**Cloud**

# **Cloud types**

## **What is a public cloud?**

Public clouds are the most common way of deploying cloud computing. The cloud resources (like servers and storage) are owned and operated by a third-party [cloud service provider](https://azure.microsoft.com/en-us/overview/what-is-cloud-computing/) and delivered over the Internet. [Microsoft Azure](https://azure.microsoft.com/en-us/) is an example of a public cloud. With a public cloud, all hardware, software, and other supporting infrastructure is owned and managed by the cloud provider. In a public cloud, you share the same hardware, storage, and network devices with other organizations or cloud “tenants.” You access services and manage your account using a web browser. Public cloud deployments are frequently used to provide web-based email, online office applications, storage, and testing and development environments.

### **Advantages of public clouds:**

* Lower costs—no need to purchase hardware or software, and you pay only for the service you use.
* No maintenance—your service provider provides the maintenance.
* Near-unlimited scalability—on-demand resources are available to meet your business needs.
* High reliability—a vast network of servers ensures against failure.

## **What is a private cloud?**

A private cloud consists of computing resources used exclusively by one business or organization. The private cloud can be physically located at your organization’s on-site datacenter, or it can be hosted by a third-party service provider. But in a private cloud, the services and infrastructure are always maintained on a private network and the hardware and software are dedicated solely to your organization. In this way, a private cloud can make it easier for an organization to customize its resources to meet specific IT requirements. Private clouds are often used by government agencies, financial institutions, any other mid- to large-size organizations with business-critical operations seeking enhanced control over their environment.

### **Advantages of a private clouds:**

* More flexibility—your organization can customize its cloud environment to meet specific business needs.
* Improved security—resources are not shared with others, so higher levels of control and security are possible.
* High scalability—private clouds still afford the scalability and efficiency of a public cloud.

## **What is a hybrid cloud?**

Often called “the best of both worlds,” hybrid clouds combine on-premises infrastructure, or private clouds, with public clouds so organizations can reap the advantages of both. In a hybrid cloud, data and applications can move between private and public clouds for greater flexibility and more deployment options. For instance, you can use the public cloud for high-volume, lower-security needs such as web-based email, and the private cloud (or other on-premises infrastructure) for sensitive, business-critical operations like financial reporting. In a hybrid cloud, “cloud bursting” is also an option. This is when an application or resource runs in the private cloud until there is a spike in demand (such as seasonal event like online shopping or tax filing), at which point the organization can “burst through” to the public cloud to tap into additional computing resources.

### **Advantages of hybrid clouds:**

* Control—your organization can maintain a private infrastructure for sensitive assets.
* Flexibility—you can take advantage of additional resources in the public cloud when you need them.
* Cost-effectiveness—with the ability to scale to the public cloud, you pay for extra computing power only when needed.
* Ease—transitioning to the cloud doesn’t have to be overwhelming because you can migrate gradually—phasing in workloads over time.

# **Cloud services**

## **Infrastructure as a service (IaaS)**

The most basic category of cloud computing services. With IaaS, you rent IT infrastructure—servers and virtual machines (VMs), storage, networks, operating systems—from a cloud provider on a pay-as-you-go basis. To learn more, see [What is IaaS?](https://azure.microsoft.com/en-in/overview/what-is-iaas/)

## **Platform as a service (PaaS)**

Platform as a service refers to cloud computing services that supply an on-demand environment for developing, testing, delivering and managing software applications. PaaS is designed to make it easier for developers to quickly create web or mobile apps, without worrying about setting up or managing the underlying infrastructure of servers, storage, network and databases needed for development. To learn more, see [What is PaaS?](https://azure.microsoft.com/en-in/overview/what-is-paas/)

## **Serverless computing**

Overlapping with PaaS, [serverless computing](https://azure.microsoft.com/en-in/overview/what-is-serverless-computing/) focuses on building app functionality without spending time continually managing the servers and infrastructure required to do so. The cloud provider handles the setup, capacity planning and server management for you. Serverless architectures are highly scalable and event-driven, only using resources when a specific function or trigger occurs.

## **Software as a service (SaaS)**

Software as a service is a method for delivering software applications over the Internet, on demand and typically on a subscription basis. With SaaS, cloud providers host and manage the software application and underlying infrastructure and handle any maintenance, like software upgrades and security patching. Users connect to the application over the Internet, usually with a web browser on their phone, tablet or PC. To learn more, see [What is SaaS?](https://azure.microsoft.com/en-in/overview/what-is-saas/)

# **Cloud advantages**

## **Trade capital expense for variable expense**

Instead of having to invest heavily in data centers and servers before you know how you’re going to use them, you can pay only when you consume computing resources, and pay only for how much you consume.

## **Benefit from massive economies of scale**

By using cloud computing, you can achieve a lower variable cost than you can get on your own. Because usage from hundreds of thousands of customers is aggregated in the cloud, providers such as AWS can achieve higher economies of scale, which translates into lower pay as-you-go prices.

## **Stop guessing about capacity**

Eliminate guessing on your infrastructure capacity needs. When you make a capacity decision prior to deploying an application, you often end up either sitting on expensive idle resources or dealing with limited capacity. With cloud computing, these problems go away. You can access as much or as little capacity as you need, and scale up and down as required with only a few minutes’ notice.

## **Increase speed and agility**

In a cloud computing environment, new IT resources are only a click away, which means that you reduce the time to make those resources available to your developers from weeks to just minutes. This results in a dramatic increase in agility for the organization, since the cost and time it takes to experiment and develop is significantly lower.

## **Stop spending money running and maintaining data centers**

Focus on projects that differentiate your business, not the infrastructure. Cloud computing lets you focus on your own customers, rather than on the heavy lifting of racking, stacking, and powering servers.

**Go global in minutes**

Easily deploy your application in multiple regions around the world with just a few clicks. This means you can provide lower latency and a better experience for your customers at minimal cost.