

Final Term Paper (Spring - 2020)
Cloud Computing

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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:

Network Based Storage:

Network based storage or network-attached storage (NAS) is a dynamic form of storage where data storage server is connected to computer network and could be accessed by the heterogeneous clients .it is a block level or file level data storage which can provide services from both hardware and software platforms . It is stated as computer appliance it makes data storage to be accessed by the network devices NAS gives the network a single access point with the built- in security management and fault handling capabilities .NAS is one of the main three data storage architectures along with the SAN and DAS.

NAS as hardware:

NAS as hardware come up with Preconfigured storage software installed in the specific hardware usually a boxed shape hardware structure Known as a NAS box, NAS unit, NAS server, or NAS head ,the box is a server containing the disk or drives, processors , RAM.

NAS as software:

NAS software is deployed on an operating system (OS) that's embedded in the hardware. Servers have full OSs that send and receive thousands of requests every second who may be related to storage NAS box send and receive two type of the request data storage and file sharing.

NAS Protocols:

NAS protocols generally composed of data transfer protocols these protocols are used to send data between devices. these protocols provide clients to access data through switch which act as the central servers it connect s everything route requests and data transfer protocols . The major data transfer protocols are the

- Network File Systems (NFS):
- Server Message Blocks (SMB):
- Apple Filing Protocol (AFP):

Benefits of NAS

- Scale-out capacity
- Performance
- Easy setup
- Accessibility
- Fault tolerance

Cloud based storage:

Cloud data storage is the computing model in which data is located in the remote servers which could be accessed by the network like internet it is maintain by the cloud data services provider who maintains servers through virtualization techniques. Cloud storage can provide the benefits like accessibility, rapid deployment, reliability, protection, strong data backup and majorly used in the disaster recovery purposes and it its cheapest way to secure data with lower cost of purchasing deploying and maintaining hardware .

Types of cloud storage:

Personal storage

It is a public cloud storage used by the general public it also called as the mobile cloud storage that store individual data in the cloud and provide individual access to the data from anywhere from simple internet connection .

Public storage:

This is the storage where the enterprises and storage service providers are separate there are no cloud services located in the enterprise data servers. The cloud storage provider fully manages the enterprise data centers.

Private storage:

A form of the storage in which the enterprise and cloud storage provider a are integrated in the enterprises data center .Private cloud storage helps resolve the potential for security and performance concerns while still offering the advantages of cloud storage.

Hybrid Cloud Storage

Hybrid storage is a combination of public and private cloud storage where some critical data resides in the enterprise's private cloud while other data is stored and accessible from a public cloud storage provider.

Question No. 2:

(20)

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

Answer:

WEB APPLICATION:

Web application is an application software that work on the web servers different from the other applications that run on the local operating systems. Web applications are composed of the server side scripts and the PHP and ASP to retrieve the information and to handle storage of the data and client side scripts to give information to the user .This allows users to interact with the company using online forms, content management systems, shopping carts in addition to the productivity the employees can create documents, share information, collaborate on projects, and work on common documents regardless of location or device.

How a web application works

- User makes an request to web servers through network e.g. internet by web browser or search engine or the application user interface .
- Web browser moves request to web application server.
- Web application servers perform requested task. Such processing data , querying database.
- Web application server send data to the web server with processed request.
- Web server responds back to the client and display information on the screen.

Multitenant technology:

The multitenant technology refers to creation of the architecture which can serve multi costumers or clients. Tenants mean the users. Multitenant applications ensure that tenants do not have access to data and configuration information that is not their own

Tenants can individually customize features of the application, such as:

- User Interface
Tenants can change the “look and feel” for their application interface.
- Business Process
Tenants are allow to customize the rules, logic, and workflows of the business processes .
- Data Model
Tenants can extend the data of the application to include, exclude, or rename fields in the application data structures.
- Access Control
Tenants are in control of the access rights for users and groups.

Common characteristics of multitenant applications:

- Usage Isolation
The usage of one tenant cannot effect the other tenants in the application
- Data Security
Every tenants is responsible for their data and thy cannot others tenants data.
- Backup
Backup and restore procedures are separately executed for the data of each tenant.

- Application Upgrade
Tenants are not negatively affected by upgrading of shared applications
 - Scalability
The application can scale both number of tenant existing and new in applications.
- b. Explain in detail cloud security threats.

Answer:

cloud security threats:

Violating Data:

violation of data in cloud have the effects like loss of the trust by the partners and costumers ,market value decrease, financial expenses due to forensics and may face legal liabilities and contract problems.

Change control:

The change of control of data storage must be analyzed and cloud services provider have to provide proper attention to data privacy it may lead to the disastrous effects like in 2017 amazon storage bucket had been exposed 123 million people data .

Lack of Cloud Security Architecture and Strategy:

One of the biggest challenges during this transition is the implementation of appropriate security architecture to fight cyber-attacks. A lack of understanding of the shared security responsibility model is also another contributing factor.

Credential, Access and Key Management:

In the cloud security rules purposes that public and private cloud settings should be aware of the access and key managements . CSPs and cloud consumers are required to manage IAM without compromising security.

Account Hijacking:

Account hijacking is a threat in which malicious attackers gain access to and abuse accounts that are highly privileged or sensitive. In cloud environments Phishing attacks, exploitation of cloud-based systems, or stolen credentials can compromise these accounts.

Insider Threat:

Insider negligence is the cause of most security incidents. Employee or contractor negligence was the root cause of 64 percent of the reported insider incidents, whereas 23 percent were related to criminal insiders and 13 percent to credential theft.

Weak Control Plane:

Moving from the data center to the cloud poses some challenges for creating a sufficient data storage and protection program. The user must now develop new processes for data duplication, migration and storage.

structure Failures:

the meta structure is the most important in the cloud access storage of the data . it is considered to be the waterline for the deployment of cloud structure.

Limited Cloud Usage Visibility

Limited cloud usage visibility occurs when an organization does not possess the ability to visualize and analyze whether cloud service use within the organization is safe or malicious. This occurs when employees are using cloud applications and resources without the specific permission and support of corporate IT and security.

Question No. 3:

(10)

- a. Briefly describe following.
 - a. Advantages and disadvantages of cloud computing.

Answer:

ADVANTAGES:

➤ On-Demand Self-service

The cloud computing allows user to request the data access at anytime from anywhere through internet this most beneficial for the user.

➤ Multi-tenancy

It handles multi user with cost effective way and provides better platform to collaborate with the people.

➤ Offers Resilient Computing

It offers effortless computing because of which an its usage for the general public is very helpful.

➤ Fast and effective virtualization

It provides fast and effective data virtualization by removing barriers in data shift and change from on place to another.

- Provide you low-cost software
- Offers advanced online security
- Location and Device Independence

Disadvantages:

- Performance issues
- Technical Issues
- Security Threat
- Downtime
- Internet Connectivity
- Lower Bandwidth
- Lacks of Support

b. Collaborative meeting in cloud.

Answer:

Cloud collaboration is term refer to the creation of collaborative environment for the employees colleagues so they can access share work and single subject of documents .there is a lot of applications which enabled this sort of interaction for the users in way that is affordable, accessible, configurable toolset for users to interact, exchange, cooperate and communicate across the full suite of communication channels

The Features of Cloud Collaboration:

- Universal user access
- IP voice and video
- Sharing and conferencing
- Rich presence
- Instant messaging
- Group chat
- Unified messaging
- Single number reach
- Click to dial audio and video calling