Survey on Dynamic migration of data in cloud

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ABSTRACT

Cloud computing is used to distribute services over the shared pooled on internet. It has gained importance to the obscure part of the sole proprietor to get adjusted with the demanding amount data availability to the other business market. Thus, resource or data made available is the only vital point for any cloud computing system, and with "Pay as use" i.e. on demand is to appreciate. Not only this, the cloud also allows user to scale the data according to their demand whenever necessary for the growth. SOA in cloud plays a major role of facilitating the user for better service. But with the turbulent network bandwidth the system may face a congestion problem while delivering various services, thus it may impact on the service migration performance. This paper provides the overall survey of cloud services, data migration and dynamic service migrations in cloud.

Introduction
Cloud Computing

Cloud computing and its power is generally considered with its sharing of resources, services, data virtually. So cloud also has gained a tremendous importance to the upcoming business proprietors' for dealing with their small paradigm with other rivalries. Cloud provides various technical improvements to the systems as: optimization (of both the hardware and the software), reliability, scalability, flexibility, performance scalability, security, virtualization along with the associated demands by the user [1] [2].

Cloud system also provides the different models that improve the economic as well as minimize the cost of investment which leads to low expenditure for the various tasks. Thus it helps the entrepreneur to think towards the growth of the company, instead of increasing the I.T department of the company. So numbers of business are now adopting the cloud as a better solution.

Cloud services are provided to the user as "Pay as you go" so it gives the elasticity to the user for the application security, management, functionality etc. Thus the enterprises get relieved from the data storage, processing and the management of the data on their severs or PC's [3].

In short, the cloud computing provides the end-user with the less expensive and scalable demanding resources according to the utilization of the user along with the preservation of quality of service and infrastructure. Thus, cloud computing involve the service consumers of the cloud service and the providers of the cloud. But the both parties need to make sure the demanded resource is secure and correct. This deploys the challenge to the data integrity in the cloud system [4].

Virtualization

Virtualization in cloud is a key part of the system utilization for the task. There are two types: hardware virtualization and software virtualization [5].Thus with use of virtualization the system computing gets the provision of self

–management and automated. Such system has a capacity to function at a high level, such that it keeps the complexity of the system invisible from the end user.

The virtualization in hardware consists of storage virtualization, server virtualization. While in software virtualization it consists of application virtualization, network virtualization, operating system virtualization [6][8].Thus virtualization has added the feature of scalability, flexibility in migration, lowering of maintenance, security and fault tolerant systems. This allows the user to have a "virtualized infrastructure" than the consolidated traditional data centers [7].

Kiswany [9] research on this and stated that, in all the biggest solution for the static data center for the high load on their servers is "Server Virtualization" that is the dynamic solution to the data centers. It provides the user with the dynamic allocation of the shared resources and with the full control over it with the demand. Scalability is another challenge to the jamming of network or improper services. The scalability in server, network, Platform can be achieved by giving the sufficient resources to meet the increasing demand on time.

[10] A study says scalability of the system can directly affect the performance of the system and even the Qos. In cloud the service can attend full scalability for a system if it can provide the available resources on time. Scalability should be achieved the system taking cost factor into consideration. Generally the systems are kept with the replication to achieve the scalability for the system.

[11][12]Also some system provides the scalability of services by some methods like service replication; service migration and novel scaling paradigm are used.

Data Integrity

Although in cloud it provides user with the relaxation of the data on its server, also the maintenance of the server is minimized, but along with it the cloud also includes challenging issues for the user that is of data integrity.

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The data integrity means the security of the data of the user under the different integrity acts. It is a vital issue for a system and a cloud service provider to give the assurance of the users data integrity.[13] In some of the system complex the environment in it becomes complex, such type of system are generally prone to the data loss, the malware external attacks, tampering of data, etc.

So it is very necessary for the service providers to check the data at various levels as the user have no idea about the storage of the data.

Related Work

Typical traditional system contain the model of, content distribution. And the cloud service provider or the middleware of the system provide the user with their contents as required. This system does have the complex network. The users data travel a route to reach the destination data storage. Also while traveling around the route the data that are distributed in packets need to be taken care from different attacks.

[14] Various studies are carried out in this, it is suggest to use PDP, POR, TPA for the system while storing and retrieval of data at various levels for the data check.

Ateniese [15] research states, the PDP system for data integrity as it allocates the data to only user and any other client cannot access the data, as the system uses linear allocation with homomorphic Algo. It is only request response system but has error as the data cannot be access to the other clients of the same company, this system can be only used as for public data system.

Juels [16] study states that the system should have a proof for the data security while retrieving the data, whether the data is secure or not. It shows that the file that is been retrieved is not tampered neither is prone to any attacks. This system allows the TPA of the system to read the data and then use it for the retrival of the metadata, for the verification of the data security when it is demanded by the user. The system also provide the advantage of the correctness of the data if it is corrupted, within the short period of time.

Kan [17] suggests that only the proof of the data security is not a valid solution as the it doesn't satisfy the privacy protection fully. Thus the use of homomorphic linearity tags is also to be used to see the packets of data are not tampered and corrupted while uploading and downloading.
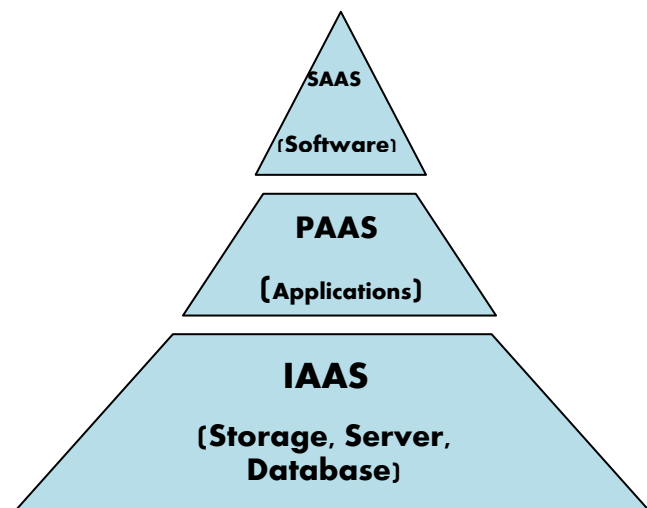
Figure 1. Cloud Computing

Rabi [3] research states, that instead cloud computing is most popular for the computing resource availability it has different challenging issues to study about for the computing. The research also mentioned that data lock-in is one of the major problem faced in cloud computing. This is undesirable for the clients in the system to stop the vulnerable increase in the rates and the price.

Neena [8] research finds that there is lack of cloud "service engineering" and management of the all over migration of data in cloud. Static migration technology needs to be developed to improve its reliability in the system.

[18]Location of qualified nodes for the secure transmission, as well as optimization of task completion time can be done on the bases of the throughput ratio of the system and by the method of self organization of the resource in the system the resource consumption can be minimized.

[19] Suggest that the data overload can be minimized for the cloud by dynamic allocation of VM for the resource request. The migration of VM which is available for service can be used to improve the performance of the system. Thus the overload of the server is minimized. But the paper does not confirm the overload avoidance fully.

[20] Considering the primitive and non primitive resources the server can make availability of resource which is continuous in use for the client and can store it in the buffer, so as to give allocate the client with available resource whenever necessary, "skewness" is used to measure the unevenness in the multiple dimensional resource utilization of a server, reducing the skewness workloads of various types can be utilized to improve complete utilization of resources This approach ensures the avoidance of overload on the server fully.

[21]This system allows the preservation of the SOA and the SLA for the client for the secure computing of the cloud. Also it manages the Qos of the data while allocation. It also facilitate service migration and cost minimizing model. To reduce the overload and to improve the performance of the system it organize facilitate the user to make the decision for the tradeoffs on the service provider selection and migrate the data.

	[18]	*[19]*	*[20]*	*[21]*
Privacy	✗	✓	✓	✓
Server Overload avoidance	✗	✓	✓	✓
Data dynamics	✗	✗	✓	✓

Table 1. Comparison of the papers

Service Status	POR [14]	PDP [15]	P2PSMM with GCP [16]	MHT [17]
Security	Yes	Yes	No	Yes
Para virtualization	No	No	No	Yes
Qos	Satisfied	Partially satisfied	Satisfied	Satisfied
Reliability	Yes	No	No	No

Table 2. Comparison of Data Integrity strategies.

Proposed Work

In our research the system allows scaling automatically according to the user demand. Thus provide with dynamic workout. Using this paradigm the system is design to facilitate the client with the comparison of the different service providers

available to the server and can make a decision to select the service for migration from their pervious servers.

The system give the scenarios of the cloud provides with the listing for the client to optimized their selection of CSP, GPU time, Cost factor, The storage space availability for the CSP is listed out.

The system provides the cost effective management of the service selection and reliability of the service in the system for the user to improve the performance of the system.

This system includes the transfer of service from one CSP1 to another CSPn by client demand. It also reduces the cost of replication for the backup of the system as by providing the priority to the data for the backup.

The TPA in the system provide the verification of the client data. The client request of the service migration is also translated to the server after the service discovery according to the user demand verification by the TPA.
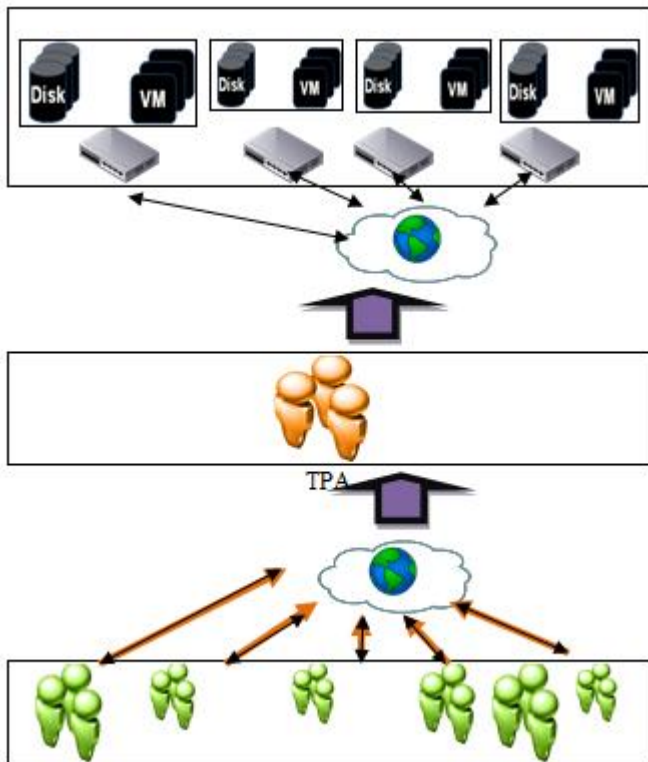
Figure 2. System Architecture

TPA not only satisfy the SLA agreement at the server side but also gives the service URI on the client side so as to ensure the data integrity of the system.

Conclusion

The paper, thus provide the complete survey of reliable and optimized cloud dynamic resource and migration strategies in cloud environment. Performance of system states proposed schemes are provably reliable and efficient. Industries that hold on cloud computing for services over internet of their large data can get an easy solution for storing and maintaining of their data.

It also provide fault-tolerant and security of client's data. The already defined decision making algorithm allows making the optimized decision of the service migration to the client. These all advantages of the proposed schemes will shed light on cost efficiency and helps in green computing of the system for Cloud Computing.

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