# **Cloud Storage**

## **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.

## **What are the types of cloud storage? (Persistent)**

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](https://aws.amazon.com/what-is-cloud-object-storage/) 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.

### Types of cloud storage

There are three main cloud storage options, based on different access models: public, private and hybrid.

[**Public cloud**](https://www.techtarget.com/searchcloudcomputing/definition/public-cloud)**.**

These storage services provide a multi-tenant storage environment that is most suited for unstructured data on a subscription basis. Data is stored in the service provider's data centers with storage data spread across multiple regions or continents. Customers generally pay on a per-use basis, similar to the utility payment model. In many cases, there are also transaction charges based on frequency and the volume of data being accessed.

Private cloud.

A private cloud storage service is an in-house storage resource deployed as a dedicated environment protected behind a firewall. Internally hosted private cloud storage implementations emulate some of the features of commercial public cloud services, providing easy access and allocation of storage resources for business users, as well as object storage protocols. Private clouds are appropriate for users who need customization and more control over their data or who have stringent data security or regulatory requirements.

[**Hybrid cloud**](https://www.techtarget.com/searchcloudcomputing/definition/hybrid-cloud).

This cloud storage option is a mix of private cloud storage and third-party public cloud storage services, with a layer of orchestration management to operationally integrate the two platforms.

The model offers businesses flexibility and more data deployment options. An organization might, for example, store actively used and structured data in an on-premises private cloud and unstructured and archival data in a public cloud. A hybrid environment also makes it easier to handle seasonal or unanticipated spikes in data creation or access by [cloud bursting](https://www.techtarget.com/searchcloudcomputing/definition/cloud-bursting) to the external storage service and avoiding having to add in-house storage resources.

Adoption of the hybrid cloud model has increased in recent years. Despite the [benefits of hybrid clouds](https://www.techtarget.com/searchcloudcomputing/tip/Top-5-benefits-of-hybrid-cloud), they present technical, business and management challenges. For example, private workloads must access and interact with public cloud storage providers, so compatibility, and reliable and ample network connectivity are important factors. An enterprise-level cloud storage system should be scalable to suit current and future needs, accessible from anywhere and application-agnostic.

**References:** https://aws.amazon.com/what-is/cloud-storage/

echtarget.com/searchstorage/definition/cloud-storage