



MIGRATING TOWARDS DATA AS SERVICE IN CLOUD COMPUTING

¹ Isha Shankarwar, ² Pallavi Sankhe, ³ Sheetal Patel, ⁴ Rajashree Gohil, ⁵ Prof. Sowmiya Raksha Naik, ⁶ Prof. K. K. Joshi

Email:ishashankarwar@gmail.com,257pallavis@gmail.com,sheetalspatel@hotmail.com,shreeraj993@gmail.com,sraksha@vjti.org.in kkjoshi@vjti.org.in

¹²³⁴⁵⁶Veermata.Jijabai Technological Institute, Matunga, Mumbai

Department of Computer and Information Technology

Abstract—Cloud Computing is growing rapidly and clients are demanding more services and better results, it has become a very interesting and important research area for resource, platform, infrastructure and data management . Many technologies are suggested to provide and implement various components of an organization as a service. The purpose of this paper is to elucidate the idea of the cloud and to identify the benefits of data as a service in private cloud. Data as a service (DaaS) is essential service model in cloud environment.

Keywords: Cloud Computing, DaaS.

I.INTRODUCTION

Cloud computing is a result of evolutionary computing changes over the years

A. Mainframe Computing

In the past companies used to rely on mainframe architecture (in one location, computer stored data and ran applications) to store their information. All software applications used to run on the mainframe hardware. In mainframe it was relatively easy to assist multiple applications, the problem was maintaining the huge chunk of hardware which was costly and inefficient. The major issue with mainframe is the maintenance. Maintaining the hardware and

software requires a lot of resources like physical space, power supply, man- power, technology and cooling mechanisms. Also since the mainframe is situated in one location the efficiency degrades when coupled with networked architecture

B. Distributed Computing

With lower computing costs and ease of access to high powerful applications, people started switching to distributed computing. In distributed computing the mainframe was replaced with cheaper computers each with data storage and application executing capabilities. This computing solution was relatively easier to manage as each computer works independently. However it is difficult to coordinate between computers in distributed computing.

C. Grid Computing

At the elementary level, grid computing can be defined as a network of computers where each computer can have an access of every other computer's resources. The users can access processing power, storage and memory of other computers in the given network for specific tasks. A grid computing system is basically an agglomeration of identical tasks executing on the Same operating system. In grid computing, CPU scavenging and shared computing create a grid from unused resources in a network. This makes use of desktop computer instruction cycles

which are unused when no execution work is done[2].

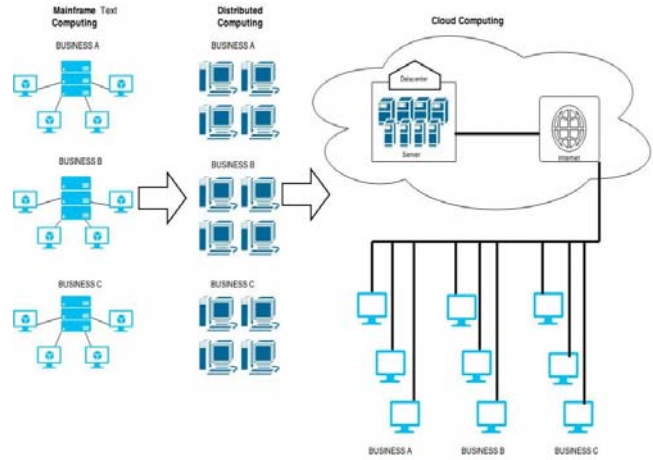
D.Cloud Computing

Cloud computing has become very prominent in the con- temporary years. The Cloud provides a variety of services for its users such as Software As A Service, Platform As A Service, Infrastructure As A Service which provides Hardware As A Service and also Data As A Service. One of the main advantages of cloud is that it provides ease and convenience in accessing the data[9]. Recently, there has been an increase in the number of private organizations making use of private cloud for smart and efficient data access and usage. But along with these, there exist many problems in the Cloud which needs to be improved such as security of the Cloud, compatibility issues, compliance of the cloud etc. However, there still lies a problem with those clouds offering Data As A Service which is improving the techniques to make the data accessible easily and quickly. At, the same time, it should be taken care that only the authorized and permitted users are allowed to view, modify and delete the files[10].

II. CLOUD PRELIMINARIES

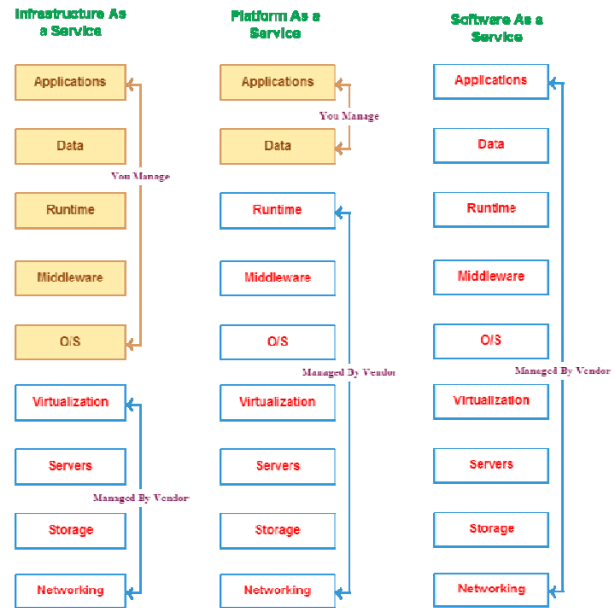
A. Evolution of Cloud

Cloud computing luckily for us, today we have the cloud, which offers a slew of advantages to the computing world. As a very general definition, the cloud is a shared network of computers through which people and companies store data and run software. At the hub, the cloud is actually a data center, which is a physical building consisting of hardware (computers) and software running on that hardware, connected by a channel of pipes and routed to many, many computers[1]. Cloud service providers, who maintain and manage these networks, offer services rather than products in that clients are allowed to access and use the cloud, but they do not own any part of it; there is no hardware or software installation[12].



Fig(1): Evolution of Cloud.

Levels of Cloud Services Cloud providers offer multiple levels of services, depending on the client’s needs.



Fig(2): Types of Services offered by cloud

Level 1: Infrastructure as a Service (IaaS) The elementary level of cloud services is cloud infrastructure. Clients using cloud infrastructure basically buy an operating system the cloud provider manages the systems CPU, memory and pro- cessing. Everything else is up to the client to configure and maintain. This type of cloud service is known as Infrastructure as a Service (IaaS)[7].

Level 2: Platform as a Service (PaaS) The next level of cloud services is cloud platform. Providers of cloud platform deliver a more comprehensive environment in which the client can develop and deploy applications. The client only needs to worry about designing and implementing software specifically for the application. This branch of cloud computing is called Platform as a Service (PaaS) [7].

Level 3: Software as a Service (SaaS) The third level of cloud services is cloud applications. The cloud provider hosts the application, so the client is simply a user of the application. The data associated with this software is stored in the cloud, so the client can interact with the application (also known as a web app) through their web browser. This type of cloud computing is called Software as a Service (SaaS)[7].

B. Data as Service

Data as a Service (DaaS) helps to access data which is critical for business in a secure, cost-effective and timely manner. DaaS works on the lines that important and meaningful data can be transported to consumers on demand without the interference of institutional and geographical boundaries between customers and service providers. DaaS removes redundancy and lowers affiliated expenses. It stores significant data in a single location and permits multiple users to use/modify data using a single point of update. First DaaS was used in web mashups, now this strategy is used by commercial and corporate organizations

C. Benefits of Data as Service

Agility: The movement of customers is not restricted because data access is simple plus one doesn't need vast knowledge of the concealed data. The changes are minimal for implementation of different data structures and location requirements.

Cost-Effectiveness: The service providers can construct the base with data professional and the presentation layer can be outsourced. This makes the user interface cost-effective and the requests of changes at the presentation layer very easy to implement.

Data Quality: The control of data access is done with data services which help to improve data quality by using the single point of updates. First these services are tested comprehensively and then they undergo regression testing.

D. Drawbacks of DaaS

The drawback is that the customers will have to rely on the service providers for privacy, security and server downtime avoidance. In DaaS the data operations are restricted READ operations and data is not allowed for download. The other operations like create, update and delete cannot be performed

E. Pricing models of DaaS

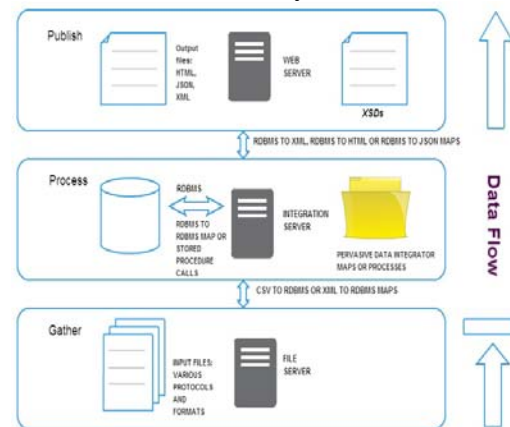
The DaaS providers demand payment from their customers based on two pricing models.

Volume based models: The providers charge on basis of the quantity of data the customers want to use or the number of calls the customer makes to the API.

Data type based Model: The providers charge depending on the type of data used. Example: financial, geographical, historical data.

F. Architecture of DaaS

DaaS gathers all the input files through different formats and protocols. It then processes all the files with the help of RDBMS. After processing it then publishes the HTML, JSON or XML file through the web server. The file transfer server and integration server forms the intermediary.



Fig(3): Architecture Of DaaS

Types of Cloud

Public Cloud: Public cloud services are available for public users where users from all over the internet can access the resources. They are very highly scalable and have moderate reliability. The security of the public cloud totally depends on the service provider and this could be a disadvantage sometimes with all people accessing the same resources. The performance is low to medium and it is cheaper than the IT infrastructure which was traditionally used.

Private Cloud: Private cloud is build up with existing private infrastructure. This type of cloud has some authentic users who can dynamically provision the resources. Scalability is limited but reliability is very high. There is very high class security. Performance of private cloud is better than public cloud. Owning a private cloud is expensive compared to public cloud.

Hybrid Cloud: Whenever private cloud resources are unable to meet user's quality-of-service requirements, these systems partially composed of public cloud resources and privately owned infrastructures, are created to serve the organizations needs. These are often referred as hybrid clouds, which are becoming a common way for many associates to start examining the possibilities offered.

Community Cloud: Different types of cloud integrated together to meet a common or particular need for some organization is called as a community cloud. Scalability is limited and reliability is very high. Security offered is high and performance is very good. Owning a community cloud is more expensive than owning a private cloud.

H. Benefits of Cloud

Cloud requires low investment where customer does not need to purchase the resources, that's why it's the favorite of startup companies as they do not need heavy investment in setting up an IT firm. It removes IT infrastructure management overhead and provides immediate access to a wide variety of applications and services. Elasticity plays an important role in the popularity of cloud

where the computing demand grows and reduces dynamically according to the present resource requirements. Cloud leads to green computing as it results in reduction of power consumption.

I. Concerns Regarding Cloud

The blocks in the path of cloud transformation in companies are lack of control, security, reliability and interoperability which the cloud provider must address. Solutions are needed to solve these problems in accordance to the needs of the users. The cloud infrastructure to be used should be secure, security must be up to date and must be backed up for recovery[6].

J. Cloud Computing Architecture

Cloud computing architecture consists of the elements and sub-elements required for cloud computing. These elements typically consist of a front end platform (for eg. thick client, thin client, mobile device), back end platforms (for eg: servers, storage), a cloud based delivery, and a network (for eg.: Internet, Intranet, Intercloud). When these elements are put together, cloud computing architecture is made[4]. **Thick Client:** It is a computer (client) in clientserver architecture or networks that typically provides rich functionality independent of the central server. It is also known as a fat client or heavy, rich, or thick client

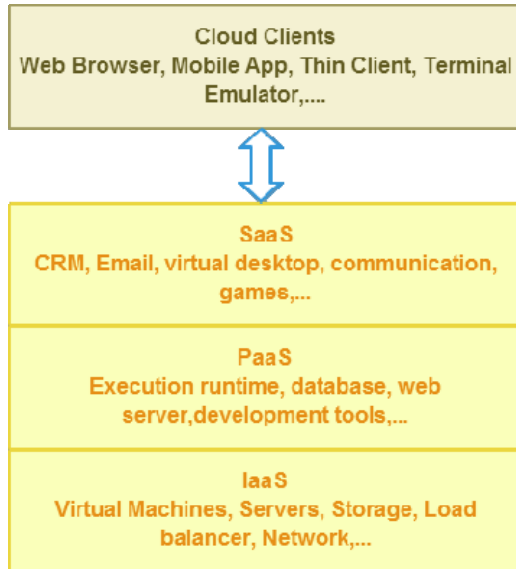
Thin Client: It is a computer or a computer program that depends heavily on another computer (its server) to fulfill its computational roles.

Mobile device: It is basically any handheld computer which is enabled with mobility. It is designed to be extremely portable, often fitting in the palm of your hand or in your pocket. This portable computer will have same services as given by any non portable device. These devices are popular nowadays

Servers: It is a running instance of an application which is capable of accepting requests from the client and giving responses accordingly. Servers can run on any computer including dedicated computers, which

individually are also often referred to as “the server”.

Storage: Computer data storage, often called storage or memory, is a technology consisting of computer components and recording media used to retain digital data. It is a core function and fundamental component of computers. Data can be stored using different technologies and devices.



Fig(4): Architecture Of Cloud.

III. CONCLUSION

Cloud Computing is in vogue today. It is being used in various commercial organizations for reduced cost of computing, scalability and flexibility. Cloud providers offer various services in the form of applications, platforms and infrastructure. Cloud also has its classification into public, private, hybrid and community cloud according to the nature of services being implemented. Cloud facilitates its users to store data and install applications in its store which can be accessed and update from anywhere. Cloud Computing also leads to reduced carbon footprints as the infrastructure otherwise required is minimal. The main obstruction in the way of cloud computing is security and privacy problems. Efforts are being made to resolve these issues so that one can have a carefree cloud

experience. DaaS is now fast coming into the cloud business with its distinctive advantages over others.

REFERENCES

- [1] Stimulation and Analysis of Cloud Environment-Prof. S. M. Ranbhise, Prof. K. K. Joshi. International Journal of Advanced Research in Computer Science and Technology (IJARCST 2014), Vol. 2, Issue 4, ver 2 (Oct. - Dec. 2014)
- [2] Cloud Computing: Issues and Challenges-Dillon, T. Digital Ecosystem and Bus. Intell. Inst. , Curtin Univ. of Technol. , Perth, WA, Australia Chen Wu ; Chang, E.
- [3] Cloud computing architectures-Tianfield, H. School of Engineering and Built Environment, Glasgow Caledonian University, Glasgow, UK
- [4] Toward cloud computing reference architecture: Cloud service management perspective -Amanatullah, Y. Hochschule Fulda, Angewandte Inf. , Fulda, Germany Lim, C. ; Ipung, H. P. ; Juliandri, A
- [5] Cloud Computing education strategies Breivold, H. P. ABB Corp. Res. , Malardalen Univ. , Vasteras, Sweden Crnkovic, I.
- [6] Cloud computing - concepts, architecture and challenges Jadeja, Y. ; Dept. of Computer Engineering and IT, Ganpat Univ. , Kherva, India ; Modi, K.
- [7] A survey of cloud computing taxonomies: Rationale and overview- Poulash, F. Computer Science Department, University of Memphis, Memphis, TN, USA Abuhussein, A. ; Shiva, S.
- [8] Cloud computing for future generation of computing technology- Islam, S. S. Dept. of Electr. and Electron. Eng. , Int. Islamic Univ. Chittagong, Chittagong, Bangladesh Mollah, M. B. ; Huq, M. I. ; Aman Ullah, M.

- [9] The Characteristics of Cloud Computing-
Chunye Gong Dept. of Comput.
Sci. , Nat. Univ. of Defense Technol. ,
Changsha, China Jie Liu ; Qiang
Zhang ; Haitao Chen ; Zhenghu Gong
- [10] Cloud Computing: The Fifth Generation of
Computing- Rajan, S. Nat.
Inf. Centre (NIC), Gov. of India, Naharlagun,
India Jairath, A.
- [11] Cloud Computing: Opportunities and
Challenges- Sadiku, M. N. O.
Electr. Eng. , Prairie View A and M
University, Prairie View, TX, USA Musa, S.
M. ; Momoh, O. D.
- [12] Cloud computing and its key techniques- Xu
Wang Software Sch. , Xiamen Univ. , Xiamen,
China Beizhan Wang ; Jing Huang