

## Assignment #1: Deployment and Models of Cloud Computing

### WHAT IS CLOUD COMPUTING?

Cloud computing is the use of off-site systems to help computers store, manage, process, and/or communicate information. These off-site systems are hosted on the cloud (or the internet) instead of on your computer or other local storage. They can encompass anything from email servers to software programs, data storage, or even increasing your computer's processing power.

### MODELS OF CLOUD COMPUTING

➤ Infrastructure as a Service (IAAS)

Infrastructure as a service (IaaS) is a type of cloud computing service that offers essential compute, storage, and networking resources on demand, on a pay-as-you-go basis. IaaS is one of the four types of cloud services, along with software as a service (SaaS), platform as a service (PaaS), and server less.

➤ Platform as a Service (PAAS)

Platform as a service. Platform as a service (PaaS) is a complete development and deployment environment in the cloud, with resources that enable you to deliver everything from simple cloud-based apps to sophisticated, cloud-enabled enterprise applications.

➤ Software as a Service (SAAS)

Software as a service (or SaaS) is a way of delivering applications over the Internet—as a service. Instead of installing and maintaining software, you simply access it via the Internet, freeing yourself from complex software and hardware management.

➤ Business Process Outsourcing (BPO)

Business process outsourcing (BPO) is the delegation of one or more IT-intensive business processes to an external provider that, in turn, owns, administrates and manages the selected processes based on defined and measurable performance metrics.

## DEPLOYMENT MODEL

The cloud deployment model identifies the specific type of cloud environment based on ownership, scale, and access, as well as the cloud's nature and purpose. The location of the servers you're utilizing and who controls them are defined by a cloud deployment model.

## TYPES OF DEPLOYMENT MODELS

### ➤ Public Cloud

As the name suggests, this type of cloud deployment model supports all users who want to make use of a computing resource, such as hardware (OS, CPU, memory, storage) or software (application server, database) on a subscription basis. Most common uses of public clouds are for application development and testing, non-mission-critical tasks such as file-sharing, and e-mail service.

### ➤ Private Cloud

True to its name, a private cloud is typically infrastructure used by a single organization. Such infrastructure may be managed by the organization itself to support various user groups, or it could be managed by a service provider that takes care of it either on-site or off-site. Private clouds are more expensive than public clouds due to the capital expenditure involved in acquiring and maintaining them. However, private clouds are better able to address the security and privacy concerns of organizations today.

### ➤ Hybrid Cloud

In a hybrid cloud, an organization makes use of interconnected private and public cloud infrastructure. Many organizations make use of this model when they need to scale up their IT infrastructure rapidly, such as when leveraging public clouds to supplement the capacity available within a private cloud. For example, if an online retailer needs more computing resources to run its Web applications during the holiday season it may attain those resources via public clouds.

### ➤ Community Cloud

This deployment model supports multiple organizations sharing computing resources that are part of a community; examples include universities cooperating in certain areas of research, or police departments within a county or state sharing computing resources. Access to a community cloud environment is typically restricted to the members of the community.

# Comparison of Cloud Deployment Models

Here is a comparative table that provides an overview of all five cloud deployment models:

	Public	Private	VPC	Community	Hybrid
Ease of setup	Very easy to set up, the provider does most of the work	Very hard to set up as your team creates the system	Easy to set up, the provider does most of the work (unless the client asks otherwise)	Easy to set up because of community practices	Very hard to set up due to interconnected systems
Ease of use	Very easy to use	Complex and requires an in-house team	Easy to use	Relatively easy to use as members help solve problems and establish protocols	Difficult to use if the system was not set up properly
Data control	Low, the provider has all control	Very high as you own the system	Low, the provider has all control	High (if members collaborate)	Very high (with the right setup)
Reliability	Prone to failures and outages	High (with the right team)	Prone to failures and outages	Depends on the community	High (with the right setup)
Scalability	Low, most providers offer limited resources	Very high as there are no other system tenants	Very high as there are no other tenants in your segment of the cloud	Fixed capacity limits scalability	High (with the right setup)
Security and privacy	Very low, not a good fit for sensitive data	Very high, ideal for corporate data	Very low, not a good fit for sensitive data	High (if members collaborate on security policies)	Very high as you keep the data on a private cloud
Setup flexibility	Little to no flexibility, service providers usually offer only predefined setups	Very flexible	Less than a private cloud, more than a public one	Little flexibility, setups are usually predefined to an extent	Very flexible
Cost	Very inexpensive	Very expensive	Affordable	Members share the costs	Cheaper than a private model, pricier than a public one
Demand for in-house hardware	No	In-house hardware is not a must but is preferable	No	No	In-house hardware is not a must but is preferable