their global e-commerce & operational needs.

Q4) What are Nagios & explain how Nagios are used in E-commerce?

- ⇒ Nagios is a central & versatile open-source monitoring tool designed to oversee & manage IT infrastructure. It primarily focuses on monitoring systems, networks & infrastructure, providing comprehensive insights into the performance & health of servers, applications, services & network protocols. Nagios operates by periodically checking the status of various resources through plugins, which can be customized to suit specific monitoring needs. When it detects issues or potential problems, Nagios alerts administrators through notifications, enabling timely interventions to prevent downtime & ensure system reliability.

In the context of E-services, Nagios plays a critical role by ensuring the continuous availability & optimal performance of online services & applications. E-services rely heavily on consistent uptime & quick response times to meet user expectations & maintain satisfaction. Nagios helps achieve this by monitoring the entire infrastructure supporting E-services, including web servers, databases, network devices & other critical components. It detects issues like server overloads, network outages or application failures, triggering alerts that prompt immediate corrective actions. By using Nagios, organisations proactively manage their E-services, minimise downtime, enhance user experience & maintain the trust & reliability essential for digital platforms.

2.