# What is IaaS?

Infrastructure as a service

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](https://azure.microsoft.com/en-au/resources/cloud-computing-dictionary/what-is-saas/)), platform as a service ([PaaS](https://azure.microsoft.com/en-au/resources/cloud-computing-dictionary/what-is-paas/)), and [serverless](https://azure.microsoft.com/en-au/resources/cloud-computing-dictionary/what-is-serverless-computing/).

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](https://azure.microsoft.com/en-au/resources/cloud-computing-dictionary/choosing-a-cloud-service-provider/) like [Azure](https://azure.microsoft.com/en-au/resources/cloud-computing-dictionary/what-is-azure/azure-iaas/) manages the infrastructure, while you purchase, install, configure, and manage your own software—including operating systems, middleware, and applications.

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## Common IaaS business scenarios

[**Learn about Azure IaaS**](https://azure.microsoft.com/en-au/resources/cloud-computing-dictionary/what-is-azure/azure-iaas/)

### Lift-and-shift migration

This is the fastest and least expensive method of migrating an application or workload to the cloud. Without refactoring your underlying architecture, you can increase the scale and performance, enhance the security, and reduce the costs of running an application or workload.

### Test and development

Your team can quickly set up and dismantle test and development environments, bringing new applications to market faster. IaaS makes it quick and economical to scale dev/test environments up and down.

### Storage, backup, and recovery

Your organization avoids the capital outlay for storage and the complexity of storage management, which typically requires a skilled staff to manage data and meet legal and compliance requirements. IaaS is useful for handling unpredictable demand and steadily growing storage needs. It also can simplify planning and management of backup and recovery systems.

### Web apps

IaaS provides all the infrastructure to support web apps, including storage, web and application servers, and networking resources. Your organization can quickly deploy web apps on IaaS and easily scale infrastructure up and down when demand for the apps is unpredictable.

### High-performance computing

High-performance computing on supercomputers, computer grids, or computer clusters helps solve complex problems involving millions of variables or calculations. Examples include protein folding and earthquake simulations, climate and weather predictions, financial modeling, and product design evaluations.

## Advantages of IaaS

### Reduces capital expenditures and optimizes costs

IaaS eliminates the cost of configuring and managing a physical datacenter, which makes it a cost-effective choice for migrating to the cloud. The pay-as-you-go subscription models used by IaaS providers help you reduce hardware costs and maintenance and enable your IT team to focus on core business.

### Increases scale and performance of IT workloads

IaaS lets you scale globally and accommodate spikes in resource demand. That way, you can deliver IT resources to employees from anywhere in the world faster and enhance application performance.

### Increases stability, reliability, and supportability

With IaaS, there's no need to maintain and upgrade software and hardware or troubleshoot equipment problems. With the appropriate agreement in place, the service provider assures that your infrastructure is reliable and meets service-level agreements (SLAs).

### Improves business continuity and disaster recovery

Achieving high availability, business continuity, and disaster recovery is expensive because it requires a significant amount of technology and staff. But with the right SLA in place, IaaS helps to reduce this cost. It also helps you access applications and data as usual during a disaster or outage.

### Enhances security

With the appropriate service agreement, a cloud service provider can offer better security for your applications and data than the security you would attain in house.

### Helps you innovate and get new apps to users faster

With IaaS, once you've decided to launch a new product or initiative, the necessary computing infrastructure can be ready in minutes or hours, rather than in days or weeks. And because you don't need to set up the underlying infrastructure, IaaS lets you deliver your apps to users faster.

**What is PaaS?**

Platform as a service

Platform as a service (PaaS) is a complete development and deployment environment in the cloud, with resources that enable you to deliver everything from simple cloud-based apps to sophisticated, cloud-enabled enterprise applications. You purchase the resources you need from a [cloud service provider](https://azure.microsoft.com/en-gb/resources/cloud-computing-dictionary/choosing-a-cloud-service-provider/) on a pay-as-you-go basis and access them over a secure Internet connection.

Like [IaaS](https://azure.microsoft.com/en-gb/resources/cloud-computing-dictionary/what-is-iaas/), PaaS includes infrastructure—servers, storage, and networking—but also middleware, development tools, business intelligence (BI) services, database management systems, and more. PaaS is designed to support the complete web application lifecycle: building, testing, deploying, managing, and updating.

PaaS allows you to avoid the expense and complexity of buying and managing software licenses, the underlying application infrastructure and middleware, container orchestrators such as [Kubernetes](https://azure.microsoft.com/en-gb/topic/what-is-kubernetes/), or the development tools and other resources. You manage the applications and services you develop, and the cloud service provider typically manages everything else.

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**Common PaaS scenarios**

Organizations typically use PaaS for these scenarios:

**Development framework.** PaaS provides a framework that developers can build upon to develop or customize cloud-based applications. Similar to the way you create an Excel macro, PaaS lets developers create applications using built-in software components. Cloud features such as scalability, high-availability, and multi-tenant capability are included, reducing the amount of coding that developers must do.

**Analytics or business intelligence.** Tools provided as a service with PaaS allow organizations to analyze and mine their data, finding insights and patterns and predicting outcomes to improve forecasting, product design decisions, investment returns, and other business decisions.

**Additional services.** PaaS providers may offer other services that enhance applications, such as workflow, directory, security, and scheduling.

**Advantages of PaaS**

By delivering infrastructure as a service, PaaS offers the same advantages as IaaS. But its additional features—middleware, development tools, and other business tools—give you more advantages:

**Cut coding time.** PaaS development tools can cut the time it takes to code new apps with pre-coded application components built into the platform, such as workflow, directory services, security features, search, and so on.

**Add development capabilities without adding staff.** Platform as a Service components can give your development team new capabilities without your needing to add staff having the required skills.

**Develop for multiple platforms—including mobile—more easily.** Some service providers give you development options for multiple platforms, such as computers, mobile devices, and browsers making cross-platform apps quicker and easier to develop.

**Use sophisticated tools affordably.** A pay-as-you-go model makes it possible for individuals or organizations to use sophisticated development software and business intelligence and analytics tools that they could not afford to purchase outright.

**Support geographically distributed development teams.** Because the development environment is accessed over the Internet, development teams can work together on projects even when team members are in remote locations.

**Efficiently manage the application lifecycle.** PaaS provides all of the capabilities that you need to support the complete web application lifecycle: building, testing, deploying, managing, and updating within the same integrated environment.

**What is SaaS?**

Software as a service

Software as a service (SaaS) allows users to connect to and use cloud-based apps over the Internet. Common examples are email, calendaring, and office tools (such as Microsoft Office 365).

SaaS provides a complete software solution that you purchase on a pay-as-you-go basis from a [cloud service provider](https://azure.microsoft.com/en-gb/resources/cloud-computing-dictionary/choosing-a-cloud-service-provider/). You rent the use of an app for your organization, and your users connect to it over the Internet, usually with a web browser. All of the underlying infrastructure, middleware, app software, and app data are located in the service provider’s data center. The service provider manages the hardware and software, and with the appropriate service agreement, will ensure the availability and the security of the app and your data as well. SaaS allows your organization to get quickly up and running with an app at minimal upfront cost.

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**Common SaaS scenarios**

If you’ve used a web-based email service such as Outlook, Hotmail, or Yahoo! Mail, then you’ve already used a form of SaaS. With these services, you log into your account over the Internet, often from a web browser. The email software is located on the service provider’s network, and your messages are stored there as well. You can access your email and stored messages from a web browser on any computer or Internet-connected device.

The previous examples are free services for personal use. For organizational use, you can rent productivity apps, such as email, collaboration, and calendaring; and sophisticated business applications such as customer relationship management (CRM), enterprise resource planning (ERP), and document management. You pay for the use of these apps by subscription or according to the level of use.

**Advantages of SaaS**

**Gain access to sophisticated applications.**To provide SaaS apps to users, you don’t need to purchase, install, update, or maintain any hardware, middleware, or software. SaaS makes even sophisticated enterprise applications, such as ERP and CRM, affordable for organizations that lack the resources to buy, deploy, and manage the required infrastructure and software themselves.

**Pay only for what you use.** You also save money because the SaaS service automatically scales up and down according to the level of usage.

**Use free client software.** Users can run most SaaS apps directly from their web browser without needing to download and install any software, although some apps require plugins. This means that you don’t need to purchase and install special software for your users.

**Mobilize your workforce easily.** SaaS makes it easy to “mobilize” your workforce because users can access SaaS apps and data from any Internet-connected computer or mobile device. You don’t need to worry about developing apps to run on different types of computers and devices because the service provider has already done so. In addition, you don’t need to bring special expertise onboard to manage the security issues inherent in mobile computing. A carefully chosen service provider will ensure the security of your data, regardless of the type of device consuming it.

**Access app data from anywhere.** With data stored in the cloud, users can access their information from any Internet-connected computer or mobile device. And when app data is stored in the cloud, no data is lost if a user’s computer or device fails.