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# Virtual Migration with the Help of Cloud Simulator to Balance the Data Load

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***Abstract*: *There are various techniques which are giving the solid issues with virtualization like the mode the type and the format of the data between the clients and services and data between services to services. This could lead the data loss and to solve this issue when virtualization the data has to be properly extracted and from the various selected extensions. So this work proposed a new framework with respect to API called personal virtualization application process interface API(PVA). This PVA is platform unspecific and can be utilized over the clouds and across the clouds with virtualization. Generally over the clouds if any data accommodation issues comes into scenario then the data migration can happen with the help of "extension dynamic creation"(EDC) of virtual machine making and data storage can happen in that new virtual machine with out any data loss. The EDC will preserve the data with out any duplication and stores in the virtualized machine. The threshold is based on the data storage capacity of the virtual machine which is allocated from cloud sim when allocation of cloudlets. The data selection process is dynamic and extraction of the solid data in the form PVA and same type of the data model will be maintained throughout the communication when virtualization happens. Now the data migration is safe when compared to the previous works which has no proper allocation of the data formats and extraction.***

***Index Terms*: *Virtualization,PVA,EDC,dynamic,cloud,data acommadation.***

## I. INTRODUCTION

Service oriented architectures are the underwater infrastructure to cloud services. Services once deployed they keeps gives the services to clients with proxy model infrastructure. This infrastructure will gives the services to clients in the form of the WSDL(Web services desctiptor language) as web stub as references to skeleton with SOAP protocol with XML communications between clients and service. Always the clients are refering to services unlike regular TCP/IP protocols. The published URL will be reffered by various client asynchronously so that virtualization can happen with respect lot of scenarios and parameters. These parameters can be variant with actual model development with IDE's. So cloudSim and glassfish with XFIRE will gives actual cloud implementations with one as simulation and other as live which can be published over internet.

Cloud computing is the computing resources with the combination of hardware and software which are delivered as a service over an internet[1]. The clouds provides many services for the user namely software as service (SaaS), infrastructure as a service (IaaS), platform as a service (PaaS)[2].

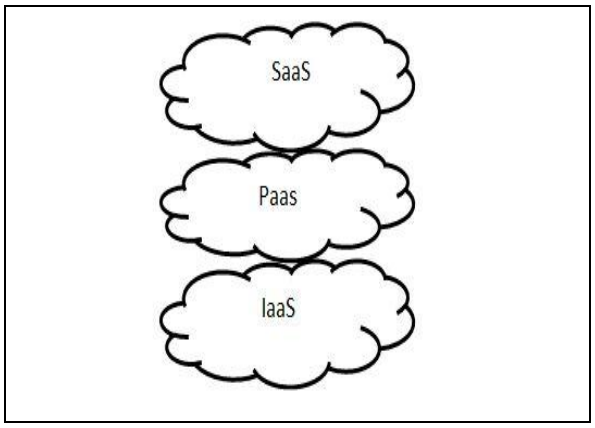


**Fig 1. cloud service architecture**

The figure 1 shows the cloud service architecture. In cloud computing the virtualization technique is used to proved user virtual operating system, virtual hardware, virtual application, virtual storage, virtual memory. Almost all Cloud providers use virtualization to provide economies of scale and optimal distributed architecture. Virtualization has its own set of security issues [3][4].

## II. VIRTUALIZATION

Virtualization is a core technology for the cloud computing.The virtual machine is created over an existing machine is called as virtual machine or host machine it is referred as guest machine. Virtual machine is managed by firmware is called hypervisor[5]. It is the solution for the some of the computing namely hardware, runtime environments, storage and networking.

The example of virtualization is hardware virtualization. The virtualization needs increased performance and computing capacity, under utilized software and hanrdware, lack of space and so on.

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The virtualizaton will increase security for data, manage the execution and also easily portable. In managed execution the virtualization environment implements sharing, emulation, isolation and aggregation. The virtualization layer is responsible for recreating the same or different kind of environment.

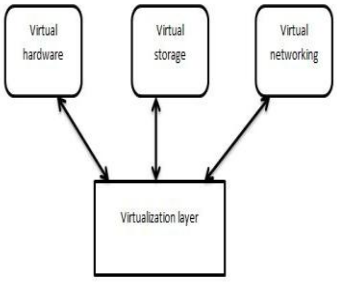


**Fig 2. virtualization layer**

The figure 2 shows the virtualization layer the virtualization layer provides virtual hardware, virtual storage and virtual networking for users to use virtual technologies. Virtualization includes some techniques they are full virtualization, para virtualization and partial virtualization. Virtualization vector provides applications, programming languagues, operating system and hardware. It covers emulation technique that is used in different ares of computing. Execution virtualization technique has two levels that is process level and system level technique. The process level technique is implemented at top of an existing operating system. The system level technique is implemented at hardware with or without minimum requirement of existing operating system.

## III. LITERATURE SURVEY

### A. *An overview of virtual machine placement schemes in cloud computing*

This discussions with different scenarios of deploying various virtual machines over clouds. Moreover, lot of research happened on this issue of deploying the virtual machine in cloud service with dynamic properties with proper management of incoming data stream of virtual machine and already deployment stream is ignored. A proper implementation methodology of cloud infrastructure management system under various stream of continuous neiboring requests have been under process in this work. Altogether an effectivemethodologies which is called as backward speculative deployment is also discussed. BSP[6] method is discussed in two different methods. Managing the stream of placement and deployment requests and regular optimization are two attributes of BSP model which are continuously debated in this work. Related authors used generic MIP algorithm to analysis and comparison of the results. Which shows the advantages of BSP method. Mainly the authors have continuous glance of historical requirement traces of placed VMS and BSP projects, and discovered VMS inter relation aspect is best efficient. Pitchai et al proposed algorithms to provide security in cloud data [11] and explained models for online education [12] and grievance system [13] using cloud.

### B. *Analyzing the Impact of Virtualization on IT Infrastructure Using the ITIL Framework*

This author debated on various virtualization methodologies and their advantages. Authors are also figured and debated on various benefits of virtualization on cloud computing domain. ITIL and information technology standard[7], utilized for analysis on virtualization methodologies and to conclude the benefits of virtualization on IT sector. Authors also concluded virtualization will result with enhanced Cloud infrastructure and with proper improved IT clouds services. This can lead the proper benefits to IT companies with proper reduction of the infrastructure costs and deployment cost. Improved cloud services also figured as much benefits of virtualization. Thiscan be decided from the output that virtualization will give result in improving of cloud infrastructure and to make new sophisticated and dynamic cloud services.

## IV. VIRTUALIZATION IN CLOUD COMPUTING

This work starts with basics of cloud infrastructure with proper deployments Next to that the main method of virtualization is vigorously debated with preceding attributes[8] concepts of services and types of virtual service and various types of virtualization, which can lead the various benefits of virtualizations methodologies and advantages of cloud services been discussed. At the end future benefits of virtualization and cloud infrastructure and their challenges. Authors have discussed on various challenges with respect to methods to cloud computing like effected service application, bulk data loss and data integrity is debated.

### A. *Virtual Machine selection and Placement for dynamic consolidation in Cloud computing environment*

Implemented the work on chosen virtual machine and its deployment for proper consolidation in cloud service environment. These authors discussed about the consolidation is an best way to reduce the energy and increase physical resource utilization. Authors debated the different aspects can lead the violated of service level of mutual agreement delivered by cloud service providers and to users. To solve the issue, authors have proposed taking CPU utilization and also allocation of variable which can be represented as degree of deployed resource satisfaction[9] in choosing the virtual machines. Authors also faced the better results than the existing models. The model proposed by the authors is not only in terms of virtual machine migration time but also service level agreement violation and energy consumption. These authors exhibited the best approach for auto consolidation in cloud service environment and methodology which supported by data gathered by cloud simulations.

### B. *Live Migration of Virtual Machines*

Author implemented this work on live virtualization. This work initiated with proper debate on migration and benefits. The workers figured out that migration OS is useful for super administrators because it gives lot of benefits in segregating the hardware and software[10]. This also benefits to in data load balance, infrastructure maintenance and fault management. This paper also shows the live virtualization can be utilized to get the best service low service downtime.

Authors also debated proper infrastructure for proper migration of OS with current running status without disturbing the live constraints. Here authors used different experimental scenarios which gave that by collaborating LIVE virtualization int Xen virtualization monitoring, so rapid changes in workloads with in the cloud clusters and data centers can be enabled.

### C. *Implementation methodologyand flow of data typestrategy*

Dynamic number of clouds with proper allocation of the virtual machines will be allocated(attached to capacities with respect to cloud simulator capacity). These capacities are cloudlets generated vritual machine's capacities. Each and every VM will be with variant storage cpacities. Whose capacities can lead to migration with the proper and concrete cause as data loss. The data loss or ignorance can happen only when the acommadation of the data cannot happen with the VM. Simulation wise the virtualization can happen with proper concrete coz of the accepted data from the concurent clients with proper allocation of new vritual machine under the selected cloud only. Collaborative clouds can have mutual understanding of share the data without virtualization and if necessary with least case scenario.

## V. PROPOSED FLOW WTH THIS WORK

Our previous work is not based on the various types of the file data and size. All multimedia files are getting rejected so this work implemented virtualization personel api to read the all the file contents in the form of the general data which is of extraction api. This works for all most all the multimedia data and .exe and .ini is negotiation.
The used data type file are as follows:

- .Doc: document type file where the user can read and write easily in MS word.
- .Jar: it is not opened until the user have specifed software to read the jar files in any system
- .GIF: the movement of the picture in sec type file format.
- .PDF: portable document file where the user can only read the data but connot modify it.
- .MP3: music file
- .ZIP: where allmore number file file merged under a one folder and zipped to reduce the folder size.
- .txt: text formate file.
- .JPG: image type file.

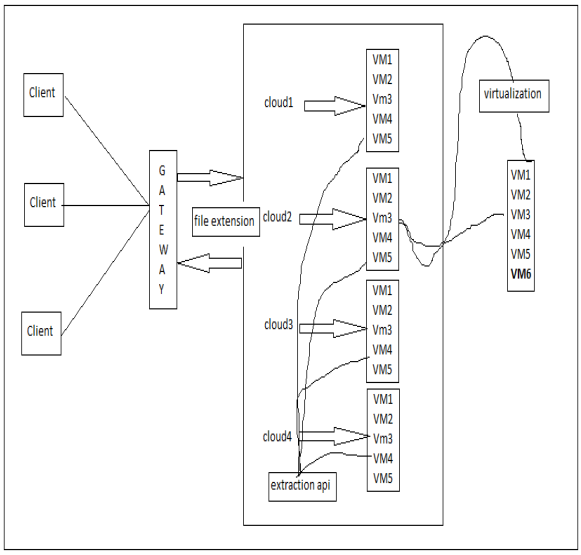


**Fig3: Virtualization with PVA**

Figure3 shows over all architectural flow of the entirve PVA dashboard. This each cloud(variant sizes) will be allocated with 5 virtual machines with variant capacities. Once the user selects the data the cloud wil check the extension with filteration model and PVA api extracts the data with 2 model way. One is file extension extraction and other is file data with API. After the data extraction of the file and depends on the cloud the data will be extracted and checks the allocated cloud's virtual machine's capacities for virtualization and virtualization done with respect to proper extension too.
Algorithm:
Step1: START
Step2: create fixed threshold virtual machine with limited capacity.
Step3: check the user selected data type from VM1 to VM4.
Step4: if the selected data matches allocate with matched virtual machine.
Step5: end if
Step1: if not virtual migration takes place create new VM.
Step5: end if not
Step6: END

## VI. PROPOSED METHODOLOGY

On the top of the hardware the execution virtualization is implemented they are operating system, application statically or dynamically linked to an application image. Virtualizing an execution environment at different level with reference model which defines interfaces between the levels of abstraction that hides implementation details. The virtualization layer is lies between the hardware and the software. Virtual machine manager has three modules they are dispatcher, allocator, and interpreter. Dispatcher is responsible for reroutes the instruction issued by the virtual machine instances to one of the two modules. The allocator is responsible for providing the virtual machine for the system resource. The interpreter is responsible for virtual machine execution. Virtual machine threshold is calculated based on bandwidth and capacity.

### A. Working Mechanism

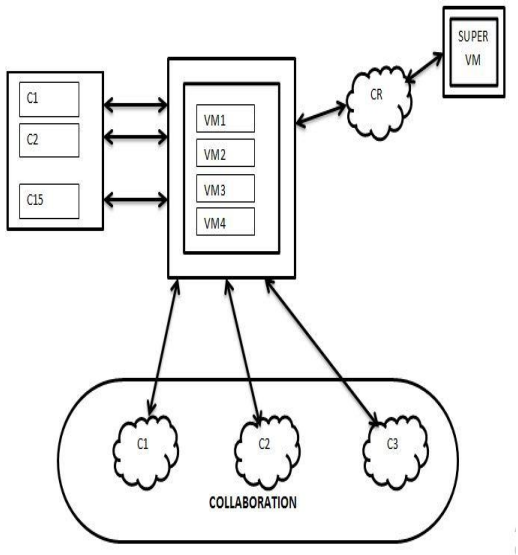


**Fig 5. System Architecture**

In the figure 5 we can see the overall architecture. In cloud platform there will be n number of clouds and each cloud have respective virtual machines. If the user want to select data in the cloud, it provides virtual machine which is having some limited threshold for every user selected data it accommodate virtual machine which is collaborated, if the virtual machine is not collaborated then it has to create new CRwith super virtual machine to provide data accommodation for user selected data.The above figure 5 shows the cloud virtualization. From C1 to C15 are the clouds. From V1 to V4 are the virtual machines. C1, C2 and C3 are the collaborated. Virtual machine has collaborated with C1, C2 and C3. All virtual machine is managed by virtual machine manager.

### A. *Algorithm Pseudocode*

$\sum C_i$=initialization of clouds
$\sum V_m$=initialization of virtual machines
i=C1,C2C3,….,C15//C is clouds
m=VM1,VM2,VM3,VM4//VM is virtual machine
π=Threshold initialization
C(C1,C2,C3,..,C15)=ALLOCATION(VM1,VM2,VM3,VM4)
$\Pi$=ASSIGN($\sum C_i$ , $\sum V_m$) //limiting threshold for each virtual machine and cloud
START
SELECT(DATA)
ASSIGN C1← (VM1,VM2,VM3,VM4) // similar to C2,C3,…C15 assign VM
FOR each $C_i$ having four VM
IF data is collaborated
[$\sum C_i$ , $\sum V_m$]=COMPARE(DATA)
$\sum V_m$=EXTRACT($\sum C_i$) // accommodate data in cloud
END FOR
IFNOT
CREATE(CR) // accommodate data in super virtual machine
CR=SVM// SVM is super virtual machine
END IF
END IFNOT
END

### B. *Experimental Analysis*

The datamigration and management is done by virtual machine in a cloud. It takes less amount of time to migrate the data in the cloud through virtual machine day to day activitiesoftheuserdataismigratedacrossthecloud.Whenthedataisnotaccomodated then super virtual machine created in cloud and accomodates data. The user executes the project by using the dashboard as shown in figure 6.

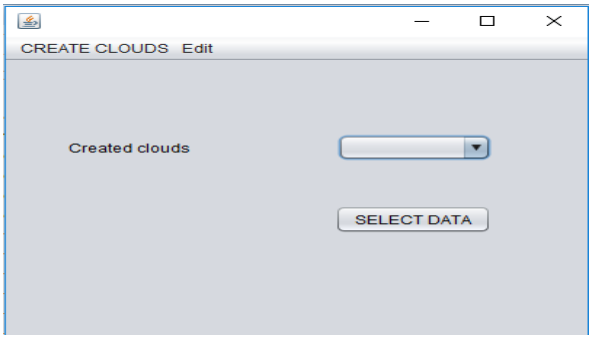


**Fig 6 User Dashboard**

User creates the required number of clouds as shown below figure7.

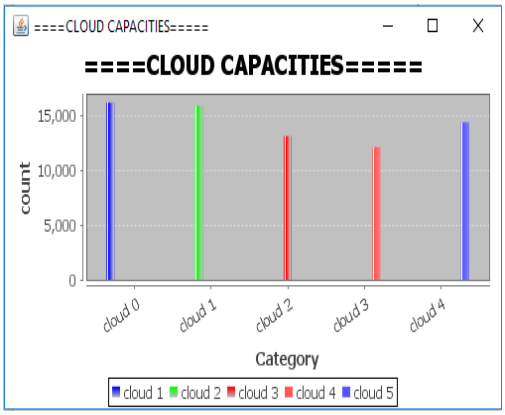


**Fig 7: Number of Clouds**

The selected cloud capacities will be shown in below figure 8

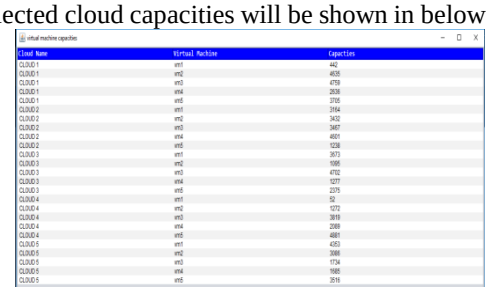

**Fig 8:** List of all Clouds Capacities The capacities of all the clouds is shown in the form of graph in figure **9.**

We can observe the distributed capacities of cloud in graph as shown in figure 10after uploading data in selected cloud.

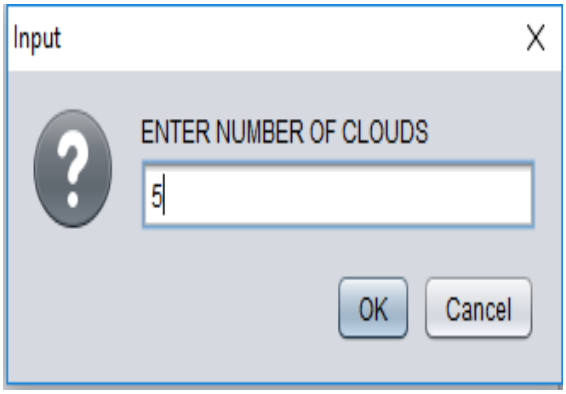


**Fig 9:** Capacities of all Clouds

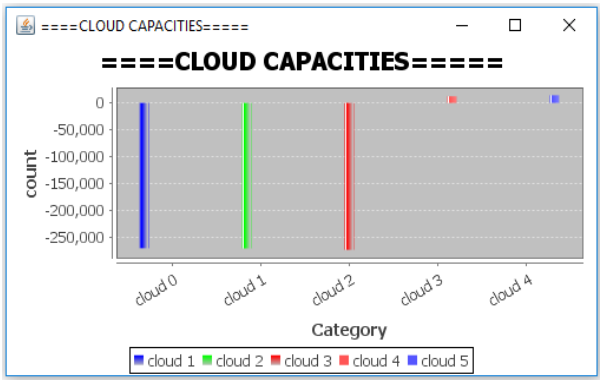


**Fig 10: Capacities of Clouds after distribution**

## VII. CONCLUSION

To get benefit in the business we are moving towards virtualization. Virtualization is a technique used in cloud computingn to create multiple operating system, virtual hardware, virtual memory, virtual storage area to reduce cost and to increase the performance of the hardware or sofware. Virtualization helps to provide IT resouces to get benefit in business and reduce the cost the physical instance. Running many resources or operating system in single machine is virtualization.In this paper we are using clouds and for each cloud there will be a four virtual machine. Every virtual machine will accommodate the user selected data and which is collaborated with clouds. Every virtual machine cloud have some limited threshold. If the virtual machine is not collaborated then it will create new CR. The CR creates new super virtual machine for storing the user selected data across the cloud.The proposed approach can be used as an effective solution for VM Migrations and data migration in cloud environment. **Future work**:This work can be extended with anonymous clouds as cloud simulator is with limited with the features as only id and capacity allocations. But this work can be extended with the elasticity property as self virtualization API can be extended with dynamic allocation of virtual machine allocation with LOG mechanism to reduce the communication with respect to duplication. And data broad cast in the virtualization only in the form of mutual authentication between the clouds in the form mutual key authentication sharing mechanism. This key will be generated once the data is getting migrated with virtualization across the clouds.

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