Test3 – Cloud

Date – 7-Dec-2021 (Tue)

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10 – Marks for each question.

Q1. Explain what you understand by Cloud Computing?

Answer: In simple terms Cloud computing is the delivery of different types of services via internet. Those Services may be software tools, application, databases storage servers and others. In old days we used to access these services from our local machine or computer, but with the rise of internet and connected world those service is available anywhere with access of internet. We can enable, disable, and modify the nature of these services as per our demand. There are different models of the cloud services in which they are delivered, mostly they are categorized into Infrastructure As A Service (IAAS), Platform As Service (PAAS) and Software AS Service (SAAS)

Q2. Compare Cloud and On-premises Computing. (Hint – Criteria Initial cost, Maintenance, upgrade, scalability e.t.c..)

Answer: Computing has become need of every business and organization and over the time its models has changed. In earlier days, every business and organization used to maintain their own servers and computers for data storage, computation and other software services but they have now started to migrate towards the using the third-party services for their need, these third party providing the need for the storage, computation and software services are called cloud service provider. The cloud service provider take care of almost every computational need for business and organization.

There are some differences between the traditional in house or On-premises Computing and today's cloud computing service in terms characteristic explained below.

Initial cost

On the traditional on-premises approach the user have to buy their ever resources they need which escalate the initial cost of setup. Setting up the resources and network and infrastructure is hectic and costly job. In cloud the cost of initial setup has been reduced since the user do not need to buy those resources physically, they are just renting the services and can easily let the service go if their need is fulfilled.

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Maintenance

User or the business owner are solely responsible for the infrastructure maintenance for on-premise computing but as per cloud computing, the service provider will handle that on their own and provide user with ready to use service.

Upgrade and Scalability

For any kind of upgrade in the service, again the user need to either procure for resources or upgrade existing one for on-premise computing but in cloud computing it can be easily done with a click in matter of seconds and those services can be scaled as required.

Q3. What are three different cloud service models or types? Explain briefly.

Although these models can be categorized further the three fundamental model or types of cloud service are

1. **Infrastructure as a Service (IAAS)**
   IAAS is a way of acquiring the computing resources, server, storage facility and virtual private server (VPS) as per demand. These services will be charged on the basis of the use so they are also called "Pay as you go" model. Google cloud platform and Amazon EC2 are most common example of IAAS.

2. **Software AS a Service (SAAS)**
   Saas are the service that are provided by the software provider. User do not need those software to run on their local machine and can be used via web. Most of the software these days are available via web. This kind of service removes the trouble of software maintenance and upgrade for user they can simply enjoy the service only with out worrying about the procurement and maintenance.

3. **Platform As a Service (PAAS)**
   Paas is a halfway between the IAAS and software, here user are provided with the platform where they can run their own software on it and get benefit out of it. It is mostly used by developer for creating, maintaining, and running service on the cloud. IOT, Agile development and API development are some of the use cases for paas.

Q4. Explain what is Amazon S3 service.

Answer: Amazon S3 is Simple storage service provided by Amazon which is one of the most popular cloud service provider. The service is designed for backup and archives of the data and applications. Amazon S3 was designed with the ability to scale easily.

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Amazon S3 provides 99.99% of durability for the stored data objects and API can be built out of these storage which can be accessible from internet. Other amazon services can be integrated with S3 as well to ease the access of data.

Most Common use cases of Amazon S3 are

- Data Archiving
- Data Back up
- Mobile application
- Disaster Recovery
- Data lake

Q5. Explain Amazon RDS service.

Answer: Amazon RDS is a relational database service. The relational database can be created and the data can be stored in the RDS. RDS can be integrated with other Amazon services as well with the proper configuration. RDS can be easily scaled to stored the high volume of data. Relational data are most commonly used for transactional and analytical processes.

RDS stores the data as other structured databases as tables and row. And relationship key plays vital role on it. Postgres , SQl , Mysql are some of the database engine that are available in RDS.

Some of the features of Amazon RDs are

Easy to use

Amazon management console or RDS command line interface can be used to create production ready database in minutes.

Performance

It used SSD for storage which increase the performance as compared to old storage technologies.

Scalability

Scalability can be easily achieved with the click of the button. As the storage requirement grow user can increase the database storage as per need to store the additional data.

Security

There is inbuilt security as the default option. The underlying data in the storage are encrypted and it uses SSl to secure data in transit

Q6. What is Storage service of Google cloud called, explain features briefly.

Answer: The storage service of Google is called Google cloud Storage. It is similar to the service provided by Amazon S3. Other service can be integrated with google cloud storage as well.

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Some of the features of Google cloud storage are

Interoperability

Google cloud storage is compatible with other cloud storage such as amazon s3 and few others which allows data to transfer from one cloud service provider to another

Multiple redundancy options

User are allowed to choose the multiple redundant location to store their data and plan their data recovery and disaster recovery

Access controls

Cloud storage provide the Access control List (ACL) service that allows multiple user to have different permission on the storage and act accordingly

Resumable uploads

Due to network failure or any other interruption of the uploading of files are hindered user can continue from the same point with resumable uploads.

Q7. What is Amazon EC2 service what is it used for?

Answer: Amazon Ec2 (Elastic cloud Compute) is the basic building block of cloud Service. User can create virtual instance under EC2. It is scalable so user can scale the instance in the time of their need. Ec2 is used for almost every computation in the cloud. It has huge set of use cases starting from running simple applications to creating cluster in EMR. Some of templates solution provided by amazon also use EC2 so it can be regarded as building block. Some of the features of amazon Ec2 are

- It can be easily integrated with other services such as RDS, SQS and simple DB.
- User can configure different type of security options for incoming and outgoing traffic
- Among all services it is most affordable services which is hourly charged.

Q8. What is Region and Availability Zone in Amazon AWS?

Answer: Amazon region are the actual physical location around the world where data centers are clustered, and group of logical data centers are called Availability zone. Each geographical region consists of multiple isolated and physically separated Availability Zones. There are 25 geographical regions and 80 availability zone. Availability Zone lies within the Geographical regions. Thus, a region can have multiple availability zone.

While viewing, an user can only see the resource available in his zone. There is a feature of transfer of data from regions, but it is charged. CLI tools can be used to get the information about the regios.

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While considering availability zone, it is best to choose the zone in which most of customers of the application are located which will help in decreasing the latency.

Q9. What is Big Query in google cloud?

Answer: Big query is fully functional, managed data warehouse which helps to perform Machine Learning (ML), Business Intelligence (BI) and geo spatial analysis on data. It is distributed, scalable and fast service which allows to query terabytes of data in matter of seconds. Big query is NoSQl database service which allows Online analytical processing (OLAP). It has column-oriented database system. Big query has features of in-built and user defined functions for analysis of datasets.

Some of the features of Big Query are

- Analysis of geospatial data is possible with big query
- Inbuilt Machine learning tool integration
- Business intelligence is supported in big query with BI engine
- Automatic data transfer is possible with simple manner without need of any coding

Q10. What is Amazon Redshift service?

Answer: Amazon redshift is a secure, scalable, and fast data processing data warehouse solutions. There are various analytical, machine learning and artificial intelligence features built on it which can be used to derive insights from data.

Some of the features of Redshift service are

Fault tolerance

When it comes to warehouse fault tolerance refers to the ability to perform the task smoothly even if some of the cluster are down, redshift has those features and offers no single point of failure.

End to end Encryption

Redshift offers end to end encryption feature to ensure data privacy and security. User are offered with the options from which they can choose and the options which best fits their needs.

Column oriented database

To provide the lightning query execution speed and scalability redshift uses column-oriented database which can perform huge data processing jobs quickly

Cost Effective

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Compared to traditional data warehouse solutions redshift is quite affordable and there are no up front cost and long term commitment required.