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WORK LOAD SHARING USING MOBILE EDGE COMPUTING

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ABSTRACT— *Recently, intense use of mobile devices is increased and day by day new technology in communication is increasing so we have to accommodate more and more devices on the cloud server also we have to provide advanced algorithm for efficient exchange of resources between cloud and client server. Mobile devices users are saturated with already proposed traditional methods such as grid-computing. Our aim in this project is to reduce the load on mobile devices and reduces the work sharing in cloud environment. This paper supports the use of more optimum algorithm for mobile Edge-Clouds. In using mobile edge computing technology, we have a cellular operator that allows efficient deployment services for specific customers or classes of customers. This technology also reduces the signal load of the core network, and can host applications and provide services in a cheaper way. Data Sharing will increase traffic on mobile edge cloud to reduce it is our major aim of the project. Our idea is to secure and reliable data sharing in mobile edge cloud environment.To achieve this we are going to implement an Algorithm of BackScatter and Priority based task Sharing Algorithm.*

Keywords—*Mobile edge computing, Work load sharing cloud environment, Backscattering Algorithm,Prirority based task Scheduling Algorithm*

I. INTRODUCTION

Edge computing or multi-edge computing is a form of architecture that allow cloud computing to be executed at the edge or near a mobile network.The main logic behind the architecture is to reduce network congestion and improve applications by performing related processing tasks near to the end user. He technology implements at cellular base stations which provide a rapid deployment of applications and other customer services. The advantages of spreading and shifting of the workload of cloud computing with MEC is to reduce traffic congestion near mobile devices. With present 4G network technology and with the total connected devices which are increasing day by day 5G Technology is required MEC is a key factor to it.

Computing. So mobile edge computing is essential as it is a basic step towards development of 5G data processing.

Mobile edge computing is shall be implemented around year 2020.It allows software applications have the advantage of local content and extract information about local-access network conditions. By deployment of various services and caching content at the network edge, Mobile core networks have to face further congestion and can efficiently serve local purposes.

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Our idea is to provide better security and reliable data sharing in mobile edge cloud environment. Data is more secure and reliable when using mobile edge devices as data is close to the mobile device and also is easily accessible. Internet data is also saved while using MEC.To achieve this we use complex algorithms like back scattering algorithms and Priority based Task Sharing Algorithm. The communication between cloud and client is based on priority which

allows computing with certain conditions.. The ISG also helps in advancement and enabling the MEC ecosystem by hosting Proof- of-Concept (PoC) and MEC Deployment Trial (MDT) environments. It also supports in running Hackathons.

II. LITERATURE SURVEY

1) Incentive Mechanism for Edge Cloud ProfitMaximization in Mobile Edge Computing

A relationship is developed between the mobile edge clouds and mobile devices which pay price for sharing resources and it also develops a mechanism of resource training between the cloud servers and clients .

Algorithm used: PMMRA Algorithm

Relevance: It provides cloud servers with high utility of resource sharing as it can increase the number of users as much as possible

Disadvantage: Computational power or resources of the service providers are not considered while using PMMRA Algorithm

2) ***Storage using an autonomous mobile infrastructure***

Parallel and Distributed Systems

It provides temporary storage devices to clients in a small specified area making good use of hoc ad devices and mobile computing resources

Algorithm used: Run time algorithm and Phoenix algorithm

Relevance: Ensure safety of data despite of wireless communication failure and autonomous mobility of data thus prevents the data loss while communication

Disadvantage: The evaluation can be done only on single hop networks.

3) ***Exploiting mobile crowdsourcing for pervasive cloud services: challenges and solutions edge***

Exploration of crowd sourcing architecture .Its application is discussed and what are the challenges and advantages are discussed. The paper measure for developing outsource.

Algorithms used: MAASP and Recruitment algorithm

Relevance: It is cost-effective and efficient way of applying pervasive cloud computing.

Disadvantage: Privacy issues while using in big data and multimedia resources

4) ***Femtoclouds: Leveraging mobile devices to provide cloud service at the edge***

Femto-cloud system is used to make a self adjusting and multi device cloud system which is also dynamic in nature. The whole system is made up of cluster of mobile devices.

Algorithm used: Clustering Algorithm and Dynamic allocation

Relevance: Better framework provides scalable heuristic solution of task scheduling algorithm

Disadvantages: Mobile devices consumption is not considered while implementing above algorithms.

5) ***A Novel Ad-Hoc Mobile Edge Cloud Offering Security Services through Intelligent Resource-Aware Offloading***

Ad-hoc mobile device is used for connecting, sharing of resources and integration by using wifi direct method

Algorithm used: Heuristic Algorithm and Generic Algorithm

Relevance***:*** Securing better communication between devices and cloud. It also decreases the execution time,reduce computational time and energy consumption.

Disadvantages***:*** It is assumed that the nodes are safe and secure which creates critical situation

6) ***Computing with Nearby Mobile Devices: a Work Sharing Algorithm for Mobile Edge-Clouds***

We use nearby mobile devices for reducing the work load. Use as crowed power resource cloud to complement the remote cloud

Algorithm used: Honeybee Model and Work-stealing Algorithm

Relevance***:*** When there is load on main cloud server the honeybee model is used to create a new virtual server and ease the load on main server.

Disadvantage***:*** It is assumed that the nodes or platforms are safe and secure and has an intensive system

7) ***Incentive Mechanism for Edge Cloud Profit Maximization in Mobile Edge Computing***

Dynamic virtual servers are created that are guided by user centric capabalities

Algorithms used***:*** ECC Mechanism

Relevance: Capability of end user devices are increase .It increases the computational power of the cloud resource as well as the end devices

Disadvantages***:*** Higher level statements cannot be easily translated

8) ***The locations of ip spoofers from pathway backscatter in passive ip traceback***

The security is increased and the algorithm helps in finding the ip spoofers from passive traceback and backscatter algorithm

Algorithm used: Passive IP traceback

Relevance: This method increases security and trace back the ip which is found suspicious and remove the threat if required.

Disadvantages: Vulnerable *to passive attacks*

III. PRPOSED WORK

We are working on mobile edge computing . Our main aim of the project is to make work load sharing algorithm so that the main cloud server can be free and also safe from attackers .In this we create nodes and try to accommodate as many clients as possible and also increase the security level When the number of clients on a particular server increases the system creates another server and try to accommodate more clients on the next server and likewise more and more clients are being settled in our server .So the main cloud or our main database is safe and all the request from the clients And also as the previous servers are getting idle the new clients can be accommodated there thus the cloud traffic congestion is avoided and the client can easily performs its job.

A) List of modules

1) System Model

There are several instances where we use a public cloud in cloud computing like wise here also we need a public cloud. A service provider provides a standard public cloud computing model which is similar to standard cloud .A large public cloud includes many number of nodes which are scattered around in different geographic points or locations . So we have to use cloud partitioning To manage this big cloud .Cloud partitioning is a technique we divide geographical locations into several sub areas where they arerequired to perform the specific jobs. The main controller initiates which has to be assigned which job. The partition load balancer decides how to assign jobs to specific nodes

.When the load status of the cloud partition is not normal or

it is full the job should be given to some other free partition

.This is the main system model .

2) Main controller and balancers

The load balancing solution is performed by the main controller and the balancers. The main controller main rst assigns tasks to the appropriate cloud partition and then communicates with the balancers in each partition to refresh this status information. Since the main controller deals with the information for each partition, smaller data sets will give rise to higher processing rates. The balancers in each partition gather position information from each node and then choose the correct strategy to distribute the jobs. The Main controller and the balancer are very important part of the system as they direct all request to suitable subpartion

3) Assigning jobs to cloud partitions

When a task arrives on the public cloud, the first step is to choose the correct partition. The status of a partitioncan be divided into three types:

I Inactive: When the percentage of inactive nodes exceeds balancer A, the idle state changes.

II Normal: When the percentage of normal node exceeds balancer B, the normal load state changes.

III Overload

When the percentage of overloaded nodes exceeds the balancer C, changes to the overloaded state.

4) Motivation

A relatively simple method can be used for the split idle state with a much complex method for the normal state. Load balancers switch methods as soon as the situation changes. Here, the idle state uses a better round robin algorithm while the normal state uses game theory based load balancing.

5) Load Balance strategy

There are several load balancing techniques such as random algorithm ,Dynamic Round robin and weight round robin.Round robin algorithms are one of the most simplest algorithms .These are also one of the oldest techniques and one of the simplest technique to balance the load .This method is basically used in a queue . So basically we are using round robin so that it passes each new request to the next server which is available in a queue .The algorithm

does not hold the status of every server connection so the status information in unavailable. In classic round robin every node gets equal chance of being selected . Thus we prefer a better round robin where round robin is performed based on load degree evaluation . The algorithm is quite same as previous round robin . Prior to round robin the theload degree is provided and the nodes are arranged from lowest to highest the result is noted on balancing table.

6) Load Balancing strategy for normal status

At the point when the cloud partition is typical, client jobs are showing up a lot quicker than in the inert state and the circumstance is unmistakably increasingly mind boggling, so an alternate technique is utilized for the Load Balancing. Every client needs his job finished in the minimum time, so the open cloud needs a strategy that can finish the workload of all clients with optimum time. In proposed a static workload adjusting procedure dependent on game hypothesis for conveyed frameworks.

Also, this work furnishes us with another audit of the heap balance issue in the cloud condition. As a usage of conveyed framework, the heap adjusting in the distributed computing condition can be seen as a problem which can be solved using game theory. So using above algorithms and strategies we can share the work load among given nodes.

Abbreviations and Acronyms

- PMMRA :- profit maximization multi-round auction
- MAASP:- Mobile as a service provider
- MEC:- Mobile edge computing
- ECC:- Elliptic curve cryptography

IV. ALGORITHM USED

Passive IP Traceback Algorithm

Path backscatter messages are essential to trace back the hacker ,attacker or spoofer .When investigated in backwards toward the messages we can get to the spoofer.PIT retraces these messages to find the spoofer .Now when the location of spoofers are open then the user can assist help from corresponding ISP to refine the the attacking packets and make the counter measures to defend the user .Now these backscatter messages are used to study the Denial of Service

,path backscatter messages and other cyber attacks such as fishing ,DDOS ,MITM etc. That is why PIT is essential algorithm in mobile edge computing.

Priority Based Task Scheduling Algorithm

In this algorithm the priority is not predefined here priority of user is taken into account . This algorithm is specifically made for the users which operate on cloud systems. Here one user will have high priority at one point while otherswill have low priority .This algorithm is used for meta task scheduling . Meta task means that no task is has above priority then any other task.It depends on the situation .Here higher priority tasks are based on min-min algorithm and normal priority is decided by min-max.Here we also have three lock-free data structures which have different scalability and ordering guarantees .It is better at resource utilization compared to previous techniques like honeybee model ,grid scheduling algorithm .P-TSA also provides better security and prevents spoofers while computation.It supports task-parallel applications.

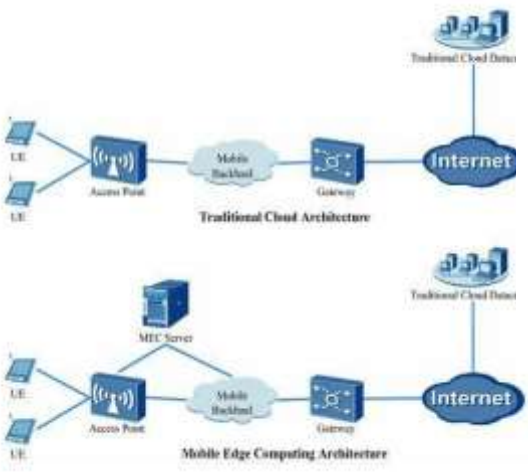
V. ARCHITECTURE DIAGRAM

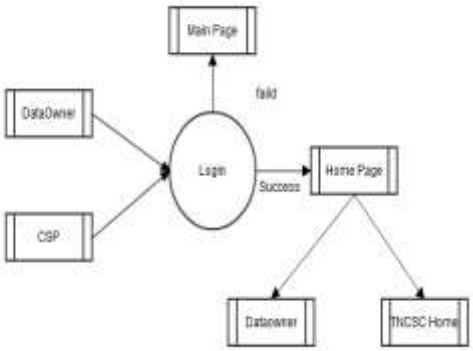
The above image depicts the common difference between Mobile edge computing and simple cloud computing. The above image is diagram of cloud computing where as lower picture shows diagram mobile edge computing.

between the main sor system cloud and the other load balancer present .When the main server gets enough requests and its states changes from idle to overlord the load is passed to the next load balancer and the can accommodate more and more clients service. That is the main advantage of using mobile edge devices.

Data flow diagram

This diagram initiates the rights of cloud administrator and the clients which are not connected to the current server.



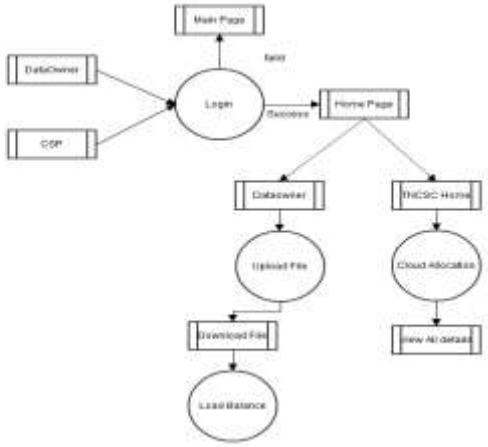


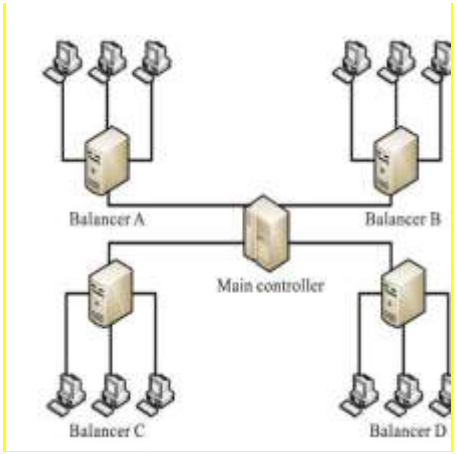
S.No	Server Name	URL	Connections		Status	Location	Edit	Delete
			Total	Available				
5	TN	http://192.168.0.113:8084/	3	3	Overload	TN		
6	AP	http://192.168.0.112:8084/	3	0	Idle	AP		
7	KA	http://192.168.0.110:8084/	3	0	Idle	KA		

Figure 1: Data flow diagram

Data flow diagram level 1

The following picture represents the 1st level of data flowing Diagram in this 1st server is full here the data owner uploads the file which is available for all the clients. As the number of clients increases the system the system makes room for more and more clients.





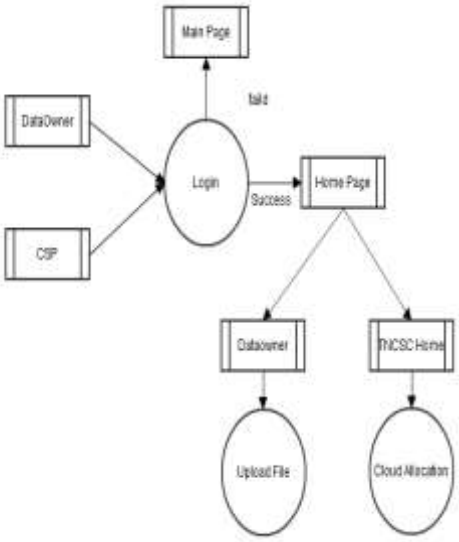


Figure 2: The above diagram shows how the load is balanced

Overall Dataflow Diagram

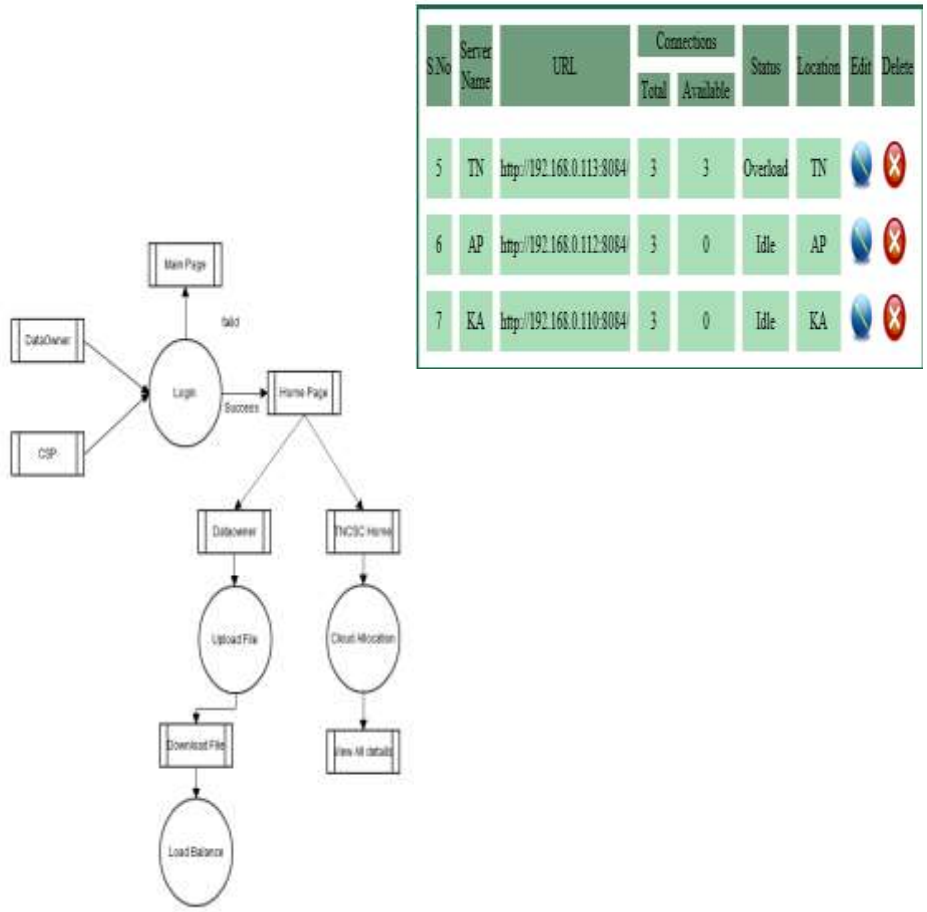


Figure 3: Overall Dataflow Diagram

VI. RESULT

The clients are successfully able to accommodate in the nodes or instances that we have made from the main cloud and we are able to do mobile edge computing and workload balance is done .And our main aim was to transmission of reliable and secure data without data being traced by ipspoofers and hackers so backscattering algorithm helps in achieving the corresponding goal.Now as we have all our servers created the clients will come and move into servers and then when one server gets 3 clients it will shift to next server .

Implimentation

At first the server admin logins and three servers are created with the help of ip address .Now we need to create instances or number of available nodes in 3 servers in our demonstration we are using 3 nodes or instances .That means that each server can hold 3 clients at a ime and when the state changes from idle to overflow or the server will be changed

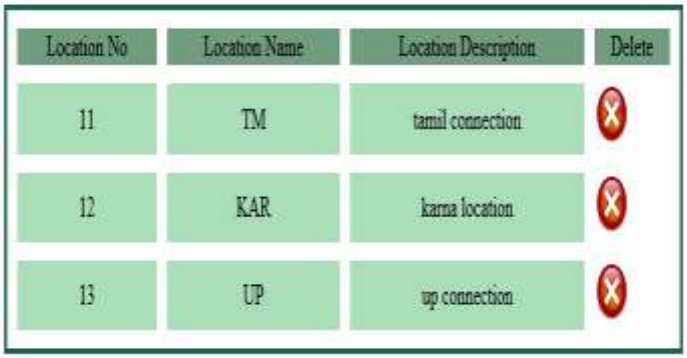


Figure 4: Now we need to assign ip to every server from which the

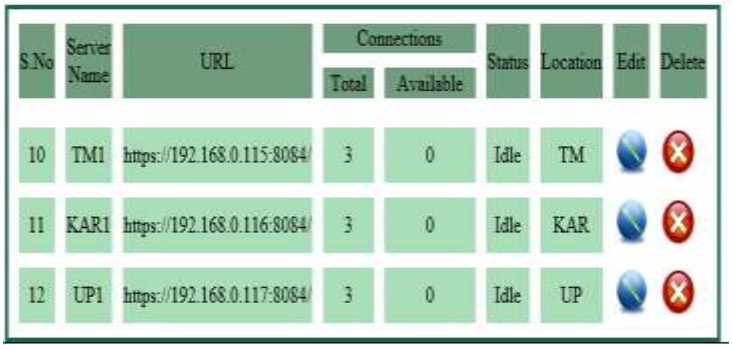


Figure 5: clients can connect to primary server and its state changes from idle to overflow the server can be changed and further it will continue to change server

VII. CONCLUSION

Our aim is to secure and reliable data sharing in mobile edge cloud environment .To achieve this it is intended to use Backscatter Algorithm to provide security against spoofers and Denial of service attacks . By using Priority based task scheduling algorithm we implement proper sharing of resources increase resource efficiency

.With the given modules we implement proper mobile edge computing. Which will be used in multiple purposes like selection, provisioning, and order of mobile edge applications. The virtual servers built in mobile edge computing should have optimize sharing of resources. We also have used priority algorithm and game theory to for work load sharing in mobile edge computing.

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