Difference between SaaS, PaaS and IaaS:

1. SaaS – Software as a Service
Definition: Fully functional software delivered over the internet. Users just access the software—no need to install, maintain, or manage infrastructure.

Software as a Service (SaaS) is the most user-friendly model, providing complete software applications hosted in the cloud. Instead of purchasing and installing software on individual devices, users can access applications over the internet. SaaS eliminates the need for businesses to install, maintain, or manage software themselves.

Managed by provider: Everything (apps, data, runtime, OS, servers).

User's role: Just use the application.

Examples: Gmail, Google Docs, Salesforce, Zoom, Microsoft 365

Use case: A business uses Salesforce for customer relationship management without worrying about backend setup.

Characteristics of SaaS (Software as a Service)

- Applications are ready to use, and updates and maintenance are handled by the provider.
- You access the software through a web browser or app, usually paying a subscription fee.
- It's convenient and requires minimal technical expertise, ideal for non-technical users.

2. PaaS – Platform as a Service
Definition: A platform that provides tools and environment for developers to build, test, and deploy applications.

Platform as a Service (PaaS) offers a cloud environment for developing, running, and managing applications without dealing with the complexities of maintaining the underlying infrastructure. It provides a platform that includes tools for app development, hosting, and runtime management. PaaS is aimed at developers who want to focus on building applications rather than managing hardware or operating system.

Managed by provider: Runtime, middleware, OS, servers.

User's role: Develops and manages the application and data.

Examples: Google App Engine, Microsoft Azure App Service, Heroku

Use case: A developer deploys a web app using Python on Heroku without configuring the underlying server or database.

Characteristics of PaaS (Platform as a Service)

- PaaS is like a toolkit for developers to build and deploy applications without worrying about infrastructure.
- Provides pre-built tools, libraries, and development environments.
- Developers focus on building and managing applications, while the provider handles infrastructure management.
- It speeds up the development process and allows for easy collaboration among developers.

3. IaaS – Infrastructure as a Service

Definition: Virtualized computing resources over the internet. You get raw infrastructure (servers, storage, networking).

Infrastructure as a Service (IaaS) is a cloud service model that provides virtualized computing resources over the internet. It delivers essential infrastructure components such as servers, storage, networking, and computing resources on a pay-as you-go use basis.

Unlike traditional on-premises data centers, IaaS enables businesses to rent physical resources without managing hardware directly. This flexibility allows businesses to scale up or down based on their needs, making it ideal for startups and large enterprises alike.

Managed by provider: Hardware, virtualization.

User's role: Installs and manages OS, apps, runtime, etc.

Examples: Amazon EC2 (AWS),Google Compute Engine,Microsoft Azure Virtual Machines

Use case: A company hosts its own website on a virtual server on AWS EC2, configuring the OS, software stack, and security.

Characteristics of IaaS (Infrastructure as a Service)

- IaaS is like renting virtual computers and storage space in the cloud.
- You have control over the operating systems, applications, and development frameworks.
- Scaling resources up or down is easy based on your needs.

Basis Of	IaaS	PaaS	SaaS
Stands for	Infrastructure as a service.	Platform as a service.	Software as a service.
Uses	IaaS is used by network architects.	PaaS is used by developers.	SaaS is used by the end user.
Access	IaaS gives access to the resources like virtual machines and virtual storage.	PaaS gives access to run time environment to deployment and development tools for application.	SaaS gives access to the end user.
Model	It is a service model that provides virtualized computing resources over the internet.	It is a cloud computing model that delivers tools that are used for the development of applications.	It is a service model in cloud computing that hosts software to make it available to clients.

Technical understanding.	**It requires technical knowledge.**	**Some knowledge is required for the basic setup.**	**There is no requirement about technicalities company handles everything.**
Popularity	**It is popular among developers and researchers.**	**It is popular among developers who focus on the development of apps and scripts.**	**It is popular among consumers and companies, such as file sharing, email, and networking.**
Percentage rise	**It has around a 12% increment.**	**It has around 32% increment.**	**It has about a 27 % rise in the cloud computing model.**
Usage	**Used by the skilled developer to develop unique applications.**	**Used by mid-level developers to build applications.**	**Used among the users of entertainment.**
Cloud services.	**Amazon Web Services, sun, vCloud Express.**	**Facebook, and Google search engine.**	**MS Office web, Facebook and Google Apps.**

Enterprise services.	**AWS virtual private cloud.**	**Microsoft Azure.**	**IBM cloud analysis.**
Outsourced cloud services.	**Salesforce**	**Force.com, Gigaspaces.**	**AWS, Terremark**
User Controls	**Operating System, Runtime, Middleware, and Application data**	**Data of the application**	**Nothing**
Others	**It is highly scalable and flexible.**	**It is highly scalable to suit the different businesses according to resources.**	**It is highly scalable to suit the small, mid and enterprise level business**