

Assignment - 1

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1. Create S3 bucket and host video streaming.
2. Download any sample video from internet.
3. Now break the whole video into smaller chunks so that it can easily be transmitted over network.
4. To make smaller chunks we would use ffmpeg. The general syntax is `ffmpeg -i <VIDEO-NAME> -c:v h264 -level 3.0 -start_number 0 -time`
5. Ensure you download the ffmpeg before using the above command.

6. After that create a new S3 bucket, name it and allow public access.

7. Now, change the bucket policy so that anyone can access bucket objects.

8. We also need to setup CORS policy so that we can request for resources of bucket.

9. After setting up all necessary configuration, upload video segments that we had created previously.

10. Create a new folder named 'h3' inside bucket and upload all the video segments in it.

11. Now we would create the simple HTML document that would be hosted on S3 bucket so that it can be played.

12. The HTML file would contain the link of main video. When we open the link provided inside object properties, the video will start streaming.

Q2) Discuss BMW and Hotstar case studies using
 → BMW uses AWS to power its connected car services enabling real-time analysis & secure processing. Scalable cloud infrastructure, BMW can features like remote software updates, predictive maintenance & real-time driver assistance. Amazon EC2 for processing this data, Amazon S3 for processing this data & CloudFront for content globally. This setup allows BMW to AWS Flexibility also BMW enhance user experience offering faster updates and better connectivity.

~~# HOTSTAR~~

HOTSTAR

- Hotstar relies on AWS to handle surges especially during live events like the India league (IPL). During this events, Hotstar million of concurrent viewers, which requires scalable & reliable infrastructure, using Amazon EC2 dynamically adjust its resources to real-time spikes in traffic, while Amazon S3 ensure low latency content delivery. AWS Elastic Load Balancing and Amazon ElastiCache to manage huge amount of data. This setup helps optimize cost during off peak times. Smooth Streaming during high demand events.

Why Kubernetes and advantages & disadvantages of k8s
Explain how adidas uses Kubernetes.

It's an open-source platform designed to automate deploying, scaling and managing containerized applications across clusters of machines, making it easier to manage applications requiring high availability, scalability and resilience.

Advantages:

1) Automated scaling: Kubernetes can automatically scale up or down based on traffic and load.

2) Self healing: It restarts failed containers, replaces unresponsive containers and kills containers that don't conform to your defined specifications.

Effective resource management: Kubernetes helps optimize resource utilization by packing containers efficiently on nodes.

Rolling updates and Rollbacks: Kubernetes allows for deployment of updates without downtime. In case of issues, you can roll back to the previous version.

Disadvantages:

Complexity: Setting up and managing Kubernetes is complex, especially for beginners or small teams.

Learning curve: The platform has a steep learning curve, requiring knowledge of networking, security and infrastructure.

Resource intensive: Running Kubernetes requires significant resources, which can be costly for small organizations.

Adidas: Like many large-scale companies, Adidas uses Kubernetes to enhance the scalability and the reliability of its infrastructure. Adidas adopted Kubernetes to

in digital transformation, primarily to handle the spikes during product launches and events, ensuring seamless experience for the user. By containerizing the services and running them on the Kubernetes.

Benefits of using Kubernetes:

- Scalability: Adidas can handle millions of access their platform during peak times without delay.
- Improved Agility: Kubernetes allow the company to develop, test and deploy, test and deploy new services.
- Cost Optimization: The efficient use of cloud through Kubernetes helps reduce operational cost.

Q4) What are Nagios and explain how Nagios works in a Exercise?

→ Nagios is an open source continuous monitoring. monitors networks, application & services. It and repair problems detected in infrastructure and stop future issues before they affect the end user. gives the complete status for your IT infrastructure. Stop future issues before they affect the end user.

Benefits of Nagios:

- It helps getting rid of periodic timing.
- It detects split second failure when the unit is in the intermediate stage.
- It reduces maintenance cost without sacrificing performance.
- It provides timely notification to the management and breakdown.

Now Nagios is used in the services
in the context of E-services (which refers to the service
provided electronically [like banking government & health
services]) Nagios plays a special role in ensuring
availability and performance of the services.

Monitoring uptime of services.
- E-services like online transaction, user portals or
procuring applications need to be available 24/7
Nagios continuously help to check the availability of these
services and generate alerts.

Performance monitoring
- Monitors the performance metrics of server hosting e-s
such as CPU usages memory consumption disk space and
network bandwidth. This helps in identifying performance
bottlenecks that would affect user experience.

Database monitoring
- E-services rely on database to store and retrieve data
Nagios can monitor database health query execution
time & availability to ensure seamless experience.

Security monitoring
- Nagios can integrate with security plugins to monitor
critical vulnerabilities ensuring the integrity & safety
of the service platform.

Custom Alerts for critical application.
- Services platforms often have mission-critical app
which requires immediate application of issue arises.

By providing real time monitoring & alerting, Nagios
that e-services remain operational, secure and perform
helping to improve user satisfaction & business continuity.

