

# What is cloud computing?

- Simply put, cloud computing is the delivery of computing services—including servers, storage, databases, networking, software, analytics, and intelligence—over the Internet (“the cloud”) to offer faster innovation, flexible resources, and economies of scale. You typically pay only for cloud services you use, helping you lower your operating costs, run your infrastructure more efficiently, and scale as your business needs change.

## Top benefits of cloud computing

Cloud computing is a big shift from the traditional way businesses think about IT resources. Here are seven common reasons organizations are turning to cloud computing services:

### Cost

- Moving to the cloud helps companies optimize [IT costs](#). This is because cloud computing eliminates the capital expense of buying hardware and software and setting up and running onsite data centers—the racks of servers, the round-the-clock electricity for power and cooling, and the IT experts for managing the infrastructure. It adds up fast.

### Speed

- Most cloud computing services are provided self service and on demand, so even vast amounts of computing resources can be provisioned in minutes, typically with just a few mouse clicks, giving businesses a lot of flexibility and taking the pressure off capacity planning.

### Global scale

- The benefits of cloud computing services include the ability to scale elastically. In cloud speak, that means delivering the right amount of IT resources—for example, more or less computing power, storage, bandwidth—right when they’re needed, and from the right [geographic location](#).

### Productivity

- Onsite datacenters typically require a lot of “racking and stacking”—hardware setup, software patching, and other time-consuming IT management chores. Cloud computing removes the need for many of these tasks, so IT teams can spend time on achieving more important business goals.

## Performance

- The biggest cloud computing services run on a worldwide network of secure datacenters, which are regularly upgraded to the latest generation of fast and efficient computing hardware. This offers several benefits over a single corporate datacenter, including reduced network latency for applications and greater economies of scale.

## Reliability

- Cloud computing makes data backup, [disaster recovery](#), and business continuity easier and less expensive because data can be mirrored at multiple redundant sites on the cloud provider's network.

## Security

- Many cloud providers offer a broad set of policies, technologies, and controls that strengthen your security posture overall, helping protect your data, apps, and infrastructure from potential threats.

## Types of cloud computing

Not all clouds are the same and no single type of cloud computing is right for everyone. Several different models, types, and services have evolved to help offer the right solution for your needs.

First, you need to determine the type of cloud deployment, or cloud computing architecture, that your cloud services will be implemented on. There are three different ways to deploy cloud services: on a public cloud, private cloud, or hybrid cloud. [Learn more about public, private, and hybrid clouds.](#)

### Public cloud

[Public clouds](#) are owned and operated by third-party [cloud service providers](#), which deliver computing resources like servers and storage over the internet. Microsoft Azure 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. You access these services and manage your account using a web browser.

### Private cloud

A [private cloud](#) refers to cloud computing resources used exclusively by a single business or organization. A private cloud can be physically located on the company's onsite datacenter. Some companies also pay third-party service providers to host their private cloud. A private cloud is one in which the services and infrastructure are maintained on a private network.

## Hybrid cloud

[Hybrid clouds](#) combine public and private clouds, bound together by technology that allows data and applications to be shared between them. By allowing data and applications to move between private and public clouds, a hybrid cloud gives your business greater flexibility and more deployment options and helps optimize your existing infrastructure, security, and compliance.

## Types of cloud services: IaaS, PaaS, serverless, and SaaS

Most cloud computing services fall into four broad categories: infrastructure as a service (IaaS), platform as a service (PaaS), serverless, and software as a service (SaaS). These are sometimes called the cloud computing "stack" because they build on top of one another. Knowing what they are and how they're different makes it easier to accomplish your business goals.

### IaaS

The most basic category of cloud computing services. With [infrastructure as a service \(IaaS\)](#), you rent IT infrastructure—servers and virtual machines (VMs), storage, networks, operating systems—from a cloud provider on a pay-as-you-go basis.

### PaaS

[Platform as a service \(PaaS\)](#) 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.

### SaaS

[Software as a service \(SaaS\)](#) 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.

## Serverless computing

Overlapping with PaaS, [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.

## What is a cloud ecosystem?

A cloud ecosystem is a complex system of interdependent components that all work together to enable cloud services. In nature, an ecosystem is composed of living and nonliving things that are connected and work together. In cloud computing, the ecosystem consists of hardware and software as well as cloud customers, [cloud engineers](#), consultants, integrators and partners.

Werner Vogels, CTO at Amazon, first compared the cloud to an ecosystem in a keynote address at the Cloud Connect 2011 conference. At the time, enterprise cloud computing was usually thought of in terms of three broad service areas -- infrastructure-as-a-service (IaaS), platform-as-a-service (PaaS) and software-as-a-service (SaaS). Vogels proposed that the cloud was really more complex and its description also needed to include the array of service providers that companies rely on to operate in the cloud.

## How a cloud ecosystem works

The center of a cloud ecosystem is a public cloud provider. It might be an IaaS provider such as Amazon Web Services (AWS) or a SaaS vendor such as Salesforce. Radiating out from the center of the cloud are software companies that use the provider's anchor platform, as well as consultants and companies that have formed strategic alliances with the anchor provider.

There is no [vendor lock-in](#) because these companies overlap, making the ecosystem more complex. For example, AWS is the center of its own ecosystem, but it's also a part of the Salesforce ecosystem. Salesforce runs a number of its services on AWS's infrastructure, and Salesforce customers can gain access, through devices called connectors, to pieces of AWS, such as its [Simple Storage Service \(S3\)](#).

A robust ecosystem provides a cloud provider's customers with an easy way to find and purchase business applications and respond to changing business needs. When the apps are sold through a provider's app store such as [AWS Marketplace](#), Microsoft [Azure Marketplace](#) (for cloud software) or Microsoft AppSource (for business applications), the customer essentially has access to a catalog of different

vendors' software and services that have already been vetted and reviewed for security, risk and cost.

## The benefits of a cloud ecosystem

Companies can use a cloud ecosystem to build new [business models](#). It becomes relatively easy for a medical device manufacturer, for example, to launch a heart-monitoring service on its cloud service provider's cloud infrastructure and then sell the service alongside its main business of manufacturing heart monitors for hospitals.

In a cloud ecosystem, it is also easier to aggregate data and analyze how each part of the system affects the other parts. For example, if an ecosystem consists of patient records, smart device logs and healthcare provider records, it becomes possible to analyze patterns across an entire patient population.

## **CLOUD CONNECTIVITY SERVICES**

Cloud-optimized, managed networks and connectivity services improve productivity, security, and resilience.

More than ever, your network's performance, availability, reliability, and security (PARS) is critical. As a cloud connectivity provider, our managed cloud network connectivity services ensure that all of the pieces — WiFi, LAN, WAN, Internet, and mobile — work together to deliver the service you need and expect in the office, at home, and on the road.

Contact us or browse our cloud connectivity options below

- ***MANAGED LOCAL AND WIFI CONNECTIVITY NETWORKS***

Secure, high performance local area and WiFi networks as a cloud connectivity service. Managed firewalls, routers, and switches ensure network connectivity to local resources and the cloud.

- ***BUSINESS BROADBAND AND WIRELINE CONNECTIVITY SERVICES***

Connect your locations to each other, your clouds, and the Internet with reliable, affordable high-speed cloud connectivity networking services.

- **MANAGED DOMAIN NAME SERVICE (DNS)**

With this cloud connectivity option, ensure your domain ownership and configurations facilitate your Internet services, including your web site, email, and [security services](#).

- **CELLULAR VOICE AND DATA CONNECTIVITY SERVICES**

Connect your people and devices to cellular services with one of our top [managed cloud](#) connectivity services, creating opportunities for productivity anywhere at anytime.

**Cloud Networking** is service or science in which company's networking procedure is hosted on public or private cloud. [Cloud Computing](#) is source manage in which more than one computing resources share identical platform and customers are additionally enabled to get entry to these resources to specific extent. Cloud networking in similar fashion shares networking however it gives greater superior features and network features in cloud with interconnected servers set up under cyberspace. **Why cloud networking is required and in-demand?**

- It is in demand by many companies for their speedy and impervious delivery, fast processing, dependable transmission of information without any loss, pocket-friendly set-up. Benefited corporations who select Cloud Networking consist of internet service providers, [e-commerce](#), cloud service providers, community operators, cloud service providers.
- It permits users to boost their networks in accordance with necessities in [cloud-based services](#). An actual cloud network provides high-end monitoring to globally positioned servers, controls site visitors flow between interconnected servers, protects structures with superior network safety, and offers visibility to user by means of its centralized management. The web access can be expanded and made greater reliable bandwidth to promote couple of network features into cloud.
- It ensures overall performance and safety in multi-cloud surrounding so that Information technology receives greater visibility by means of supplying end-users with necessities and experience they need. Workloads are shared between cloud surroundings using software program as provider application. Safety is given to user to get entry to web page and infrastructure by means of transferring functions to the cloud with standard

security model. The gateway offers contextual access code and multi-layer firewall. Applications and offerings are given to allotted data centers in cloud environment.

- Software-Defined [Wide Area Network](#) is technology that makes use of bunch of networking switches and routers to virtually get entry to machine from hardware to software program deployed on white box. Confidential units and information are set up on primary branch workplace or consumer region and given unique access to administrator to get admission to its superior networking functions, cloud optimization software, and firewalls. It is massive range of array with network features deployed in cloud platform.
- Software-defined Wide range community offers standard load balancing approach and combines all stages of network to user experience. It offers greater visuality with assist of intelligent analytics. Giving options to every cloud user may be challenging however leverage of all offerings and supplying them special answer by means of SD-WAN from ceasing to cease applications.

#### **Advantages of Cloud Networking :**

1. **On-Demand Self Service** – Cloud computing provides required application, services, and utility to client. With login key, they can begin to use besides any human interplay and cloud service providers. It consists of storage and digital machines.
2. **High Scalability** – It requests grant of resources on large scale besides any human intervention with every service provider.
3. **Agility** – It shares the assets efficiently amongst customers and works quickly.
4. **Multi-sharing** – By distributed computing, distinctive clients from couple of areas share identical resources through fundamental infrastructure.
5. **Low Cost** – It is very economical and can pay in accordance with its usage.
6. **Services in pay per use Model** – Application Programming Interface is given to clients to use resources and offerings and pay on service basis.
7. **High availability and Reliability** – The servers are accessible at the proper time besides any delay or disappointment.
8. **Maintenance** – It is user-friendly as they are convenient to get entry to from their location and does not require any installation set up.

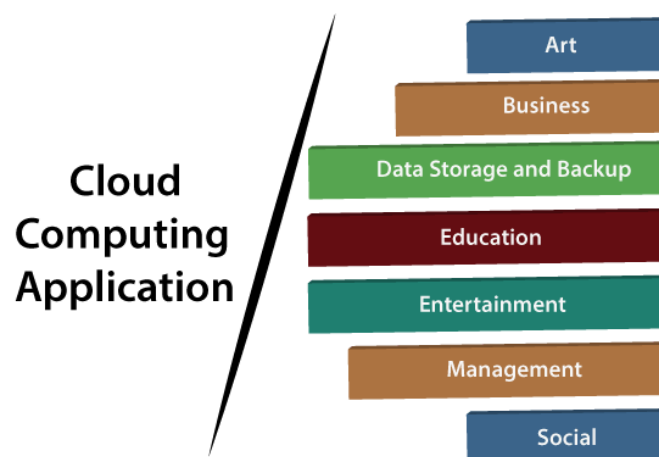
#### **Disadvantages of Cloud Networking :**

1. **Dependency on internet connectivity** – Cloud networking requires a strong and reliable internet connection. If the connection is slow or unreliable, it can cause performance issues and disrupt network access.
2. **Security concerns** – Cloud networks are susceptible to cyber-attacks, and security breaches can compromise the sensitive data stored on the cloud. This risk is mitigated through proper security measures, but there is always some level of vulnerability.
3. **Limited control** – When you use a cloud network, you are dependent on the cloud provider to manage and maintain the network infrastructure. This can limit your control over the network and how it is managed.
4. **Cost** – Cloud networking can be expensive, particularly for large-scale enterprise networks. The costs can add up quickly, especially when you factor in the ongoing maintenance and support costs.
5. **Lack of customization** – Cloud networking solutions are typically pre-configured and may not offer the level of customization that some organizations require. This can limit your ability to tailor the network to your specific needs.

## Cloud Computing Applications

Cloud service providers provide various applications in the field of art, business, data storage and backup services, education, entertainment, management, social networking, etc.

The most widely used cloud computing applications are given below -





# 1. Art Applications

Cloud computing offers various art applications for quickly and easily design **attractive cards, booklets, and images**. Some most commonly used cloud art applications are given below:

## i Moo

Moo is one of the best cloud art applications. It is used for designing and printing business cards, postcards, and mini cards.

## ii. Vistaprint

Vistaprint allows us to easily design various printed marketing products such as business cards, Postcards, Booklets, and wedding invitations cards.

## iii. Adobe Creative Cloud

Adobe creative cloud is made for designers, artists, filmmakers, and other creative professionals. It is a suite of apps which includes PhotoShop image editing programming, Illustrator, InDesign, TypeKit, Dreamweaver, XD, and Audition.

# 2. Business Applications

Business applications are based on cloud service providers. Today, every organization requires the cloud business application to grow their business. It also ensures that business applications are 24\*7 available to users.

There are the following business applications of cloud computing -

## i. MailChimp

MailChimp is an **email publishing platform** which provides various options to **design, send, and save** templates for emails.

## iii. Salesforce

Salesforce platform provides tools for sales, service, marketing, e-commerce, and more. It also provides a cloud development platform.

## iv. Chatter

Chatter helps us to **share important information** about the organization in real time.

## v. Bitrix24

Bitrix24 is a **collaboration** platform which provides communication, management, and social collaboration tools.

#### **vi. Paypal**

Paypal offers the simplest and easiest **online payment** mode using a secure internet account. Paypal accepts the payment through debit cards, credit cards, and also from Paypal account holders.

#### **vii. Slack**

Slack stands for **Searchable Log of all Conversation and Knowledge**. It provides a **user-friendly** interface that helps us to create public and private channels for communication.

#### **viii. Quickbooks**

Quickbooks works on the terminology "**Run Enterprise anytime, anywhere, on any device.**" It provides online accounting solutions for the business. It allows more than 20 users to work simultaneously on the same system.

### **3. Data Storage and Backup Applications**

Cloud computing allows us to store information (data, files, images, audios, and videos) on the cloud and access this information using an internet connection. As the cloud provider is responsible for providing security, so they offer various backup recovery application for retrieving the lost data.

A list of data storage and backup applications in the cloud are given below -

#### **i. Box.com**

Box provides an online environment for **secure content management, workflow, and collaboration**. It allows us to store different files such as Excel, Word, PDF, and images on the cloud. The main advantage of using box is that it provides drag & drop service for files and easily integrates with Office 365, G Suite, Salesforce, and more than 1400 tools.

#### **ii. Mozy**

Mozy provides powerful **online backup solutions** for our personal and business data. It schedules automatically back up for each day at a specific time.

#### **iii. Joukuu**

Joukuu provides the simplest way to **share** and **track cloud-based backup files**. Many users use joukuu to search files, folders, and collaborate on documents.

#### **iv. Google G Suite**

Google G Suite is one of the best **cloud storage** and **backup** application. It includes Google Calendar, Docs, Forms, Google+, Hangouts, as well as cloud storage and tools for managing cloud apps. The most popular app in the Google G Suite is Gmail. Gmail offers free email services to users.

## **4. Education Applications**

Cloud computing in the education sector becomes very popular. It offers various **online distance learning platforms** and **student information portals** to the students. The advantage of using cloud in the field of education is that it offers strong virtual classroom environments, Ease of accessibility, secure data storage, scalability, greater reach for the students, and minimal hardware requirements for the applications.

There are the following education applications offered by the cloud -

#### **i. Google Apps for Education**

Google Apps for Education is the most widely used platform for free web-based email, calendar, documents, and collaborative study.

#### **ii. Chromebooks for Education**

Chromebook for Education is one of the most important Google's projects. It is designed for the purpose that it enhances education innovation.

#### **iii. Tablets with Google Play for Education**

It allows educators to quickly implement the latest technology solutions into the classroom and make it available to their students.

#### **iv. AWS in Education**

AWS cloud provides an education-friendly environment to universities, community colleges, and schools.

## 5. Entertainment Applications

Entertainment industries use a **multi-cloud strategy** to interact with the target audience. Cloud computing offers various entertainment applications such as online games and video conferencing.

### i. Online games

Today, cloud gaming becomes one of the most important entertainment media. It offers various online games that run remotely from the cloud. The best cloud gaming services are Shaow, GeForce Now, Vortex, Project xCloud, and PlayStation Now.

### ii. Video Conferencing Apps

Video conferencing apps provides a simple and instant connected experience. It allows us to communicate with our business partners, friends, and relatives using a cloud-based video conferencing. The benefits of using video conferencing are that it reduces cost, increases efficiency, and removes interoperability.

## 6. Management Applications

Cloud computing offers various cloud management tools which help admins to manage all types of cloud activities, such as resource deployment, data integration, and disaster recovery. These management tools also provide administrative control over the platforms, applications, and infrastructure.

Some important management applications are -

### i. Toggl

Toggl helps users to track allocated time period for a particular project.

### ii. Evernote

Evernote allows you to sync and save your recorded notes, typed notes, and other notes in one convenient place. It is available for both free as well as a paid version.

It uses platforms like Windows, macOS, Android, iOS, Browser, and Unix.

### iii. Outright

Outright is used by management users for the purpose of accounts. It helps to track income, expenses, profits, and losses in real-time environment.

## iv. GoToMeeting

GoToMeeting provides **Video Conferencing** and **online meeting apps**, which allows you to start a meeting with your business partners from anytime, anywhere using mobile phones or tablets. Using GoToMeeting app, you can perform the tasks related to the management such as join meetings in seconds, view presentations on the shared screen, get alerts for upcoming meetings, etc.

## 7. Social Applications

Social cloud applications allow a large number of users to connect with each other using social networking applications such as **Facebook, Twitter, LinkedIn**, etc.

There are the following cloud based social applications -

### i. Facebook

Facebook is a **social networking website** which allows active users to share files, photos, videos, status, more to their friends, relatives, and business partners using the cloud storage system. On Facebook, we will always get notifications when our friends like and comment on the posts.

### ii. Twitter

Twitter is a **social networking** site. It is a **microblogging** system. It allows users to follow high profile celebrities, friends, relatives, and receive news. It sends and receives short posts called tweets.

### iii. Yammer

Yammer is the **best team collaboration** tool that allows a team of employees to chat, share images, documents, and videos.

### iv. LinkedIn

LinkedIn is a **social network** for students, freshers, and professionals.

## Cloud Deployment Models

Cloud Deployment Model functions as a virtual computing environment with a deployment architecture that varies depending on the amount of data you want to store and who has access to the infrastructure.

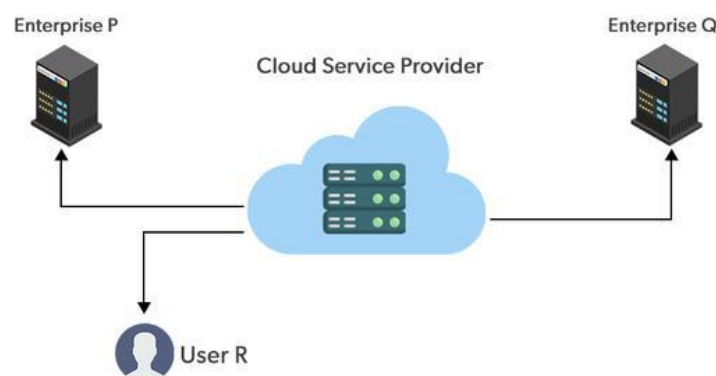
## Types of Cloud Computing Deployment Models

The cloud deployment model identifies the specific type of cloud environment based on ownership, scale, and access, as well as the cloud's nature and purpose. The location of the servers you're utilizing and who controls them are defined by a cloud deployment model. It specifies how your cloud infrastructure will look, what you can change, and whether you will be given services or will have to create everything yourself. Relationships between the infrastructure and your users are also defined by cloud deployment types. [Different types of cloud](#) computing deployment models are described below.

- [Public Cloud](#)
- Private Cloud
- [Hybrid Cloud](#)
- Community Cloud
- [Multi-Cloud](#)

### Public Cloud

The public cloud makes it possible for anybody to access systems and services. The public cloud may be less secure as it is open to everyone. The public cloud is one in which cloud infrastructure services are provided over the internet to the general people or major industry groups. The infrastructure in this cloud model is owned by the entity that delivers the cloud services, not by the consumer. It is a type of cloud hosting that allows customers and users to easily access systems and services. This form of cloud computing is an excellent example of cloud hosting, in which service providers supply services to a variety of customers. In this arrangement, storage backup and retrieval services are given for free, as a subscription, or on a per-user basis. For example, Google App Engine etc.



*Public Cloud*

### *Advantages of the Public Cloud Model*

- **Minimal Investment:** Because it is a pay-per-use service, there is no substantial upfront fee, making it excellent for enterprises that require immediate access to resources.
- **No setup cost:** The entire infrastructure is fully subsidized by the cloud service providers, thus there is no need to set up any hardware.

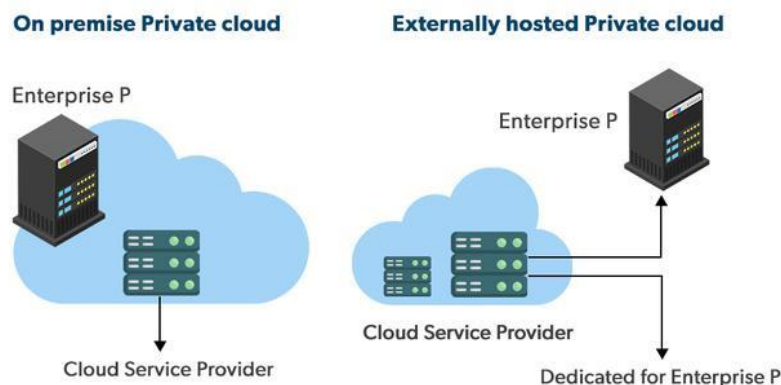
- **Infrastructure Management is not required:** Using the public cloud does not necessitate infrastructure management.
- **No maintenance:** The maintenance work is done by the service provider (not users).
- **Dynamic Scalability:** To fulfill your company's needs, on-demand resources are accessible.

#### *Disadvantages of the Public Cloud Model*

- **Less secure:** Public cloud is less secure as resources are public so there is no guarantee of high-level security.
- **Low customization:** It is accessed by many public so it can't be customized according to personal requirements.

### Private Cloud

The private cloud deployment model is the exact opposite of the public cloud deployment model. It's a one-on-one environment for a single user (customer). There is no need to share your hardware with anyone else. The distinction between [private and public clouds](#) is in how you handle all of the hardware. It is also called the "internal cloud" & it refers to the ability to access systems and services within a given border or organization. The cloud platform is implemented in a cloud-based secure environment that is protected by powerful firewalls and under the supervision of an organization's IT department. The private cloud gives greater flexibility of control over cloud resources.



*Private Cloud*

#### *Advantages of the Private Cloud Model*

- **Better Control:** You are the sole owner of the property. You gain complete command over service integration, IT operations, policies, and user behavior.
- **Data Security and Privacy:** It's suitable for storing corporate information to which only authorized staff have access. By segmenting resources within the same infrastructure, improved access and security can be achieved.
- **Supports Legacy Systems:** This approach is designed to work with legacy systems that are unable to access the public cloud.

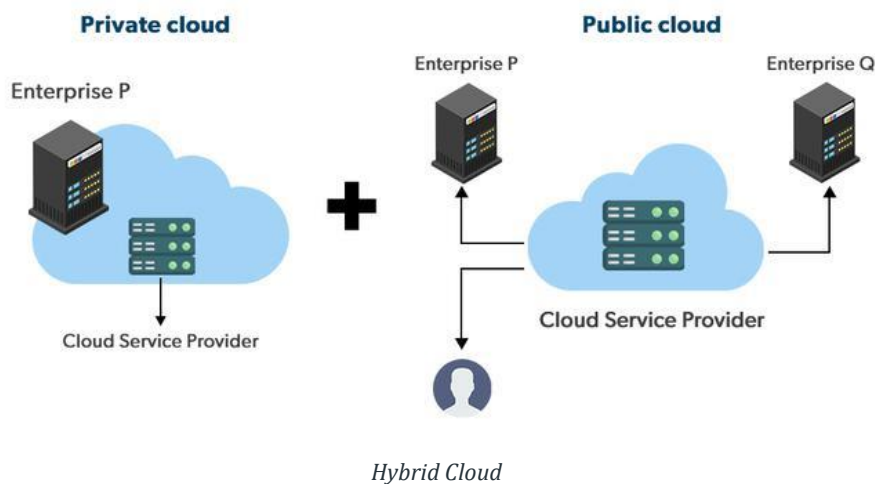
- **Customization:** Unlike a public cloud deployment, a private cloud allows a company to tailor its solution to meet its specific needs.

#### *Disadvantages of the Private Cloud Model*

- **Less scalable:** Private clouds are scaled within a certain range as there is less number of clients.
- **Costly:** Private clouds are more costly as they provide personalized facilities.

### Hybrid Cloud

By bridging the public and private worlds with a layer of proprietary software, hybrid cloud computing gives the best of both worlds. With a hybrid solution, you may host the app in a safe environment while taking advantage of the public cloud's cost savings. Organizations can move data and applications between different clouds using a combination of two or more cloud deployment methods, depending on their needs.



#### *Advantages of the Hybrid Cloud Model*

- **Flexibility and control:** Businesses with more flexibility can design personalized solutions that meet their particular needs.
- **Cost:** Because public clouds provide scalability, you'll only be responsible for paying for the extra capacity if you require it.
- **Security:** Because data is properly separated, the chances of data theft by attackers are considerably reduced.

#### *Disadvantages of the Hybrid Cloud Model*

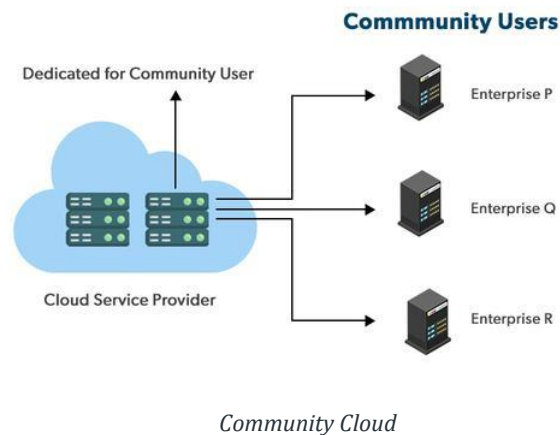
- **Difficult to manage:** Hybrid clouds are difficult to manage as it is a combination of both public and private cloud. So, it is complex.
- **Slow data transmission:** Data transmission in the hybrid cloud takes place through the public cloud so latency occurs.

### Community Cloud

It allows systems and services to be accessible by a group of organizations. It is a distributed system that is created by integrating the services of different clouds to address the specific needs of a community, industry, or business. The infrastructure of the community could be shared between the organization which



has shared concerns or tasks. It is generally managed by a third party or by the combination of one or more organizations in the community.



#### *Advantages of the Community Cloud Model*

- **Cost Effective:** It is cost-effective because the cloud is shared by multiple organizations or communities.
- **Security:** Community cloud provides better security.
- **Shared resources:** It allows you to share resources, infrastructure, etc. with multiple organizations.
- **Collaboration and data sharing:** It is suitable for both collaboration and data sharing.

#### *Disadvantages of the Community Cloud Model*

- **Limited Scalability:** Community cloud is relatively less scalable as many organizations share the same resources according to their collaborative interests.
- **Rigid in customization:** As the data and resources are shared among different organizations according to their mutual interests if an organization wants some changes according to their needs they cannot do so because it will have an impact on other organizations.

#### Multi-Cloud

We're talking about employing [multiple cloud providers](#) at the same time under this paradigm, as the name implies. It's similar to the hybrid cloud deployment approach, which combines public and private cloud resources. Instead of merging private and public clouds, multi-cloud uses many public clouds. Although public cloud providers provide numerous tools to improve the reliability of their services, mishaps still occur. It's quite rare that two distinct clouds would have an incident at the same moment. As a result, multi-cloud deployment improves the high availability of your services even more.

*Multi-Cloud*

### *Advantages of the Multi-Cloud Model*

- You can mix and match the best features of each cloud provider's services to suit the demands of your apps, workloads, and business by choosing different cloud providers.
- **Reduced Latency:** To reduce latency and improve user experience, you can choose cloud regions and zones that are close to your clients.
- **High availability of service:** It's quite rare that two distinct clouds would have an incident at the same moment. So, the multi-cloud deployment improves the high availability of your services.

### *Disadvantages of the Multi-Cloud Model*

- **Complex:** The combination of many clouds makes the system complex and bottlenecks may occur.
- **Security issue:** Due to the complex structure, there may be loopholes to which a hacker can take advantage hence, makes the data insecure.

### What is the Right Choice for Cloud Deployment Model?

As of now, no such approach fits picking a cloud deployment model. We will always consider the best cloud deployment model as per our requirements. Here are some factors which should be considered before choosing the best deployment model.

- **Cost:** Cost is an important factor for the cloud deployment model as it tells how much amount you want to pay for these things.
- **Scalability:** Scalability tells about the current activity status and how much we can scale it.
- **Easy to use:** It tells how much your resources are trained and how easily can you manage these models.
- **Compliance:** Compliance tells about the laws and regulations which impact the implementation of the model.
- **Privacy:** Privacy tells about what data you gather for the model.

Each model has some advantages and some disadvantages, and the selection of the best is only done on the basis of your requirement. If your requirement changes, you can switch to any other model.

### Overall Analysis of Cloud Deployment Models

The overall Analysis of these models with respect to different factors is described below.

<b>Factors</b>	<b>Public Cloud</b>	<b>Private Cloud</b>	<b>Community Cloud</b>	<b>Hybrid Cloud</b>
Initial Setup	Easy	Complex, requires a professional team to setup	Complex, requires a professional team to setup	Complex, requires a professional team to setup

Factors	Public Cloud	Private Cloud	Community Cloud	Hybrid Cloud
Scalability and Flexibility	High	High	Fixed	High
Cost-Comparison	Cost-Effective	Costly	Distributed cost among members	Between public and private cloud
Reliability	Low	Low	High	High
Data Security	Low	High	High	High
Data Privacy	Low	High	High	High

### Models of Cloud Computing

Cloud Computing helps in rendering several services according to roles, companies, etc. Cloud computing models are explained below.

- Infrastructure as a service (IaaS)
- Platform as a service (PaaS)
- Software as a service (SaaS)

#### 1. Infrastructure as a service (IaaS)

[Infrastructure as a Service \(IaaS\)](#) helps in delivering computer infrastructure on an external basis for supporting operations. Generally, IaaS provides services to networking equipment, devices, databases, and web servers.

Infrastructure as a Service (IaaS) helps large organizations, and large enterprises in managing and building their IT platforms. This infrastructure is flexible according to the needs of the client.

##### *Advantages of IaaS*

- IaaS is cost-effective as it eliminates capital expenses.

- IaaS cloud provider provides better security than any other software.
- IaaS provides remote access.

#### *Disadvantages of IaaS*

- In IaaS, users have to secure their own data and applications.
- Cloud computing is not accessible in some regions of the World.

## 2. Platform as a service (PaaS)

[Platform as a Service \(PaaS\)](#) is a type of cloud computing that helps developers to build applications and services over the Internet by providing them with a platform.

PaaS helps in maintaining control over their business applications.

#### *Advantages of PaaS*

- PaaS is simple and very much convenient for the user as it can be accessed via a web browser.
- PaaS has the capabilities to efficiently manage the lifecycle.

#### *Disadvantages of PaaS*

- PaaS has limited control over infrastructure as they have less control over the environment and are not able to make some customizations.
- PaaS has a high dependence on the provider.

## 3. Software as a service (SaaS)

[Software as a Service \(SaaS\)](#) is a type of cloud computing model that is the work of delivering services and applications over the Internet. The SaaS applications are called Web-Based Software or Hosted Software.

SaaS has around 60 percent of cloud solutions and due to this, it is mostly preferred by companies.

#### *Advantages of SaaS*

- SaaS can access app data from anywhere on the Internet.
- SaaS provides easy access to features and services.

#### *Disadvantages of SaaS*

- SaaS solutions have limited customization, which means they have some restrictions within the platform.
- SaaS has little control over the data of the user.
- SaaS are generally cloud-based, they require a stable internet connection for proper working.

# What is IaaS?

Infrastructure as a service (IaaS) is a type of cloud computing service that offers essential compute, storage, and networking resources on demand, on a pay-as-you-

go basis. IaaS is one of the four types of cloud services, along with software as a service ([SaaS](#)), platform as a service ([PaaS](#)), and [serverless](#).

Migrating your organization's infrastructure to an IaaS solution helps you reduce maintenance of on-premises data centers, save money on hardware costs, and gain real-time business insights. IaaS solutions give you the flexibility to scale your IT resources up and down with demand. They also help you quickly provision new applications and increase the reliability of your underlying infrastructure.

IaaS lets you bypass the cost and complexity of buying and managing physical servers and datacenter infrastructure. Each resource is offered as a separate service component, and you only pay for a particular resource for as long as you need it. A [cloud computing service provider](#) like [Azure](#) manages the infrastructure, while you purchase, install, configure, and manage your own software—including operating systems, middleware, and applications.

