Advance Selection Approach for Efficient Design Network for Cloud Computing

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Abstract: The main objective is to design efficient and optimum network for cloud computing by using virtual machine migrations. Several algorithms have been studied and proposed in the literature to solve issues regarding size complexity, time complexity and speed when migrating data from virtual machine to server. In most of the cases, decisions on VM migrations are taken without factoring in time complexity, size complexity and speed. Being computing element in the cloud datacenter, virtual machine should be able to migrate from one location to another location in order to meet necessities of user therefore it is discussed that which VM must be migrated so as to minimize the network overhead among traditional cloud and mobile cloud systems is investigated in this paper. Proposed an algorithm based on fuzzy clustering to solve the aforementioned problem in an optimal way. Experimental evaluation shows that by using proposed algorithm, size complexity and time complexity are reduced, thus performance is improved.

Keywords: **Virtual machine migration, Fuzzy clustering, Network optimized.**

I. INTRODUCTION

During the last decade, cloud computing environment has received a lot more attention from a research point of view. Ranging from terabytes to petabytes, there have been various scientific projects which creates a huge amount of data. Not only these scientific projects' demands are insatiable in management and data storage but also computing resources has voracious demands by many applications of science in which generated data should be processed. Researchers are advised to utilize certain techniques for cloud systems by the above insatiable requests in data and computational resources [1].

II. BACKGROUND THEROIES

2.1 Cloud Computing

To keep, handle and process data, instead of using a personal computer or a local server, cloud computing uses a network of remote servers provided over the internet. Cloud computing makes it all possible if anyone wants to use an online service to edit documents, play games, listen to music, send mail and store pictures or other files. Early cloud computing facilities are hardly 10 years old but already enormous corporations are accepting the technology for all sorts of reasons. Organizations may be ranging from government agencies to non- profitable companies or tiny startups to global corporations.

2.2 Virtual Machine

As virtual machine is a key component in cloud computing, it should be able to move from a place to another location in order to meet cloud users' necessity and defined policies of cloud computing system. When a virtual machine relocates over IP subnets, mobility becomes an important issue. In cloud computing, a mobile node makes reference to a virtual machine whereas mobility makes reference to VMM. Between IP subnets, live migration could be implemented without interrupting the service [6]. Many virtual machine algorithms have been studied and proposed in the documentations with various range such as reduction of network cost or server consolidation. In most of the cases, decisions on virtual machine migrations are taken which later affects the data access cost by virtual machines.

2.3 Benefits of Virtual Machine

Sometimes consumer demands are too less and sometimes consumer requests are too high, because of this, server dynamically changes workloads. So, practically it is not feasible to add servers physically. So changing workloads are automatically accommodated by the migration of virtual machine. Also used for disaster recovery. Migrating operating system and applications individually is very difficult because it interrupts the service, it is unchallenging to relocate a virtual machine from a server to another server.

2.4 Fuzzy Clustering

Fuzzy clustering is a form of clustering in which each data point can belong to more than one cluster. Clustering or cluster analysis involves assigning data points to clusters such that items in the same cluster are as similar as possible, while items belonging to different clusters are as dissimilar as possible. Clusters are identified via similarity measures. These similarity measures include distance, connectivity, and intensity. Different similarity measures may be chosen based on the data or the application.

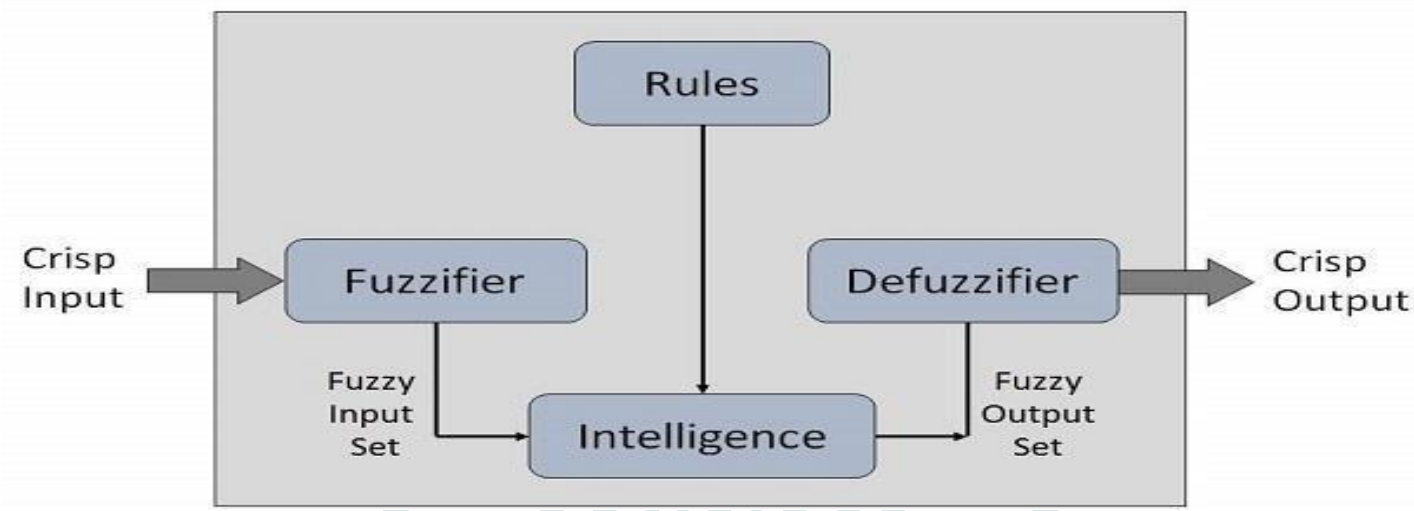


fig (1). fuzzy clustering

The algorithm works as follows:

- Firstly, linguistic variables and terms are defined. (start)
- Then membership functions are constructed. (start)
- Knowledge base of rules is constructed. (start)
- By using membership functions, convert crisp data into fuzzy data sets. (fuzzification)
- Rules are evaluated in the rule base. (Inference Engine)
- Results from each rule are combined. (Inference Engine)
- Output data is converted into non-fuzzy values. (defuzzification)

2.5 Purpose

For commercial and practical purposes, fuzzy logic is useful. Machines and consumer products can be controlled by fuzzy. Acceptable reasoning is given by it but may not accurate reasoning. It helps in dealing with the uncertainty inengineering.

III. LITRATURE SURVEY

In paper [1], to reduce network overhead among mobile cloud and traditional cloud systems, usage of replication of data with virtual machine which targets on evaluating algorithms that determine both, which data should be reproduced where and which virtual machine must be moved and also assignment issue. As datacenters used for the traditional cloud and micro-datacenters used for the mobile cloud have restricted computing capacity and storage, they have studied and discussed incapacitated case and more realistic case. To sort out the previous issue in best way related to the unconstrained case and enlarge it to capture storage and computing capacity constraints, further they have proposed an algorithm based on hyper-graph partitioning. When compared to state-of-the-art algorithms found in the literature, trial and error analysis reveals that proposed algorithm provides minimization of network overhead up to 53%.

In paper [2], based on locator method of decoupling of Mobility Driven Networks (MDN), it offers a mobility oriented cloud data center network architecture and focuses on mobility management in cloud computing systems. In network of cloud data center, a mobile node makes reference to a virtual machine whereas mobility makes reference to VMM. In proposed model, instead of cold migration, live migration could be implemented by a virtual machine between IP subnets without disruption of service. Mobility issues can be solved successfully in virtual machine migration between IP subnets by evaluating the proposed scheme.

In paper [3], an energy efficiency in mobile-edge computing with performance guaranteed problem is investigated. The mobile users wish for low energy utilization and performance guaranteed, therefore energy reducing optimization issue for mobile edge cloud computing is proposed and they have also introduced a request offloading scheme for this problem. In specific, the offloading scheme is decided by bandwidth capacity and energy utilization at each time slot. Numerical outcomes indicates that their proposed offloading scheme outperforms entire offloading method and local computing on energy utilization and execution on delay.

In paper [4], they have proposed, Division and Replication of Data in cloud for Optimal Performance and Security (DROPS) which deals with performance and security problems. In the DROPS procedure, a file is divided into fragments and replicate that fragmented data over the cloud nodes. Only a single fragment of a particular data file is stored by each of the nodes which ensures that no meaningful information is revealed to the attacker even in case of a successful attack. Additionally, with certain interval by means of graph T-coloring to prevent an attacker from predicting locations of fragments, nodes storing fragments, are separated. Moreover, for the data security, DROPS methodology does not rely on the traditional cryptographic methodologies, thereby mitigating the system of computationally costly techniques. They have shown that chance to locate all the nodes which store the fragments of a single file is abundantly low. They have also compared the execution of DROPS procedure with other schemes and the conclusion is, little performance overhead with excessive level of security was noticed.

In paper [5], data sets are stored under the cloud computing environment by big data applications but the need of data set is dynamic which means it changes over time in big data applications. Such applications meet new challenges in data migration in case of multiple data centers, which includes how to mitigate the number of network access, how to minimize overall time utilization and how to enhance the effectiveness by the time of load balancing in process of migration.

IV. PROPOSED SYSTEM

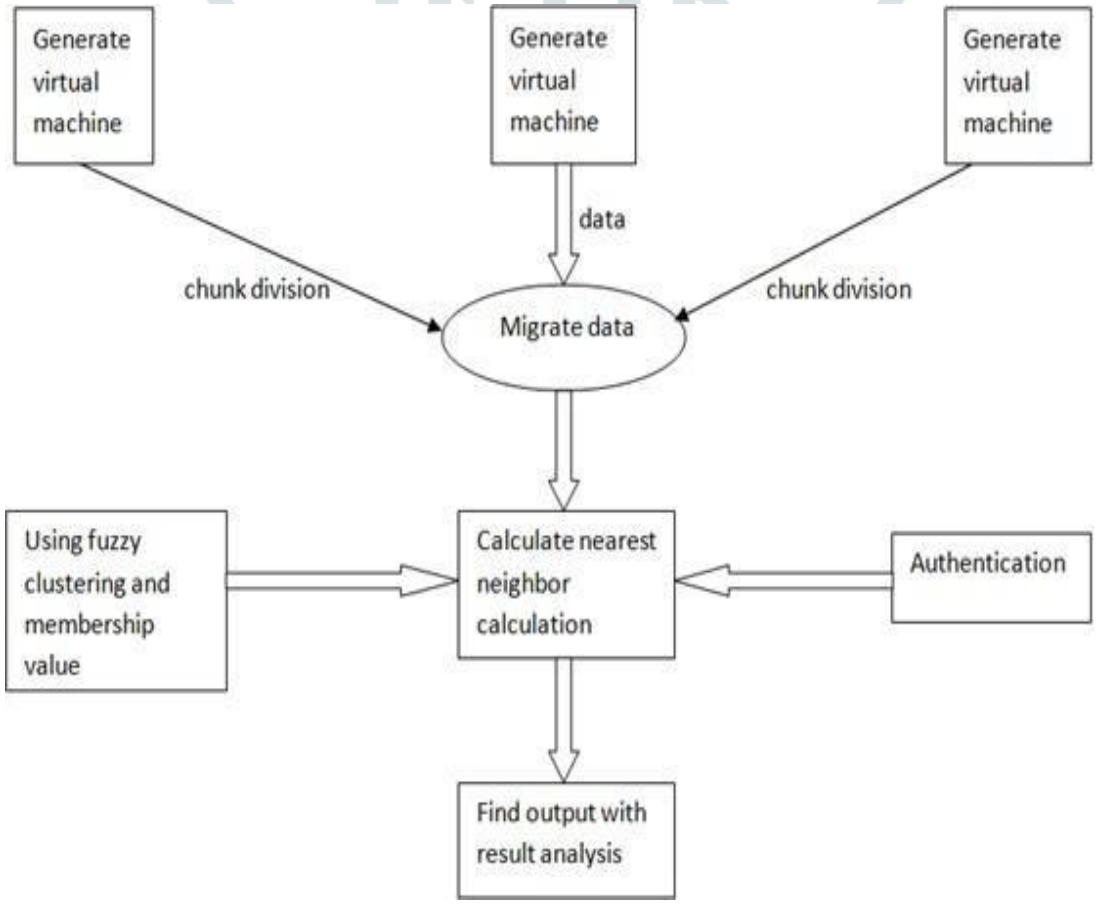


fig (2). proposed flow

In this research, data is taken from virtual machines to find meaningful necessary data by using fuzzy clustering algorithm.

1. Create virtual machine.
2. Use chunk divide approach for allowing data on server.
3. Use fuzzy clustering for selecting meaningful data only.
4. Apply authentication.
5. Migrate data with minimum distance.
6. Result analysis.

V. Simulation

5.1 MATLAB:

MATLAB is a programming package which stands for MATrix LABoratory specifically developed for uncomplicated and rapid I/O and scientific calculations. MATLAB contains abundant integral functions for a huge range of various toolboxes and computations developed for certain analysis and investigation which include data analysis, statistics, partial differential calculations' solution and optimization [6].

The main components of the MATLAB framework:

1. **Data representation:** Title is the most suitable one because in MATLAB, the formation for the storage of all data is a matrix.
2. **Scrolling:** Provides facility to search through earlier commands.
3. **Basic arithmetic operations:** Provisions certain operations on variables.
4. **Keeping contact with variables:** Variables are therein MATLAB's workspace window unless we change, delete or make exit from MATLAB.
5. **Readymade vectors and matrices:** Allows us to make various simple matrices automatically by providing certain functions with no need of typing or reading in each of the elements.
6. **Saving and retrieving work:** Workspace stores every variable which is created in MATLAB session. workspace stores every variable which is created in MATLAB session.
7. **Logical expressions:** Consists of 6 relational operators by which comparisons can be made between variables.

5.2 Output:

alpha | data

1001535x4 double

	1	2	3	4	5	6	7	8	9	10	11	12	13
1	0	27.9421	15.0745	18.0365									
2	0	22.4168	33.8986	20.4548									
3	0	33.2146	26.7536	27.2554									
4	0	4.1202	7.8851	6.0976									
5	0	20.6330	17.2337	15.3270									
6	0	2.0177	1.2091	1.6571									
7	0	2.3075	8.7740	5.3997									
8	0	7.3354	5.2837	4.9127									
9	0	49.3486	27.7982	30.2205									
10	0	2.4537	5.0583	2.7483									
11	0	36.1179	38.4824	26.7916									
12	0	9.9312	17.4078	11.6012									
13	0	19.4569	44.5354	26.8468									
14	0	22.8210	25.8394	19.4979									
15	0	7.3711	31.7587	14.0450									
16	0	39.9268	17.8468	24.9880									
17	0	9.7911	13.0378	9.4662									
18	0	12.9195	85.4163	23.5817									

fig (3). data points

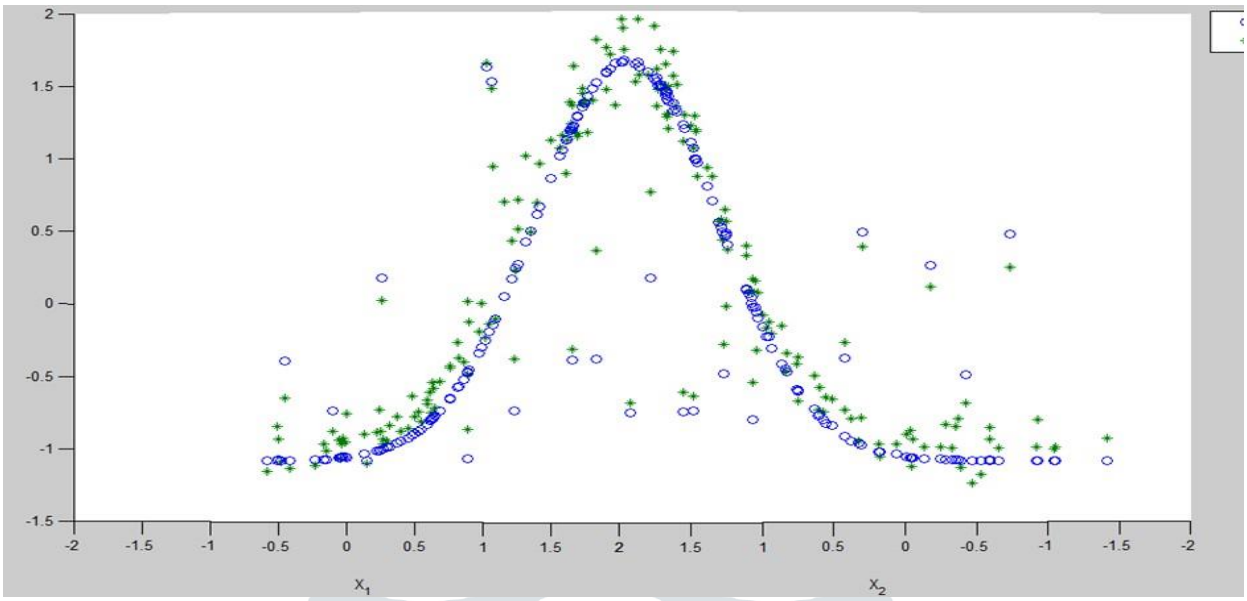
```
% Algorithm
while (norml>tol && itr<maxItr)
    alpha_old=alpha;
    alpha_=alpha;
    for i=1:N
        alpha(i)=alpha(i) + y(i) -eps*sign(alpha(i))...
            -alpha'*kernel(x,x(i,:),'g')';

        if alpha_(i)*alpha(i)<0
            alpha(i)=0;
        end

    end
norml=norm(alpha_old-alpha);
```

fig (4). algorithm

fig (5). result analysis-1



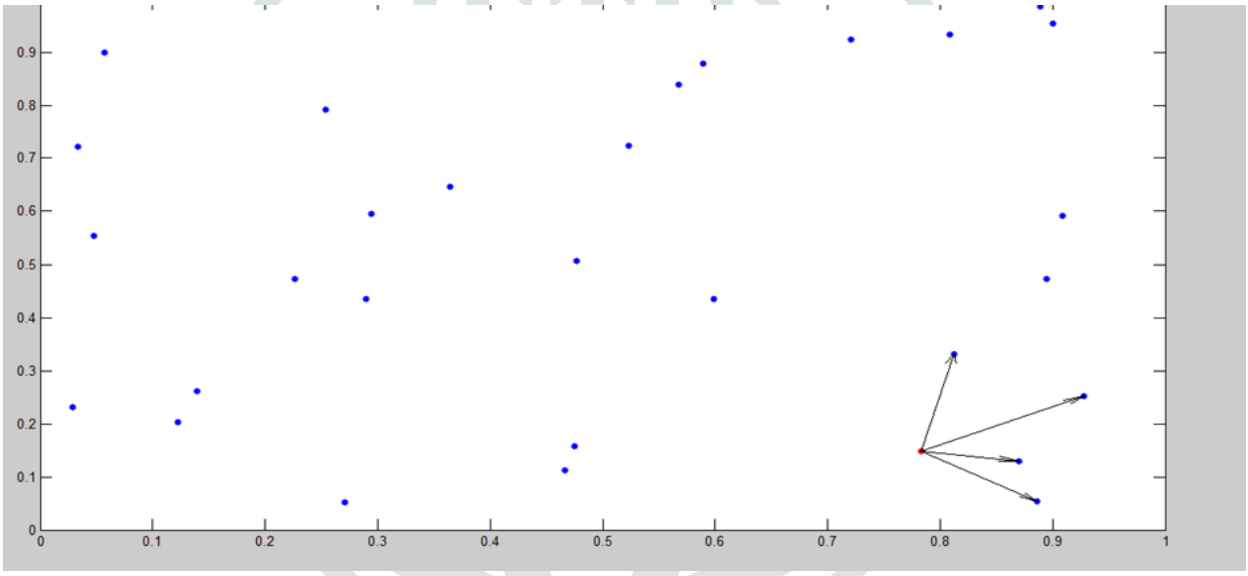


fig (6). result analysis-2

VI. CONCLUSION

Being computing component in cloud datacenter, virtual machine should be able to migrate from one location to another location in order to meet necessities of user. In this dissertation, some issues are found during virtual machine migration so by using proposed approach, trying to reduce current generation issue with high security and efficiency.

VII. REFRENCES

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