**Cloud Storage Exercise**

**Learning Goal: gaining a deeper understanding of cloud storage.**

**Please answer the following questions.**

1. **What are the facilities that house cloud storage systems called?**

The facilities that house cloud storage systems are typically referred to as data centres.

1. **What is redundancy?**

Redundancy refers to duplicating critical components or functions of a system to increase reliability and performance. In the context of cloud storage, redundancy involves replicating data across multiple servers or locations to ensure data availability and prevent data loss in the event of hardware failures, maintenance or other issues.

1. **What are the main models of cloud storage? Describe each.**

**a. Public Cloud Storage:**

Public cloud storage is a service provided by third-party cloud service providers, and the infrastructure is shared among multiple organisations or users. Users pay for the storage space and services they consume.

Examples:

* Amazon S3
* Microsoft Azure Blob Storage
* Google Cloud Storage.

**b. Private Cloud Storage:**

Private cloud storage is operated solely for a single organization. The infrastructure may be managed by the organization itself or by a third-party service provider. Private clouds offer more control over security and customisation but may involve higher initial costs.

Examples:

* OpenStack Swift
* VMware vSAN.

**c. Hybrid Cloud Storage:**

Hybrid cloud storage combines elements of both public and private cloud storage. It allows data and applications to be shared between them. Organizations can use public cloud resources for scalability and flexibility **while keeping sensitive data or critical** workloads in a private cloud. Hybrid cloud solutions aim to provide the benefits of both models.

Examples:

* AWS Outposts
* Microsoft Azure Hybrid Storage
* Google Cloud Anthos.

1. **What is the difference between cloud storage and cloud computing?**

**Cloud Storage:** Involves storing and managing data in remote servers accessed over the internet. It focuses on data durability, availability, and accessibility.

**Cloud Computing:** Involves the delivery of computing services, including processing power, memory, and application hosting, over the internet. It encompasses a broader range of services, including infrastructure as a service (IaaS), platform as a service (PaaS), and software as a service (SaaS).

1. **What are the challenges associated with cloud storage? Explain.**

**Security Concerns:** Concerns about unauthorized access, data breaches, and compliance with data protection regulations.

**Data Transfer Bottlenecks:** Transferring large volumes of data to and from the cloud can be time-consuming and bandwidth-intensive.

**Downtime and Availability:** Dependence on the internet and the cloud provider's infrastructure can lead to downtime and affect data availability.

**Cost Management:** Managing costs associated with storage, data transfer, and additional services can be complex.

1. **What are the advantages of cloud storage? Explain.**

**Scalability**: Cloud storage allows users to easily scale their storage needs up or down based on demand.

**Accessibility**: Data stored in the cloud can be accessed from anywhere with an internet connection.

**Cost** **Efficiency**: Users pay for the storage they use, avoiding the need for large upfront investments in hardware.

**Redundancy** **and** **Reliability**: Cloud storage providers often implement redundancy measures, ensuring data durability and minimizing the risk of data loss.

**Collaboration**: Cloud storage facilitates collaboration by allowing multiple users to access and edit documents in real-time.

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