

Mid Semester Assignment (Spring - 2020) Cloud Computing

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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.

Answer:

Characteristics of cloud computing.

Following are the characteristics of cloud computing.

On-Demand Self-service

A customer can monitor continuously the server uptime, capabilities and its storage without the interaction of human with each service provider.

Broad Network Access

A customer or a client can access its server from anywhere if the client has from any device (e.g. mobile phones, tablets and workstation).

Resource pooling

The services of cloud computing are assigned to many other customers. Resources can be dynamically assigned and reassigned according to customer demand. Customers don't care where their systems are physically located but should be aware of risk when they are offshore.

Rapid elasticity

Resources are released or expanded automatically (i.e. CPU power or ability to handle additional users). The changes to the customers are seamless, limitless and responsive to their change in requirements.

Measured Services

Customers pay bills for what they use. There is a metering which monitors the usage of the customer's resources and also controlled reported providing transparency for both the provider and consumer of the utilized service.

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

Answer:

Following are the key properties of cloud computing.

User centric:

Once a user is connected to the cloud all the data of the user like documents, messages, photos, videos, applications, whatever stored there, the user can access them. User can also share its data to others. Any device that accesses your data also becomes yours.

Task centric

It is not focusing on the application that what it can do, it only focuses on what if we need an application, how much it can help us in the required work.

Powerful

It is a powerful system because there are hundreds and thousands of computers together in a cloud, and it is impossible that it can be controlled by a single desktop PC.

Accessible

In a cloud system, data is stored in the cloud; user can retrieve more information from multiple resources. Cloud is not limited to a single source of a desktop PC.

Intelligent

There are a lot of data stored in the cloud, so if the user wants to access it, data mining and analysis are necessary in an intelligent manner.

Programmable

Many tasks in a cloud system are necessary to be automated.

For example: to protect the data stored in one computer in the cloud, it must be replicated on other computers in the cloud. If one computer in the cloud system goes offline or shuts down, there must be a backup for it that automatically connects that computer to the cloud and does not stop the work.

Question No. 2:

(10)

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

Answer:

Following are the models of cloud computing.

Infrastructure as a service (IaaS)

IaaS is the delivery of technology infrastructure as an on-demand, scalable structure. IaaS provides access to the physical machines, virtual machines, virtual storage, etc.

- Bill is based on user usage.
- Mostly multi-tenant virtualized machines.
- Sometime it can combine to application services for OS and application support.

Example of IaaS:

OP source, NTT communications, AT&T.

Platform as a Service (PaaS)

PaaS provide the runtime place applications, development & deployment tools etc. PaaS provides all the facilities required to support the complete lifecycle of building and delivering of web based application an all the web services entirely from the internet.

Mostly application must be developed with a particular platform in mind.

- Multi tenant environment.
- Higly scalable multi tier architecture.

PaaS example:

Amazon, web services, salesforce.com, azure, rockspace.

Software as a service (SaaS)

SaaS model is use software application as a service to end user.

SaaS is used to provide delivery methodology licensed software with multi-tenant access to software all of its function remotely as web based services.

- Bill is based on usage of the customer.
- Many multi tenant environment.
- Highly scalable architecture.

SaaS example:

Salesforce.com, netsuite, google, postini.

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

Answer:

Deployment models:

In deployment model it tells us how the cloud is located? Cloud has four types of access: public, private, hybrid and community.

Public:

Public cloud is that type of cloud which is for the use of everyone no protected password it can be used for general purpose everyone have access to it. e.g email.

Private:

It is that type of cloud which is used in an organization. It has more security its private.

Community:

It is that of cloud which can be accessible by specific people in an organization. which means a group of people that have access to that system.

Hybrid:

It is a cloud system in which public & private are mixed together in which if someone want to send some critical data they use private and if someone want non critical data he used public cloud.

Question No. 3:

(10)

- a. Explain in detail roles and boundaries in cloud.

Answer:

Following are the roles of cloud system.

Cloud provider:

Those organization that provides cloud based IT resources is the cloud providers. It is responsibility Of a cloud providers that it provides cloud services to the cloud consumers, as per agreed upon SLA guarantees.

Cloud consumers:

A cloud consumers is an organization (or a human) that has a formal contract or arrangement with the cloud provider company to use IT resources that are made by cloud provider. The cloud consumers uses a cloud consumer to uses all the services provided by the cloud provider.

Cloud service Owner:

a person or a company or an organization that legally owns an organization who runs cloud computing services is known as cloud services owner. The cloud service owner are also the cloud consumer, or the cloud providers that owns the cloud within the cloud services resides.

Cloud resource administrator

A cloud resource administrator is an organization or a person which is responsible for all the cloud based resources & cloud services the cloud resources administrator is also belong to the cloud to the cloud consumer and cloud providers because it is also part of it.

Additional role:

The NSIT cloud computing reference architecture defines the following supplementary roles.

Cloud auditor:

It is a third party contractor which is responsible for the privacy and performance.

Cloud broker:

A party which negotiate the usage of cloud services between cloud & the consumer and cloud provider including intermediation, arbitrage.

Cloud carrier:

It is a party which is responsible to provide the wired-level connectivity between cloud consumers and cloud providers. In general if we say to provide the network telecommunication.

Boundaries of cloud computing:

Following are the cloud computing boundaries.

Organizational boundary:

The physical state of the cloud computing that are owned and governed or running by an organization is known as organizational boundary.

Trust boundary:

A logical perimeter that assumes all the role of cloud consumer to access the cloud based IT-resources , it needs that the organization that runs the cloud have to ensure thee customers that they will never face any bad situation in which your data will be leaked or destroyed.

b. Explain in detail cloud risk and challenges.

Answer:

Following are the challenges of cloud computing.

Security:

In everything first we have to secure our premises because if we not secure our premises than we face many problems. So now we can see that in cloud also there is also need of security so we have to secure our resources that a hacker can steal our data and we will never get a client again.

Cost management and containment:

The next part in our list of cloud challenges is cost management and containment an organization cannot give order of new hardware an organization must go with its client increasing in numbers so the client increasing the make there resources increase according to the customer.

Lack of resources/expertise:

The cloud computing company/Enterprises also facing lack of resources and expertise because the company wants to increasing the workload but the cloud computing is still under development and it needs more work and developers to develop it and make it advance.

Risk of cloud Computing :

Following are the risk of cloud computing.

Unauthorized usage to clients and business data:

Hackers can easily target small trade networks so they are easily compromised and they are commonly go after big company to take out large amount of money.

Data loss:

In the list of challenges of cloud computing risk it is also a risk that data can be loss when sometimes the server breakdown and there is no backup server and generator.

Hacked interfaces as well as insecure APIs:

The cloud period has brought regarding the condition of seeking to create services present to millions as limiting any harm all these mostly some clients can do the work.