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Assignment - 1

05/05

Que 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 containerized applications. It allows for efficient management of clusters of containers, typically used in microservices architectures. 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 application through container redundancy.
3) Self-Healing :- If a container crashes, kubernetes automatically restarts it, and if a node fails, it redistributions the containers.
4) Flexibility :- It works across different environment whether on-premise or cloud.

Disadvantages of kubernetes.

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

3. Resource Overhead : Running kubernetes cluster consumers significant system resources which might be overkill for small application.
4. Operational Overhead : Maintaining kubernetes cluster can require ongoing monitoring and management, often needing specialized DevOps ex

Adidas leverages kubernetes to power its digital transformation and improve the scalability and reliability of its digital insfrasture.

1. Microservices Architecture
2. Scaling for Peak Demand.
3. Agile Development
4. Cloud-Native Approach
5. Improved CI/CD pipelins.

Que 4 What are Nagios and explain how Nagios are used in E-Services?

Ans Nagios is an open-source monitoring system designed to monitor the performance and availibility of IT infrastructure, including servers, network devices, applications and services, It helps system administrator identify.

Key features of Nagios:

1) Monitoriting of Network Services
2) Monitoring of Server Resources.
3) Alerting
4) Reporting
5) Scalability.

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How Nagios is used in E Services :-
E-services such as online banking e-commerce and digital healthcare services, rely heavily on infrastruct

1. Monitor Application and Service Uptime.
2. Track Performance & Metrics.
3. Security Monitoring
4. Proactive Problem Detection
5. Load Balancer and Failover Monitoring.
6. Compliance Monitoring.

Que 4 Use S3 bucket and host video streaming.

(a) setup on Amazon S3 bucket.

1) Search for S3 on the services section check 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 our video in this bucket For that click on the name of the bucket, this will restrict you to the objects screen which show the objects of your ticket 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 cloudfront. on the services tab and open it in a new tab.
2. On the left pane under security you will find origi n

access click on it then click on Identities (legacy) 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 distributions.
4. Here, in origin field select the S3 bucket, where the video is uploaded Under origin, access select legacy access identities Here select the identity you have created under bucket policy select updating the bucket S3 policy.
In default cache behaviour under review select redirect http to https. Under web application firewall selet 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 distributed 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. Combine the domain name of the distribution & the key of the video to make your final link of the video chat is streamed.

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Discuss BMW and Hot state case studies using AWS.

BMW Group case study with AWS
Overview :- BMW Group one of the worlds leading premium automobile manufactures user AWS to drive innovation 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 center that required significant maintainance and operational overhead. The need to analyze vast amount of data generated by connected cars & deliviers updates to millions of vehicles.

- Solution with AWS :-
- Connected car platform :- BMW builds IOS connected car platform on AWS using service like amazon S3, amazon EC2 and AWS Lambda. This platform connects and processes terrabyts of vehicle sensors data enabling real-time analytics and enhancing predictive maintaience.
- Data storage & analytics :- BMW uses amazon S3 for scalable data storage and amazon redshift for data analysis Machine learning used.

amazon page master to build modules for improved safety & services

Hotstar case study with AWS.

Overview : Hotstar one of India's larger storming platform uses AWS to manage traffic peaks during High profile live events.

→

Challenges : Hotstar needed to handle unpredictable traffic spikes especially during events like IPL with millions of current viewers

Aws solution

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 Handle over 2 millions concurrent.

Serviceless architecture Hotstar implemented Lambda and Amazon Dynamo-DB were used to build services components reducing the operational overhead and ensuring that the infrasture scaled automatically with increasing traffic.

Content delivery Hotstar leverages amazon cloud front a global content delivery network (CDN) to distribute video content