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Assignment - 1

Q1. Use S3 bucket and host video streaming.

→ 1. Go to the S3 services in AWS website. Click on create bucket. Give a name to your bucket. It is better to block all public access. This will prevent unauthorized access. Keeping setting to default, create the bucket.
2. Go to the permissions tab in the created bucket. Edit the "Block public access settings".
Add a bucket policy to allow public read access.

```
{
  "Version": "2012-10-17",
  "Statement": [
    {
      "Sid": "PublicReadGetObject",
      "Effect": "Allow",
      "Principal": "*",
      "Action": "S3:GetObject",
      "Resource": "arn:aws:S3::: <bucket-name>"
    }
  ]
}
```

3. Go to the objects tab in your bucket. Click on "Upload" and select the video file to be hosted. Ensure the video is in proper format (eg. MP4)
4. As the video is being uploaded, Search for Cloud Front on the services tab and open it in a new tab.

5. On the left pane, under security, you will find origin access. Click on it, click on Identities. Click on Create origin access identity. Give the identity a name and create.

6. Go to create a CloudFront distribution. In the origin field, select the S3 bucket where video is uploaded. Under origin Access, select legacy access identities. Here, under origin Access identities, select the identity that you have created. Under bucket policy, select update.

7. In default Cache behaviour, select Redirect HTTP to HTTPS. Enable security protections to provide a layer of security. Finally click on create distribution

8. To access, copy the domain name of your distribution

9. Go to the S3 bucket and click on the name of the video you uploaded. Copy the key.

10. Finally, combine domain name and the key of distribution and video respectively to make the final link of the video streamed.

<domain name of distribution>/<key of video>

Q2. Discuss BMW and Hotstare case studies using AWS.

→ BMW Case Study

BMW utilizes AWS to enhance its digital services and improve operational efficiency. The automotive giant leverage cloud computing for various applications, including data analytics, machine learning and IoT.

Key points:

1. Connected Cars:
BMW uses AWS to process data from its connected vehicles, enabling real time analytics and insights. The data collected helps in predictive maintenance and enhancing the overall customer experience.

2. Data Management:
AWS provides BMW with scalable storage solutions for managing larger volumes of data generated by vehicles. Services like Amazon S3 and Amazon Redshift allow BMW to store, analyze, and visualize data efficiently.

3. Innovation and Development:
The cloud environment fosters innovation by allowing BMW to quickly develop and test new applications. AWS's machine learning services enable BMW to integrate advanced features, such as personalized driving experiences.

Hotstar Case Study

Hotstar, now part of Disney+, is a leading streaming service in India that uses AWS to deliver high quality

content to million of users.

Key points.

1. Scalability:
During major events, such as cricket matches, Hotstar experiences significant traffic spikes. AWS allows the platform to scale dynamically to handle millions of concurrent viewers without compromising performance. Services like Amazon EC2 and Auto Scaling ensures that resources are allocated effeciently based on demand.

2. Content Delivery
Hotstar employs Amazon CloudFront for content delivery, ensuring fast and reliable streaming experiences. This reduces latency and improves user staisfaction, especially during high-traffic periods.

3. Data Analytics:
Hotstar leverages AWS analytics services to understand viewer behavior and preferences.
Insights gained from data analytics help in content recommendation and targeted advertising, enhancing user engagement.

4. Cost Management
By using AWS, Hotstar can optimize its operational costs through a pay as you go model, allowing the service to allocate budget effectively based on usage.

Conclusion
Both the companies illustrate how AWS empowers

bussiness to innovate and scale effectively. BMW focuses on enhancing vehicle connectivity and operational efficiency, while Hotstar prioritizes user experience through scalable streaming and data analytics.

Q8. Why Kubernetes and advantages and disadvantages of Kubernates. Explain how adidas uses Kubernetes.

→ Kubernates is an open source container orchestration platform that automates the deployment, scaling and management of containerized applications. It allows developers to manage complex applications with ease.

Advantages

1. Scalability : Kubernetes can automatically scale applications up or down based on demand, ensuring efficient resource use.
2. High Availability : It offers built in redundancy and self healing capabilities, automatically replacing failed containers.
3. Resource Efficiency : Kubernetes optimizes resource allocation across clusters, reducing costs and improving performance.
4. Portability : Applications can run consistently across different environments due to its abstraction of underlying infrastructure.
5. Microservices Architecture : It supports microservices allowing applications to be broken down into smaller, manageable components that can be deployed independently

Disadvantages:

1. Complexity: Kubernetes can be challenging to set up and manage, requiring a steep learning curve and expertise.
2. Overhead: The additional resources needed to run Kubernetes itself can be substantial, which might not be ideal for smaller application.
3. Debugging: Troubleshooting issues in Kubernetes environment can be complex due to its distributed nature.

Adidas Case Study:

Adidas leverages Kubernetes to enhance its digital infrastructure, particularly for its e-commerce and digital applications.

Key uses

1. Microservices Deployment: Adidas uses Kubernetes to manage microservices for its online store, enabling rapid development and deployment cycles.
2. Scalability During Peak times: The platform scales dynamically during high traffic events, such as product launches or sales, ensuring that website remains responsive and available.
3. CI/CD Integration: Kubernetes supports Adidas's continuous integration and continuous delivery pactices, allowing for automated testing and deployment of new features.

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

→ Nagios is an open source monitoring system that enables organizations to monitor their IT infrastructure including servers, network devices and applications. It help ensure that systems are running smoothly by providing real time monitoring, alerting and reporting capabilities. Nagios can detect issues such as downtime, performance degradation and configuration errors.

Nagios in E-services

1. Infrastructure Monitoring: Nagios continuously monitors servers, databases and network devices in an e-service environment to ensure they are operational.
2. Performance Monitoring: It tracks various performance metrics such as CPU load, memory usage, disk space and network traffic.
3. Alerting and notifications: Nagios can send alerts via email, SMS or other communication methods when it detects issues. This enables rapid response to outages or performance problems.
4. Service Monitoring: It monitors specific e-services such as web applications, APIs and email servers to ensure they are functioning correctly. Nagios can check the status of these services and ensure they are responsive.

5. Log Monitoring : Nagios can analyze log files for error messages or anomalies, providing insights into potential issues within the e-services.
6. Integration with other tools : Nagios can be integrated with other monitoring and management tools, allowing for comprehensive oversight of the IT environment and enabling more sophisticated alerting and reporting mechanisms.
7. Customizable Dashboards : It provides dashboards that give a visual overview of the monitored infrastructure helping teams to quickly asses health of their e-services. By using Nagios, e service providers can ensure high availability and performance of their applications, enhancing user satisfaction and trust in their services.