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D15A/51

Assignment 1

05/05

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1) Use S3 bucket & host video streaming

To host a video streaming project we need to use AWS service like S3 and cloudflare.
Amazon S3 offers object storage to designed to store & retrieve any amount of data from anywhere on the web.
Cloudflare is a content delivery network (CDN) service within AWS, that has lot of edge location around the world.

S-1) Create a S-3 bucket, update bucket policy. note. Enable bucket versioning.
S-2) Upload your video on S3 bucket.
~~S-3) Set-up Origin access.~~
S-3) Search for cloudfront, In cloudfront set up origin access control.
S-4) Create distribution
- While creating distribution, choose the S3 bucket created earlier as origin domain
- In origin access section, select 'origin access control settings' (which is recommended) option and choose origin access control created earlier.
- In viewer section select 'Redirect HTTP and HTTPS'.

S-5) Once created, distribution is created, copy it's domain name.

S-6) Copy 'key' from ⊙ of your video/project from S3 bucket and paste it infront of the domain name copyed earlier.

'domain-name/'key.

2) Discuss BMW & Hot Star case study using AWS.

BMW Group

The BMW group has used AWS to transform it's data management and analytics capability By mitigating it's on-premises data lake to AWS, the company has been able to process approximately 10 terabytes of data daily from over 1.2 million vehicles.

This mitigation allowed BMW group to create a centralized Cloud Data Hub (CDH) that integrates anonymized data from various sources.

- Scalability & flexibility

By using AWS services, like aws S3 for data storage, AWS lambda for serverless computing, BMW can scale their applications globally without being limited by infrastructure.

- Security and compliance

AWS services help BMW maintain strict security.

and compliance regulations, maintain including GDPR, ensuring that customer data is secure.

- Advanced Analytics
  Utilizing AWS services like Sagemaker for machine learning and amazon kinesis for data streaming

Hotstar
Hotstar is India's largest streaming platform uses AWS for it's live streaming & video-on-demand services. Here's how AWS played a crucial role.

- Handling massive scale for live events
  One of the biggest challenge was scaling it's infrastructure to handle peak traffic during popular streamed events.

- Elastic load balance & EC2
  Hotstar EC2 utilizes amazon EC2 instances to scale compute resources dynamically. Elastic load balance (ELB) helps distribute incoming traffic across multiple instances, allowing hotstar to handle millions of users

- Serverless architecture
  Hotstar uses AWS lambda to run code without prior provising or managing servers helps in

scaling automatically for peak usage.

3) Why kubernetes and advantages & disadvantages of kubernetes. Explain how adidas uses kubernetes?

Kubernetes often known as K8s is an opensource container orchestration platform developed by google that automates the development, deployment scaling and management of containerised applications.
Kubernetes solves many challenges such as automization of deployment, containerization, scaling, and management of containerized application.

Advantages
i) Scalability
Automatically scales applications horizontally that means automatically adjusts the number of running instances based on demands and accomodation of traffic

ii) High availability
Built in load balancing and failover capabilities ensure that services remain available even if some instances goes down.

iii) Efficient Resource Management
Kubernetes allocates resources dynamically based

on workload requirements optimizing infrastructure use.

Disadvantages.

i) Complexity
It is the biggest disadvantage of Kubernetes. K8 has a steep learning curve and managing a kubernete cluster can be complex for smaller & less experienced teams

ii) Networking challenges
Networking in kubernetes can be complex when dealing with multi-cluster environments or ensuring network security bet^n services

iii) Resource Intensive
Running a K8 cluster, requires significant computation resources making it potentially for overkill.

How Addidas uses Kubernetes

i) Multi Microservice Architecture
Adidas utilizes K8 to manage its microservices architecture, allowing different components of its ecommerce platform to scale independently based on demand.

ii) DevOps Integration
The company integrates Kubernetes into the it's DevOps practices, enabling CI/CD pipelines that accelerates software development cycles.

iii) Enhanced Customer Experiences
By deploying on Kubernetes, Adidas can provide a more reliable and responsive online shopping experience.

4) What are Nagios & explains how Nagios are used in e-services?
Nagios is an open-source monitoring tool designed for IT infrastructure monitoring. It helps organizations monitor network devices, servers, applications and services to ensure they operate optimally and to detect potential issue before it lead to service disruptions.

E-services, which include online platforms offering electronic services, such as e-commerce, e-banking, etc.
i) Server and application Monitoring:- Nagios monitors server metrics like CPU load, memory usage, disk space, et

ii) Networking monitoring:- E-services heavily rely on uninterrupted network connectivity. Nagios monitors network devices like routers, switches, firewalls and load balancers, detecting potential problems.

iii) Database Monitoring : Databases are crucial for the functioning of e-services. Nagios ensures that databases are running and it checks for performance issues like so slow query execution

iv) Traffic Analysis
By monitoring network traffic and bandwidth usage, Nagios helps e-services providers identify potential bottlenecks in traffic that could indicates ~~are~~ security threats and performance issues.