**17A1063**

**Experiment 1**

**Cloud Computing:**

Cloud computing is the on-demand delivery of IT resources over the Internet with pay-as-you-go pricing. Instead of buying, owning, and maintaining physical data centers and servers, you can access technology services, such as computing power, storage, and databases, on an as-needed. The basis from a cloud provider like Amazon Web Services

• Users need not worry about any maintenance or management of actual

resources(AWS).

• The term Cloud refers to a Network or Internet. In other words, we can say that

Cloud is something, which is present at a remote location.

• Cloud can provide services over the network, i.e., on public networks or on private networks, i.e., WAN, LAN, or VPN.e.g.

• applications such as e-mail, web conferencing, customer relationship management (CRM), all run in the cloud.

**Deployment Model**

PUBLIC CLOUD: The Public Cloud allows systems and services to be easily accessible to the general public. Public cloud may be less secure because of its

openness, e.g., e-mail, Google App Engine

PRIVATE CLOUD

The Private Cloud allows systems and services to be

accessible within an organization. It offers increased security because of its private nature. E.g. HP Data Centers, Microsoft

COMMUNITY CLOUD : The Community Cloud allows systems and services to be accessible by a group of organizations.

HYBRID CLOUD: The Hybrid Cloud is a mixture of public and private clouds. However, the critical activities are performed using the private cloud while the

non-critical activities are performed using the public cloud.Hybrid cloud refers to mixed

computing, storage, and services environment made up of on-premises infrastructure, private cloud services, and public clouds—such as Amazon Web Services (AWS) or Microsoft Azure

**Service models**

Infrastructure as a Service (IAAS)

Infrastructure as a Service (IAAS) is a form of cloud computing that provides virtualized computing resources over the internet. In an IAAS model, a third-party provider hosts hardware, software, servers, storage, and other infrastructure components on the behalf of its users. IAAS providers also host users’ applications and handle tasks including system maintenance backup and resiliency planning.

IAAS platforms offer highly scalable resources that can be adjusted on-demand

which makes it well-suited for workloads that are temporary, experimental or change unexpectedly. Other characteristics of IAAS environments include the automation of administrative tasks, dynamic scaling, desktop virtualization and policy-based services. Other characteristics of IAAS include the automation of administrative tasks, dynamic scaling, desktop virtualization and policy-based services.

Platform as a Service (PAAS)

Platform as a Service (PAAS) is a cloud computing model that delivers applications over the internet. In a PAAS model, a cloud provider delivers hardware and software tools, usually those needed for application development, to its users as a service. A PAAS provider hosts the hardware and software on its own infrastructure. As a result, PAAS frees users from having to install in-house hardware and software to develop or run a new application.

PAAS doesn’t replace a business’ entire infrastructure but instead, a business relies on PAAS providers for key services, such as Java development or application hosting. A PAAS provider, however, supports all the underlying

computing and software; users only need to log in and start using theplatform-usually through a

Web browser interface. PAAS providers then charge

for that access on a per-user basis or on a monthly basis.

Software as a Service (SAAS)

Software as a Service(SAAS) is a software distribution model in which applications are hosted by a vendor or service provider and made available to customers over a network, typically the Internet. SAAS has become an increasingly prevalent delivery model as underlying technologies that support Web services and service-oriented architecture (SOA) mature and new

development approaches, such as Ajax, become popular. SAAS is closely related

to the ASP (Application service provider) and on-demand computing software delivery models. IDC identifies two slightly different delivery models for SAAS namely the hosted application model and the software development model.

Storage as a Service (SAAS)

Storage as a Service is a business model in which a large company rents space in their storage infrastructure to a smaller company or individual. The economy of scale in the service provider’s infrastructure theoretically allows them to provide storage much more cost-effectively than most individuals or

corporations can provide their own storage when the total cost of ownership is

considered. Storage as a Service is generally seen as a good alternative for a small or mid-sized business that lacks the capital budget and/or technical personnel to implement and maintain its own storage infrastructure.

Communications as a Service (CAAS)

Communications as a Service (CAAS) is an outsourced enterprise communications solution that can be leased from a single vendor. Such communications can include voice over IP (VoIP or Internet telephony), instant messaging (IM), collaboration and video conference applications using fixed and mobile devices. The CAAS vendor is responsible for all hardware and software management and offers guaranteed Quality of Service (QoS). CAAS allows businesses to selectively deploy communications devices and modes on a

pay-as-you-go, as-needed basis.

Network as a Service (NAAS)

Network as a Service (NAAS), a framework that integrates current cloud computing offerings with direct, yet secure, client access to the network infrastructure. NAAS is a new cloud computing model in which the clients have access to additional computing resources collocated with switches and routers. NAAS can include flexible and extended Virtual Private Network (VPN), bandwidth on demand, custom routing, multicast protocols, security firewall, intrusion detection and prevention, Wide Area Network (WAN), content monitoring and filtering, and antivirus.

Monitoring as a Service (MAAS)

Monitoring-as-a-service (MAAS) is a framework that facilitates the deployment of monitoring functionalities for various other services and applications within the cloud. The most common application for MAAS is online state monitoring, which continuously tracks certain states of applications, networks, systems, instances or any element that may be deployable within the cloud. MAAS makes it easier for users to deploy state monitoring at different levels of Cloud services.

**Essential characteristics**

On-demand self-service:

The Cloud computing services do not require any human administrators, user themselves are able to provision, monitor and manage computing resources as needed.

Broad network access:

The Computing services are generally provided over standard networks and heterogeneous devices.

Rapid elasticity:

The Computing services should have IT resources that are able to scale out and in quickly and on a needed basis. Whenever the user requires services it is provided to him and it is scale-out as soon as its requirement gets over.

Resource pooling:

The IT resource (e.g., networks, servers, storage, applications, and services) present are shared across multiple applications and occupant in an uncommitted manner. Multiple clients are provided service from the same physical resource.

Measured service:

The resource utilization is tracked for each application and occupant, it will provide both the user and the resource provider with an account of what has been used. This is done for various reasons like monitoring billing and effective use of the resource.

**Common characteristics** Massive-scale Homogeneity

Virtualization

Resilient computing Low-cost software Geographic distribution Service orientation

Advanced security technologies

**Conclusion :** Using Cloud Computing we can build applications faster without thinking about the infrastructure, scalability, etc. as Cloud will be providing all the needed services. So that developers can focus on the main codebase.