

Final Term Paper (Spring - 2020) Cloud Computing

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50

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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:
(20)

a. Explain in detail network and cloud-based storage.

Answer: The collection of computer, server and which connected to the internet in order to share resources such as printers, exchange files or allow electronic communication. There are four types of network but the LAN AND WAN are more common in the network.

LAN (Local Area Network)

PAN (Personal Area Network)

MAN (Metropolitan Area Network)

WAN (Wide Area Network)

Local Area Network

A Local Area Network (LAN) is a network that is confined to a relatively small area. It is generally limited to a geographic area such as a writing lab, school, or building.

Computers connected to a network are broadly categorized as servers or workstations.

Servers are generally not used by humans directly, but rather run continuously to provide "services" to the other computers (and their human users) on the network. Services provided can include printing and faxing, software hosting, file storage and sharing, messaging, data storage and retrieval, complete access control (security) for the network's resources, and many others.

Workstations are called such because they typically do have a human user which interacts with the network through them. Workstations were traditionally considered a desktop, consisting of a computer, keyboard, display, and mouse, or a laptop, with with integrated keyboard, display, and touchpad. With the advent of the tablet computer, and the touch screen devices such as iPad and iPhone, our definition of workstation is quickly evolving to include those devices, because of their ability to interact with the network and utilize network services.

Wide Area Network

Wide Area Networks (WANs) connect networks in larger geographic areas, such as Florida, the United States, or the world. Dedicated transoceanic cabling or satellite uplinks may be used to connect this type of global network.

Using a WAN, schools in Florida can communicate with places like Tokyo in a matter of seconds, without paying enormous phone bills. Two users a half-world apart with workstations equipped with microphones and webcams might teleconference in real time. A WAN is complicated. It uses multiplexers, bridges, and routers to connect local and metropolitan networks to global communications networks like the Internet. To users, however, a WAN will not appear to be much different than a LAN.

Cloud storage is a way for businesses and consumers to save data securely online so it can be accessed anytime from any location and easily shared with those who are granted permission. Cloud storage also offers a way to back up data to facilitate recovery.

Cloud storage offers a simple way to store and/or move data in a secure and safe manner. Think about buying a new computer and needing a fast and secure way to transfer all your files.

Cloud storage can also be used to archive data that requires long-term storage but doesn't need to be accessed frequently, such as certain financial records. Cloud storage works through data center virtualization, providing end users and applications with a virtual storage architecture that is scalable according to application requirements. In general, cloud storage operates through a web-based API that is remotely implemented through its interaction with the client application's in-house cloud storage infrastructure for input/output (I/O) and read/write (R/W) operations.

When delivered through a public service provider, cloud storage is known as utility storage. Private cloud storage provides the same scalability, flexibility and storage mechanism with restricted or non-public access.

Advantage

scalability:

According to the requirement user can scale the storage capacity up and down and one time payment rather than pay as per use.

Reliability:

The cloud provider give assurance to your data and will access from any where through internet.

Disadvantage

Performance:

The cloud is based on internet it will never be faster as compare to NAS and SAN based on local storage

security:

Not all the users may be able to trust the cloud provider for the users' data.

Question No. 2:
(20)

a. Explain in detail web application and multitenant technology.

Answer: Web Applications

In computer system, a web application is a client-side and server-side software application in which the client runs or request in a web browser. Common web applications include email, online retail sales, online auctions, wikis, instant messaging services and more. Many companies are shifting their focus to web applications that can be delivered as Software-as-a-Service (SaaS), such as moving to Microsoft 365.

The web application work in following step.

Step 1: The user accesses a web application via a web browser or mobile application, triggering a request to the web server over the Internet.

Step 2: The web server forwards the request to the web application server. The web application server performs the requested task such as querying the database or processing the data then generates the results of the requested data.

Step 3: The web application server sends the results back to the web server.

Step 4: the web server delivers the requested information to the client (desktop, mobile device, tablet, etc.) and the information appears on the user's display.

The benefits of web applications: flexibility and agility

Unlike desktop or client-server applications, web applications can be accessed anywhere using a web browser such as Microsoft Explorer, Google Chrome, or Apple Safari. The user can determine which machine or machines he will use to access the web application. Web applications are updated centrally so that the applications are always up to date. Security can also be applied centrally.

Multi-tenant

Multi-tenancy is an architecture in which a single instance of a software application serves multiple customers. Each customer is called a tenant. Tenants may be given the ability to customize some parts of the application, such as the color of the user interface (UI) or business rules, but they cannot customize the application's code.

In a multi-tenant architecture, multiple instances of an application operate in a shared environment. This architecture is able to work because each tenant is integrated physically, but logically separated; meaning that a single instance of the software will run on one server and then serve multiple tenants. In this way, a software application in a multi-tenant architecture can share a dedicated instance of configurations, data, user management and other properties.

Multi-tenancy applications can share the same users, displays, rules -- although users can customize these to an extent -- and database schemas, which tenants can also customize.

b. Explain in detail cloud security threats.

Answer:Cloud security, also known as cloud computing security, consists of a set of policies, controls, procedures and technologies that work together to protect cloud-based systems, data, and infrastructure. ... From authenticating access to filtering traffic, cloud security can be configured to the exact needs of the business.

Most Five common security threats are

Data breaches:The risk of a data breach is not unique to cloud computing, but it consistently ranks as a top concern for cloud customers

Human error: According to Jay Heiser, research vice president at Gartner, “Through 2020, 95% of cloud security failures will be the customer’s fault.”

DDoS attacks: Distributed denial-of-service attacks pose significant risks to cloud customers and providers, including lengthy service outages, reputational damage, and exposure of customer data.

Insecure APIs: As the public “front door” to your application, an API is likely to be the initial entry point for attackers. Use pen testing to uncover security weaknesses in the APIs you use.

Exploits: The multitenancy nature of the cloud (where customers share computing resources) means shared memory and resources may create new attack surfaces for malicious actors.

Question No. 3:

(10)

a. Briefly describe following.

a. Advantages and disadvantages of cloud computing.

Answer:Advantages:

BACK AND RECOVERY:

since all our data is stored in the cloud so the process of backing it up and restoring the same is much easier than storing the same on the physical device. The various cloud services providers offer reliable and flexible backup recovery solution. hence cloud makes the process of backup and recovery much simpler than other traditional methods of data storage.

ACCESSIBILITY:

we can access our data from anywhere via internet connection.

UNLIMITED STORAGE:

Depending upon the payment mode the client can store data on cloud.

COST SAVING:

The most significant cloud computing benefits is cost saving. The cloud is available at much cheaper rates and lowers the company IT expenses. It eliminates investment in software hardware, server licensing fee, data storage, software updates, management etc. Pay as much as you use. It allows users to pay for only what they use and according to the demand the charges get increased.

RELIABILITY: cloud computing is more reliable and consistent. Most providers offer a service which guarantee 24/7 and 99.99% availability. companies can add or subtract resources based on their needs.

DISADVANTAGE:

SECURITY:

The major issue in the cloud computing is security. before adopting this technology, we should know we are surrendering our company sensitive information to a third party cloud service provider. This cloud potentially put your company at great

risk Hence we need to choose most reliable services provider who will keep your information totally secure. security and privacy issues can be overcome by encryption, security hardware and security application.

ACCESSIBILITY:

if we don't have internet connection we can't access our data.

DOWNTIME:

cloud service provider take care of number of client each day, so sometimes this heavy load can lead to business processes being temporarily suspended.

LOCK IN:

It's very difficult for the customer to switch from one cloud service provider (CSP) to another.

However it is not yet possible because each of the cloud provider uses different standard languages for their platforms.

b. Collaborative meeting in cloud.

Answer: cloud collaboration is not only used for security but also for collaborate environment where friend, colleagues can share access, document and save single object of that's document in physical storage many application are available for years which enable user for some sort of interaction. The collaboration in cloud provide affordable and accessible tool-set for user to exchange file and full suite of communication channel.

The features of cloud collaboration.

Universal user access

IP voice and video

Sharing and conferencing

Instant messaging

Group chat

Rich messaging

Unified message