

**Mid Semester Assignment (Spring - 2020)**  
**Cloud Computing**

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**Instructor: M Omer Rauf**

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**Total Marks: 30**

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**Note: Attempt all Questions. Answers should be in your own words. Plagiarism will not be tolerated, if detected, it will lead to failure.**

**Question No. 1:** (10)

- a. Explain essential characteristics of cloud computing.
- b. Explain in detail the key properties of cloud computing.

**Question No. 2:** (10)

- a. Explain in detail different service models of cloud computing.
- b. Explain in detail different deployment models of cloud computing.

**Question No. 3:** (10)

- a. Explain in detail roles and boundaries in cloud.
- b. Explain in detail cloud risk and challenges.

# Q1.a) Explain essential characteristic of Cloud Computing.

- There are 5 essential characteristics of Cloud Computing.
- 1.On-demand self-service
- 2.Broad networks access
- 3.Resource pooling
- 4.Rapid Elasticity
- 5.Measured service

- 1.On-demand self service
- Cloud Computing assets can be conduct without human communication from the assistance jobholder , such as network storage capacity and waitron time.
- 2.Broad networks access
- Cloud Computing assets are reachable over the tracks and can be penetrate by distant consumer platforms such as phones , mobile , laptops , tablets.
- 3.Resource pooling
- Resource pooling in which various consumer are restore from the related phenomenal collateral. According to client trade resource can be domical assigned and reassigned . Normally client may not alarm about resources that where they are physically placed but should be mindful of risk.
- 4.Rapid Elasticity
- Cloud Computing assets can be range up or down promptly and in some cases , undoubtedly in return to business appeal. The acceptance , capacity and for this reason cost , can be extend up or down with no further contract or dues.

- Elasticity is a vantage point of Cloud Computing and it denote that manufacturing configuration can promptly de-provision and provision each of the Cloud Computing assets.
- 5.Measurable service
- For the use of service and amount the clients are charged . There is a quantitate concept where client assets usage can be controlled , survey, and recorded support transparency for both the client and distributors of the operated service.

# b) Explain in detail the key properties of Cloud Computing

- 1. Cloud Computing Is User Centric
- Cloud are not an addict centric high tech , and an addict become totally dangling on service distributors . Once an addict are associated to the Cloud , no matter what is reserve there –paper work , images , messages , relevance no matter what becomes legitimate to the user contact them.
- 2. Cloud Computing Is Task-Centric
- The convention model is suitable absolutely around what an addict yen to accomplish rather than any appropriate network , hardware or software groundwork.

- 3.Cloud Computing Is Powerful
- Joined a lots of computers together in the Cloud build a plenitude of computing power infeasible with an only desktop PC.
- 4.Cloud Computing Is Accessible
- Cloud Computing is accessible because the Cloud is used for data storage ,an addict can frequently acquired information from various source . As we deal with desktop PC so we are not bound to a single root of data.
- 5.Cloud Computing Is Intelligent
- When all the data stored in the Cloud of a PC so for that purpose data analysis and mining are important to get that report in a wise or ingenious way.

- 6.Cloud Computing Is Programming
- Various targets needed in the Cloud Computing must be mechanized . For example to save the data program in the Cloud of PC necessarily be copied in the Cloud of other PC . If that single PC is power off the Cloud's programming adjust that PC's data accordingly to the fresh PC in the Cloud.

# Q2)a) Explain in detail different service models of Cloud Computing.

- Different service models are
- 1) Software as a Service (SaaS)
- 2) Platforms as a Service (PaaS)
- 3) Infrastructure as a service (IaaS)

## 1) Software as a Service (SaaS)

The faculty sustain to the customer is to use the third-party provider present application functioning on a Cloud root. The five essence aspects of Cloud computing are enable by the combination of software and hardware of Cloud infrastructure .



- 2) Platforms as a Service (PaaS)

- Platforms as a Service is a platform in which the customers are granted to enroot, run and take care of applications beyond the complication of hut and take care of infrastructure associated with promote and send forth an app.

- 3) Infrastructure as a Service (IaaS)

- Infrastructure as a Service is a model in which the provider provides the faculty to the customer is the storage , networks components , hardware and data center space so the customer can easily run the software which consist of applications and operating system.
- The customer has the ability of control upon storage , operating systems , elected networking components but the customer does not head up the critical Cloud infrastructure.

## b) Explain in different deployment models of Cloud Computing.

- Different deployment models are
- 1) Private Cloud
- 2) Community Cloud
- 3) Public Cloud
- 4) hybrid Cloud
- 1) Private Cloud
- A Private Cloud in which nothing is shared with other framework like business unit. In this type of services the data and applications are shared with various consumers in the Cloud but that data and applications should be keep save from another cloud consumers.

- 2)Community Cloud

- A community Cloud in which the framework is shared with one or more organizations having same concerns like policy , security ,jurisdiction and compliance .Whether supervise by third-force and introduce externally or internally.

- 3)Public Cloud

- In this type of services the computing service provide by third-force to the public internet which is available to everyone that one wants to purchase or use them.

- 4)Hybrid Cloud

- A hybrid Cloud in which the computing service provide more environment that allow public Cloud , private Cloud and third-force services with interpretation among the platforms.

# Q3)a) Explain in detail roles and boundaries in cloud.

- Organization and human have different roles depending how they are related with Cloud Computing. They are explained in the following topics.
- 1)Cloud provider
- 2)Cloud consumer
- 3)Cloud service owner
- 4)Organization boundary
- 5)Trust boundary

- 1)Cloud provider
- Organization that deliver Cloud-based IT ability is Cloud provider . When consider the position of Cloud. Provider organization is responsible for shaping Cloud services accessible to Cloud user , as per admit over SLA (Service level Agreement) assurance . The Cloud provider is more charged with any appropriate management and administrative duties to establish the on going action of the total Cloud base.
- Cloud provider average own the IT resources that are made possible for loan by Cloud user ;still , some Cloud provider also recall IT resources loan from other Cloud providers.
- 2)Cloud consumer or user
- A Cloud user is an organization or human that has a ascetic bond or arrangement with Cloud putting into operation IT resources made convenient by the Cloud provider, categorically the Cloud user a Cloud service user to access a Cloud service.

- 3) Cloud service owner
- A person or organization that lawfully owns a Cloud service is known as a Cloud service owner. The Cloud service holder can be the Cloud user or the Cloud distributor that owns the Cloud within which the cloud services consist. For example, either the Cloud user or the Cloud provider at Cloud x could hold Cloud services.
- 4) Organization Boundary
- An organization boundary shows the physical perimeter that envelops a set of IT capabilities that are purchased and governed by an organization. The organizational boundary does not show the boundary of a real organization, only an organizational set of IT capabilities and IT resources. Clouds have an organizational boundary.

- 5) Trust Boundary
- A conviction boundary is a logical perimeter that commonly span apart from physical boundaries to show the extent to which IT resources are dependable when analysis Cloud environments , the trust boundary is mush the same repeatedly with the trust distributed by the organization acting as the Cloud user.
  
- Q)b) Explain in detail cloud risk and challenges.
- The Cloud Challenges are
- 1) Cost
- Cloud Computing by itself is cheap but adjust the platform as per the company's demand can be costly , moreover the amount of transferring that data to public Clouds can confirm to be a difficulty for short lived and small scale project.

- Companies can save money on system maintenance , management and gain but they also have to invest in extra bandwidth and the absent of routine infinitely in an absolute expansible Computing platforms can get bigger cost.
- 2)Service provider reliability
- The capability of a technical service distributor are as important as price . The service distributor must be accessible when you need them . The main distress should be the service provider's viable and honor. Make sure you appropriate the techniques via which a provider find its services and guard dependability claim.
- 3)Down Time
- Down Time is significant short coming of Cloud technology . No dealer can assurance a platform that is free of available downtime . Cloud technology build limited companies relying on their connectivity , so companies with an dishonest internet connection apparently want to think over again before follow Cloud Computing.



- 4)Data privacy
- Sensitive and personal material that is held in the Cloud shall be defined as being for ingrained use only not to be joint with third parties. Businesses must have a plan to securely and efficiently deal the data they risk assemble.

- **The Cloud risks are**

- 1)The impact on a business return on investment (ROI)
- Transfer to the Cloud may sound like the most effective possibility but businesses shall carefully compare the expenditure of owning software and equipment with the amount of assent it technologies parameters like speed , usage , quantity of services must be considered.
- 2)Compatibility
- Migration to the Cloud might posture difficulty of appropriate with enduring IT base or with a company security requirement and organizational policies pre arrange is once again crucial in considering all these.

- 3)Condition
- There are exposure concern disregard with actual policies and fair bond related to the handled data or the business operations. The law full indication of using an exterior IT distributor shall be careful study.
- 4)Security
- Not just private , but the full structure shall be measure . Where's your data going to be saved? Who will have entrance to the information ? What security quantity and safety does the Cloud distributor ? Is all information transmitted in unsecured plain text or is it times?