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Adv DevOps Assignment -1

Q3 Use S3 bucket and host video streaming.  
→ To host video streaming using S3 bucket on AWS, follow these steps:

1) Create an S3 bucket:

Log in to AWS management console, go to the S3 service and create a new S3 bucket. Ensure to choose a globally unique bucket name and region close to your users for better performance.

2) Configure Bucket permissions:

Set the bucket permissions to allow public access for objects you want to stream. Go to the permissions tab, disable "Block all public access" and configure a bucket policy that allows public read access.

3) Upload Video Files:

Upload the video files you want to stream into the S3 bucket. Ensure the files are in a format compatible with streaming (e.g. mp4, mov).

4) Enable Static Website Hosting:

In the S3 bucket settings, enable static website hosting by navigating to the 'Properties' tab and configuring index and error documents.

5) Access Streaming URL:

Once hosting is enabled, access the video through the provided S3 URL or use CloudFront, AWS's content delivery network (CDN), to reduce latency and improve video streaming performance.

## 67 Embed Video

Finally, you can embed the video URL into an HTML file or website for users to stream directly from the S3 bucket.

Q27 Discuss BMW and Hot Star case studies using AWS.

→ BMW Case study with AWS: BMW uses AWS to support its connected car initiative, offering real-time data and services to millions of vehicles globally. AWS provides the infrastructure for BMW's "ConnectedDrive" platform, which integrates features like navigation, entertainment, and safety. BMW leverages AWS services such as EC2, S3 and RDS to manage large volumes of data generated by vehicles. The cloud infrastructure helps BMW reduce operational costs and enhance user experiences by delivering reliable, fast, and secure services globally.

Hotstar case study with AWS: Hotstar, one of India's largest video streaming platforms, utilizes AWS to stream live events such as cricket matches to millions of concurrent users. AWS services like EC2, Lambda, S3 and CloudFront were crucial in enabling Hotstar to handle peak traffic without compromising on performance. The combination of AWS's content delivery network (CDN) and storage solutions ensures that Hotstar can provide seamless video streaming with minimal buffering, improving user experience.



Q.37 Why Kubernetes and advantages and disadvantages of Kubernetes. Explain how adidas uses Kubernetes.

→ Kubernetes is an open-source container orchestration platform that automates the deployment, scaling, and management of containerized applications. It handles tasks like load balancing, self-healing, scaling and resource optimization, making it a go-to solution for modern applications.

Advantages :-

- i) Scalability: Easily scales applications horizontally & vertically.
  - ii) High availability: reschedules failed containers to maintain runtime.
  - iii) Resource efficiency: Efficiently utilizes hardware resources.
- Other advantages include portability and automation.

Disadvantages :-

- i) Complexity: The steep learning curve due to its extensive features.
- ii) Overhead: requires more resources to run, which can lead to higher costs for smaller applications.

How adidas uses Kubernetes: Adidas adopted Kubernetes to manage its microservices-based architecture and improve the agility of its platforms. Adidas benefits from Kubernetes' ability to scale workloads dynamically during peak traffic periods, such as product launches or high-demand times like holiday seasons. This flexibility allows Adidas to deliver a consistent user experience while maintaining operational efficiency across its e-commerce platforms.



Q47 What are Nagios and explain how Nagios are used in E-services?

→ Nagios is an open-source monitoring tool that helps track the health and performance of IT infrastructure including servers, applications, services, and networks. It provides real-time alerts on issues like service downtime, network failures, or resource exhaustion, allowing administrators to resolve problems before they impact users.

In E-services, Nagios is used to monitor crucial services like payment gateways, website uptime, and database availability. It ensures smooth service delivery by detecting issues early and notifying the IT team, thus preventing service disruptions, minimizing downtime, and ensuring a reliable user experience for end-users.

How Nagios Works

**Monitoring:** Nagios monitors systems using plugins that run on various hosts and report status to a centralized server.

**Alerts:** When Nagios detects an issue, it sends alerts to administrators or users.

**Visualization:** Nagios offers a web interface to view the status of monitored devices and services.

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Logging: It logs system performance data, which can be used for auditing and troubleshooting.

## Usage in e-Services:

In context of e-services, Nagios is used to:

- 1) Monitor Uptime: Ensure that the services are always available and detect outages quickly.
- 2) Track Resource usage: Monitor CPU, memory, disk space, and other metrics to ensure optimal performance.

It is also used to implement:

Network Monitoring: Monitors networks' services and hardware, such as routers and switches, to ensure seamless connectivity and performance.

Application monitoring: Observes the performance and availability of web applications, databases, and APIs, allowing for quick detection of issues.

By implementing Nagios, e-service providers can maintain high availability and performance, ultimately enhancing customer satisfaction and trust.