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Cloud Cost Analyser and Price Reduction Recommendation

Komal Khapekar[1], Niraj Bhalerao[2], Aashish Chandragade[3], Sonal Dange[4], Prof. Nital Adikane[5], Prof. Minal Chalakh[6]
[1, 2, 3, 4] *Students,* [5, 6] *Professor, Department of Information Technology, MIT College of Engineering, Pune, India*

Abstract: ***Cloud computing has emerged as an important paradigm for deploying services and applications for both enterprises and end-users that helps to eliminate the need for maintaining expensive computing as it has capability to pay only when a resource is actually needed, and it help to eliminate large upfront costs for users. Cloud computing has been considered as a much overestimated phenomenon in the IT and business world promising to deliver a host of benefits.***
Nowadays lots of big companies are investing billions of money in buying cloud infrastructure which is not used in most favorable way. This paper presents a method that monitors VMs (EC2 Instances) on private clouds like Amazon or Google and provides solutions to reduce infrastructure cost from the customer's point of view.

I. INTRODUCTION

In recent years, cloud computing [1][2] [4]has become very popular and been accepted by both enterprise users and personal users since it can provide economical, scalable, and elastic access to computing resources over the Internet.
Cloud Computing providers offer more services to their clients ranging from infrastructure as a service (IaaS)[8], platform as a service (PaaS), software as a service (SaaS), workflow-as-a-service (WaaS). The purpose of providers is to exploit returns by their price schemes, while the main goal of customers is to have the quality of services (QoS) for a reasonable price [5].
Computing outsourcing provides great elasticity [1], flexibility[2] and scalability of resources. It minimizes client-side management overheads and benefit from a service provider's global expertise consolidation and bulk pricing, and helps users avoid the capital expense in acquiring computing resources. Cloud computing can reduce costs while enabling greater business agility and flexibility [2]. The key characteristics of cloud computing are the ability to scale resources practically infinitely, the capability to pay only when a resource is actually used [2], and the elimination of large upfront costs for users. In addition, low prices and ease of use encourage enterprises to utilize cloud computing to host their IT infrastructure [4]. Every cloud provider has a different pricing approach; yet, for computing resources, they offer two categories of products: on-demand instances and reserved instances. On-demand instances are virtual machines created and paid for only when utilized.
The main purpose of the system is to create private cloud (test bed) by using (Amazon Account) along with monitoring critical resources like RAM, CPU, memory, bandwidth, partition information, running process information and utilization and swap usages etc. We build up a system that monitors VMs (EC2 Instances) on private clouds like Amazon or Google and provides solutions to decrease infrastructure cost from the customer's point of view.

II. LITERATURE SURVEY

Yeoa et al.[6] analyzed the difference between fixed and variable prices. Fixed prices were easier to recognize and clear-cut for users. However, fixed price could not be fair to all users because not all users had the same needs. The proposed charging variable prices with the sophisticated condition, where users know the exact charges that are computed at the time of reservation even though they were based on variable prices. Li at all.[7] proposed a pricing algorithm for cloud computing resources. Authors proposed the cloud bank agent model as a resource agency from a global perspective, which provides analysis and guidance for all members.
Amelie Chi Zhou et al.[8] presents a scheduling system known as Dyna to minimize the expected monetary cost given the user-specified probabilistic deadline guarantees. Dyna includes an A*-based instance configuration method for performance dynamics and a hybrid instance configuration refinement for using spot instances. Experimental results with three scientific workflow applications on Amazon EC2 and a cloud simulator shows (1) the capacity of Dyna on satisfying the probabilistic deadline guarantees required by the users; (2) the efficiency on reducing monetary cost in comparison with the existing approaches.
Subhas Chandra Misra et al. [9] gives a framework for helping companies analyze several characteristics of their own business as well as pre-existing IT resources to identify their favorability in the migration to the Cloud Architecture. A general Return on

Investment (ROI) model considers various intangible impacts of Cloud Computing, apart from the cost. The analysis presented herein provides a much broader perspective and insight into Cloud Computing to its prospective adopters.

Guoxin Liu et al.[3] provide a model to decrease the payment cost of clients and at the same time is guarantee their SLOs (service level objective) with the globally distributed data centers belonging to different CSPs with different resource unit prices. The cost minimization problem can be solved by using integer programming.

III. PROPOSED SYSTEM

Every cloud provider has different pricing strategies for computing resources. In the course of a cloud, implementation users have the flexibility to choose the EC2 instance type that provides the appropriate mix of resources for the target application and workload. They apply charges on the basis of resource utilization, but it is very high.

The main purpose of the system is to create private cloud (test bed) by using (Amazon Account) along with monitoring critical resources like RAM, CPU, memory, bandwidth, partition information, running process information and utilization and swap usages etc. Also, recommend the price reduction strategy. Figure 1 shows the architecture of the proposed system.

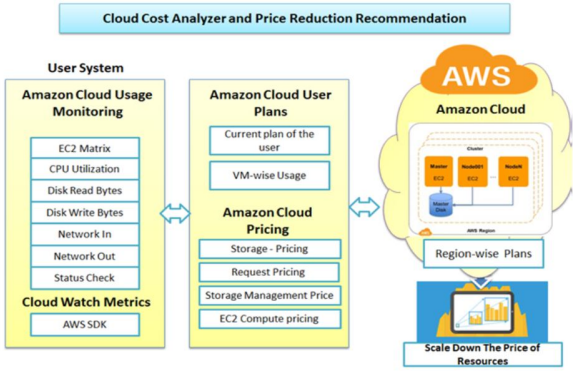


Figure 1: System Architecture

1) The proposed system which cans monitor VMs (EC2 Instances) on private clouds such as Amazon or Google and offers solutions to decrease infrastructure cost. Resource Monitoring of Cloud Nodes:

2) Resource Monitoring of Cloud Nodes: User should be able to view CPU and RAM usage utilization of Amazon ec2 nodes. CPU and RAM utilization statistics should be dynamic and should refresh every second.

3) Select Cloud Plans for popular clouds like Amazon: Cost of service depends on the region of the server, memory usage, CPU etc. Cloud service providers charge for the services like Storage Pricing , Request Pricing , Storage Management Price , CPU prizing which need to be added in the system.

4) Monitor account wise VM Usage of parameters like CPU Utilization ,DiskReadBytes, DiskWriteBytes, NetworkIn and out and StatusCheck.

5) Finally propose an efficient resource utilization By suggesting memory cutdown, CPU cutdown, storage cutdown. The key benefit of cloud computing is based on some components like elasticity to extend and IT infrastructure depending on the enterprise needs. To estimate the output of the complete system, It is essential to perform load balancing on the test bed as well as compute the need of some resources like Storage Pricing, CPU pricing, Request Pricing, and Storage Management Price. This outcome contains a multiple number of purchaser and agent.

IV. ALGORITHM USED

A. AES Algorithm

1) Encryption: We used below mentioned AES steps of encryption for a 128-bit block:

a) Give the set of round keys from the cipher key.

b) Initialize the state array with the plaintext.

c) Take the primary round key to the early state array.

d) Carry out nine rounds of state handling.

e) Carry out the tenth and final round of state exploitation.

f) Copy the last state array out as the encrypted data (cipher text).

2) Every round of the encryption procedure needs a sequence of steps to change the state array. These steps occupy four kind of action called:

a) Sub-Bytes
b) Shift-Rows
c) Mix-Columns
d) Xor-Round Key

B. Implementation Details

The proposed method can monitor EC2 Instances on private clouds with reduced infrastructure cost. The system can also help to optimal utilization of cloud resources. In proposed system threshold values are dynamically updated and Inactive User count is decreased.

Cloud Cost Analyzer						
	Userload	Additional UserLoad	Fixed Threshold	Next Node Load Balancing	% RAM Fr	% CPU Free
Node1	50	10	Threshold Values are	Node3	20	45
Node2	10	50	dynamically updated	Node3	10	45
Node3	20	10	and Inactive User	Node3	50	45
Node4	20	10	count is decreased	Node3	30	45

Figure 2: Next Load Balancing Table for Proposed System

Here, node 3 is selected as it contains large amount of free space and CPU utilization. The offloading can done at 2 levels i.e. Resource Level and User Level. The below figure gives percentage of free RAM and CPU usage for shifting the load to next node.

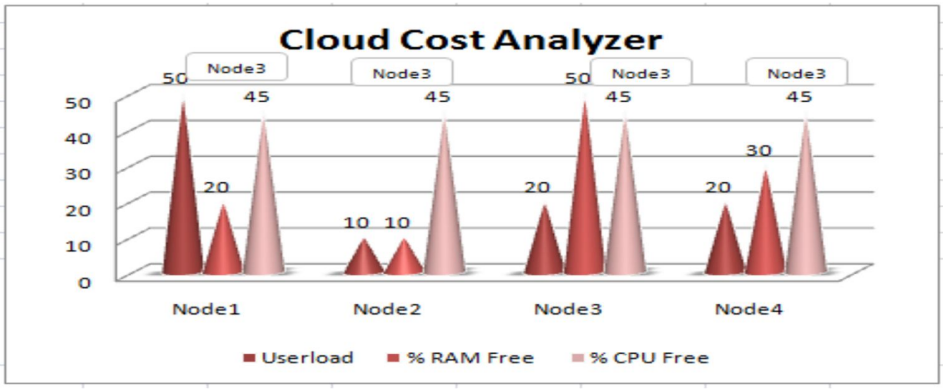
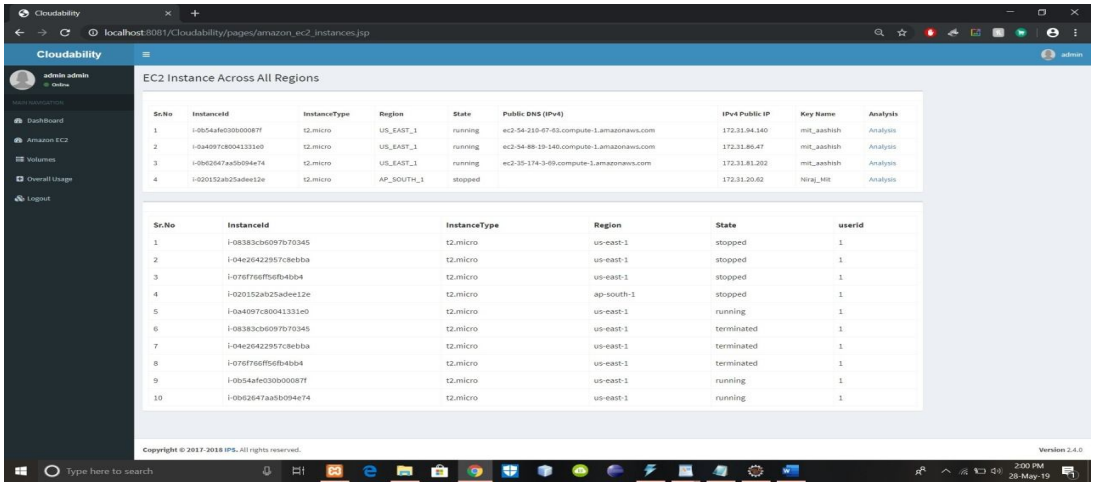


Figure 3: Next Load Balancing Table for Proposed System



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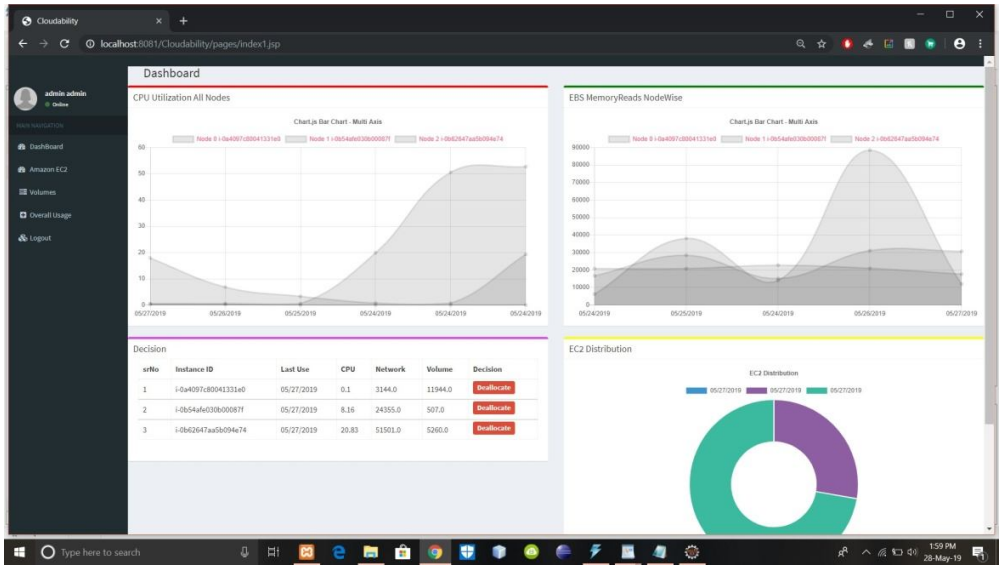

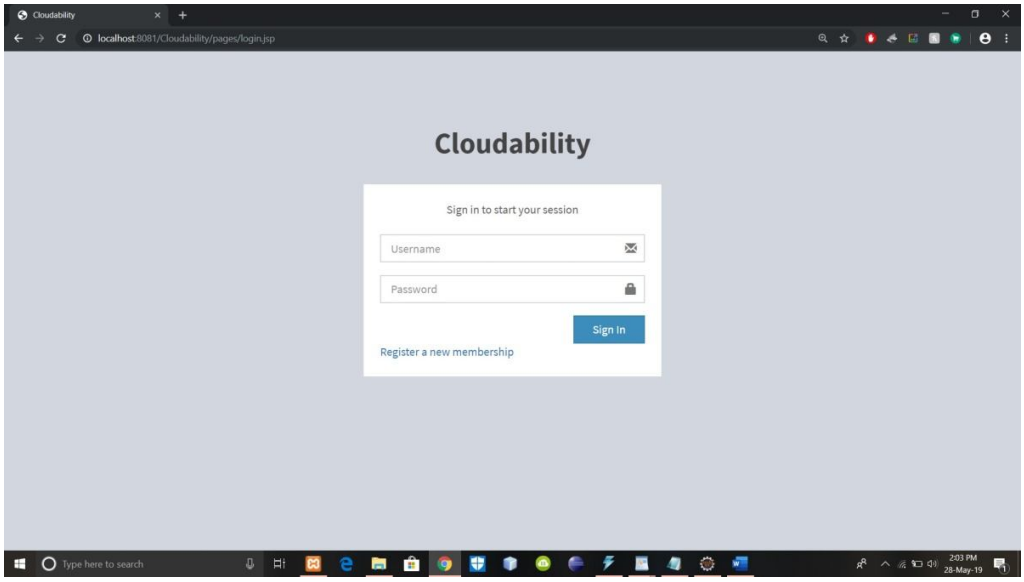

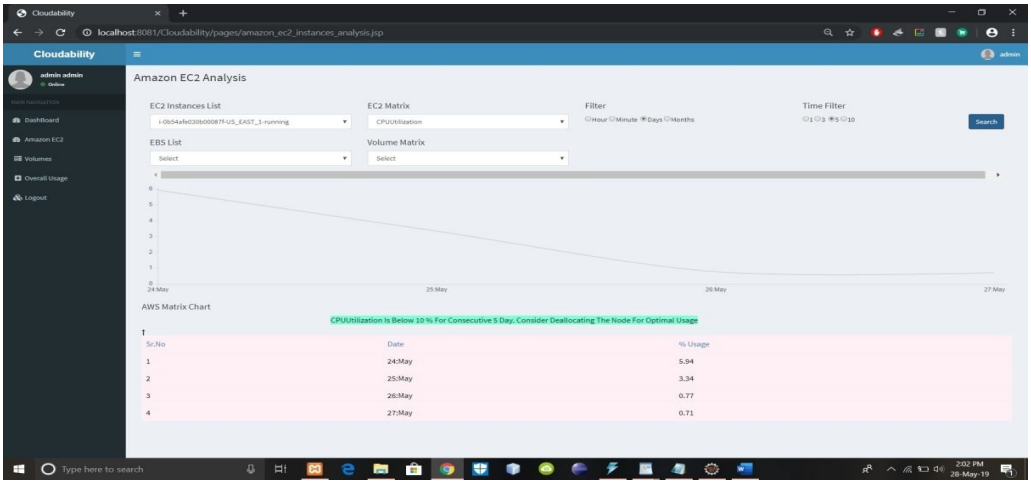

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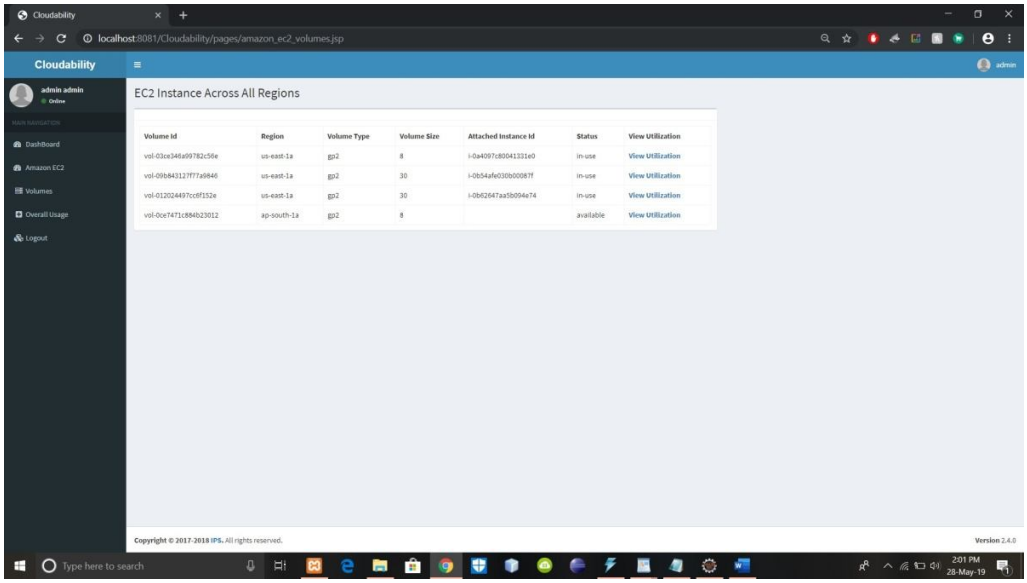

V. CONCLUSION

The success of any application is depending on factors like ease of use, reliability and product image. The proposed system can monitors system performance in terms of RAM, CPU, memory bandwidth.

Cost optimization is a major concern in cloud computing as owners of large IT infrastructures have to pay a large cost for resource utilization. The infrastructure cost can be reduced from the customer's point of view by monitoring the VM node on the private cloud. The system provides the solution for cost optimization in cloud computing by evaluating the resource monitoring and load balancing tools

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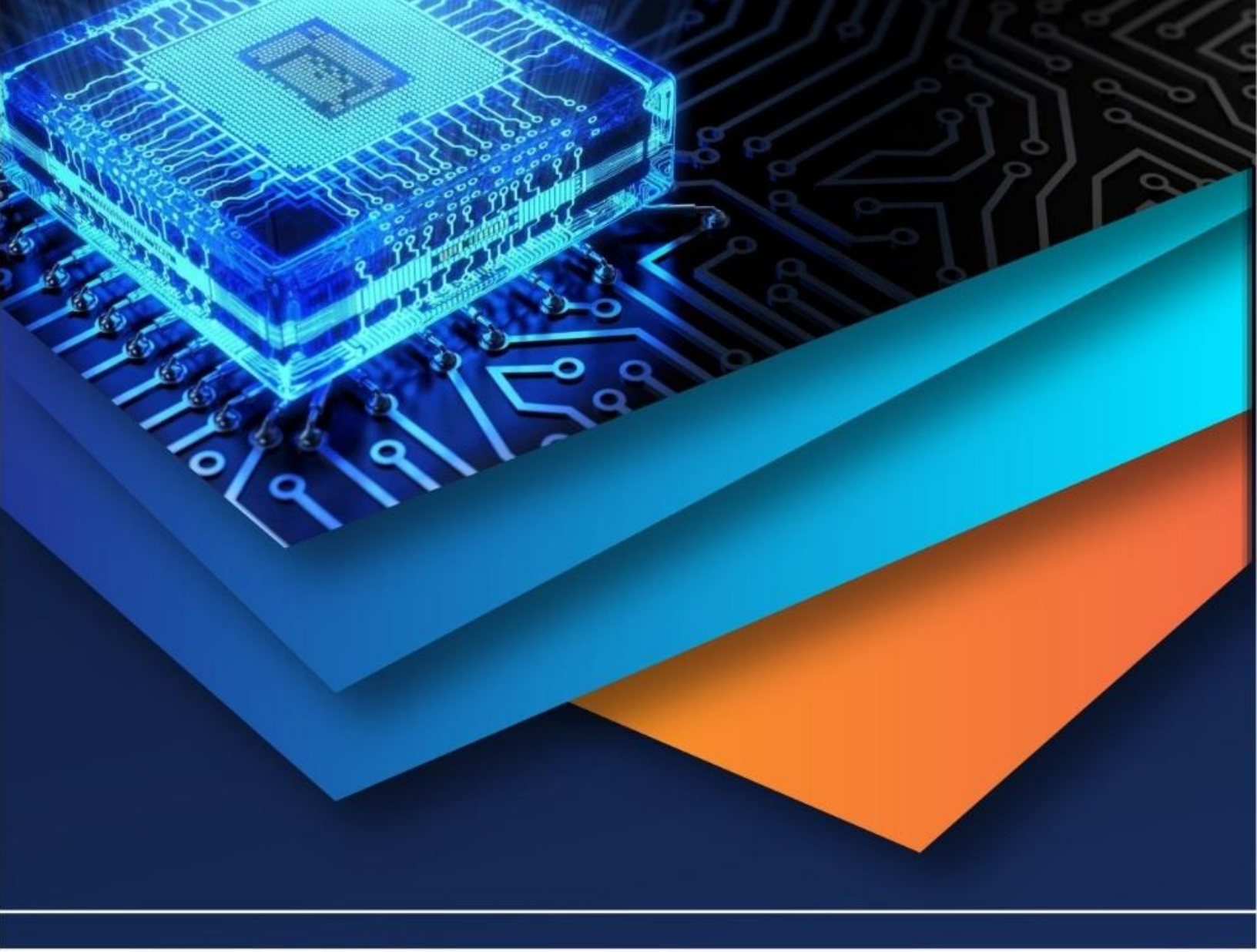

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