eKart: A Cloud-Based

E-commerce Platform for Shopping deployed on AWS

Gogineni Ashrith Sai   
Computer Science and Engineering with Artificial Intelligence  
Amrita Vishwa VidhyapeetamBangalore, India  
[ashrith.gogineni@gmail.com](mailto:ashrith.gogineni@gmail.com)

Thankanati Ganesh Madhav  
Computer Science and Engineering with Artificial Intelligence  
Amrita Vishwa VidhyapeetamBangalore, India  
[madhavchickoo@gmail.com](mailto:madhavchickoo@gmail.com)

Konda Reddy Balaji Reddy  
Computer Science and Engineering with Artificial Intelligence  
Amrita Vishwa VidhyapeetamBangalore, India  
[balajireddykondareddy@gmail.com](mailto:balajireddykondareddy@gmail.com)

Dr. Beena B.M  
Computer Science and Engineering with Artificial Intelligence  
Amrita Vishwa VidhyapeetamBangalore, India  
[bm\_beena@blr.amrita.edu](mailto:bm_beena@blr.amrita.edu)

Kothuru Gurunadh  
Computer Science and Engineering with Artificial Intelligence  
Amrita Vishwa VidhyapeetamBangalore, India  
[guruvenkat99@gmail.com](mailto:guruvenkat99@gmail.com)

*Abstract*— The strategic implementation of applications in cloud services has become a crucial strategy for enterprises seeking operational efficiency, scalability, and agility in the quickly changing digital age. The goal of this research is to create and implement a cutting-edge online retail platform on the reliable architecture of Amazon Web Services (AWS). This cloud-based solution, which uses AWS services as its foundation, takes advantage of Amazon EC2 for robust application hosting, guaranteeing unmatched scalability and peak performance. Taking urgent data security considerations into consideration, When AWS Identity and Access Management (IAM) is used to provide strict access control, Amazon S3 becomes a reliable storage option. In addition to improving operational efficiency, the smooth integration of various AWS services creates a safe and expandable base that is perfect for fostering the development of a vibrant and dynamic e-commerce ecosystem, which is typified by the suggested platform, eKart.

Keywords—Shopping Management, AWS platform, AWS Services, Amazon EC2, Amazon RDS, Amazon S3

# Introduction

In response to the evolving landscape, eKart, a Cloud-Based E-commerce Platform for Shopping deployed on AWS, introduces a distinctive approach to online shopping. This platform serves as a nexus for both customers and sellers, offering a comprehensive space for the seamless buying and selling of products. By leveraging the power of Amazon Web Services (AWS), eKart not only embraces the convenience of digital commerce but also ensures a secure and scalable foundation for an enhanced shopping experience. In this digitally driven era, eKart stands as a testament to the fusion of traditional retailing and cutting-edge e-commerce solutions, providing a dynamic platform for the continued celebration of products in the modern age.

Adopting cloud computing has become critical for companies looking for flexibility, scalability, and operational efficiency in the quickly changing world of modern business. Cloud platforms give businesses the capacity to host and control cloud apps, which are just remote server replicas. A vast range of services, including computer resources, storage, databases, networking, and software, are provided by Amazon Web Services (AWS), a well-known cloud service platform with flexible and affordable options. AWS offers a variety of services, including Amazon EC2, Amazon S3, Amazon IAM, Amazon Cloud Watch, and Amazon SNS.

A new paradigm in online retail has emerged with the launch of eKart, a cloud-based e-commerce platform for shopping that is integrated with AWS and offers a wide variety of products, such as grocery, fashion, and electronics. With its smooth integration with the AWS platform, eKart provides a complete and effective solution for handling a variety of products in the retail industry.

Because of its distinctive features, eKart can meet a wide range of consumer demands. It makes it easier for customers to buy new products and encourages sustainability by allowing them to resell their pre-owned goods. This multifaceted strategy promotes eco-friendly methods in a variety of product categories, such as grocery, fashion, and technology, and it is in line with modern consumer expectations.

Through eKart's utilisation of cloud technology, scalability, security, and operational efficiency are guaranteed, resulting in a contemporary and eco-friendly framework for online retail administration. This dynamic platform integrates many product categories, promotes a circular economy, and lessens environmental effect to provide modern shoppers a responsive and sustainable alternative.

Section 1 of this paper provides a brief introduction to eKart, cloud services, and deployment of the application. Section 2 of this paper gives detailed information about the references. Section 3 provides a concise explanation of the eKart architecture and AWS services used. The details about the integration with the AWS cloud platform and the architecture of the AWS service integration for the deployment are given in Section 4. Brief information about the methodology and results are given in Section 5 and Section 6. The conclusions drawn from the study are also presented in section 7.

# Literature Survey

Cloud-based apps, which provide efficiency and scalability, have become essential to current company aims. The importance of cloud-based apps stems from its flexibility and cost-effective solution for hosting applications, which allows organisations to respond to changing continuing demands. Cloud-based e-commerce platforms are more important, and the rapid expansion of cloud-deployed apps is obvious and driven by the need for organisations to be nimble and responsive to market changes.

[1] explores the intersection of e-commerce and cloud computing. The authors delve into the state-of-the-art techniques and practices in utilizing cloud computing for e-commerce applications. The paper emphasizes the importance of cloud computing in enhancing the scalability, availability, and efficiency of e-commerce platforms. It discusses various aspects of cloud-based e-commerce, including architectural considerations, data management, security, and performance optimization. [2] paper begins by defining cloud computing and e-commerce, and then goes on to discuss the advantages and disadvantages of using cloud computing in e-commerce. [3] provides a comprehensive exploration of emerging trends and technologies in smart e-commerce logistics. The paper discusses how advancements in logistics, driven by technologies like the Internet of Things (IoT), artificial intelligence (AI), and data analytics, are reshaping the e-commerce industry. It highlights the significance of efficient and intelligent logistics systems in meeting the growing demands of e-commerce and ensuring customer satisfaction. The paper also examines various applications of smart logistics in e-commerce, such as route optimization, inventory management, and last-mile delivery. [4] presents an innovative approach to forecasting logistics costs in the context of cross-border e-commerce. The paper focuses on leveraging cloud computing and intelligent forecasting techniques to enhance cost prediction accuracy, which is crucial for the efficiency and competitiveness of cross-border e-commerce logistics.

A cloud-based E-commerce platform for efficient eKart on cloud platform combines cloud technology, e-commerce. According to the literature review, cloud-based solutions can help redefine efficiency, sustainability, and reliability.

# eKart and AWS services

Amazon Web Services (AWS) provides a complete collection of cloud computing services to meet a variety of corporate requirements. Amazon Elastic Compute Cloud (EC2), Amazon Simple Storage Service (S3), and Amazon Identity and Access Management (IAM) are among the services available.

Amazon EC2, Amazon S3, Amazon CloudWatch, and Amazon Simple Notification Service (SNS) are the services used to host the proposed eKart. Amazon EC2 is a web service that provides scalable computing capacity and resources in the cloud and allows users to run virtual servers for different applications. Amazon S3 is a web service that provides an object storage service designed for scalable storage, widely used for hosting static web content and backup.

A diagram of a company

Description automatically generated

Fig 1: Workflow

Integration of unique functionalities within an application and deployment on cloud platforms ensures scalability, security, and seamless user experience in the dynamic environment.

# eKart and AWS service integration

EKART, our e-commerce logistics solution, uses cutting-edge software to improve and automate our supply chain management. Our system provides user-friendly features that enable smooth order processing and delivery tracking, all while maintaining a strong focus on efficiency and customer happiness. Easy scheduling and real-time changes are made possible by the user-friendly interface, which highlights our commitment to an approach to e-commerce logistics that is customer centric. With the provision of streamlined and user-centric experiences for both businesses and consumers.

Comprehensive cloud computing services are provided by Amazon Web Services (AWS) to meet a range of corporate requirements. Amazon Elastic Compute Cloud (EC2), Amazon Simple Storage Service (S3),and Amazon Identity and Access Management (IAM) are a few of the services offered.

Amazon EC2, Amazon S3, Amazon Elastic Block Store (EBS), Amazon CloudWatch, Amazon IAM, and Amazon Simple Notification Service (SNS) are the services used to host the proposed EKART Service.

Amazon S3 service offers object storage for scalable storage, which is frequently used for hosting static online content and backup. Amazon EC2 service offers users scalable computational capacity and resources in the cloud, enabling them to run virtual servers for various applications.

Using an EC2 instance, Amazon EBS is a scalable block storage solution that offers permanent block-level storage volume.

With the help of Amazon IAM, users may manage individuals and groups with specific rights and regulate who has access to what services and resources. Distributing messages via email, SMS, or application notifications is made possible via Amazon SNS, a messaging service. A web-based monitoring tool called Amazon CloudWatch makes it possible to track data and get insightful information for applications.

The incorporation of distinct features into an application and its implementation on a cloud platform guarantee the application's scalability, security, and smooth user experience in the ever-changing landscape.

# Methodology

The two components of the suggested process are the web application's development and its AWS cloud deployment. Many benefits come with having a web application put in the cloud, which completely changes how the Programme functions and grows.

The power of cloud technology to provide scalable, dependable, and internationally accessible solutions for the advantage of buyers and sellers is highlighted by cloud deployment. The process is described in full below, along with information on development and deployment in Figure 1.

The front-end components of the EKART were created with HTML, CSS, and JS; the database was created with MySQL; and the business logic was implemented with PHP framework. Xampp is the control panel that uses PHP myAdmin to integrate the front-end and back-end. Using Bootstrap, the web application is created as a responsive website that works on all devices.

to set up the designed AWS cloud-based Ekart. Web application deployment services offered by Amazon include Amazon EC2, Amazon EBS, Amazon S3, Amazon IAM, Amazon CloudWatch, and Amazon SNS. Fig. 2 below shows the architecture of the AWS service integration.

A diagram of a computer network

Description automatically generated

Fig. 2. AWS service architecture

Amazon EBS provides an EC2 instance with a restricted volume of storage that is sufficient for scalable storage, high durability, and dynamically altering capacity and performance based on demand. Amazon EC2 is used to host the application via a virtual server. The database used in the construction of the online application for the Ekart is stored on Amazon S3.

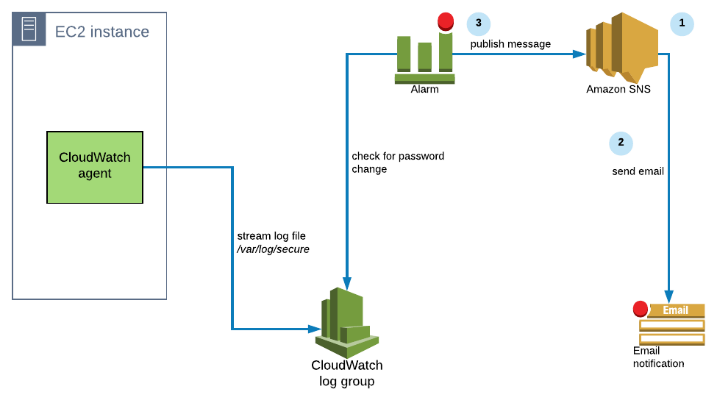


Fig. 3: Working of SNS and CloudWatch

Figure 3 depicts the working of CloudWatch and SNS. Where SNS send notification mail regarding the usage of AWS services and CloudWatch keeps track of CPU utilization.

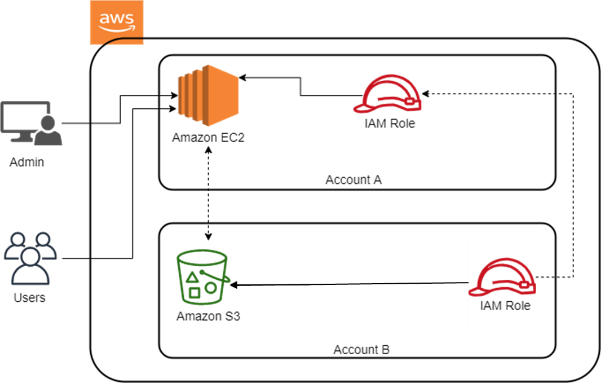


Fig. 4: Working of EC2 And S3

IAM role is created and given full access for S3 and EC2 as well. It establishes the connection between S3 and EC2. And gives EC2 full control over S3, it is depicted in Figure 4. Security groups and roles can be created using the Amazon IAM service. Security groups that have been created are HTTP and HTTPS, and roles have been created under the name "x" Amazon SNS service is used to send an email alert when CPU utilization is detected, and Amazon CloudWatch service is utilized to monitor CPU utilization based on a pre-defined threshold.

# Results and Discussion

Using the services indicated in Fig. 2, the EKART has been implemented on the AWS cloud platform. AWS EBS, AWS S3, AWS IAM, AWS SNS, and CloudWatch are integrated with the web application deployed on an EC2 virtual server.

For the functional, accessible, and effective shopping website, an EC2 instance, an S3 bucket, IAM roles and groups configurations, CloudWatch monitoring, and SNS notification services were developed. SOCIETAL IMPACT. Online shopping has been transformed by Ekart, an AWS-based cloud-based e-commerce platform that prioritizes both price and sustainability. Ekart addresses environmental concerns by reducing the demand for new manufacturing while promoting cost-effective transactions by providing a varied marketplace for both new and old products. This cutting-edge platform makes shopping accessible and environmentally friendly while promoting economic empowerment, particularly in rural communities. With the help of AWS for scalability, Ekart becomes a technical innovation leader, changing the face of e-commerce on a global scale.

# Conclusion

The Ekart Shopping Platform, deployed on the robust infrastructure of Amazon Web Services (AWS), emerges as a revolutionary solution for reshaping and optimizing the online retail landscape. Through seamless integration of diverse functionalities like browsing, purchasing, and transaction management, Ekart caters to the dynamic needs of a diverse customer base.

Leveraging cutting-edge AWS services such as Amazon EC2 for hosting, AWS EBS for scalable block-level storage, AWS S3 for reliable data storage and AWS IAM for robust access control, Ekart ensures unparalleled scalability, security, and operational efficiency. Ekart has a significant social influence. It represents a paradigm change in online purchasing as well as a strategy that balances technology advancement with the welfare of society. Ekart, which is powered by AWS, is a prime example of how online commerce has evolved holistically by skillfully fusing technology innovation with a dedication to improving society.

# FUTURE SCOPE

In the future, Ekart on AWS aims to make online shopping even better. With AWS Sage Maker, it plans to offer personalized experiences and cool recommendations. By using AWS CloudWatch, it wants to see what's happening in real-time to make smart decisions. In the coming days, you can expect more cool stuff like personalized suggestions, reviews you can interact with, ekart rentals, and easy connections with mobile apps, making online shopping more fun and convenient.

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