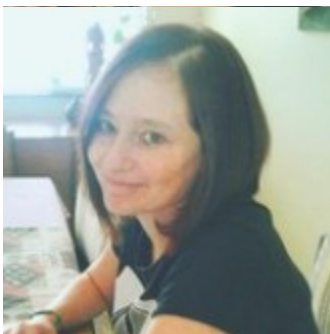


Differences between IaaS and PaaS: What You Need to Know

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Cloud computing services provide the speed, flexibility, and scalability that allows organizations to develop, innovate, and support IT operations. Infrastructure as a service (IaaS), platform as a service (PaaS), and software as a service (SaaS) are the three primary cloud computing services. This post delves into the

differences between IaaS and PaaS.

What Is IaaS?

IaaS is a [cloud computing service model](#) where the cloud service provider (CSP) uses the internet to provision compute, storage, and network resources to consumers on demand. The CSP manages the IT infrastructure components that you expect to find in an on-premises datacenter, including servers, storage, and networking resources.

IaaS allows organizations to scale and shrink resources according to specific needs where they pay via a pay-as-you-go pricing scheme. This minimizes the need for high, upfront capital expenditures (CapEx) or unnecessary owned IT infrastructure.

Besides the essential IT infrastructure, CSPs may also provide detailed billing, security, load balancing, and storage resiliency features. Businesses can use the IaaS model to support testing and development, high-performance computing (HPC), and hosting websites, among others.

What Is PaaS?

In a PaaS model, the CSP provides consumers with a complete cloud platform—hardware, software, and the infrastructure—for developing, deploying, and managing applications. PaaS allows developers to build, test, run, and scale applications more quickly—without the complexities, costs, and inflexibility associated with developing and maintaining applications in an on-premises IT infrastructure.

This is because the CSP provider hosts and manages everything—servers, storage, networks, storage, operating systems (OSs), middleware, databases, and development tools—at its datacenter. You can choose the pay-as-you-go pricing model where you pay

only for the resources consumed or pay a fixed fee for a specified amount of resources developers need.

Besides providing a development framework, organizations can also use PaaS tools for analyzing and mining their data. PaaS can also offer additional services that improve applications such as security, scheduling, and directory.

What Are the Differences between IaaS and PaaS?

The table below highlights the major distinctions between IaaS and PaaS:

Feature	IaaS	PaaS
Who are the core users?	IaaS solutions are meant to help system administrators.	PaaS solutions are meant for developers, development and operations (DevOps) teams, and database administrators.
What are the services provided?	An IaaS solution creates a virtual datacenter consisting of servers, storage, and networking resources. IT administrators can use the virtual datacenter to create services and platforms for the applications development lifecycle.	A PaaS solution creates a virtual platform that developers can use instantly to develop, test, and deploy applications.
What does the CSP control?	A CSP manages servers, storage, and networking resources through	A CSP manages servers, storage, networking,

	virtualization in an IaaS environment.	middleware, databases, development, and business intelligence (BI) tools in a PaaS environment.
What does the user manage?	The user manages the OS, middleware, databases, applications, and runtime environment.	The user controls applications and databases.

IaaS vs PaaS – The Biggest Difference

The most important contrast between IaaS and PaaS is that IaaS gives administrators more full control over operating systems, whereas PaaS gives consumers more flexibility and ease of use.

Let's presume I wanted to make a website. I'd need an IaaS provider like Amazon Web Services to host it and its apps. If I wanted to, I could use a PaaS vendor such as Google App Engine to create and install a custom feature on my site.

IaaS is used to build the framework of a cloud-based system. Developers can use PaaS to create custom software which can be provided via the cloud via an API. SaaS, on the other hand, refers to cloud-based software that companies may buy and use.

Consider IaaS to be the foundation of every cloud-based service, whether that's content, software, or a shopping website. Platform as a service (PaaS) allows developers to build apps without having to host them themselves, whereas SaaS refers to software that you can buy or sell to help software companies (or others) get things done.

What Are Some Use Cases for IaaS and PaaS?

Use Cases for IaaS

Businesses can use IaaS for various purposes, including:

- **Creating testing and development environments.** IaaS is a flexible and scalable solution that enterprises can use to create and shrink resources on an as-needed basis. As such, IT administrators can set up and dismantle development and test environments quickly to bring new applications to the market faster.
- **Hosting websites.** IaaS provides the necessary infrastructure such as web and application servers, networking, and storage resources that you need to deploy web applications. You can deploy web applications on IaaS quickly and scale the infrastructure as the need arises.
- **Providing HPC services.** Certain workloads such as financial modeling, scientific computations, and product design may require HPC. IaaS is a cost-effective approach to offering HPC services because you can dismantle virtual machines (VMs) easily when the tasks get completed.
- **Providing storage, backup, and recovery services.** IaaS can help the organization avoid the expenses associated with storage resources and management that typically require skilled personnel. Besides handling unpredictable demands for the growing storage requirements, IaaS can also help you simplify the planning and management processes of backup and recovery systems.

Use Cases for PaaS

On the other hand, [PaaS can ease various IT initiatives](#) such as:

- **Agile development and DevOps.** Developers can access fully-configured environments that automate the application development lifecycle, including integration, deployment, testing, and security.

- **Application programming interface (API) development and management.** Because of its inbuilt frameworks, PaaS simplifies how developers build, deploy, manage, and secure APIs.
- **Cloud migration and cloud-native development.** With its integration capabilities and ready-to-use tools, PaaS can simplify the migration of existing applications to the cloud, particularly through [replatforming](#) or [refactoring](#).
- **Analytics and BI.** You can use PaaS's inbuilt tools to analyze and mine organization data, discovering insights and patterns that can help the business improve forecasting, investment returns, and other decisions.

Benefits and Drawbacks of IaaS

Some advantages that the IaaS model provides include:

- **It minimizes the CapEx and optimizes costs.** IaaS eliminates the costs associated with configuring and managing IT resources in an on-premises setup. The pay-as-you-go pricing model allows the organization to minimize hardware and maintenance costs, allowing IT teams to focus on the core business.
- **It increases the scalability and performance of workloads.** IaaS allows you to scale effectively when a need arises. This way, you can deliver workloads to employees from any location in the world faster and improve the application performance.
- **It improves business continuity and disaster recovery (BCDR) measures.** Attaining [high availability](#) and [BCDR](#) can be expensive because of the costly technology and skilled personnel involved. However, with the right service level agreement (SLA) in place, IaaS can help you minimize these costs and improve BCDR measures.

The major drawback of leveraging IaaS is that IT teams are still

responsible for ensuring the security of the infrastructure. In this regard, IT teams must ensure that applications and OSs are working perfectly to achieve the utmost security.

Benefits and Drawbacks of PaaS

Some of the most popular advantages of PaaS include:

- **It accelerates the time to market.** With PaaS, you don't need to buy and install the necessary hardware and software components for building and maintaining the application development lifecycle. The development teams can start the core development quickly by tapping into the CSP's PaaS, speeding up the time to market.
- **It is an affordable way to access a broader range of resources.** You can access a wide range of resources such as OSs, middleware, databases, and development tools that would otherwise be expensive to purchase and own in an on-premises setup.
- **It provides greater flexibility for the development teams.** Because of the shared software development environment, DevOps teams can access all the tools they need from any location.
- **It is a streamlined and cost-effective scalability option.** Scaling the application development infrastructure in an on-premises setup can be wasteful and expensive. However, with PaaS, you buy only the additional capacity and begin to use it immediately.

Despite these benefits, PaaS has two notable drawbacks:

- **You have no control over the IT infrastructure.** While developers control the code and the databases, they cannot address emerging issues arising from compute, storage, and networking resources.
- **It can be risky. In a PaaS model, the CSP hosts the database on behalf of the organization.** This can pose a security risk to

application users in cases where there is an outage and the CSP is unreachable.

Parallels RAS: Deploy on IaaS Cloud Environments

Parallels® Remote Application Server (RAS) is an easy-to-use [virtual desktop infrastructure \(VDI\)](#) solution that integrates seamlessly with Azure IaaS. [Parallels RAS on Azure IaaS](#) allows enterprises to have access to an affordable, quick, flexible, and more reliable platform for deploying and managing virtual applications and desktops globally.

Businesses can leverage Parallels RAS on Azure IaaS to deploy and scale their VDI workloads on-demand, rendering faster provisions and streamlining IT management. They can also improve the flexibility of remote desktop session host (RDSH) deployments by combining on-premises, public, and hybrid cloud environments.

Parallels RAS also extends and streamlines the capabilities of [Azure Virtual Desktop](#)—Microsoft's desktop as a service (DaaS) offering. Enterprises can integrate Parallels RAS deployment with existing or new Azure Virtual Desktops to deliver an all-in-one VDI solution to end users.

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