HISTORICAL BACKGROUND OF CLOUD COMPUTING, STUDY OF ITS STANDARDS, ITS COMPUTING SOLUTIONS AND ALSO STUDY OF ITS FUNDAMENTALS CONCEPTS USED IN COMPUTER SCIENCE AND ELECTRONICS ENGINEERING

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ABSTARCT: -In this research paper we are going to discuss historical background of cloud computing various standards used in cloud computing later we discuss various computing solutions and also its fundamentals. We found that cloud computing is considered to be best technology in it sectors these days The goal of cloud computing is to apply traditional supercomputing, or high-performance computing power, normally used by military and research facilities, to perform tens of trillions of computations per second, in consumer-oriented applications such as financial portfolios, to deliver personalized information, to provide data storage or to power large, immersive computer games. For this cloud computing uses networks of large groups of servers typically running low-cost consumer PC technology with specialized connections to spread data-processing chores across them.

KEYWORDS: - Software-as-a-Service,Grid computing, Service Level Agreements

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1 INTRODUCTION

Cloud computing has large number of benefits and result of this it implies in it sector at a rapid speedCloud computing can be cheaper, faster, and greener. Without any infrastructure investments, you can get powerful software and massive computing resources quickly—with lower up-front costs and fewer management headaches down the road.Cloud computing is a type of computing that relies on sharing computing resources rather than having local servers or personal devices to handle applications[1].

Below diagram shows how our environment gets polluted with viruses. In cloud computing, the word cloud is used as a metaphor for "the Internet," so the phrase cloud computing means "a type of Internet-based computing," where different services -- such as servers, storage and applications -- are delivered to an organization's computers and devices through the Internet.Figure1   shows cloud computing environment .Cloud computing is comparable to grid computing, a type of computing where unused processing cycles of all computers in a network are harnesses to solve problems too intensive for any stand-alone machine[2].

Figure1 cloud computing environment

2 A BRIEF HISTORY OF CLOUD COMPUTING

Clod computing has its special market these days. cloud computing" concepts date back to the 1950s when large-scale mainframes were made available to schools and corporations. The mainframe's colossal hardware infrastructure was installed in what could literally be called a "server room" (since the room would generally only be able to hold a single mainframe), and multiple users were able to access the mainframe via "dumb terminals" – stations whose sole function was to facilitate access to the mainframes [3].

Now we understand that Due to the cost of buying and maintaining mainframes, an organization wouldn't be able to afford a mainframe for each user, so it became practice to allow multiple users to share access to the same data storage layer and CPU power from any station. By enabling shared mainframe access, an organization would get a better return on its investment in this sophisticated piece of technology Figure2 shows Evolution of internet computing

It is clear that couple decades later in the 1970s, IBM released an operating system called VM that allowed admins on their System/370 mainframe systems to have multiple virtual systems, or "Virtual Machines" (VMs) on a single physical node [4].

Now we know that the 1990s, telecommunications companies that had historically only offered single dedicated point–to-point data connections started offering virtualized private network connections with the same service quality as their dedicated services at a reduced cost.
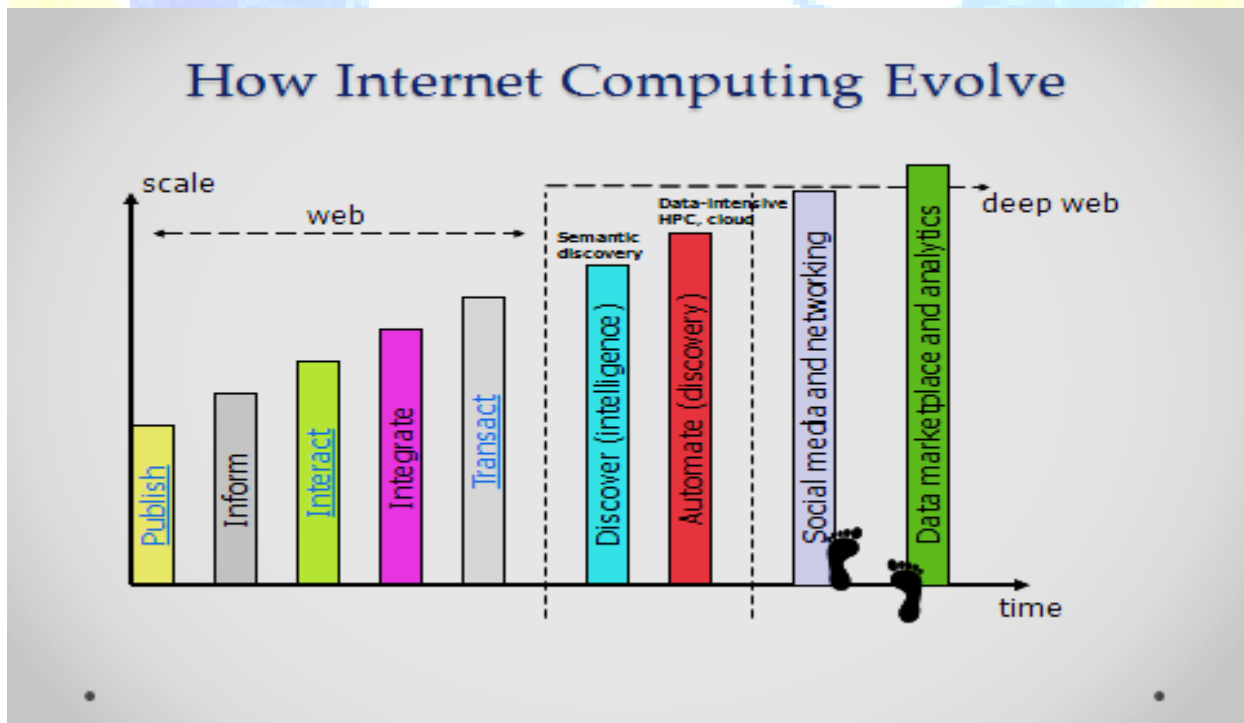

Figure2 Evolution of internet computing

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We find that If you were in the market to buy servers ten or twenty years ago, you know that the costs of physical hardware, while not at the same level as the mainframes of the 1950s, were pretty outrageous. As more and more people expressed demand to get online, the costs had to come out of the stratosphere, and one of the ways that was made possible was by … you guessed it virtualization. Servers were virtualized into shared hosting environments, Virtual Private Servers, and Virtual Dedicated Servers using the same types of functionality provided by the VM OS in the 1950s

Large number of market shifted from a belief that "these servers are expensive, let's split them up" to "these servers are cheap, let's figure out how to combine them." Because of that shift, the most basic understanding of "cloud computing" was born online. By installing and configuring a piece of software called a hypervisor across multiple physical nodes, a system would present all of the environment's resources as though those resources were in a single physical node.

Every technologies and hypervisors got better at reliably sharing and delivering resources, many enterprising companies decided to start carving up the bigger environment to make the cloud's benefits to users who don't happen to have an abundance of physical servers available to create their own cloud computing infrastructure.

Now all kinds of users could order "cloud computing instances" (also known as "cloud servers") by ordering the resources they need from the larger pool of available cloud resources, and because the servers are already online, the process of "powering up" a new instance or server is almost instantaneous.

In order for installing software on a cluster of machines to allow for users to grab pieces, we built a platform that could automate all of the manual aspects of bringing a server online without a hypervisor on the server. We call this platform "IMS." What hypervisors and virtualization do for a group of servers, IMS does for an entire data center.

At last we found that Without a hypervisor layer between your operating system and the bare metal hardware, your servers perform better. Because we automate almost everything in our data centers, you're able to spin up load balancers and firewalls and storage devices on demand and turn them off when you're done with them. Other providers have cloud-enabled servers. We have cloud-enabled data center

3 VARIOUS STANDARDS USED IN CLOUD COMPUTING

Various standards used will define that cloud computing is very rapid discovery that enhance it sectors The standards for connecting the computer systems and the software needed to make cloud computing work are not fully defined at present time, leaving many companies to define their own cloud computing technologies.

There are very large number of companies those are enhancing these technologies. Cloud computing systems offered by companies, like IBM's "Blue Cloud" technologies for example, are based on open standards and open source software which link together computers that are used to to deliver Web 2.0 capabilities like mash-ups or mobile commerce [5].

Financial matter is one of the major challenges. Cloud computing has started to obtain mass appeal in corporate data centers as it enables the data center to operate like the Internet through the process of enabling computing resources to be accessed and shared as virtual resources in a secure and scalable manner. For a small and medium size business (SMB), the benefits of cloud computing is currently driving adoption. In the SMB sector there is often a lack of time and financial resources to purchase deploy and maintain an infrastructure (e.g. the software, server and storage).In cloud computing, small businesses can access these resources and expand or shrink services as business needs change.

Now we understand that cloud computing is fastest technology. The common pay-as-you-go subscription model is designed to let SMBs easily add or remove services and you typically will only pay for what you do us Cloud computing is all the rage.

There are large numbers of technologists those have confusion and with growth of this they understand and consider best technology some analysts and vendors define cloud computing narrowly as an updated version of utility computing: basically virtual servers available over the Internet. Others go very broad, arguing anything you consume outside the firewall is "in the cloud," including conventional outsourcing

At last we find that Cloud computing is at an early stage, with a motley crew of providers large and small delivering a slew of cloud-based services, from full-blown applications to storage services to spam filtering. Yes, utility-style infrastructure [6].

4 TYPES OF CLOUD COMPUTING SOLUTIONS

Safeguard the business by ensuring enterprise-level standards for how systems are protected across your cloud environment. IT financial management Cloud computing comes in many different flavors depending on the intended usage. For instance, a manufacturing organization may use Infrastructure-as-a-Service to test a new product or code. Or a software company may deploy a software application in a Platform-as-a-Service cloud environment. Figure3 shows layer model of cloud computing [7] .

Application Service (SaaS)	MS Live, IBM, Google Apps; Salesforce.com Quicken Online, Zoho, Cisco
Application Platform	Mosso,Force.com, Engine Yard,Facebook, Heroku, AWS
Server Platform	GoGrid, RightScale, Linode
Storage Platform	Amazon S3, Dell, Apple

Figure3 cloud computing layer model

1 SOFTWARE-AS-A-SERVICE (SAAS)

Salesforce.com is by far the best-known example among enterprise applications, but SaaS is also common for HR apps and has even worked its way up the food chain to ERP, with players such as Workday. SaaS refers to the actual delivery model of applications across the Internet to end-users. A SaaS provider's backend platform is usually associated with a simplified, dedicated environment [8].

2 PLATFORM-AS-A-SERVICE (PAAS)

Cloud Infrastructure VMware offers customers two options for transforming the data center into a cloud environment that implements the software-defined data center (SDDC) architecture: PaaS provides the underlying hardware and software infrastructure configured and ready to go for application deployment [9]. A PaaS service typically includes a development tool so application developers can focus on design rather than management of the underlying infrastructure.

3 INFRASTRUCTURE-AS-A-SERVICE (IAAS)

Efficiently run your cloud with purpose-built tools to optimize performance, ensure security and rectify potential problems before users ever see them. Availability, disaster recovery and compliance IaaS supplies the entire underlying hardware and software infrastructure, excluding the operating system. IaaS typically relates to usage of physical server and storage capacity provided through virtual machines. Customers of IaaS are essentially renting space to load their preferred operating environment and applications.

5 CLOUD COMPUTING FUNDAMENTALS

For robust cheating detection, we further explore the algebraic property of matrix-vector operations and propose an efficient result verification mechanism, which allows the customer to verify all answers received from previous iterative approximations in one batch with high probability [10].

1 Virtualization

2 Define a Cloud

3On-Demand and Measured Usage

4Contemporary Cloud Computing Platforms and Cloud Services

5Cloud Service Owner Roles

6 Cloud Service Consumer Roles

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7Software as a Service (SaaS), Platform as a Service (PaaS)

8Combining Cloud Delivery Models

9Community Cloud Deployment Models

10Calculating Cloud and On-Premise Solution Costs

11Service Level Agreements (SLAs) for Cloud-based IT Resources

12 Calculating and Rating SLA Quality of Service Characteristics

CONCLUSION

In last we come to know that cloud computing technology is considered to be the technology that has special significance for evaluating different kinds of cloudso Several large Web companies are now exploiting the fact that they have data storage capacity that can be hired out to others allows data stored remotely to be temporarily cached on desktop computers, mobile phones or other Internet-linked devices. Many of the activities loosely grouped together under cloud computing have already been happening and centralised computing activity is not a new phenomenon Grid Computing was the last research-led centralised approach However there are concerns that the mainstream adoption of cloud computing could cause many problems for users Many new open source systems appearing that you can install and run on your local cluster

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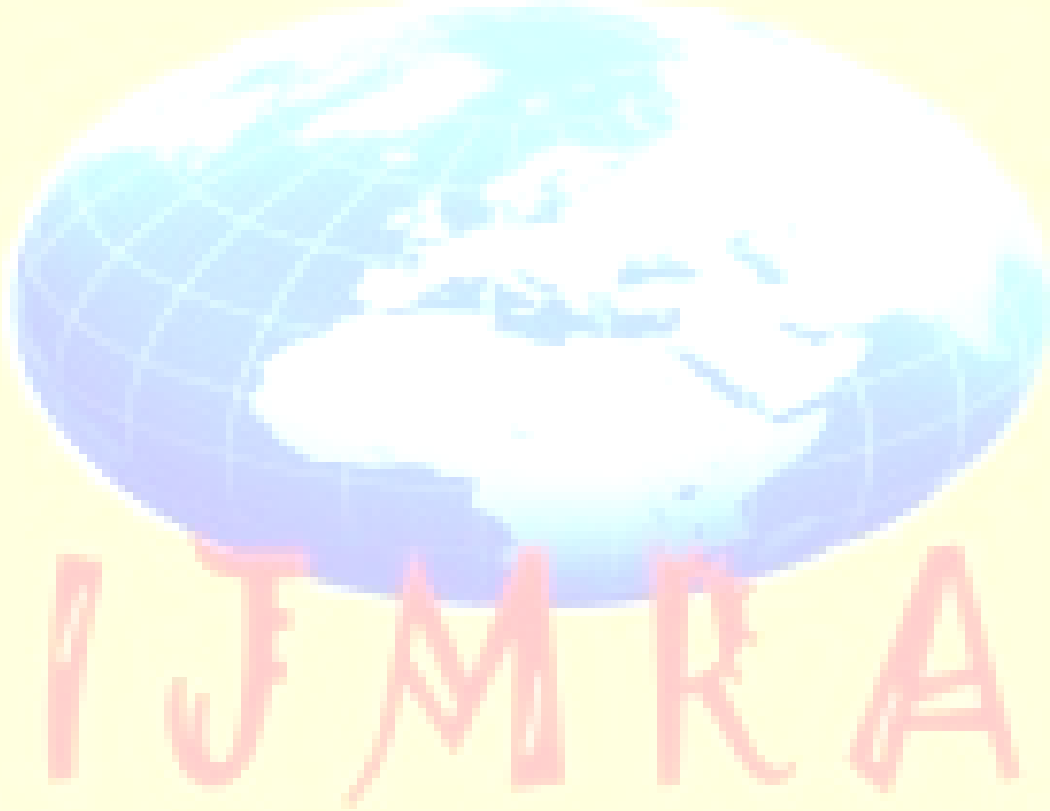
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