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**Topic:** Cloud storages

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***Cloud storages***

**What is cloud storage?**

Cloud storage is a cloud computing model that enables storing data and files on the internet through a cloud computing provider that you access either through the public internet or a dedicated private network connection. The provider securely stores, manages, and maintains the storage servers, infrastructure, and network to ensure you have access to the data when you need it at virtually unlimited scale, and with elastic capacity. Cloud storage removes the need to buy and manage your own data storage infrastructure, giving you agility, scalability, and durability, with any time, anywhere data access.

**Why is cloud storage important?**

Cloud storage delivers cost-effective, scalable storage. You no longer need to worry about running out of capacity, maintaining storage area networks (SANs), replacing failed devices, adding infrastructure to scale up with demand, or operating underutilized hardware when demand decreases. Cloud storage is elastic, meaning you scale up and down with demand and pay only for what you use. It is a way for organizations to save data securely online so that it can be accessed anytime from any location by those with permission.

Whether you are a small business or a large enterprise, cloud storage can deliver the agility, cost savings, security, and simplicity to focus on your core business growth. For small businesses, you no longer have to worry about devoting valuable resources to manage storage yourself, and cloud storage gives you the ability to scale as the business grows.

For large enterprises with billions of files and petabytes of data, you can rely on the scalability, durability, and cost savings of cloud storage to create centralized data lakes to make your data accessible to all who need it.

**Cost effectiveness**

With cloud storage, there is no hardware to purchase, no storage to provision, and no extra capital being used for business spikes. You can add or remove storage capacity on demand, quickly change performance and retention characteristics, and only pay for storage that you actually use. As data becomes infrequently and rarely accessed, you can even automatically move it to lower-cost storage, thus creating even more cost savings. By moving storage workloads from on premises to the cloud, you can reduce total cost of ownership by removing overprovisioning and the cost of maintaining storage infrastructure.

**Increased agility**

With cloud storage, resources are only a click away. You reduce the time to make those resources available to your organization from weeks to just minutes. This results in a dramatic increase in agility for your organization. Your staff is largely freed from the tasks of procurement, installation, administration, and maintenance. And because cloud storage integrates with a wide range of analytics tools, your staff can now extract more insights from your data to fuel innovation.

**Faster deployment**

When development teams are ready to begin, infrastructure should never slow them down. Cloud storage services allow IT to quickly deliver the exact amount of storage needed, whenever and wherever it's needed. Your developers can focus on solving complex application problems instead of having to manage storage systems.

**Efficient data management**

By using cloud storage lifecycle management policies, you can perform powerful information management tasks including automated tiering or locking down data in support of compliance requirements. You can also use cloud storage to create multi-region or global storage for your distributed teams by using tools such as replication. You can organize and manage your data in ways that support specific use cases, create cost efficiencies, enforce security, and meet compliance requirements.

**Virtually unlimited scalability**

Cloud storage delivers virtually unlimited storage capacity, allowing you to scale up as much and as quickly as you need. This removes the constraints of on-premises storage capacity. You can efficiently scale cloud storage up and down as required for analytics, data lakes, backups, or cloud native applications. Users can access storage from anywhere, at any time, without worrying about complex storage allocation processes, or waiting for new hardware.

**Business continuity**

Cloud storage providers store your data in highly secure data centers, protecting your data and ensuring business continuity. Cloud storage services are designed to handle concurrent device failure by quickly detecting and repairing any lost redundancy. You can further protect your data by using versioning and replication tools to more easily recover from both unintended user actions or application failures.

**With cloud storage services, you can:**

Cost-effectively protect data in the cloud without sacrificing performance.

Scale up your backup resources in minutes as data requirements change.

Protect backups with a data center and network architecture built for security-sensitive organizations.

**How does cloud storage work?**

Cloud storage is delivered by a cloud services provider that owns and operates data storage capacity by maintaining large datacenters in multiple locations around the world. Cloud storage providers manage capacity, security, and durability to make data accessible to your applications over the internet in a pay-as-you-go model. Typically, you connect to the storage cloud either through the internet or through a dedicated private connection, using a web portal, website, or a mobile app. When customers purchase cloud storage from a service provider, they turn over most aspects of the data storage to the vendor, including capacity, security, data availability, storage servers and computing resources, and network data delivery. Your applications access cloud storage through traditional storage protocols or directly using an application programming interface (API). The cloud storage provider might also offer services designed to help collect, manage, secure, and analyze data at a massive scale.

**What are the types of cloud storage?**

There are three main cloud storage types: object storage, file storage, and block storage. Each offers its own advantages and has its own use cases.

**Object storage**

Organizations have to store a massive and growing amount of unstructured data, such as photos, videos, machine learning (ML), sensor data, audio files, and other types of web content, and finding scalable, efficient, and affordable ways to store them can be a challenge. Object storage is a data storage architecture for large stores of unstructured data. Objects store data in the format it arrives in and makes it possible to customize metadata in ways that make the data easier to access and analyze. Instead of being organized in files or folder hierarchies, objects are kept in secure buckets that deliver virtually unlimited scalability. It is also less costly to store large data volumes.

Applications developed in the cloud often take advantage of the vast scalability and metadata characteristics of object storage. Object storage solutions are ideal for building modern applications from scratch that require scale and flexibility, and can also be used to import existing data stores for analytics, backup, or archive.

**File storage**

File-based storage or file storage is widely used among applications and stores data in a hierarchical folder and file format. This type of storage is often known as a network-attached storage (NAS) server with common file level protocols of Server Message Block (SMB) used in Windows instances and Network File System (NFS) found in Linux.

**Block storage**

Enterprise applications like databases or enterprise resource planning (ERP) systems often require dedicated, low-latency storage for each host. This is analogous to direct-attached storage (DAS) or a storage area network (SAN). In this case, you can use a cloud storage service that stores data in the form of blocks. Each block has its own unique identifier for quick storage and retrieval.

**What cloud storage requirements should you consider?**

Ensuring your company’s critical data is safe, secure, and available when needed is essential. There are several fundamental requirements when considering storing data in the cloud.

**Durability and availability**

Cloud storage simplifies and enhances traditional data center practices around data durability and availability. With cloud storage, data is redundantly stored on multiple devices across one or more data centers.

**Security**

With cloud storage, you control where your data is stored, who can access it, and what resources your organization is consuming at any given moment. Ideally, all data is encrypted, both at rest and in transit. Permissions and access controls should work just as well in the cloud as they do for on-premises storage.

**What are cloud storage use cases?**

Cloud storage has several use cases in application management, data management, and business continuity. Let’s consider some examples below.

**Analytics and data lakes**

Traditional on-premises storage solutions can be inconsistent in their cost, performance, and scalability — especially over time. Analytics demand large-scale, affordable, highly available, and secure storage pools that are commonly referred to as data lakes.

Data lakes built on object storage keep information in its native form and include rich metadata that allows selective extraction and use for analysis. Cloud-based data lakes can sit at the center of multiple kinds of data warehousing and processing, as well as big data and analytical engines, to help you accomplish your next project in less time and with more targeted relevance.

**Backup and disaster recovery**

Backup and disaster recovery are critical for data protection and accessibility, but keeping up with increasing capacity requirements can be a constant challenge. Cloud storage brings low cost, high durability, and extreme scale to data backup and recovery solutions. Embedded data management policies can automatically migrate data to lower-cost storage based on frequency or timing settings, and archival vaults can be created to help comply with legal or regulatory requirements. These benefits allow for tremendous scale possibilities within industries such as financial services, healthcare and life sciences, and media and entertainment that produce high volumes of unstructured data with long-term retention needs.

**Software test and development**

Software test and development environments often require separate, independent, and duplicate storage environments to be built out, managed, and decommissioned. In addition to the time required, the up-front capital costs required can be extensive.

Many of the largest and most valuable companies in the world create applications in record time by using the flexibility, performance, and low cost of cloud storage. Even the simplest static websites can be improved at low cost. IT professionals and developers are turning to pay-as-you-go storage options that remove management and scale headaches.

**Cloud data migration**

The availability, durability, and low cloud storage costs can be very compelling. On the other hand, IT personnel working with storage, backup, networking, security, and compliance administrators might have concerns about the realities of transferring large amounts of data to the cloud. For some, getting data into the cloud can be a challenge. Hybrid, edge, and data movement services meet you where you are in the physical world to help ease your data transfer to the cloud.

**Compliance**

Storing sensitive data in the cloud can raise concerns about regulation and compliance, especially if this data is currently stored in compliant storage systems. Cloud data compliance controls are designed to ensure that you can deploy and enforce comprehensive compliance controls on your data, helping you satisfy compliance requirements for virtually every regulatory agency around the globe. Often through a shared responsibility model, cloud vendors allow customers to manage risk effectively and efficiently in the IT environment, and provide assurance of effective risk management through compliance with established, widely recognized frameworks and programs.

**Cloud-native application storage**

Cloud-native applications use technologies like containerization and serverless to meet customer expectations in a fast-paced and flexible manner. These applications are typically made of small, loosely coupled, independent components called microservices that communicate internally by sharing data or state. Cloud storage services provide data management for such applications and provide solutions to ongoing data storage challenges in the cloud environment.

**Archive**

Enterprises today face significant challenges with exponential data growth. Machine learning (ML) and analytics give data more uses than ever before. Regulatory compliance requires long retention periods. Customers need to replace on-premises tape and disk archive infrastructure with solutions that provide enhanced data durability, immediate retrieval times, better security and compliance, and greater data accessibility for advanced analytics and business intelligence.

**Hybrid cloud storage**

Many organizations want to take advantage of the benefits of cloud storage, but have applications running on premises that require low-latency access to their data, or need rapid data transfer to the cloud. Hybrid cloud storage architectures connect your on-premises applications and systems to cloud storage to help you reduce costs, minimize management burden, and innovate with your data.

**Database storage**

Because block storage has high performance and is readily updatable, many organizations use it for transactional databases. With its limited metadata, block storage is able to deliver the ultra-low latency required for high-performance workloads and latency sensitive applications like databases.

Block storage allows developers to set up a robust, scalable, and highly efficient transactional database. As each block is a self-contained unit, the database performs optimally, even when the stored data grows.

ML and IoT

With cloud storage, you can process, store, and analyze data close to your applications and then copy data to the cloud for further analysis. With cloud storage, you can store data efficiently and cost-effectively while supporting ML, artificial intelligence (AI), and advanced analytics to gain insights and innovate for your business.

**Is cloud storage secure?**

Security is our number one priority at AWS. AWS pioneered cloud computing in 2006, creating cloud infrastructure that allows you to securely build and innovate faster. With AWS, you control where your data is stored, who can access it, and what resources your organization is consuming at any given moment. Fine-grain identity and access controls combined with continual monitoring for near real-time security information ensures that the right resources have the right access, wherever your information is stored. On AWS, you will gain the control and confidence you need to securely run your business with the most flexible and secure cloud computing environment available. As a result, the most highly regulated organizations in the world trust AWS, every day.