

PUBLIC VS PRIVATE VS HYBRID: CLOUD DIFFERENCES EXPLAINED



The term cloud computing spans a range of classifications, types, and architecture models. This networked computing model has transformed how we work—you're likely already using the cloud. But the cloud isn't one thing—cloud computing can be categorized into three general types:

- **Public cloud** is cloud computing that's delivered via the internet and shared across organizations.
- **Private cloud** is cloud computing that is dedicated solely to your organization.
- **Hybrid cloud** is any environment that uses both public and private clouds.

This article looks at cloud computing at the highest level by:




- Defining cloud computing
- Exploring public, private, and hybrid cloud environments
- Sharing use cases and examples

Public vs private vs hybrid cloud: At a glance



Cloud Comparison

Key benefits & drawbacks of cloud computing types

 Public Cloud	 Private Cloud	 Hybrid Cloud
No maintenance costs	Dedicated, secure	Policy-driven deployment
High scalability, flexibility	Regulation compliant	High scalability, flexibility
Reduced complexity	Customizable	Minimal security risks
Flexible pricing	High scalability	Workload diversity supports high reliability
Agile for innovation	Efficient	Improved security
Potential for high TCO	Expensive with high TCO	Potential for high TCO
Decreased security and availability	Minimal mobile access	Compatibility and integration
Minimal control	Limiting infrastructure	Added complexity

Benefits

Drawbacks

What is cloud computing?

Cloud computing is storing or accessing programs, apps, and data via the internet—instead of directly on your computer hard drive. The most popular examples of cloud computing are [Software as a Service \(SaaS\)](#), [Platform as a Service \(PaaS\)](#) and [Infrastructure as a Service \(IaaS\)](#)—most of which

you can choose whether to set up in a public or private option. Cloud computing is giving rise to more as-a-service offerings including:

- [AlaaS: AI as a service](#)
- DaaS: Desktop as a service
- [ITaaS: IT as a service](#)
- [RaaS: Ransomware as a service](#) (On the less savory side of technology)

Any cloud service consists of client-side systems or devices (PC, tablets, etc.) that are connected to the backend data center components. The components that constitute [cloud infrastructure](#) include:



Cloud Infrastructure

Infrastructure components for cloud



The underlying infrastructure architecture can take various forms and features, including:

- [Virtualized](#)
- [Software-defined](#)
- [Hyper-converged](#)

Individuals and companies alike both value [the benefits of cloud computing](#), including:

- Reducing complexity
- [Optimizing DevOps](#)
- [Trading CapEx for OpEx](#)
- Planning for the future

Examples and use cases of cloud computing

There are some very obvious examples of cloud computing, many of you which you might already use in your personal or professional life:

- Document sharing options, like Dropbox, Google Docs, and Microsoft 365
- Social networking and telecom services, like Facebook, Twitter, and Skype
- CRMs and productivity management tools such as Salesforce and Atlassian

- ITSM and ITOM software, like [BMC Helix](#)
- Online streaming services such as Netflix, Sling, and Hulu
- [Machine learning and big data analysis](#)
- [The IoT](#)

What is the public cloud?

The public cloud refers to the cloud computing model in which IT services are delivered via the internet. As the most popular model of cloud computing services, the public cloud offers vast choices in terms of solutions and computing resources to address the growing needs of organizations of all sizes and verticals.

The defining features of a public cloud solution include:

- High elasticity and scalability
- A low-cost subscription-based pricing tier

Services on the public cloud may be free, freemium, or subscription-based, wherein you're charged based on the computing resources you consume.

The computing functionality may range from common services—email, apps, and storage—to the enterprise-grade OS platform or infrastructure environments used for [software development and testing](#).

The cloud vendor is responsible for developing, managing, and maintaining the pool of computing resources shared between multiple tenants from across the network.

When to use the public cloud

The public cloud is most suitable for these types of environments:

- Predictable computing needs, such as communication services for a specific number of users
- Apps and services necessary to perform IT and business operations
- Additional resource requirements to address [varying peak demands](#)
- Software development and test environments

Advantages of public cloud

People appreciate these public cloud benefits:

- **No CapEx.** No investments required to deploy and maintain the IT infrastructure.
- **Technical agility.** High scalability and flexibility to meet unpredictable workload demands.
- **Business focus.** The reduced complexity and requirements on in-house IT expertise is minimized, as the cloud vendor is responsible for infrastructure management.
- **Affordability.** Flexible pricing options based on different SLA offerings
- **Cost agility.** The cost agility allows organizations to follow lean growth strategies and focus their investments on innovation projects

Drawbacks of public cloud

The public cloud does come with limitations:

- **Lack of cost control.** The total cost of ownership (TCO) can rise exponentially for large-scale usage, specifically for midsize to large enterprises.
- **Lack of security.** Public cloud is the least secure, by nature, so it isn't best for sensitive mission-critical IT workloads.
- **Minimal technical control.** Low visibility and control into the infrastructure may not meet your compliance needs.

[Learn more about securing your public cloud.](#)

What is the private cloud?

The private cloud refers to any cloud solution dedicated for use by a single organization. In the private cloud, you're not sharing cloud computing resources with any other organization.

The data center resources may be located on-premise or operated by a third-party vendor off-site. The computing resources are isolated and delivered via a secure private network, and not shared with other customers.

Private cloud is customizable to meet the unique business and security needs of the organization. With greater visibility and control into the infrastructure, organizations can operate compliance-sensitive IT workloads without compromising on the security and performance previously only achieved with dedicated on-premise data centers.

When to use the private cloud

The private cloud is best suited for:

- Highly regulated industries and government agencies
- Sensitive data
- Companies that require strong control and security over their IT workloads and the underlying infrastructure
- Large enterprises that require advanced data center technologies to operate efficiently and cost-effectively
- Organizations that can afford to invest in high performance and availability technologies

Advantages of private cloud

The most popular benefits of private cloud include:

- **Exclusive environments.** Dedicated and secure environments that cannot be accessed by other organizations.
- **Custom security.** Compliance to stringent regulations as organizations can run protocols, configurations, and measures to customize security based on unique workload requirements
- **Scalability without tradeoffs.** High scalability and efficiency to meet unpredictable demands without compromising on security and performance
- **Efficient performance.** The private cloud is reliable for high SLA performance and efficiency.

- **Flexibility.** The private cloud is flexible as you transform the infrastructure based on ever-changing business and IT needs of the organization.

Drawbacks of private cloud

The private cloud has drawbacks that might limit use cases:

- **Price.** The private cloud is an expensive solution with a relatively high TCO compared to public cloud alternatives, especially for short-term use cases.
- **Mobile difficulty.** Mobile users may have limited access to the private cloud considering the high security measures in place.
- **Scalability depends.** The infrastructure may not offer high scalability to meet unpredictable demands if the cloud data center is limited to on-premise computing resources

What is hybrid cloud?

The hybrid cloud is any cloud infrastructure environment that combines both public and private cloud solutions.

The resources are typically orchestrated as an integrated infrastructure environment. Apps and data workloads can share the resources between public and private cloud deployment based on organizational business and technical policies around aspects like:

- Security
- Performance
- Scalability
- Cost
- Efficiency

This is a common example of hybrid cloud: Organizations can use private cloud environments for their IT workloads and complement the infrastructure with public cloud resources to accommodate occasional spikes in network traffic.

Or, perhaps you use the public cloud for workloads and data that aren't sensitive, saving cost, but opt for the private cloud for sensitive data.

As a result, access to additional computing capacity does not require the high CapEx of a private cloud environment but is delivered as a short-term IT service via a public cloud solution. The environment itself is seamlessly integrated to ensure optimum performance and scalability to changing business needs.

When you do pursue a hybrid cloud, you may have another decision to make: whether to be [homogeneous or heterogenous](#) with your cloud. That is—are you using cloud services from a single vendor or from several vendors?

When to use the hybrid cloud

Here's who the hybrid cloud might suit best:

- Organizations serving multiple verticals facing different IT security, regulatory, and performance requirements

- Optimizing cloud investments without compromising on the value that public or private cloud technologies can deliver
- Improving security on existing cloud solutions such as SaaS offerings that must be delivered via secure private networks
- Strategically approaching cloud investments to continuously switch and tradeoff between the best cloud service delivery model available in the market

Advantages of hybrid cloud

- **Policy-driven option.** Flexible policy-driven deployment to distribute workloads across public and private infrastructure environments based on security, performance, and cost requirements.
- **Scale with security.** Scalability of public cloud environments is achieved without exposing sensitive IT workloads to the inherent security risks.
- **Reliability.** Distributing services across multiple data centers, some public, some private, results in maximum reliability.
- **Cost control.** Improved security posture as sensitive IT workloads run on dedicated resources in private clouds while regular workloads are spread across inexpensive public cloud infrastructure to tradeoff for cost investments

[Learn more about hybrid cloud security and best practices.](#)

Drawbacks of hybrid cloud

Common drawbacks of the hybrid cloud include:

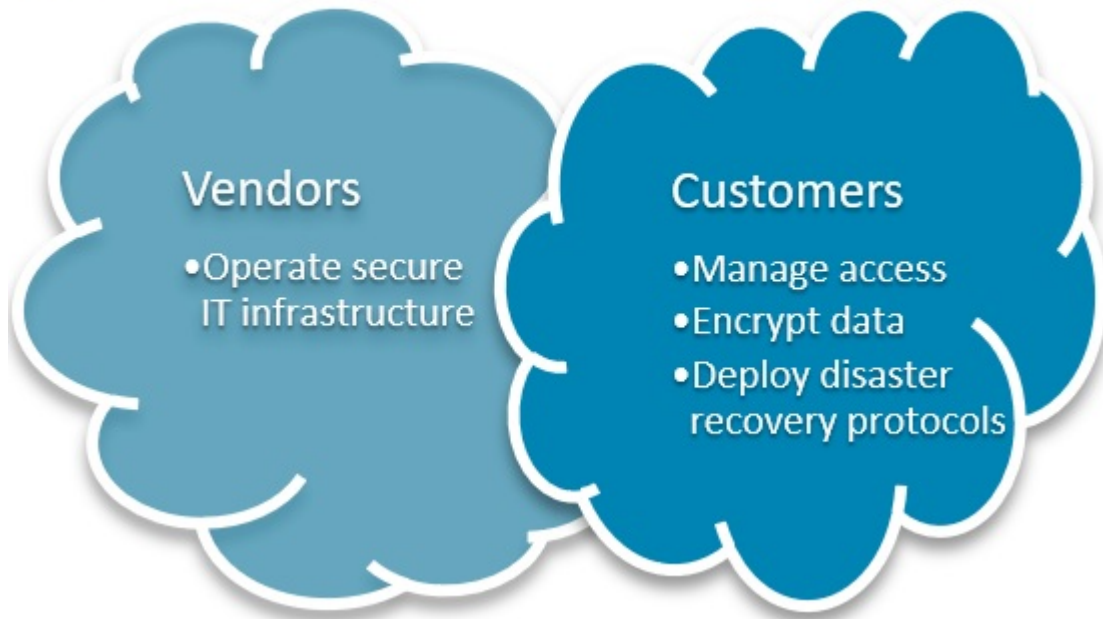
- **Price.** Toggling between public and private can be hard to track, resulting in wasteful spending.
- **Management.** Strong compatibility and integration is required between cloud infrastructure spanning different locations and categories. This is a limitation with public cloud deployments, for which organizations lack direct control over the infrastructure.
- **Added complexity.** Additional infrastructure complexity is introduced as organizations operate and manage an evolving mix of private and public cloud architecture.

Cloud responsibility: A shared model

As a final note, It is important to know that no matter which cloud environment you work in, your problems don't go away. Though you're purchasing services from third-party vendors, you still have to do your due diligence to reduce risk.

This is known as shared model of cloud responsibility. Though vendors operate the IT infrastructure and control things like flexibility and agility, your organization maintains responsibility for:

- Who has access to what
- Cloud security and encryption
- [Disaster recovery planning](#)



Which cloud to choose?

The choice between public, private, and hybrid cloud solutions depends on a variety of factors, use cases, and limitations. In the real world, this is rarely an either/or situation, especially since organizations tend to leverage all three types of cloud solutions for each's inherent value propositions.

Though you're likely already using the cloud, it is worth developing an [intentional cloud strategy](#) in order to optimize your use of each cloud environment. Start with defining the needs of your various workloads, then prioritize them based on the pros and cons of each model.

Additional resources

For more on cloud computing, explore the [BMC Multi-Cloud Blog](#) and these resources:

- [State of the Cloud in 2020](#)
- [Cloud Growth in 2020: Trends & Outlook](#)
- [Top 5 Cloud Security Trends of 2020](#)
- [Rise of Data Centers and Private Clouds in Response to Amazon's Hegemony](#)
- [Key Facets of a Smart Cloud Migration Strategy](#)
- [Dispelling Common Cloud Myths with Microsoft's Steve Bohlen](#)