

E-commerce application on IBM cloud computing

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Definition :

Cloud computing affects on different sectors, including: E-learning, health care, and E-commerce. It offers online services in high efficiency and minimal cost which provide a high economic value. It is undoubtedly the next revolution in the Internet world as well as the business world. Currently, more E-commerce enterprises move to Cloud Computing to achieve high practical value. This paper introduces an overview for Cloud computing in E-commerce through discussing various definitions for both concepts, highlighting the benefits and challenges for applying Cloud Computing in E-commerce, and discussing a suggested cloud computing E-commerce framework.

Abstract :

The term cloud computing describes computing services on the internet. This chapter provides an introduction to cloud computing, its features, applications and limitations. Different load balancing techniques are also discussed. Since cloud computing involves the execution of multiple activities simultaneously, efficient management is required for its smooth and secure functioning. A framework for the development of an optimized scheduling algorithm for Platform as a Service-based applications in a secure cloud environment is presented. A mobile recharge PaaS-based application is described that has been deployed on the cloud computing platform Google App Engine.

Architecture :

The typical e-commerce chain consists of the hardware manufacturer, software developer, Internet service provider, network integration provider and service provider where they function as the company's backend and provide the technical support. Although the structure of the e-commerce industry chain will change when the cloud infrastructure is migrated into e-commerce. Throughout his research the researcher Akinyede introduced a new paradigm for using cloud computing throughout e-commerce applications to solve problems related to lack of resources and the environmental cost of designing and implementing an e-commerce program. It is composed of five layers and this reduces the time and cost of hardware and software implementations. It consists of hardware resource (HR), software resource (SR), resource management (RM), server, and business layers. The HR layer is the lowest layer in the cloud service middleware, a

Designing :

Define Objectives and Requirements:

Clearly define the goals and objectives of your e-commerce application .
Document the functional and non-functional requirements, including scable, security, performance .

Select IBM Cloud Services:

Choose the IBM Cloud services that best fit your needs. Consider using services like IBM Cloud Kubernetes Service, IBM Cloud Databases, and IBM Cloud Object Storage.

Architecture Design:

Design the overall architecture of your application , including components like web servers, application servers, and databases.

Database Design:

Design the database schema to store product information , user data, and transaction history.
Choose the appropriate IBM Cloud Database service, such as Db2 or IBM Cloudant, and optimize database performance .

Frontend Development:

Develop the user interface (UI) for your e-commerce application using frontend technologies like HTML, CSS, and JavaScript.
Consider using IBM Cloud Continuous Delivery for CI/CD pipelines.

Backend Development:

Develop the backend logic for handling user authentication , product catalog, shopping cart, and order processing.
Utilize IBM Cloud Functions or IBM Cloud Foundry for serverless computing .

Security Considerations:

Implement security measures such as SSL/TLS for data encryption, OAuth for authentication, and regular security audits.

Utilize IBM Cloud Security services to enhance application security.

Scalability and Load Balancing:

Set up auto-scaling based on traffic patterns to ensure your application can handle increased loads.

Use IBM Cloud Load Balancer to distribute traffic evenly.

Monitoring and Logging:

Implement monitoring and logging solutions using tools like IBM Cloud Monitoring and Log Analysis.

Set up alerts for critical events.

Testing and Quality Assurance:

Perform thorough testing, including functional testing, performance testing, and security testing.

Use IBM Cloud DevOps tools for test automation.

Deployment and Continuous Integration:

Deploy your application to IBM Cloud using Kubernetes or Cloud Foundry.

Implement continuous integration and delivery (CI/CD) pipelines with IBM Cloud Continuous Delivery.

User Experience Optimization:

Continuously gather user feedback and make improvements to enhance the user experience.

Backup and Disaster Recovery:

Implement backup and disaster recovery strategies to ensure data integrity and availability.

Compliance and Regulations:

Ensure your application complies with relevant regulations and standards, such as GDPR or PCI DSS.

Monitoring and Optimization:

Continuously monitor application performance and optimize resources as needed.

Leverage IBM Cloud services for analytics and insights.

Documentation and Training:

Document your application's architecture, deployment procedures, and troubleshooting guides.

Train your team on maintaining and operating the application on IBM Cloud.

Launch and Marketing:

Prepare for the launch of your e-commerce application by creating marketing strategies and promotional campaigns.

Customer Support:

Set up customer support channels and processes to handle inquiries and issues. Remember that designing an e-commerce application is a complex process, and it's crucial to plan and execute each step meticulously to ensure a successful deployment on IBM Cloud. Additionally, stay updated with the latest IBM Cloud services and best practices to make the most of the platform.

Deployment :

Create an IBM Cloud Account:

If you don't already have one, sign up for an IBM Cloud account.

Choose Services:

IBM Cloud offers various services like Kubernetes, Cloud Foundry, and Virtual Servers. Select the services that best fit your application's requirements.

Develop Your Application :

Develop your e-commerce application, ensuring it's designed to be cloud-native, scalable, and fault-tolerant.

Database Setup:

Configure a database service on IBM Cloud to store your application's data. IBM offers databases like Db2, PostgreSQL, and IBM Cloudant.

Containerization (Optional):

If you're using microservices architecture, containerize your application using Docker and create a Docker image.

Kubernetes Orchestration (Optional):

Deploy your application on IBM Kubernetes Service (IKS) if you're using containers and need orchestration.

Cloud Foundry Deployment (Alternative):

if you prefer a Platform-as-a-Service (PaaS) approach, deploy your application to IBM Cloud Foundry.

Network and Security:

Configure network settings, security groups, and firewall rules to secure your application.

Load Balancing:

Use IBM Cloud Load Balancer to distribute traffic across multiple instances of your application for scalability and redundancy.

Monitoring and Logging:

Implement monitoring and logging solutions (e.g., IBM Cloud Monitoring and Log Analysis) to track the health and performance of your application.

Auto Scaling:

Set up auto-scaling policies to automatically adjust the number of application instances based on traffic load.

Backup and Disaster Recovery:

Implement backup and disaster recovery plans to ensure data integrity and availability.

Continuous Integration/Continuous Deployment (CI/CD):

Use CI/CD pipelines to automate application deployment and updates.

SSLCertificate:

Secure your e-commerce site with SSL certificates for data encryption.

Domain Configuration:

Map your domain to your IBM Cloud application for a custom web address.

Testing:

Thoroughly test your application in the IBM Cloud environment to ensure it performs as expected.

Scaling and Optimization:

Continuously monitor and optimize your application's performance and costs.

Compliance and Regulations :

Ensure your e-commerce application complies with relevant regulations (e.g., GDPR, PCI DSS) and implement necessary security measures.

Backup and Recovery:

Implement robust backup and recovery strategies to protect your data.

Thankyou