

AdvtDev Ops Assignment (04/05)

Ans. 1 Steps to host a video streaming service using S3 on AWS.

(1) Create an S3 bucket

- Log in to your AWS management console
- Navigate to the S3 service.
- Click on "Create Bucket" and follow the prompts to set up your bucket.
- Name your bucket
- Choose a region to host the bucket from.
- ~~Disable ACLs (Access Control Lists).~~
- Block public access if you only want users to connect via Cloudfront.
- Disable bucket versioning.
- Use default encryption.
- Click "Create Bucket".

(2) Upload your videos

- Click on the created bucket to open it.
- Click on "Upload" and choose the video files you want to upload.
- Click on "Upload" again.

(3) Configure bucket policy

- In the S3 bucket, under "Permissions" tab, update bucket policy to allow CloudFront access to your videos.

(4) Setups a CDN (Content Delivery Network) via CloudFront.

- Choose your S3 bucket as the origin.
- Click on "Redirect HTTP to HTTPS".
- Keep cache policy as 'Caching Optimized'.
- Check "Enable security protection" for Web App Firewall.

- Use all edge locations for best performance.
- Leave the remaining settings at default values.
- Copy the policy and update your bucket.

(5) Access videos via CloudFront.

- Use your CloudFront distribution name and video key to access it.

(6) Secure your Content

- Use IAM roles and policies.
- Enable encryption.

(7) Monitor and Optimize

- Use CloudFront's analytics and monitoring tools.
- Optimize Caching settings in CloudFront settings.

Ans-2) BMW Group's Cloud Transformation with AWS A Case Study

Overview :- The BMW Group, renowned for its premium automobiles and motorcycles, embarked on a digital transformation journey to enhance its operational efficiency and innovation capabilities.

By migrating its on-premises data lake to Amazon Web Services (AWS), BMW has been able to leverage cloud technology to meet global demands and drive innovation.

Challenges :- BMW faced several challenges with its existing infrastructure, like,

~~Scalability issues to accommodate the increasing volume of data generated by BMW's global operations.~~

~~Fragmented data causing data silos, causing inability to fulfill needs of, Real-time access.~~

Solutions: (1) Cloud Data Hub (CDH)

- BMW developed a centralized data lake using Amazon S3 for scalable and secure storage and Amazon Redshift, which enables fast querying and analysis of large datasets.

(2) Machine Learning and Predictive Analysis

- Amazon SageMaker to train and deploy machine learning models.
- Amazon Kinesis to facilitate real-time data streaming and analytics.

(3) Blockchain Technology

- Amazon Elastic Kubernetes Service (EKS) to enhance traceability of automotive parts.

(4) Multilingual Business Process using Amazon Translate.

Outcomes :- The migration to AWS has yielded several significant benefits for BMW.

- Enhanced Scalability
- Improved Innovation
- Real-Time Insights
- Operational Efficiency

Services used :-

- S3
- Redshift
- Logstash
- Kinesis
- FTS
- Translate

Conclusion :-

~~BMW's collaboration with AWS highlights the transformative power of cloud technology is driving scalability, innovation, and real-time data processing.~~

This partnership has enabled BMW to stay at the forefront of the automobile industry, delivering premium experiences to its customers, worldwide.

Hotstar's success with AWS

A Case Study

Overview:- Hotstar, now known as Disney+Hotstar is one of India's leading OTT streaming platforms.

It has leveraged Amazon Web Services (AWS) to handle massive traffic spikes, especially during live events like the Indian Premier League (IPL) cricket matches.

By using AWS, Hotstar has been able to scale its infrastructure to support millions of concurrent viewers.

Challenges:- Hotstar faced the following challenges with its existing infrastructure:

Scalability to handle sudden traffic spikes,

Performance, to ensure low-latency and high-quality streaming.

Cost management by scaling infrastructure

Solutions :- To address its challenges, Hotstar implemented the following services,

- Amazon EC2 and Elastic Load Balancing (ELB) for running applications.
- Amazon CloudFront for content delivery.
- Amazon Kinesis for Real-time analytics.
- EC2 spot instances to optimize costs.

Outcomes :- The migration to AWS has provided Hotstar with several benefits.

- Scalability
- Performance
- Cost Efficiency
- Real-time insights

Conclusion :- Hotstar's collaboration with AWS showcases how leveraging cloud technology enabled the platform to deliver high-quality streaming experiences to millions of users.

Ans. D) Kubernetes is used because it automates the deployment, scaling, and management of containerized applications.

It ensures high availability, efficient resource utilization, and easy scaling, making it ideal for managing complex, distributed systems.

Advantages :-

- Scalability
- High availability
- Portability
- Resource Efficiency
- Extensibility
- Automation

Disadvantages :-

- Complexity
- Resource Intensive
- Operational Overhead
- Security
- Cost

How Adidas leverages Kubernetes :-

- Containerization and Agile Development,
- By using Kubernetes, Adidas can deploy applications faster and more quickly.

- Improved Developer Experience

With Kubernetes, Adidas no longer faces delays in getting development environments set up.

- Enhanced E-Commerce Performance

Kubernetes has reduced site load times to half and allowed more frequent releases.

- Scalability and Reliability

Adidas manages thousands of pods and hundreds of nodes, ensuring their systems can handle high traffic volumes, especially during peak shopping events.

- Continuous Delivery

Rapid push updates help Adidas stay competitive in the fast-paced retail market.

Ans. ▷ Nagios is an open-source monitoring and alerting system designed to track the health and performance of IT infrastructure, networks, and applications.

Key Features :-

- Server monitoring
- Network monitoring
- Service availability
- Resource Utilization
- Performance metrics and Trend analysis
- Log file monitoring
- Alerting and Notification
- Application monitoring
- Security monitoring
- Environmental monitoring

Nagios is extensively used in E-Services to ensure the reliability and performance of various IT components.

It provides real-time monitoring, easy-to-understand graphics, and intuitive statistics, which helped in reducing troubleshooting time and ensuring high availability of services.

By using Nagios, IT-services can,

- Centralize monitoring
- Improve response times
- Enhance reliability
- Simplify management