

Adv DevOps.  
Assignment - 1

Q1

Use S3 bucket and host video streaming

Steps to host video streaming on S3 bucket  
Prerequisites : Register and configure a custom domain with route S3

Before we start, it is recommended to register and configure a custom domain (For example : example.com) with Route S3 so that you can configure your CloudFront distribution to use a custom domain name later.

Without custom domain name .S3 video is publicly accessible and hosted through CloudFront at a URL that looks similar to following:  
<https://cloudfrontdistribution.domain.name/path/to/an/S3/video>.

~~Step 1 : Create an S3 bucket~~

~~Sign In to AWS console and open Amazon S3  
choose Buckets > Create Bucket~~

~~Enter Bucket name (For example : Tutorial-bucket)~~

~~Choose Region~~

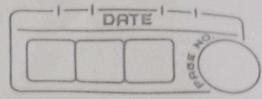
~~For Block Public Access setting for this bucket~~

~~Keep default settings~~

~~For remaining settings, keep default settings  
click on Create Bucket.~~

~~Step 2 : Upload a video to the S3~~

~~In the Bucket list, choose name of bucket that we created in step 1 to upload your file to~~



On the object tab for your Bucket, choose Upload  
On the upload page, under Files and Folders  
choose add files  
choose file to upload and then choose open  
choose upload.

Step 3: Create a CloudFront origin access identity

From AWS console, now open CloudFront service  
Under security section, choose origin access. Under identities tab, choose create origin access identity and enter a name. click on create

Step 4 :- Create a CloudFront distribution

a) Create a CloudFront distribution  
choose Distributions > Create Distribution

In Origin section, origin domain select domain name which starts with name of S3 bucket created in step 1.

For origin access identity choose origin access identity created in step 3.

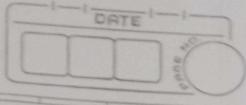
Under Bucket Policy, choose Yes. Update Bucket policy. In Default cache behaviour > Viewer Protocol policy.

choose Redirect HTTP to HTTPS.

Keep the remaining setting set to default.  
click on create distribution.

b) Review the bucket Policy

Step 5: Access the video through the CloudFront distribution.



go to Distribution

Find Distribution by matching S3 origin name and copy name . open new tab & paste copied domain name . Return previous tab choose video object created in step 2 copy key from object .

Step 6 : Configure your CloudFront distribution to use your custom Domain name

a) Request SSL certificate

b) Create DNS record to route traffic from alternate domain name to your CloudFront distribution.

Step 7 :- Access the S3 video through CloudFront distribution with custom domain name

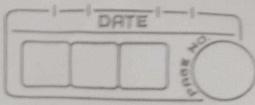
Distribution > Find Distribution > copy alternate domain name .

Step 8 :- View data about request received .

Hence , video streaming is hosted successfully .

Q2. Discuss BMW and Potstar case study using AWS  
→ BMW group , headquartered in Munich , Germany is a global manufacturer of premium automobiles and motorcycle

The company needed to more easily scale its data to support the growing demands of internal & external stakeholders . As data wasnt easily accessible and spread across , BMW's innovation was slowed down by its own IT infrastructure . Hence , BMW needed to develop solutions agile enough to support data need & allow company to move quickly to address customer demand .



The BMW Group rearchitected its on-premises data to AWS cloud, creating Cloud Data Hub that integrates anonymised data from vehicle sensor and other sources. Using AWS services like S3, Athena, Kinesis Firehose, glue, BMW streamlined data management & enabled scalable agile operations for data engineers. This setup allowed teams to maintain their own DevOps process.

The company uses this data to monitor vehicle health indications such as check controls errors to identify potential issues across vehicle lines. This enables BMW groups to leverage fleet data ingested, collected and refined from CDH to better resolve issue, even before they impact customers.

Hotstar is an Indian subscription video on-demand streaming service owned and operated by star India, a subsidiary of The Walt Disney Company India. In 2019, during ICC World Cup Semi-Final between India & New Zealand, Hotstar set a new record of 25.3 million viewers. On the game day, the first spike witnessed was from 1.5M to 15M, as India started batting. Then, when Dhoni got out there was viewer drop to <1M viewers. Hotstar does not use traditional auto scaling from AWS because of insufficient capacity error & step size auto-scaling group. They build their own scaling strategy.

At the backend side, Hotstar uses Amazon Route 53 and Amazon CloudFront services for video streaming.

Q3 why Kubernetes and advantage and disadvantage of Kubernetes

→ Kubernetes is an open-source platform for automating the deployment, scaling and management of containerized applications.

Advantages :-

- ① Scalability - Automatically adjust resources based on demand
- ② Portability - consistent performance across cloud and on-premises environments.
- ③ High Availability - self-heals and ensure uptime.
- ④ Load Balancing - Distributes traffic effectively.

Disadvantages :-

- ① Complexity - steep learning curve and setup time
- ② Resource Intensive - Requires significant computing resources.
- ③ Operational Overhead - Needs continuous management and monitoring.
- ④ Networking challenges - complicated configurations can be tricky to troubleshoot.
- ⑤ Ecosystem Fragmentation - Numerous tools can complicate stack choices.

How Adidas uses Kubernetes :-

- ① Microservices - Manages independent services to speed up development.
- ② Scalability - automatically scales during high-traffic events.
- ③ Continuous deployment - Implements CI/CD for rapid feature releases.
- ④ Resource Optimization - efficiently manages cloud resources to reduce costs.
- ⑤ Cloud-Native Strategy - enhances agility and flexibility in operations.

Q4. What are Nagios and explain how Nagios are used in E-Services?

→ ~~Nagios is an open-source monitoring system designed to keep track of network services, host resources and server performance. It provides alerts on system failures and issues.~~

How Nagios is Used in E-Services -

① Infrastructure Monitoring - Nagios monitors servers, network devices and applications, ensuring that critical components of e-services are running smoothly.

- ② Service Availability - Nagios checks availability of essential services and alerts administrators if any services go down.
- ③ Performance Metrics :- By gathering performance data, Nagios helps in identifying trends and potential bottlenecks in e-services.
- ④ Alerting and Notifications - Nagios sends alerts via email, SMS or other methods when issues are detected.
- ⑤ Customizable checks - Users can define custom checks based on their specific e-service needs, allowing for tailored monitoring.
- ⑥ Reporting and Analytics - Nagios provides reporting features that help in analyzing performance over time which can be critical for auditing and improving service quality.
- ⑦ Integration with Other Tools - Nagios can be integrated with various third-party applications and plugins, enhancing its functionality for managing e-services.