CLOUDNET ASSIGNMENT DAY-4

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THEORY

a) **As an infrastructure as a service what are the resources that are provided by it?**

Ans) Infrastructure as a Service (IaaS) is a cloud computing service model. As is the case with all cloud computing models of business, IaaS provides access to computing resources in a cloud-based environment. In the case of IaaS, the computing resources provided are virtualized hardware, or a computing infrastructure. Such product offerings range from virtual servers to network connections to load balancers. Infrastructure as a Service (IaaS) in cloud computing is one of the most significant and fastest growing field. In this service model, cloud providers offer resources to users/machines that include computers as virtual machines, raw (block) storage, firewalls, load balancers, and network devices.

b) **What are the business benefits involved in cloud architecture?**

Ans) 1. Zero infrastructure investment: Cloud architecture provide user to build large scale system with full hardware, machines, routers, backup and other components. So, it reduces the start-up cost of the business.

2. Just-in-time Infrastructure: It is very important to scale the infrastructure as the demand rises. This can be done by taking cloud architecture and developing the application in the cloud with dynamic capacity management.

3. More efficient resource utilization: Cloud architecture provides users to use their hardware and resource more efficiently and utilize it in a better way. This can be done only by applications request and relinquish resources only when it is needed (on-demand).

c) What are the characteristics of cloud architecture that separates it from traditional one?

Ans) 1. In cloud architecture, the server hardware is provided and maintenance to it is done by the service provider.

2. Users can draw the services they require over the internet eliminating the need to purchase any new hardware.

3. Users pay for the services they use. It does away the need to pay any fixed monthly plan fee as in traditional hosting. It also ensures users do not have to buy resources they do not require and leave them un-utilized.

4. Cloud architecture is scalable on demand. Users can increase or decrease their resources depending on their

business needs with just a few clicks without the need of any physical effort as in traditional hosting.

5. Cloud hosting is capable of handling workloads seamlessly without any possibility of failure. Since it functions as a network, even if there is a failure in one of the components, the services are available from the other active components.

6. Cloud offers better data security and recovery from any natural disasters and human errors as it backs up data over multiple locations.

d) Mention what is the difference between elasticity and scalability is in cloud computing?

Ans) **AWS Cloud Elasticity**: *Elasticity* is the ability to grow or shrink infrastructure resources dynamically as needed to adapt to workload changes in an autonomic manner, maximizing the use of resources. This can result in savings in infrastructure costs overall.

AWS Cloud Scalability: Scalability offers many services that can help set up your application scale up or down depending on the resource requirements. One Cloud product, the Elastic Load Balancer scales automatically on demand with the traffic it receives for your application.

e) In cloud architecture what are the different components that are required?

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1. Client Infrastructure

Client Infrastructure is a Front end component. It provides GUI (Graphical User Interface) to interact with the cloud.

2. Application

The application may be any software or platform that a client wants to access.

3. Service

A Cloud Services manages that which type of service you access according to the client's requirement.

Cloud computing offers the following three type of services:

i) Software as a Service (SaaS) – It is also known as cloud application services**.** Mostly, SaaS applications run directly through the web browser means we do not require to download and install these applications. Some important example of SaaS is given below –

Example: Google Apps, Salesforce Dropbox, Slack, Hubspot, Cisco WebEx.

ii) Platform as a Service (PaaS) – It is also known as cloud platform services. It is quite similar to SaaS, but the difference is that PaaS provides a platform for software creation, but using SaaS, we can access

software over the internet without the need of any platform.

Example: Windows Azure, Force.com, Magento Commerce Cloud, OpenShift.

iii. Infrastructure as a Service (IaaS) – It is also known as **cloud infrastructure services**. It is responsible for managing applications data, middleware, and runtime environments.

Example: Amazon Web Services (AWS) EC2, Google Compute Engine (GCE), Cisco Metapod.

4. Runtime Cloud

Runtime Cloud provides the execution and runtime environment to the virtual machines.

5. Storage

Storage is one of the most important components of cloud computing. It provides a huge amount of storage capacity in the cloud to store and manage data.

6. Infrastructure

It provides services on the **host level**, **application level**, and **network level**. Cloud infrastructure includes hardware and software components such as servers, storage, network devices, virtualization software, and other storage resources that are needed to support the cloud computing model.

7. Management

Management is used to manage components such as application, service, runtime cloud, storage, infrastructure, and other security issues in the backend and establish coordination between them.

8. Security

Security is an in-built back end component of cloud computing. It implements a security mechanism in the back end.

9. Internet

The Internet is medium through which front end and back end can interact and communicate with each other.

f) In cloud architecture what are the different phases involved?

Ans) 1. Launch phase: it launches the basic services and makes the system ready for communication and for application building

2. Monitor phase: it monitors the services that is being launched and then manages them so that on demand the user will be able to get what he wants.

3. Shutdown phase: it shutdown the services that are not required first and after all the services gets shutdown, and then it closes the system services.

4. Cleanup phase: it clean up the left out processes and services that is being either broken or didn't get shutdown correctly.

g) How buffer is used to Amazon web services?

Ans) Buffer helps to synchronize different components, which gets requests and processes it in an unsynchronized way. It manages the balance between various components in order to maintain the speed and provide a faster service. In AWS buffer also ensures efficiency over traffic or load.

h) What is Amazon SQS?

Ans) Amazon Simple Queue Service (SQS) is a fully managed message queuing service that enables you to decouple and scale microservices, distributed systems, and serverless applications. SQS eliminates the complexity and overhead associated with managing and operating message oriented middleware, and empowers developers to focus on differentiating work. Using SQS, you can send, store, and receive messages between software components at any volume, without losing messages or requiring other services to be available. Get started with SQS in minutes using the AWS console, Command Line Interface or SDK of your choice, and three simple commands.

SQS offers two types of message queues. Standard queues offer maximum throughput, best-effort ordering, and at-least-once delivery. SQS FIFO queues are designed to guarantee that messages are processed exactly once, in the exact order that they are sent.

i) Mention what is Hypervisor in cloud computing and their types?

Ans) A hypervisor is a form of virtualization software used in Cloud hosting to divide and allocate the

resources on various pieces of hardware. The program which provides partitioning, isolation or abstraction is called virtualization hypervisor. The hypervisor is a hardware virtualization technique that allows multiple guest operating systems (OS) to run on a single host system at the same time. A hypervisor is sometimes also called a virtual machine manager(VMM).

j) The types of AMI provided by AWS are?

Ans) An **AMI** includes the following: One or more Amazon Elastic Block Store (Amazon EBS) snapshots, or, for instance-store-backed AMIs, a template for the root volume of the instance (for example, an operating system, an application server, and applications).