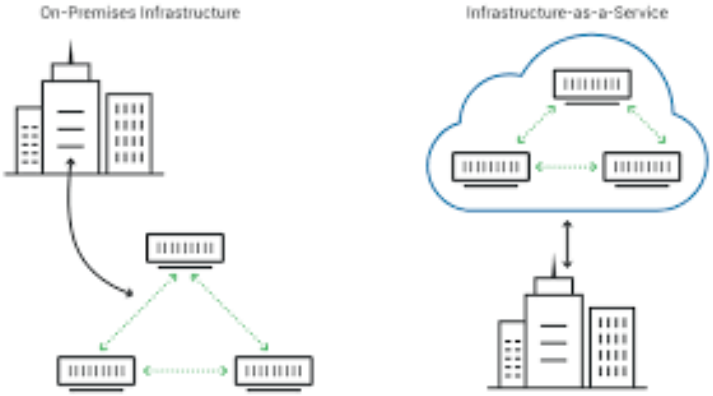
IaaS (Infrastructure as a service)

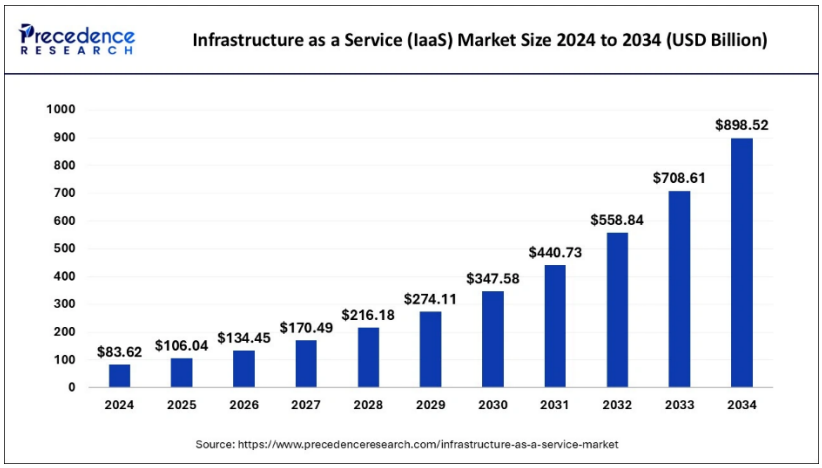
Infrastructure as a service (IaaS) is a cloud computing service model where a cloud services vendor provides computing resources such as storage, network, servers, and virtualization. This service frees users from maintaining their own data center, but they must install and maintain the operating system and application software. Iaas provides users high-level APIs to control details of underlying network infrastructure such as backup, data partitioning, scaling, security and physical computing resources. Services can be scaled on-demand by the user. According to the Internet Engineering Task Force (IETF), such infrastructure is the most basic cloud-service model. IaaS can be hosted in a public cloud (where users share hardware, storage, and network devices), a private cloud (users do not share resources), or a hybrid cloud (combination of both).



The capability provided to the consumer is provision processing, storage, networks, as well as other fundamental computing resources where the consumer is able to deploy & run arbitrary software, which can include operating systems and applications. The consumer does not manage or control the underlying cloud infrastructure but has control over operating systems,

storage, & deployed applications; and possibly limited control of select networking components (e.g., host firewalls).

Economic impact



The global infrastructure as a service (iaas) market size is estimated at USD 106.04 billion in 2025 and is forecasted to worth around USD 898.52 billion by 2034, accelerating at a CAGR of 26.80% from 2025 to 2034. The North America infrastructure as a service (iaas) market size crossed USD 38.47 billion in 2024 and is expanding at a CAGR of 26.82% during the forecast period. The market sizing and forecasts are revenue-based (USD

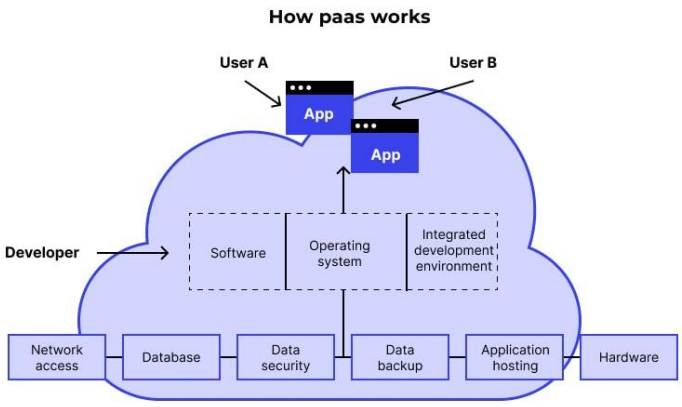
Million/Billion), with 2024 as the base year. North America held the largest share of the infrastructure as a service (IAAS) market in 2024. Factors such as cloud integration, technology networks, and the existence of strong key players stimulate the demand of the market. The drivers include the shift in goods and services to digital, increasing demand for remote work solutions, and key players such as Amazon Web Services, Microsoft Azure, and Google Cloud. Thus, further growth of the North American IAAS market is expected due to the IT demands for affordable and flexible infrastructure services.

Government Usage

The UK Government encourages departments to use public cloud solutions as a first option. IaaS is in use within the UK Government but the technology community within government recommends consideration of Platform as a Service (PaaS) in cases where a department may not have IaaS skills and management capacity.

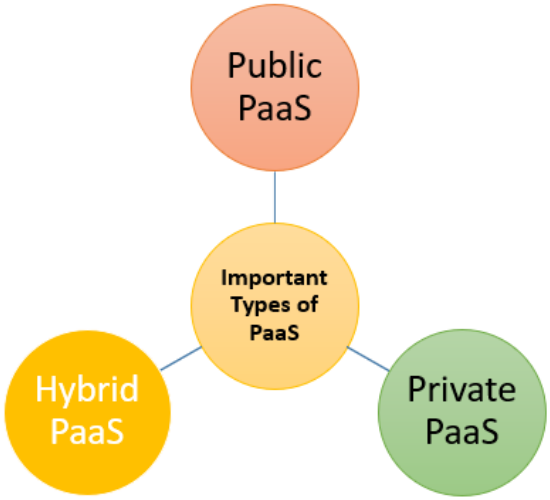
Paas(Platform as a service)

Platform as a service (PaaS) or application platform as a service (aPaaS) or platform-based service is a cloud computing service model where users provision, instantiate, run and manage a modular bundle of a computing platform and applications, without the complexity of building and maintaining the infrastructure associated with developing and launching application(s), and to allow developers to create, develop, and package such software bundles.



The first public platform as a service was Zimki, launched by Fotango, a London-based company owned by Canon Europe. It was developed in 2005, had a beta launch in March 2006 and a public launch at EuroOSCON in 2006. At the time of its closure, Zimki had several thousand developer accounts. It had demonstrated the technical viability of Platform as a Service, but also provided the first example of the perils of being dependent on a single provider. This was highlighted when the CEO (Simon Wardley, known for Wardley maps) announced at OSCON 2007 that Zimki would no longer be open-sourced and discussed the future of what was then called framework-as-a-service (later called platform-as-a-service) covering the importance of a market of providers based on an open-source reference model. The original intent of PaaS was to simplify the writing of code, with the infrastructure and operations handled by the PaaS provider. Originally, all PaaSes were in the public cloud. Because many companies did not want to have everything in the public cloud, private and hybrid PaaS options (managed by internal IT departments) were created.

Types – Public, private and hybrid



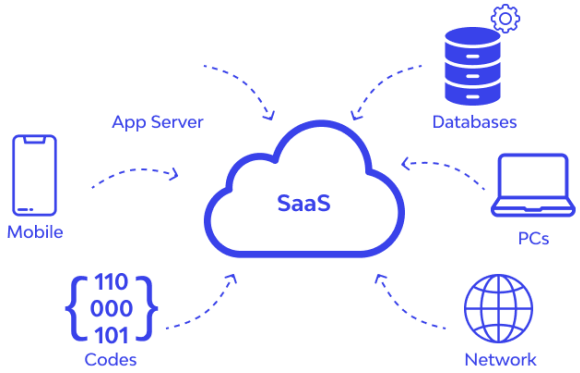
There are several types of PaaS, including public, private and hybrid. PaaS was originally intended for applications on public cloud services, before expanding to include private and hybrid options. Public PaaS is derived from software as a service (SaaS), and is situated in cloud computing between SaaS and infrastructure as a service (IaaS). SaaS is software hosted in the cloud so that it does not reside or run on customer computers. IaaS provides virtual hardware from a provider with adjustable scalability. In IaaS, the server is managed by the user, whereas in PaaS by the provider. A private PaaS can typically be downloaded and installed either in a company's on-premises data center, or in a public cloud. Once the software is installed on one or more machines, the private PaaS arranges the application and database components into a single hosting platform.

Government usage

The UK Government encourages departments to make use of public cloud solutions as a first option. PaaS is in use within UK Government but the technology community within government notes that PaaS providers may restrict the software, languages and interfaces they are willing to support. The Government operated its own GOV.UK PaaS service from 2015 until 2023, but this has now been decommissioned.

Saas (Software as a service)

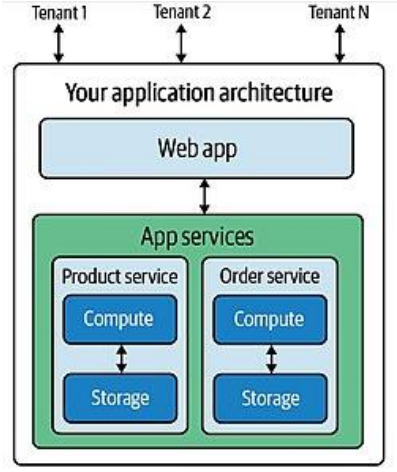
Software as a service (SaaS) is a cloud computing service model where the provider offers use of application software to a client and manages all needed physical and software resources. SaaS is usually accessed via a web application. Unlike other software delivery models, it separates "the possession and ownership of software from its use". SaaS use began around 2000, and by 2023 was the main form of software application deployment.



Unlike most self-hosted software products, only one version of the software exists and only one operating system and configuration is supported. SaaS products typically run on rented infrastructure as a service (IaaS) or platform as a service (PaaS) systems including hardware and sometimes operating systems and middleware, to accommodate rapid increases in usage while providing instant and continuous availability to customers. SaaS customers have the abstraction of limitless computing resources, while economy of scale drives down the cost. SaaS architectures are typically multi-tenant; usually they share resources between clients for efficiency, but sometimes they offer a siloed environment for an additional fee. Common SaaS revenue models include freemium, subscription, and usage-based fees. Unlike traditional software, it is rarely possible to buy a perpetual license for a certain version of the software. There are no specific software development practices that distinguish SaaS from other application development, although there is often a focus on frequent testing and releases.

Development

A challenge for SaaS providers is that demand is not known in advance. Their system must have enough slack to be able to handle all users without turning any away, but without paying for too many resources that will be unnecessary. If resources are static, they are guaranteed to be wasted during non-peak time. Sometimes cheaper off-peak rates are offered to balance the load and reduce waste. The expectation for continuous service is so high that outages in SaaS software are often reported in the news.



There are not specific software development practices that differentiate SaaS from other application development. SaaS products are often released early and often to take advantage of the flexibility of the SaaS delivery model. Agile software development is commonly used to support this release schedule. Many SaaS developers use test-driven development, or otherwise emphasize frequent software testing, because of the need to ensure availability of their service and rapid deployment. Domain-driven design, in which business goals drive development, is popular because SaaS products must sell themselves to the customer by being useful. SaaS developers do not know in advance which devices customers will try to access the, product from—such as a desktop computer, tablet, or smartphone—and supporting a wide range of devices is often an important concern for the front-end development team. Progressive web applications allow some functionality to be available even if the device is offline. SaaS applications predominantly offer integration protocols and application programming interfaces (APIs) that operate over a wide area network.