Mid Semester Assignment (spring-2020)

Cloud Computing

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Semester : 8th	**Date : 13/04/2020**
Time : 6 days	**Total Marks : 30**
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Question No. 1:

a. Explain essential characteristics of cloud computing.

Ans:

1. **Measured Service:**

   The use of cloud computing resources is measured and output organizations pay accordingly for what they have used. Resource utilization can be optimized by lever effect the load functions per use. This means that the use of cloud resources, whether they are virtual server instances or cloud storage, is monitored, measured and reported by the cloud service provider.

2. **Resources pooling:**

   This means that the cloud company has attracted the resources of the computer to provide services to more customers with the help of several companies. There are different physical and virtual products allocated and redistributed depending on customer demand. The client usually has no control or information about the location of the available resources but is able to specify a location at a higher level of abstract.

3. **Easy Maintenance:**

   The servers are easy to maintain and downtime is very small and even in some cases there is no downtime. Cloud Computing comes with an update every time by gradually improving it. The updates are more compatible with devices and work faster than older ones, along with bug fixes.

4. **Large Network Access:**

   The user can access the cloud data or upload the data to the cloud anywhere with just a device and internet connection. These features are available throughout the internet.

5. **Availability:**

   The cloud capabilities can be changed according to usage and can be extended a lot. It detects storage usage and allows the user to purchase additional Cloud storage if a very small amount is needed.

b. Explain in detail the key properties of cloud computing.

Ans:

1. **Cloud Computing Is User Centric:**

   Once as a user are connected to the cloud or server to store their data in a cloud. The data maybe documents, files, images, application, messages. The users are fully authorized to access the data anywhere and anytime by providing the connection to the server. The user can also share their data with others. Any one that access your data are the part of your cloud data.

2. **Cloud Computing Is Task-Centric:**

   We do not to be focus on the application or processes which the application can fellow, what it do for us. It better to be focus on what we need and how the system will provide it for us. Many traditional applications like spreadsheet, Word-processing, images storage, email.

3. **Cloud Computing Is Powerful:**

   Cloud computing servers or super computer are more powerful than the single desktop PC .Because on the server there are thousands or hundreds of users are connected it the same time and access the server data. That is why we need server and powerful computer to access and stored the user's data.

4. **Cloud Computing Is Accessible:**

   Once it data are Uploaded and stored in a server. The organization cannot store the user data in a single server they spread and store the user data on different server which are install on different location. So the user can access their data from multiple

repositories. The user can access their data each and every time by providing their cloud ID and internet connection.

5. **Cloud Computing Is Intelligent:**

   We know that the user data are store on many different servers and located on different location. Now if the user want to access their specific data so different data technique are apply like data mining and data analysis to provide the user specific data what they want by proper and intelligent way.

Question No. 2:

a. Explain in detail different service models of cloud computing.

Ans:

1. **Software as a Service:**

   This model allows the use of software application as a service to end users. Software as a Service (SaaS) license based on membership and hosted centrally. SaaS are fully managed by the services provider (mean Software Owner).The customer must pay some amount of money by using the software application of a specific company. There are many agreements between the user and service provider ensure application and data security. Most well-known organizations are using software as a service (SaaS).

   Example: Facebook, Google, Microsoft Office, You-tube etc.

2. **Platform as a service:**

   Platform as a service (PaaS) are runtime environment which are provided for application or software development, deployment and also deployment tools. It provide the complete platform for development and deployment of application or web software. The main advantage of this service is provide easy access our platform by using our ID and Password to login and start our work. There is no fair about the loss of data because our data is store in a server.it provide to perform building, testing, deployment, managing, and modification of software or application.

   Example: Amazon Web server, Azure, Joyent etc.

3. **Infrastructure as a service:**

   Infrastructure as a service (IaaS) are a complete platform which are provide by the cloud computer to the consumer to perform their task. They can modify the platform by the customer demand and need for which the customer has to pay. The customer don't pay any extra amount of money which they are not required. Infrastructure as a service is a type of cloud computing that services the user through the Internet.

   Example: OP source, NTT Communication, Go Grid.

b. Explain in detail different deployment models of cloud computing.

Ans:

1. **Public Cloud:**

   The cloud which allows the system and services to be easily accessible to the general public is called public cloud. It is less secure because of its openness.

   Example: Email etc.

2. **Private Cloud:**

   The Cloud which allows the system and services to be accessible within the organization is called private cloud.it is more secure than public cloud because it is access only in a specific area.

3. **Hybrid Cloud:**

   The hybrid cloud is the combination of public and private cloud. The most critical activities or task are control and perform by the private cloud while the non-critical activities and task perform by public cloud. It shares the workload between these two clouds.

4. **Community Cloud:**

   The cloud which allows the system and services are accessible by the group of people or organization.

Question No. 3:

a. Explain in detail roles and boundaries in cloud?

Roles and Boundaries Cloud Provider Cloud Consumer:

1. **Cloud Service Owner:**

   The person or organization legally owning a cloud service is called a cloud service owner. The owner of the cloud service can be the cloud consumer, or the cloud provider that owns the cloud where the cloud service is located.

2. **Cloud Resource Administrator:**

   A cloud resource manager is the person or organization responsible for managing a cloud-based IT resource. The cloud resource manager may be the cloud consumer or cloud provider of the cloud where the cloud service is located. It may be a third party organization contracted to manage the cloud-based IT resource.

3. **Organizational Boundary:**

   An organizational border represents the physical perimeter surrounding a set of IT resources that are owned and governed by an organization. The organizational limit is not the limit of an effective organization, but only an organizational set of IT assets and IT resources. Similarly, clouds have an organizational boundary.

4. **Trust Boundary:**

   When an organization assumes the role of the cloud consumer to access cloud-based IT resources, it must extend its confidence beyond the physical limit of the organization to include parts of the cloud environment. A reliable border is a logical perimeter that usually extends beyond the physical borders to represent the extent to which IT resources are reliable. When analyzing cloud environments, the confidence limit is most often associated with the confidence issued by the organization that acts as a cloud consumer.

b. Explain in detail cloud risk and challenges?

Risk and challenges in Cloud Computing:

1. **Security and Privacy of Cloud:**

Cloud data storage should ensure and provide complete confidentiality. This means that the cloud provider should take the necessary security measures to secure customer data. Securities are also the responsibility of the client, as they should provide a strong password, should not share the password with anyone and change the password regularly when we have done so. If the data is outside the firewall, there may be issues that can be removed by the cloud provider.

2. Reliable and Flexible:

Reliability and flexibility are also one of the challenges for customers in the cloud and can eliminate data from leaking to the cloud and host to provide customer reliability. To eliminate this challenge, the services provided by the third party should be monitored and supervision should be conducted in terms of performance, robustness and business dependency.

3. Downtime:

Stop time is the usual challenge of cloud computing because no cloud provider guarantees a non-stop platform. The Internet connection plays an important role, because a company has a reliable Internet connection, then there may be a problem because they can cope with the disabling.

4. Cost:

Cloud computing is affordable, but modifying the cloud at the customer request can sometimes be costly. It can cause a bottleneck for small-scale organization by changing the cloud, as their demand can sometimes cost more.

5. Interoperability and portability:

The client must be provided with migration services in and out of the cloud. There should be no obligation period, as it can create a barrier for customers. The cloud should have the ability to provide facilities in the spaces. One of the challenges of Cloud is remote access that can be eliminated by the cloud provider, so that the client can access the cloud from anywhere security.