

Final Term Paper (Spring - 2020)
Cloud Computing

Name: Muhammed Omer

ID #: 13000

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Instructor: M Omer Rauf

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.

Ans:

Network:

A network consists of two or more than two computers or mobiles phones are connected with each other to share data, resources, such as CDs, USB, Printers, allow electronics communication , email send, messages, and also exchange files. The network are made or connected through cable, radio waves, satellites, telephone line and infrared light beams.

Network Storage: network storage mean local data store on a local devices a hard driver memory are on a services your network it also called attached storage we can also say that is like NAS use the having private cloud computing in office provide all benefits of public cloud on site.

NAS services are scale out meaning that's as your needed storage you can add to what you have the file based protocol for example NFS, SMB, AFP, NAS provide variety protocol to user.

Benefits of Networks:

Following are some benefits of a networks which given below:

- It provides a platform to communicate the user with each other in a network.
- It allows us to share data and resources.
- Make it possible to track and monitor the use of resources.
- Make it possible to store data in a centralize location where the server located.
- It helps up in reducing the required numbers of devices.
- It allows us to implement the security policies.
- It allows multiple user to works on a single project.

Advantage

Increased security all permission of data are controlled by an organization internal IT person.

- No internet connection required.
- Physical possession of data.
- NAS is quick the storage of data locally.

Disadvantage

- The migration of old data hard driver to new hard driver.
- It become harder when the storage area company have buy new hard driver so its expensive.
- Hard drive are fragile time they can cost a business fortune.

Devices which are used for network are given below:

- a. Hub.
- b. Routers.
- c. Bridges.
- d. Interface Cards.
- e. Switches.
- f. Firewalls.

Cloud-Based Storage:

Cloud storage is a cloud computing model that stores data on the internet through the company which allow the cloud computing and also manage and operate that data storage as a service. The cloud provider allows or delivered the cloud server on demand with capacity and cost within time and eliminates purchasing and managing your data storage. It allows us to access our data anytime and anywhere in all over the world by providing the internet connection.

Benefits of Cloud Storage:

Following are the benefit of cloud storage:

• Total Cost of Ownership:

In a cloud storage their as no such hardware devices to purchase.

We can only purchase the cloud storage by adding or removing the capacity by demand which we offer. It make quick change, high performance. If the data access frequency are low it can move automatically move to lower cost tires.

• Time to Deployment:

When the development team is ready to implement, infrastructure should never slow it down. Cloud storage enables IT to quickly send the right amount of storage, right when it's needed. This allows IT to focus on solving complex application problems rather than having to manage storage systems.'

Cloud Storage Requirement:

- Durability.
- Availability.
- Security.

Type of Cloud Storage:

- Object Storage.
- File Storage.
- Block Storage.

Example:

- Icloud.
- Google drive.
- Drop Box.
- Microsoft One drive.

Question No. 2:**(20)**

- a. **Explain in detail web application and multitenant technology.**

Ans:**Web Application**

Web application is the computer program which utilize web technology and web browser to perform task for user.

Web application are code in their respective which support by internet browser such the as the script and HTML.

Web application web is require server is manage the requests and sometime web application also needed data base to store data the user. Application example ASP. Net ASP cold fusion PHP JPS. Example micro soft office 360.

A web application or "web app" is a software program that runs on a web server. Unlike traditional desktop applications, which are launched by your operating system, web apps must be accessed through a web browser.

Web apps have several advantages over desktop applications. Since they run inside web browsers, developers do not need to develop web apps for multiple platforms.

Some people prefer desktop apps, while others prefer web applications. Therefore, many software companies now offer both desktop and web versions of their most popular programs.

Benefits of a web application

- Web applications run on multiple platforms regardless of OS or device as long as the browser is compatible
- All users access the same version, eliminating any compatibility issues
- They are not installed on the hard drive, thus eliminating space limitations
- They reduce software piracy in subscription-based web applications (i.e. SaaS)
- They reduce costs for both the business and end user as there is less support and maintenance required by the business and lower requirements for the end user's computer

Example of a web application

Web applications include online forms, shopping carts, word processors, spreadsheets, video and photo editing, file conversion, file scanning, and email programs such as Gmail, Yahoo and AOL. Popular applications include Google Apps and Microsoft 365.

Multitenant technology

Multi tenancy is architecture in which a single instance of software application server multiple customer in the multitenant technology the customer is called tenant. They cannot customize the code and design of the application and can some business changes architecture broadened of new models that advantage of virtualization and remote access. Example Netflix.

The Cloud Computing Multi tenant Technology means that multiple customers of a cloud vendor are using the same computing resources. Despite the fact that they share resources cloud customers are not aware of each other and their data is kept totally separate. Multi tenancy is a crucial component of cloud computing without it cloud services would be far less practical. Multi tenant architecture is a feature in many types of public cloud computing including Software as a Service, Platform as a Service and Infrastructure as a Service.

Multitenancy is often used in cloud computing, to offer shared tenancy on public cloud providers like Amazon Web Services and Microsoft Azure. Additionally, multitenancy is a key part of another cloud model, software as a service, and so is deployed by many software as a service companies.

Advantages of Multitenant technology

- **Simplified hosting:** It's not your hardware to manage any more, reducing a lot of time and expense.
- **Upgrading software is no longer your problem:** You always get the latest version of software pushed out to you by the provider.

Disadvantages of Multi-Tenant Hosting

- **They have their own security risks:** For starters, you need strict authentication and access controls to make sure the right people get access. Second, data corruption could possibly spread from one user to all, though precautions guard against this.
- **Noise neighbors:** As mentioned earlier, someone else on your CPU might be consuming cycles and slowing you down. Capacity is supposed to be elastic and expand as needed but that's not always the case.

b. Explain in detail cloud security threats.

Ans:

Cloud security & Threats

The past decade has seen an explosion in the popularity of cloud-computing and cloud-based storage solutions with consumers and businesses. However while moving to the cloud offers a number of benefits to businesses, many have concerns regarding security. While this is no reason to avoid using cloud-based solutions, it is important to be aware of them especially when choosing a supplier. Below are some of the most prominent security threats and concerns facing businesses moving to the cloud.

Data Breaches

Risk of data breach is not unique cloud computing, but it consistently the top of ranks concern of the cloud computing.

Data Loss and no backup

The accident of catastrophe can lead to the permanent loss of the customer and the data unless measure in the place back up the data.

DDoS Attack

The distributed denial of services the attack of significant risks and the cloud customer provider including length services outage damage and exposure of customer data.

Insecure APIs

The public front door your application an APIs is likely the initial entry points for attack. Use pen testing to uncover security weakness the APIs you use.

Exploits

The nature of multitenancy of the cloud computer and the customer share computing resources and the shared means memory and resources may create a new attack surface of malicious actor.

Account hijacking

The using stolen credentials may gain attack access to critical area of cloud computing services and compromising the confidentiality availability of those services.

Advanced persistent threats

The many persistent of advance threat groups not only the target cloud environment but use a public cloud services conduct their attack.

Spectre and meltdown

Attack can meltdown exploit virtual view of data services hosted on same hardware potentially distributes the cloud computing hosts. Specter is even worse to harder to exploit, but harder to fix to.

Human Error

According to Jay Hreser research vice president at Gartner through the 95% of cloud computing security failures will be the customer fault.

Question No. 3:

(10)

- a. Briefly describe following.

- a. **Advantages and disadvantages of cloud computing**

Ans:

Advantages:

1. **Easy implementation.** Cloud hosting allows business to retain the same applications and business processes without having to deal with the backend technicalities. Readily manageable by the Internet, a cloud infrastructure can be accessed by enterprises easily and quickly.
2. **Cost Effective:** It is way more cheaper than physically buying storage devices.
3. **Accessibility.** Access your data anywhere, anytime. It can be accessed from anywhere around the World via Internet.
4. **No hardware required.** Since everything will be hosted in the cloud, a physical storage center is no longer needed. However, a backup could be worth looking into in the event of a disaster that could leave your company's productivity stagnant.
5. **Recovery:** It is very easy for users to recover your lost data on a cloud than on your PC.
6. **Flexibility for growth.** The cloud is easily scalable so companies can add or subtract resources based on their needs. As companies grow, their system will grow with them.
7. **Syncing and Updating:** Any updates in the data on cloud is constantly updated and synced.
8. **Efficient recovery.** Cloud computing delivers faster and more accurate retrievals of applications and data. With less downtime, it is the most efficient recovery plan.
9. **Security:** Data present on cloud is much more secure than on PCs.

Disadvantages:

1. **No longer in control.** When moving services to the cloud, you are handing over your data and information.
2. **Internet Connectivity:** Without internet connection the data on cloud can't be accessed.
3. **Costly:** Frequently uploading and downloading can have additional costs.
4. **May not get all the features.** Not all cloud services are the same. Some cloud providers tend to offer limited versions and enable the most popular features only, so you may not receive every feature or customization you want.
5. **Customer Support:** Many providers refer you to a knowledge base or FAQs instead of supporting.

6. **Hard Drives:** The Idea of shifting to cloud was to eliminate dependency on hard drives but some services providers still use them.
7. **Privacy:** Since the data is located at a cloud of unknown location, one can't be sure about the privacy of the data
8. **Bandwidth issues.** For ideal performance, clients have to plan accordingly and not pack large amounts of servers and storage devices into a small set of data centers.

b. Collaborative meeting in cloud.

Ans:

Collaborative meeting in cloud

It can be performed by using the software hosted on cloud. The organizations cannot support a cost effective virtual meeting so instead of virtual meeting they used face to face meetings.

It is a way of sharing of files through the use of cloud computing, whereby documents are uploaded to a central "cloud" for storage, where they can then be accessed by others. This technologies allow users to upload, comment and collaborate on documents and even amend the document itself, evolving the document Businesses in the last few years have increasingly been switching to use of cloud collaboration.

- People resist sharing their knowledge.
- Safety issues
- Users are most comfortable using e-mail as their primary electronic collaboration tool.
- People do not have incentive to change their behaviour.
- Teams that want to or are selected to use the software do not have strong team leaders who push for more collaboration.
- Senior management is not actively involved in or does not support the team collaboration initiative.

Features of Collaborative Meeting:

- Streaming video to allow to communicate face to face.
- Messenger.
- Zoom Meeting.
- What's app
- Google class room.
- Used whiteboard or multimedia to control the presentation.
- Share Application.
- Meeting recoding.