ASSIGNMENT NO: 01

04/05

Q.1 Use S3 bucket and host video streaming.

→

a. Setup on Amazon S3 bucket.

1. Search for S3 on the services section click on it, then click on create bucket. This will direct you to the bucket creation page, now name the bucket.
2. Maintain other options as default, click on create bucket. After bucket has been created, now we need to add video in this bucket. For that click on the name of the bucket, this will restrict you to the objects screen which shows the objects of your bucket click on upload. Select add files. An MP4 extension file is needed as we need to host a video.

b. Setup Cloudfront.

1. As the video is being uploaded search for clauchfront on the services tab and open it is a new tab
2. On the left pane under security, you will find origin access. Click on it, then click on the identities. Click on create origin access identity give the identity a name and click on create.
3. Go back to distributions on the left pane and click on create cloudfront distribution.
4. Here in origin field, select the S3 bucket where the video is uploaded Under origin, access, select language identities. Here select the identity you have created Under bucket policy, select updating the bucket S3 policy.

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In default cache behaviour, under viewer, select redirect http to https, Under web application firewall select enable security protections to provide a layer of security.

5. Keep remaining options as default and click on create distribution.

C. Accessing the hosted video

1. Once the distribution is deployed, copy the domain name of your distribution.
2. Now go to S3 bucket and click on its name. Click on the name of your video you have uploaded.
3. Contain the domain name of the distribution & the key of the video to make your final link of the video that is streamed.

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Q.2 → Discuss BMW and Hotstar case studies using AWS.

BMW group case study with AWS.

- Overview: BWM group one of the worlds leading premium automobile manufactures uses AWS to drive and efficiency in its IT infrastructure. The company leverages AWS services to build a serviceless and highly scalable platforms, which supports its connected car architecture and provides a seamless digital experience to customers.

- Challenges: BMW faced challenges in managing a global network of data centres that required significant maintainence and operational overhead. The need to vast amount of data generated by connected cars & delivers updates to millions of vehicles, would wide made scalability & real time processing crucial.

- Solutions with AWS:
- Connected car platform: BMW builds IOS inverted car platform on AWS using services like amazon S3, amazon EC2 and AWS lambda. This platform connects and processes terabytes of vehide seasons data, enabling real time analytics and enhancing predictive maintainence.
- Data storage & analytics: BMW uses amazon 33 for scalable data, storage and amazon redshift for data analysis.

Machine learning: Used amazon sage master to build models

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Hotstar case study with AWS:

- Overview: Hotstar one of India's largest storming platforms, uses AWS to manage traffic peaks during high profile live events.

- Challenges: Hotstar needed to handle unpredictable traffic spikes especially during events likes IPL, with millions of concurrent viewers.

- AWS solutions

- Scalable architecture: Hotstar implemented AWS services like amazon cloud front and amazon S3 to manage traffic peaks effectively. This setup allowed Hotstar to scale dynamically and readable over 25 million DB where used to build serviceless components, reducing.
- Serviceless architecture: AWS lambda and Amazon Dynamic the operational overhead and ensuring that the infra-structure scaled automatically with increasing traffic.
- Content delivery: Hotstar leverages amazon cloud front, a global content to uses worldwide with low latency and high transfer speeches.

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Q.3 Why Kubernetes and advantage and disadvantage of Kubernetes. Explain How adidas uses Kubernetes.

Ans: Kubernetes is an open source container orchestration platform that automates the deployment, scaling and management of container of applications. It allows you efficient management of clusters of containers, typically used in microservices architecture. Here is a breakdown of advantages and disadvantages.

Advantage of Kubernetes.

1) Scalability: Kubernetes enables automatic scaling of applications based on the demand for resources
2) High-Availability: It ensures high availability of applications through container redundances.
3) Self-Healing: If a container crashes Kubernetes automatically restarts it, it redistributions.
4) Flexibility: It works across different environment, whether enpremise or cloud.

Disadvantages of Kubernetes.

1) Complexity: Setting up and managing Kubernetes can be complicated, especially for small teams or organization.
2) Learning Curve: It requires a deep understanding of containerization, networking and cloud-native concepts.

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3) Resource overhead : Running Kubernetes clusters consumes significant system resources which might be overall for small applications.

4) Operational overhead : Maintaining Kubernetes clusters can require ongoing maintainance and management often needing specialized devops expertise.

Adidas leverages Kubernetes to power its detail transformation of its digital infrastructure.

- Microservices architecture.
- Scaling for peak demand.
- Agile development.
- Cloud native approach.
- Improved CI/CD pipelines.

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

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Nagios is an open source monitoring system that helps organizations monitor systems, network and performance. It provides alerting services for servers, applications and network devices.

Key features of Nagios:

- Monitoring: Tracks the status of hosts and services.
- Alerting: Sends notifications via email or SMS when issues are detected.
- Plugins: Supports various plugins to extend functionality monitoring different services.
- Web Interface: Offers a user friendly dashboard to visualize system health.
- Customizable: Highly configurable to fit specific monitoring needs.

How Nagios is used in E services:

- Uptime monitoring: Ensures that web applications and services are always available to users, Nagios can continuously check the availability of websites and alert administrations of any downtime.

- Performance monitoring: Tracks resource usage (CPU, memory)

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(disk network) to ensure that servers are operating efficiently. This helps in proactive resource management.

- Service monitoring: Monitors specific applications and services (like databases or email servers) to ensure they are running correctly and responding to requests.

- Alerting and Reporting: Provides real time alerts for system failures or performance degradation, enabling quick responses to issues that could affect service delivery.

- Capacity planning: Gathers historical data that can help in forecasting future needs allowing organizations to scale their infrastructure accordingly.

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