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Services of Cloud Computing

Ratna Kumari Challa¹

Assistant professor
Department of CSE
JNTUKCE, JNTUK
Kakinada , AP – India

Kanusu Srinivasa Rao²

Assistant Professor
Department of MCA
Yogi Vemana University
Kadapa , AP – India

Abstract: Cloud computing is referred to as simply “the cloud,” and is the delivery of virtual resources on-demand, everything from applications to data centers is done over the Internet on a pay-for-use basis. All the resources virtually pooled in the Cloud are offered to the customers as a service on demand basis. Cloud computing is Internet based development and use of Information/computer technology whereby dynamically scalable and often computing resources are provided as a service through the Internet. Users need not have knowledge of expertise in, or control over the technology infrastructure in the cloud that supports them. This paper presents the various services offered by the Cloud Computing. The services of the cloud computing PaaS, SaaS and IaaS are important basic services, along which some other services of the cloud computing are also presented.

Keywords: Cloud Computing, pay-for-use, virtual resource, Data Centers, PaaS, SaaS, IaaS.

I. INTRODUCTION

The definition of the Cloud Computing is broad enough to cover everything such as web search and photo sharing to social networking etc. Perhaps the key point is simply that cloud computing resources should be accessible by the customers/end users anytime, anywhere, and from any platform over internet on pay-for-use basis. Broadly, the cloud can be described as on-demand computing, fix anyone with a network connection. Access to applications and data anywhere, anytime from any device is the potential outcome.

The cloud refers to wide – area networks, generally the intent from which remote computing resources are shared as shown in the Fig 1.1. The cloud reduces costs and complexity and provides scalability. The biggest advantage that the cloud brings is to reduce costs and improve efficiency. An institution can rely on the ‘pay-as-you-go’ characteristic of the three pillars of cloud: PaaS and Saas. Ease of maintenance increase efficiency as the pain of maintaining the software is now shifted to the cloud service provider.



Fig 1.1. Cloud Computing Model

Cloud computing is a model for providing computing power as services, on-demand network access to a shared pool of configurable computing resources such as networks, servers, storage, applications, and services that can be rapidly provisioned and released with minimal management effort or service provider interaction.

Cloud computing provides computation, software, data access, and storage services that do not require the knowledge about the physical location and configuration of the system that delivers to the end user as a service on pay for use basis. This concept resembles to the concept of using the electricity grid, where end-users consume power without needing to understand the component devices or infrastructure required to provide the service.

Cloud computing describes a new supplement, consumption, and delivery model for IT services based on Internet protocols, and it typically involves provisioning of dynamically scalable, often virtualized resources and enabling convenient to access to the IT services. It is a byproduct and consequence of the ease-of-access to remote computing resources and sites provided over the Internet. This frequently takes the form of web-based tools or applications that users can access and use through a web browser as if they were programs installed locally on their own computers. Typical cloud computing providers deliver common business applications online that are accessed from another Web service or software like a Web browser, while the software and data are stored on servers.

Cloud computing customers do not need to own the physical infrastructure; rather they use the resources from a third-party provider on rental basis. This helps them to avoid huge effort for the setup of the infrastructure. The End-user consumes the resources as a service and pay only for resources that they consume. Most cloud computing infrastructure consists of services delivered through common centre and built on servers. Sharing resources amongst can improve, as servers are not unnecessarily left idle, which can reduce costs significantly while increasing the speed of application development.

II. CLOUD COMPUTING SERVICE

Today, for the most part, IT must plug into cloud-based services individually, but cloud computing aggregators and integrators are already emerging.

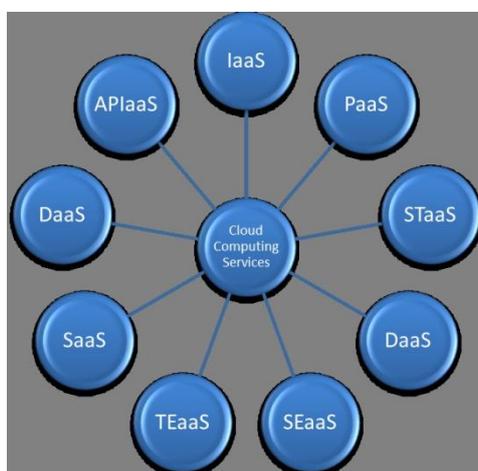


Fig 2.1 Cloud Computing Services

Cloud computing is at growing stage, and is come into exist in the various areas of providers large and small delivering a slew of cloud-based services, from full-blown applications to storage services to spam filtering. Fig 2.1 shows the various services offered by the Cloud Computing.

2.1 IaaS: INFRASTRUCTURE AS A SERVICE

The most important basic cloud service model is IaaS. IaaS offers Computers in both physical and virtual machines and other resources-hypervisors such as Hyper-V, Xen, KVM, VMware ESX/ESXi, runs the virtual machines as guests. Hypervisors within the clouds from as pools to provide a support to the large number of virtual machines and the ability to scale

the services shrink and expand according to the end users varying requirements. IaaS model of the clouds often offer additional resources such as a virtual-machine disk image library, file-based storage, load balancers, firewalls, IP addresses, virtual local area networks (VLANs), and software bundles. IaaS-cloud providers offer these resources to the end users on-demand from their large pools installed in data centers.

To deploy the applications, the end-user do not need to create a infrastructure, instead cloud users install operating-system images and their application software on the cloud infrastructure without creating his own infrastructure. In this model, the cloud user patches and maintains the operating systems and the application software. Cloud providers typically bill IaaS services on a utility computing basis cost reflect the amount of resources allocated and consumed.

2.2 PaaS: PLATFORM AS A SERVICE

In the PaaS model, cloud providers create a platform and maintain and deliver a computing platform to the end users, which include operating system, database, compiles, programming language execution environment, and web server. Application developers and independent Software vendors (ISV) can develop their applications and run their software solutions on a cloud platform without the cost and complexity of buying and managing the underlying hardware and software layers. PaaS provides all the computing facilities required to support the complete life cycle of building and delivering web applications entirely on the web.

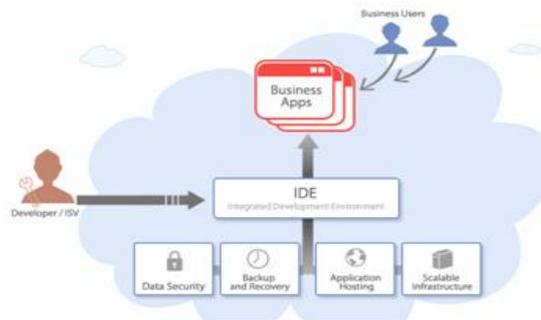


Fig 2.2 Platform as a Service Model

PaaS enables application developers and ISV's to create custom web applications and deliver it quickly. With some PaaS offers like Windows Azure, the underlying computer and storage resources scale automatically to match application demand so that the cloud user does not have to allocate resources manually.

2.3. SaaS: SOFTWARE AS A SERVICE

In the Software as a service (SaaS) model, end-users are provided access to application softwares and databases managed by Cloud providers. The infrastructure and platforms of the cloud run the applications. Cloud providers install and operate application software in the cloud and cloud users access the software from cloud clients. Cloud users do not manage the cloud infrastructure and platform where the application runs.

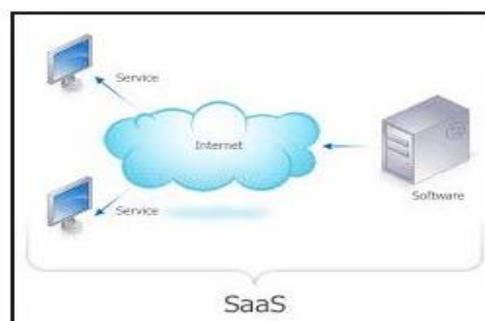


Fig 2.3 Software as a Service

SaaS is sometimes referred to as on-demand software. SaaS providers generally price applications using a subscription fee. End users can use the application on pay for use basis. The pricing model for SaaS applications is typically a monthly or yearly flat fee per user, so price is scalable and adjustable if users are added or removed at any point.

2.4 STaaS: STORAGE AS A SERVICE

Storage as a Service is an architecture model where the provider maintains digital storage. STaaS can be implemented as business model in which a large company rents space in their storage infrastructure to a smaller company or individual.

STaaS provider agreed to provide storage space on a cost-per-gigabyte-stored and cost-per-data-transfer basis over internet.

2.5 DaaS: DATA AS A SERVICE

Data as a Service (DaaS) is a cloud strategy used to provide information and distribution model in which data files including text, images, sounds, and videos are made available to customers over the Internet on pay on use basis.

DaaS facilitates the accessibility of business-critical data in a well-timed, protected and affordable manner. DaaS is expected to facilitate new and more effective ways of distributing and processing data.

2.6 TEaaS: TECHNOLOGY AS A SERVICE

TEaaS is an operational model which offers technology as a service on demand. TEaaS model lowers the cost of business solution ownership, reduces the risk of technology and provides predictability of costs over time. Many businesses today are constantly seeking advanced, leading-edge technology solutions to help improve efficiency and maintain competitive advantage.

It is especially well-suited for growing businesses, in that it provides the flexibility to support agile, rapidly-changing companies, while being scalable enough to accommodate growth. It enables your business to leverage technology more efficiently while controlling costs with minimum up-front investments.

2.7 APIaaS: APPLICATION INTERFACE AS A SERVICE

In APIaaS model, programming Graphical user interface components can be provided as a service on pay for use basis. Application Interfaces can specified in many forms, including an International Standard such as POSIX, vendor documentation such as the Microsoft Windows API, Web APIs are also an important and widely used component of today's web fabric.

2.8 SEaaS: SECURITY AS A SERVICE

SEaaS is an outsourcing model for security management, which helps secure all the forms of computing. Large service providers integrate the security services into a corporate infrastructure on subscription basis. Security services includes authentication, anti-virus, anti-malware / spyware, intrusion detection, and security event management, among others

2.9 NaaS: NETWORK AS A SERVICE

In NaaS model, network and transport connectivity is provided as a service by cloud provider. NaaS involves the optimization of resource allocations by considering network and computing resources as a unified whole.

Traditional NaaS services include flexible and extended VPN, and bandwidth on demand. NaaS concept materialization also includes the provision of a virtual network service by the owners of the network infrastructure to a third party.

III. CONCLUSION

Resources of the cloud can be accessed as a service by the end user from anywhere where there is an internet connection, on any computing device. Cloud computing is cheaper for business without buying and maintaining the resources like hardware, servers etc. Cloud computing facilitates to use the resources on pay- for-use basis.

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AUTHOR(S) PROFILE



Ratna Kumari Challa, received the M.Tech degree in Computer Science from University of Hyderabad (HCU), During 2007-2009, She worked as lecturer in IIIT(RGUKT), AP, India during 2010-2012, Now she is working as Assistant Professor in Computer Science and Engineering Department, JNTUK, Kakinada, AP, India since January 2013.



Kanusu Srinivasa Rao, received the M.Tech degree in Computer Science from JNTUH, Hyderabad during 2007-2009. Now He is working as Assistant Professor in Department of Computer Applications, Yogi Vemana University, Kadapa, AP, India since 2009.