

## ADV. Devops

## Assignment - 1

Q.1 Use S3 bucket and host video streaming

Step 1: Create an S3 bucket

1. Sign in to AWS management Console

2. Navigate to S3:

- In AWS Management Console, Select S3.

3. Create a Bucket

- Click on Create bucket

- Enter a unique bucket name.

Step 2: Upload video to S3 Bucket

1. Open your Bucket by clicking on bucket name you created.

2. Upload Files

- Click on upload

- Drag and drop your files and click upload.

3. Set permissions

- For Public access under permissions, Check Grant Public read access.

Step 3: Create a Cloud Front Distribution.

1. Navigate to CloudFront from AWS Console.

2. Click on Create distribution.

- Choose web as delivery method

3. Configure the distribution.

- Origin Domain name : select your S3 bucket

- Viewer Protocol Policy : Choose Redirect HTTP to HTTPS for secure access.

- Cache Behaviour settings : Configure caching
- Click Create distribution.

#### Step 4: Configure CloudFront for Secure Access.

1. Create an Origin access identity (OAI)
  - In CloudFront Origin Console, go to distribution settings.
  - Under origins and origin group, click Edit
  - Create a new origin access Identity
2. Update S3 bucket Policy
  - Go to your S3 bucket.
  - Click on Permission and then bucket policy
  - Add to policy to grant access to OAI.

#### Step 5: Access the Video through CloudFront.

1. Get the CloudFront URL
  - In CloudFront Console, Go to your distribution.
  - Copy the Domain Name.
2. Use the URL.
  - Use this URL in your web application to stream the video.

(Q.2) Discuss BMW and Hotstar Case studies using AWS.

### BMW Case Study

BMW Group has been using AWS to innovate and scale its operations globally.

→ Cloud Data Hub (CDH): BMW migrated its on-premises data lake to AWS, creating a Cloud data hub that processes and combines anonymized data from vehicle sensors and other sources. This helps internal teams develop customer-facing and internal applications more efficiently.

→ Generative By using AWS services like Amazon SageMaker and Amazon Bedrock, the Cloud Data Hub processes terabytes of telemetry data from millions of vehicles daily, providing real-time insights that help BMW resolve issues before they impact customers.

### Hotstar Case Study

Hotstar, one of India's leading streaming platforms, utilizes AWS to handle its massive user base and streaming demands. During high-traffic events like the IPL, Hotstar relies on AWS to dynamically scale its infrastructure, ensuring a seamless viewing experience for millions of concurrent users. This scalability is crucial for maintaining performance and reliability during peak times.

Hutstar also leverages AWS analytic services to gain insights to user behaviour and preferences. These insights enables Hutstar to to personalize Content and improve user engagement, enhancing overall user experience. This Combination of Scalability ,analytics, and Security has been instrumental in Hotstar success as a leading Stream service.

Q.3) Why kubernetes and advantages and disadvantages of kubernetes . Explain How adidam uses kubernetes.

Kubernetes is an open-source Container Orchestration platform that automates the deployment, scaling and management of Containerized applications.

1. scalability : Kubernetes can automatically scale applications up or down based on demand , ensuring optimal resource utilization.
2. Portability : It allows application to run Consistently across different environments, whether on premises ,in the cloud or hybrid
3. High availability : Kubernetes ensures that application are always available by automatic managing failures and distributing workloads

## Advantages

- Kubernetes automates many operational tasks such as deployment, scaling and updates.
- It optimizes resource usage by efficiently managing Containerized applications.
- Kubernetes can automatically restart failed containers, replace them and reschedule them when nodes die.
- It provides load balancing to manage microservices.

## DisAdvantages

- Kubernetes has steeper learning curve and can be complex to set up and manage.
- Running Kubernetes can be resource-intensive requiring significant computation resources.

## How adidas uses Kubernetes

Adidas faced significant challenges with their existing infrastructure. They say that they were happy with software choices but accessing all tools was a problem. This hindered their development and deployment processes. To overcome these issues they adopted a cloud-native approach using Kubernetes. This allowed them to containerize their application leading to greater scalability and flexibility.

By integrating agile development and

Continuous delivery process, adidas accelerated their release cycles from 4-6 weeks to multiple times a day. The migration resulted in a 50% reduction in load time for their e-commerce site, significantly enhancing the user experience. Currently, adidas operates 4000 pods and 200 nodes, handling 80000 builds per month, supporting critical systems and global customer base.

(Q.4) What are Nagios and explain how Nagios are used in E Services.

Nagios is open source monitoring and alerting system widely used for tracking the health and performance of IT infrastructure, network and applications. It provides a flexible and extensible platform for monitoring various components within an organization.

Nagios are used in e services to ensure the reliability and performance of critical infrastructure. For example, an e-commerce company might use Nagios to monitor health of its servers tracking metrics like CPU usage, memory utilization, and disk space to prevent any potential issues. It also keeps an eye on network devices such as routers and switches, ensuring smooth data flow.

and detecting anomalies. By monitoring essential services like web services and databases Nagios can quickly alert administrator to any outages or performance problems allowing for immediate intervention. Additionally Nagios integrates with log files and security systems to detect and alert on suspicious activities, enhancing overall security. By providing comprehensive monitoring and alerting capabilities, Nagios ensures that e-services remain highly available, performant, and secure, thereby delivering a seamless experience to users and supporting business experience.

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