DXC Technologies- Google Cloud Platform

Assignment-1

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Question1: Explain what's Cloud Computing? Why it's needed?

Answer 1:

Cloud computing is basically the availability of on demand computer system resources such as data storage without needing to be directly managed by the user. It is used to refer to the data stored in large data centres to multiple users over the internet.

There are mainly 3 types of clouds:

1. Private cloud
2. Public cloud
3. Hybrid cloud

A cloud is needed for the following reasons:

- Efficiency / cost reduction:
  Investment in hardware, facilities, utilities, or building out a large data centre to grow your business is not required. It also reduces costs related to downtime.
- Data security:
  Cloud offers many advanced security features that guarantee that data is securely stored and handled.
- Scalability
  Cloud based solutions are ideal for businesses with growing or fluctuating bandwidth demands. Scalability is probably the greatest advantage of the cloud.
- Mobility
  Cloud computing allows mobile access to corporate data via smartphones and devices. Resources in the cloud can be easily stored, retrieved, recovered, or processed.
- Disaster recovery
  Cloud infrastructure can also help you with loss prevention. The data stored in the cloud remains accessible for any computer with an internet connection, even if something happens to your work computer.

Question 2: Explain the advantages of Cloud Computing over Traditional methods?

Answer 2:

The main advantages of cloud computing over traditional method are:

- Resilience and Elasticity:
  The information and applications hosted in the cloud are evenly distributed across all the servers, which are connected to work as one. Therefore, if one server fails, no data is lost and downtime is avoided. The cloud also offers more storage space and server resources, including better computing power. This means your software and applications will perform faster.
  Traditional IT systems are not so resilient and cannot guarantee a consistently high level of server performance. They have limited capacity and are susceptible to downtime, which can greatly hinder workplace productivity.

- Flexibility and Scalability:
  Cloud hosting offers an enhanced level of flexibility and scalability in comparison to traditional data centres. The on-demand virtual space of cloud computing has unlimited storage space and more server resources. Cloud servers can scale up or down depending on the level of traffic your website receives, and you will have full control to install any software as and when you need to. This provides more flexibility for your business to grow.
  With traditional IT infrastructure, you can only use the resources that are already available to you. If you run out of storage space, the only solution is to purchase or rent another server.

- Automation:
  A key difference between cloud computing and traditional IT infrastructure is how they are managed. Cloud hosting is managed by the storage provider who takes care of all the necessary hardware, ensures security measures are in place, and keeps it running smoothly. Traditional data centres require heavy administration in-house, which can be costly and time consuming for your business. Fully trained IT personnel may be needed to ensure regular monitoring and maintenance of your servers – such as upgrades, configuration problems, threat protection and installations.

- Running Costs:
  Cloud computing is more cost effective than traditional IT infrastructure due to methods of payment for the data storage services. With cloud-based services, you only pay for what is used – similarly to how you pay for utilities such as electricity. Furthermore, the decreased likelihood of downtime means improved workplace performance and increased profits in the long run.

Question 3: Explain the various Service Models?

Answer 3:

The various types of cloud models are:

There are three main service models of cloud computing – Infrastructure as a Service (IaaS), Platform as a Service (PaaS) and Software as a Service (SaaS).

1. IaaS (Infrastructure as Service):
   This is the most common service model of cloud computing as it offers the fundamental infrastructure of virtual servers, network, operating systems and data storage drives. It allows for the flexibility, reliability and scalability that many businesses seek with the cloud, and removes the need for hardware in the office. This makes it ideal for small and medium sized organisations looking for a cost-effective IT solution to support business growth. IaaS is a fully outsourced pay-for-use service and is available as a public, private or hybrid infrastructure.

2. PaaS (Platform-as-a-Service):
   This is where cloud computing providers deploy the infrastructure and software framework, but businesses can develop and run their own applications. Web applications can be created quickly and easily via PaaS, and the service is flexible and robust enough to support them. PaaS solutions are scalable and ideal for business environments where multiple developers are working on a single project. It is also handy for situations where an existing data source (such as CRM tool) needs to be leveraged.

3. SaaS (Software as a Service):
   This cloud computing solution involves the deployment of software over the internet to various businesses who pay via subscription or a pay-per-use model. It is a valuable tool for CRM and for applications that need a lot of web or mobile access – such as mobile sales management software. SaaS is managed from a central location so businesses don't have to worry about maintaining it themselves, and is ideal for short-term projects.

Question 4: What are Cloud Deployment Models & explain each with example?

Answer 4:

There are three cloud deployment models: public, private and hybrid. Each deployment model is defined according to where the infrastructure for the environment is located.

1. Public Cloud:
   Public cloud solutions are readily available from Google, Amazon, Microsoft, and others. Public cloud services provide infrastructure and services to the public, and you, or your organization, secure a piece of that infrastructure and network. Resources are shared by hundreds or thousands of people. Gmail and U of I Box are examples of public cloud services.

2. Private Cloud:
   Private cloud solutions are dedicated to one organization or business, and often have much more specific security controls than a public cloud. Many medical offices, banking institutions, and other organizations who are required to meet federal and state guidelines for data controls use a private cloud. Using private cloud storage allows them to control highly sensitive data by meeting regulations and industry-based criteria, whether that be medical records, trade secrets, or other classified information.

3. Hybrid Cloud:
   Hybrid cloud solutions are a blend of public and private clouds. This is a more complex cloud solution in that the organization must manage multiple platforms and determine where data is stored. An example of a hybrid cloud solution is an organization that wants to keep confidential information secured on their private cloud, but make more general, customer-facing content on a public cloud.

Question 5: Mention various Cloud Providers with various Services?

Answer 5:

There are many Cloud Service providers in the market. Some of them are:

- Amazon Web Service (AWS)
- ServerSpace
- Microsoft Azure
- Google Cloud Platform
- IBM Cloud Services
- Adobe Creative Cloud
- Kamatera
- VMware
- Rackspace
- Red Hat
- Salesforce
- Oracle Cloud
- SAP
- Verizon Cloud
- Navisite
- Dropbox

These cloud providers provide services such as:

- Software as a Service (SaaS):
  In SaaS, a customer provides software which can be either for a particular amount of time or for the lifetime. SaaS utilizes the internet and delivers the application to the customer. Most of the SaaS application does not require any downloads as they can use directly through the web browser.
- Platform as a Service (PaaS):
  Platform as a service is a framework for the developer where they can create an application for customizing the previously built application. This service also provided through the means of internet and here all the management is done by the enterprise or any third-party provider.
- Infrastructure as a Service (IaaS):
  Infrastructure as a service, provided by the Cloud Service providers which help the customer to access and monitor things like computer, networking, and other services. In IaaS, the customer can purchase resources on demand rather than buying hardware which is costly and hard to maintain

Question 6: How organization with Cloud Computing works & without Cloud works explain?

Answer 6:

An organization with cloud computing will work differently than an organization that still uses the traditional method to store data.

Let us assume the company with cloud to be 'A' and the company without cloud to be 'B'

'A' will have greater security than 'B' as the data is handled by a cloud provider who is responsible to keep backups in case there is a data loss or a data breach.

'A' will spend less money than 'B' on data storage as cloud storage is much cheaper than traditional data center.

Question 7: Explain various SaaS Cloud Examples?

Answer 7:

Some SaaS Examples are:

1. Salesforce.com:
   The customer relations management solution enables businesses to collect all information on customers, prospects and leads within a single online platform, enabling authorized employees to access critical data on any connected device at any time

2. Microsoft Office 365:
   Users now may create, edit and share content from any PC, Mac, iOS, Android or Windows device in real-time, connect with colleagues and customers across a range of tools from email to video conferencing and leverage a range of collaborative technologies supporting secure interactions both inside and outside of the organization.

3. Google Apps:
   Google Drive enables staffers to access files from any device and share them instantly with colleagues, in the process eliminating email attachments as well as the hassles of merging different versions.

4. Amazon Web Services:
   Amazon Web Services currently encompasses more than 70 services in all, including computing, storage, networking, database, analytics, deployment, management and tools for the Internet of Things.

5. Dropbox:
   Keep your documents and files at your fingertips across all your devices using Dropbox. Anything added to Dropbox storage automatically shows up across all your desktop and mobile devices, enabling professionals to begin a project on their work PC, make edits on their smartphone during the evening commute home, and add the finishing touches from their home tablet.

Question 8: What are Compute & Storage Services in Cloud explain with examples?

Answer 8:

Cloud storage is essentially a system that allows you to store data on the Internet whereas Cloud computing is used to work on and complete specified projects. It is linked with cloud storage in that you have to move data to the cloud (cloud storage) before you can make use of cloud computing systems. Once the data is moved to the cloud, however, you or someone else can process it into useful material and send it back to you. An example of Cloud Computing is Software as a Service (SaaS), where you input data on software and the data is transformed remotely through a software interface without your computer being involved.