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ADevops Assignment

05/05

Q.1 Use S3 bucket and Video Streaming through hosting

→ i) To host video, we will first create a react project. also select which video should be hosted.

ii) We will start by login into AWS Personnel account then in services we will select S3.

iii) We will click on create bucket and start creating the bucket by naming it properly, selecting AWS region, Object ownership should be disabled, Blocking all public access thus creating S3 bucket.

iv) Now we will upload our video on the S3 bucket.

v) Now we will select on Cloud Front Services and create new distribution we will keep the origin access control settings and create control setting. Later add name and tick on sign requests, select origin type as S3. Thus create new distribution, in addition settings, now we will add the created control setting. Later in Viewer section we will add Redirect HTTP to HTTPS and ~~secteo~~ select on Cache policy and origin request will Caching optimization. In settings select on Use only North American and Europe. Now select on create distribution.

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b) Disadvantages:

i) Complexity: Kubernetes can be complex to setup and manage, particularly for small teams or organizations with limited resources.

ii) Learning curve: Developers and operations teams need to learn how to use Kubernetes effectively. This can take time and effort, particularly for those who are new to containerization and orchestration.

iii) Performance overhead: Kubernetes introduces some overhead in terms of CPU and memory usage, which can impact application performance.

About Adidas usage:

The company adopted Kubernetes to streamline operations, enabling faster deployment cycles and improving site performance. They reduced the load time of their e-commerce site by half and shifted from releasing updates every few weeks to multiple times a day. Adidas also uses Kubernetes to run 40% of its most critical systems with 4000 pods across 200 nodes, handling up to 50,000 builds per month.

q.3 Why Kubernetes and advantages and disadvantages of Kubernetes. Explain How adidas used Kubernetes.

i) Containers are a good way to bundle and run your applications. In a production environment, you need to manage the containers that run the applications and ensure that there is no downtime. For example if a container goes down, another container ~~g~~ needs to go up. ~~Wouldn't~~

a) Advantages of Kubernetes.

i) Scalability: Kubernetes allows developers to easily scale their applications to easily scale their application.

ii) Resource efficiency: Kubernetes helps optimize the use of resources by scheduling containers to run on the most appropriate node based on their resource requirements.

iii) High availability: Kubernetes provides mechanisms for ensuring that applications are always available. It can automatically restart containers that fail; it can schedule replicas of containers across different nodes.

iv) Portability: Kubernetes provides a consistent deployment platform across different environments, whether it is on-premises or in the cloud.

it to viewers seamlessly.

- Data Analytics for Personalization: Hotstar uses AWS analytics tools like Amazon RedShift and Kinesis to process and analyze user data in real time. This helps the platform offer personalized content recommendations based on user preferences and viewing habits, enhancing viewer engagement.
- Cost Efficiency and Elasticity: AWS's flexible pricing model helps Hotstar optimize costs, as they can scale resources according to demand during peak events.

Outcome: with AWS, Hotstar can handle traffic surges during major events, provide high-quality video streaming.

Conclusion: Both BMW and Hotstar showcase how AWS can enable businesses to scale efficiently, enhance performance, ensure security and drive innovation in their respective industries.

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2. Hotstar Case Study Using AWS

Overview: Hotstar (now Disney + Hotstar) is one of the largest online video streaming platforms in India. It leveraged AWS to provide seamless streaming experience during massive live events like the Indian Premier League (IPL), which attracts millions of concurrent viewers.

Key Points:

- Scalability for High Traffic Events:
During high-profile events like cricket matches, Hotstar experience sudden spikes in traffic. AWS's scalable infrastructure allows Hotstar to handle millions of simultaneous viewers without performance degradation.
- Content Delivery with Amazon CloudFront:
To deliver high-quality video content with low latency to viewers across India with other regions, Hotstar uses Amazon CloudFront, AWS's Content Delivery Network (CDN). This reduces the load on origin servers and provides smooth video streaming, even during peak times.
- Live on Demand Streaming: Hotstar uses AWS services like AWS Elemental MediaConvert to manage both live and on-demand video streaming. These services process video content, convert it into multiple formats and deliver

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Outcome : BMW's collaboration with AWS has lead to improved customer experiences, smarter and safer vehicles, and accelerated innovation in autonomous driving and connected services.

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vi) So now its important to change the policy of S3 bucket, we will click on edit policy and copy paste the policy provided in the yellow alert (to change policy message).

vii) Now ~~well~~ we will copy the name of the created distribution in the distributed domain name, also the key of the video uploaded in the S3 bucket for that click on the blue link under the name of video file uploaded.

viii) In the chrome brower we will ~~nam~~ paste the domain name of the distribution then "/ keyname.".

<domain name>/<keyname>. Hit enter and you will see the video. Now copy the https URL of this page. ~~and~~.

(ix ~~viii~~) In react project add a video tag will all the required settings such as height width, muted, ... etc. then add a ~~src~~ source tag to it and paste the copied URL in src="...".

x) Through this we can see the video streaming on our react project

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Q.2 Discuss BMW and Hotstar case studies using AWS

1. BMW Case Study Using AWS

Overview: BMW one of the worlds leading car manufacturers, used AWS to power it digital transformation and improve its data-driven services. the company adopted AWS to manage its connected vehicle platform, which integrates with cloud to provide a seamless user experience and enable autonomous driving and smart mobility

Key points:

- Connected Vehicles Platform: BMW uses AWS to support its connected vehicles, which gather and process and analyze this data for real-time decision-making, enhancing driver experience and safety.
- Scalability and Flexibility: AWS provides the scalability BMW needs to handle growing amounts of data and an increasing number of connected vehicles globally. BMW can easily scale its cloud resources up or down depending on the demand.
- Artificial Intelligence and Machine Learning: AWS provides BMW with AI and ML capabilities via services like Amazon SageMaker. BMW leverages these to build predictive models, enabling the development of advanced driver-assistance system (ADAS) and autonom driving feature

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Q.4. What are Nagios and explain how Nagios are used in E-services?

→ Nagios is an exent monitoring system that offers monitoring and alerting services for servers, switches, applications and services. It alerts users when things go wrong and alerts them a second time when problem has been resolved.

Key Features of Nagios are usage in E-services:

- Monitoring: Nagios monitors applications and servers, and can automatically send alerts to team if there is a failure.
- Alerting: Nagios can alert users when suspicious network activity occurs.
- Reporting: Users can customize reports without the need for an external system.
- Scalability and flexibility: Nagios is designed to be flexible and scalable, making it suitable for businesses of almost all sizes.
- Customization: Nagios XI is fully customizable.
- Trend Analysis and Reporting:

Nagios collects historical data on the availability and performances of services. This data can be used for capacity planning and understanding usage patterns, ensuring future scalability of e-services.

- Automation and Self-Healing:
In many e-services, Nagios is integrated with automation scripts that can restart services or systems when certain conditions are met, minimizing downtime.
- Integrating with other Tools:
Nagios integrates with various IT Service Management (ITSM) tools, allowing for smoother incident management.