

[Resources](#) > [Cloud Terms](#) > What are IaaS, PaaS, and SaaS?

What are IaaS, PaaS, and SaaS?

Discover the main cloud service models—infrastructure, platform, and software—and learn how each supports different business and technology needs.

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Overview of IaaS, PaaS, and SaaS in cloud computing

The most common [types of cloud computing](#) are Infrastructure as a Service (IaaS), Platform as a Service (PaaS), and Software as a Service (SaaS). Each offers a different balance of control, flexibility, and simplicity. Together, they shape how [cloud computing](#) delivers resources like servers, storage, and applications over the internet.

Key takeaways

- **Cloud computing delivers services over the internet**, with IaaS, PaaS, and SaaS as the most common models.
- **IaaS provides virtualized infrastructure** with extensive control for IT teams.
- **PaaS offers a managed environment** that speeds up application development and deployment.
- **SaaS delivers ready-to-use applications** that simplify daily work.
- **Each model comes with different benefits and considerations**, like scalability, flexibility, integration, and data management.
- **Many organizations use a mix of models** to balance control, efficiency, and ease of use.

Definitions

Understanding the main service models

IaaS vs. PaaS vs. SaaS

Cloud computing makes it possible to access computing resources over the internet instead of maintaining physical hardware. These resources include servers, storage, networking,

databases, and applications. The three most common service models—Infrastructure as a Service ([IaaS](#)), Platform as a Service ([PaaS](#)), and Software as a Service ([SaaS](#))—provide different ways to use and manage those resources.

Infrastructure as a Service (IaaS)

IaaS offers on-demand access to computing resources such as servers, storage, and networks. It's built on [virtualization](#), which turns physical hardware into flexible resources that can scale up or down as needed. With IaaS, you manage the operating systems, applications, and data, while the provider manages the physical infrastructure. This setup gives you the most control and flexibility, making it easy to build and scale your IT environment just the way you want.

Containers as a Service (CaaS) is an extension of IaaS designed for deploying and managing containerized applications. [Containers](#) package applications and their dependencies together, making them portable and consistent across environments. CaaS lets teams focus on building apps while the provider takes care of the infrastructure and organization behind the scenes.

Platform as a Service (PaaS)

PaaS provides a ready-to-use environment for building, testing, and deploying applications. You get to concentrate on writing code and managing data, while the provider handles all the infrastructure and runtime details. It's a streamlined way for developers to speed up delivery and cut down on complexity.

Software as a Service (SaaS)

SaaS delivers fully developed applications over the internet—no setup required. The provider manages updates, security, and all the technical details, so you just log in and get to work. It's the simplest model, offering convenience and cost savings without the hassle of managing systems yourself.

Differences

Differences between IaaS, PaaS, and SaaS

While IaaS, PaaS, and SaaS all deliver cloud resources, each model puts a unique spin on how much control you have, where responsibilities lie, and how much is managed by the [cloud provider](#). Whether you want hands-on access or a hassle-free experience, understanding these differences helps you choose the right fit for your needs.

Level of control and management responsibilities

- **IaaS** offers the most control, with management of operating systems, applications, and data remaining with the customer, while the provider manages the underlying hardware.
- **PaaS** focuses on application development, with infrastructure and runtime managed by the provider, leaving applications and data under the customer's oversight.
- **SaaS** is fully managed, delivering ready-to-use applications where infrastructure, updates, and maintenance are handled by the provider.

Advantages of each model

Each cloud service model offers unique advantages that support different goals and ways of working.

IaaS

- Flexible and scalable environments for growing workloads
- Greater control for IT teams and developers
- Customizable infrastructure to fit business needs

PaaS

- Simplified application development and deployment
- Faster delivery by reducing infrastructure complexity
- Collaborative environments for shared development

SaaS

- Ready-to-use applications with minimal setup
- Cost-effective access to everyday business tools
- Automatically updated with new features and security improvements

Examples

Real-world examples of each model

Seeing how IaaS, PaaS, and SaaS work in real-world scenarios makes their differences and benefits much clearer. Here's how each model is commonly used—and why organizations might choose them:

IaaS

- **Host** applications or websites on virtual machines.
- **Store** backups and files securely in the cloud.
- **Manage** networking resources like load balancers and VPNs.

Example: A growing e-commerce company uses IaaS to quickly scale servers during seasonal sales without investing in physical hardware.

PaaS

- **Build** apps with development frameworks and managed databases.
- **Automate** workflows using DevOps and continuous integration and continuous delivery (CI/CD) tools.
- **Test and stage** software projects in ready-made environments.

Example: A software startup uses PaaS to develop a mobile app, letting the team focus on coding while the provider manages infrastructure and runtime updates.

SaaS

- **Collaborate** using productivity apps like word processors, email, and video conferencing.
- **Manage** customer relationships with cloud-based CRM software.
- **Analyze** data with cloud-powered business intelligence platforms.

Example: A marketing team uses SaaS email and collaboration tools to coordinate campaigns across multiple offices, with no need to maintain servers or install software locally.

Who uses what—and why

Each model supports different roles and workflows: developers rely on PaaS to build apps, IT teams use IaaS for scalable infrastructure, and employees use SaaS for everyday business tasks. Together, they provide flexible options for organizations of all sizes.

Benefits

Benefits of cloud service models

Each cloud service model offers advantages that help organizations work more efficiently, reduce costs, and scale as needed.

IaaS

- **Flexibility and scalability:** Resources can expand or contract based on demand.
- **Control:** IT teams can configure environments to meet specific requirements.
- **Customizability:** Systems and applications can be tailored to specific business needs.

Example: An online retailer scales its IaaS servers during a flash sale to handle sudden traffic spikes, customizes its environment for unique transaction processing, and scales down afterward to save costs.

PaaS

- **Faster development:** Preconfigured environments streamline building, testing, and deploying applications.
- **Reduced complexity:** Developers focus on code and data, not infrastructure.
- **Collaboration:** Teams can work together more easily on shared development environments.

Example: A startup launches a new mobile app quickly using PaaS, shares a single environment among multiple developers, and avoids the overhead costs of setting up and maintaining servers.

SaaS

- **Accessibility:** Applications are available from anywhere with an internet connection.
- **Cost-effectiveness:** Organizations don't need to buy or maintain hardware or software locally.
- **Automatic updates:** Teams always have access to the latest features and security improvements.

Example: A distributed marketing team uses SaaS collaboration tools to share documents and hold meetings, while the platform automatically updates to include new features without extra effort.

Options

How IaaS, PaaS, and SaaS work together

Many organizations use a combination of cloud service models to meet different needs. IaaS provides the underlying infrastructure, PaaS supports application development, and SaaS delivers ready-to-use applications for day-to-day work.

By combining models, businesses can balance flexibility, development speed, and ease of use. For example, a company might run custom applications on IaaS, develop new features

using PaaS, and rely on SaaS for collaboration and productivity tools.

This layered approach allows organizations to get the right resources for each task while optimizing cost and efficiency.

Use cases

Industry use cases

Cloud service models are applied across industries in ways that match each organization's needs and goals.

Startups

- Often rely on PaaS for rapid application development and testing.
- Use SaaS for productivity and collaboration without the need to maintain infrastructure.
- Scale quickly and experiment with new cloud models to stay competitive.

Enterprises

- Use IaaS for scalable infrastructure to support large operations.
- Combine PaaS and SaaS to develop custom applications while providing ready-to-use tools for employees.
- Integrate cloud models to optimize costs and support complex business processes.

Education organizations

- Power learning management systems and collaboration tools for students and staff with SaaS.
- Use PaaS and IaaS to support research projects and virtual labs.
- Combine cloud models to enable remote learning and digital transformation across campuses.

Public sector organizations

- Mix IaaS and SaaS to enable secure, accessible services for citizens and employees.
- Rely on PaaS for specialized application development for government programs.
- Enhance transparency and efficiency in public service delivery through cloud adoption.

Conclusion

How to choose the right model

IaaS, PaaS, and SaaS each provide different levels of control, flexibility, and simplicity. Choosing the right model depends on the needs of the organization and the tasks at hand.

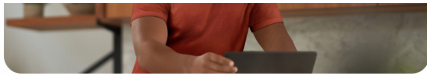
- **IaaS** works well when control and scalability are priorities, such as hosting custom applications or large workloads.
- **PaaS** is suited for accelerating development, testing, and deployment of applications with less focus on infrastructure management.
- **SaaS** provides ready-to-use applications that simplify operations and reduce the need for internal IT management.

Many organizations combine models to balance flexibility, development speed, and convenience. Evaluating business goals, technical requirements, and operational resources helps determine the mix that aligns best with current and future needs.

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01/

What are the main types of cloud services?



The three main cloud service models are Infrastructure as a Service (IaaS), Platform as a Service (PaaS), and Software as a Service (SaaS). IaaS provides virtualized computing resources, PaaS offers a development platform for building and deploying applications, and SaaS delivers fully developed applications over the internet.

02/

What is the difference between IaaS, PaaS, and SaaS?



IaaS gives the most control over operating systems, applications, and data, with the provider managing the underlying hardware. PaaS focuses on application development, with the provider managing infrastructure and runtime. SaaS is fully managed by the provider, offering ready-to-use applications with minimal maintenance required.

03/

When should you choose IaaS over PaaS?



IaaS is ideal when full control over the operating system, applications, and data is needed. It works well for running custom applications, handling large workloads, or creating highly scalable environments that require configuration flexibility.

04/

When should you choose PaaS over IaaS?



PaaS is best when the goal is to simplify and speed up application development. It reduces infrastructure management, allowing teams to focus on coding, testing, and deploying apps while relying on the provider to maintain the underlying systems.

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