Introduction to Cloud

By : Bilal Mazhar

About Me

Hi there, my name is Bilal and I will Welcome you to DevOps boot camp! I am thrilled to have you join us for this exciting journey of learning and discovery.

In this boot camp, we will be exploring the principles and practices of DevOps, which is a set of methodologies and tools that aims to bridge the gap between software development and operations. DevOps is an increasingly important area in the field of software engineering, as it helps organizations to streamline their processes, improve their agility, and deliver better value to their customers.

By the end of this boot camp, you will have gained a comprehensive understanding of DevOps and its key concepts, as well as practical skills in areas such as infrastructure automation, continuous integration and delivery, monitoring and logging, and more. You will be equipped with the knowledge and tools to apply DevOps principles in your own work and contribute to the success of your organization.

I am always looking to connect with other professionals in the field, share ideas and insights, and stay up to date on the latest trends and developments. I welcome the opportunity to connect with you and explore ways in which we can collaborate and support each other.

Please find my Linkedin profile

LinkedIn

Outline

- Cloud Computing
- Type of the Cloud
- Cloud service Model
- Virtualization
- Cloud service provider
- Cloud Native

Cloud Computing

The term ***cloud*** refers to a network or the internet. It is a technology that uses remote servers on the internet to store, manage, and access data online rather than local drives. The data can be anything such as files, images, documents, audio, video, and more.

NIST’s - Cloud Computing

A model for enabling ubiquitous, convenient, on-demand network access to a shared pool of configurable computing resources (e.g., networks, servers, storage, applications, and services) that can be rapidly provisioned and released with minimal management effort or service provider interaction.

NIST lists the following as the five essential characteristics of cloud computing:

- On-demand self-service
- Broad network access
- Resource pooling
- Rapid elasticity
- Measured service

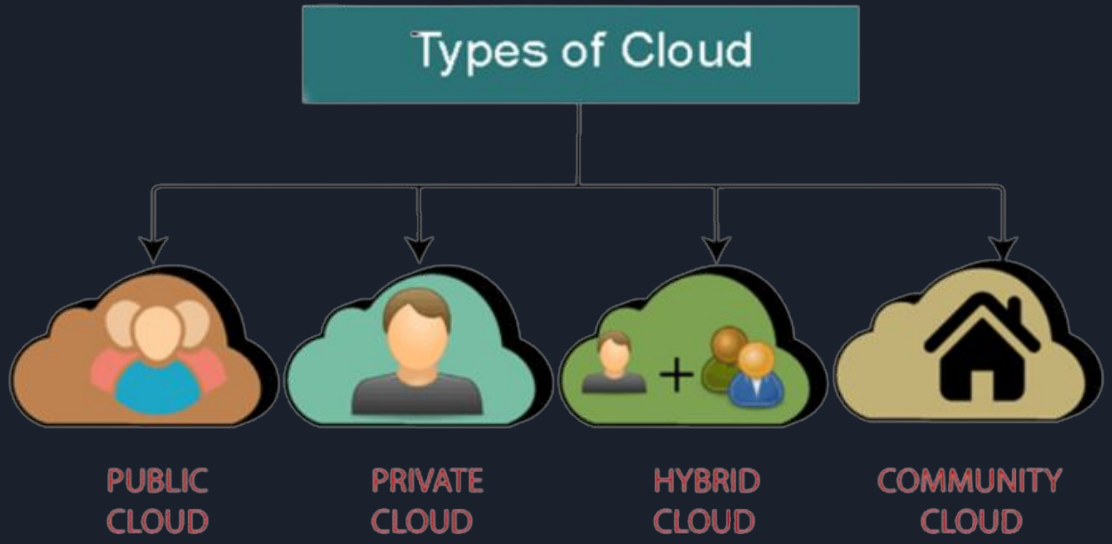
Cloud Delivery Models

Cloud resources are provided in a variety of different delivery models that offer customers different levels of support and flexibility.

- **Infrastructure as a Service (IaaS) :** cloud computing service model that provides virtualized computing resources over the internet, including servers, storage, networking, and other fundamental computing resources, on a pay-as-you-go basis.
- **Platform as a Service (PaaS) :** cloud computing service model that provides a platform for developing, testing, and deploying applications, without the need to manage the underlying infrastructure, on a pay-as-you-go basis.
- **Software as a Service (SaaS) :** cloud computing service model that delivers software applications over the internet, allowing users to access and use them on a subscription basis without the need to install or manage the software themselves.

Types of Cloud

There are the following 4 types of cloud that you can deploy according to the organization's needs

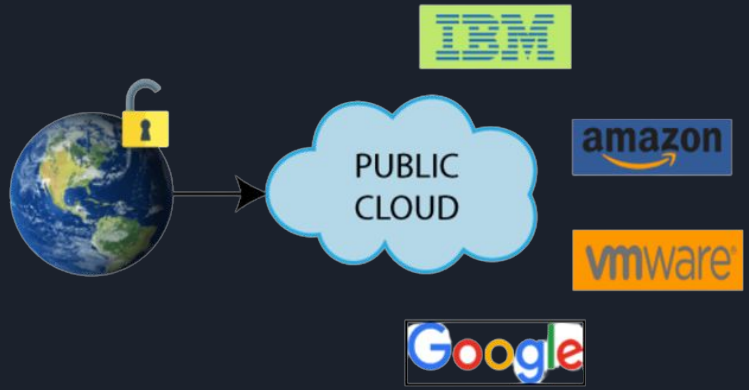


Public Cloud

Public cloud is open to all to store and access information via the Internet using the pay-per-usage method.

In public cloud, computing resources are managed and operated by the Cloud Service Provider (CSP).

Example: Amazon elastic compute cloud (EC2), IBM SmartCloud Enterprise, Microsoft, Google App Engine, Windows Azure Services Platform.

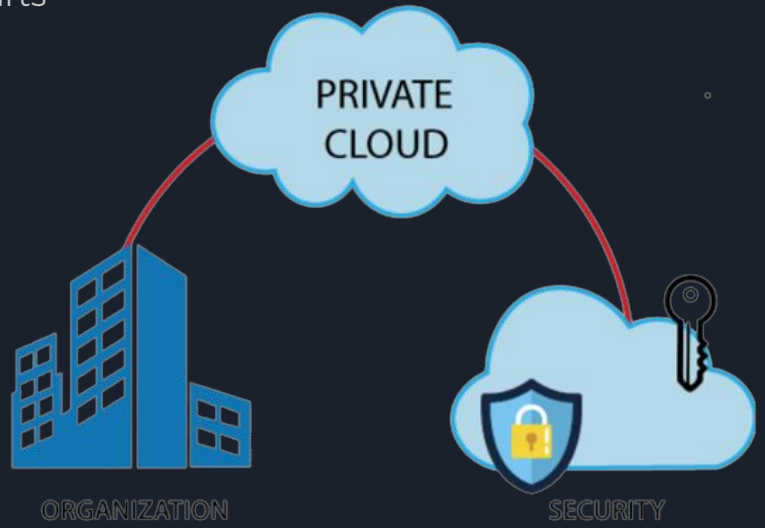


Private Cloud

Private cloud is also known as an internal cloud or corporate cloud. It is used by organizations to build and manage their own data centers internally or by the third party. It can be deployed using Open Source tools such as Openstack and Eucalyptus.

Based on the location and management, National Institute of Standards and Technology (NIST) divide private cloud into the following two parts-

- On-premise private cloud
- Outsourced private cloud



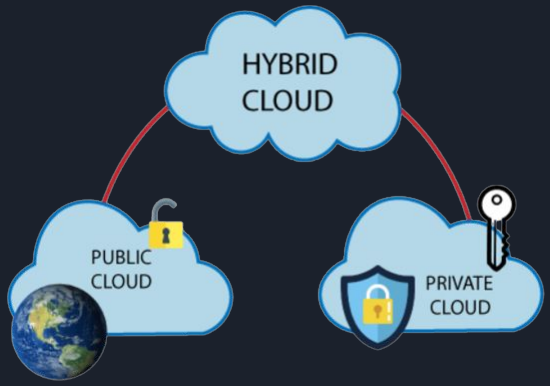
Hybrid Cloud

Hybrid Cloud is a combination of the public cloud and the private cloud. we can say:

Hybrid Cloud = Public Cloud + Private Cloud

Hybrid cloud is partially secure because the services which are running on the public cloud can be accessed by anyone, while the services which are running on a private cloud can be accessed only by the organization's users.

Example: Google Application Suite (Gmail, Google Apps, and Google Drive), Office 365 (MS Office on the Web and Onedrive), Amazon Web Services.



Community Cloud

Community cloud allows systems and services to be accessible by a group of several organizations to share the information between the organization and a specific community. It is owned, managed, and operated by one or more organizations in the community, a third party, or a combination of them.

Example: Health Care community cloud

Difference between public cloud, private cloud, hybrid cloud, and community cloud

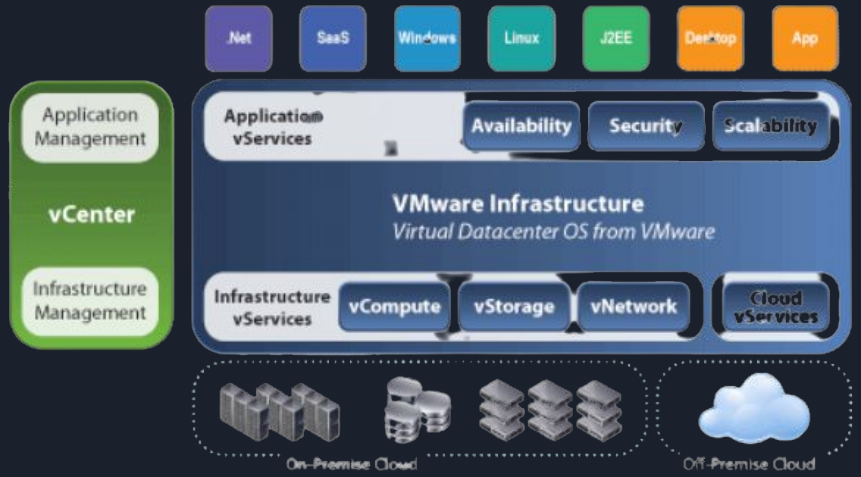
The below table shows the difference between public cloud, private cloud, hybrid cloud, and community cloud.

parameter	Public Cloud	Private Cloud	Hybrid Cloud	Community Cloud
Host	Service provider	Enterprise (Third party)	Enterprise (Third party)	Community (Third party)
Users	General public	Selected users	Selected users	Community members
Access	Internet	Internet, VPN	Internet, VPN	Internet, VPN
Owner	Service provider	Enterprise	Enterprise	Community

Virtualization

Virtualization is the "creation of a virtual (rather than actual) version of something, such as a server, a desktop, a storage device, an operating system or network resources".

In other words, Virtualization is a technique, which allows to share a single physical instance of a resource or an application among multiple customers and organizations. It does by assigning a logical name to a physical storage and providing a pointer to that physical resource when demanded.



Cloud Service Provider

Cloud Service providers (CSP) offers various services such as Software as a Service, Platform as a service, Infrastructure as a service, network services, business applications, mobile applications, and infrastructure in the cloud. The cloud service providers host these services in a data center, and users can access these services through cloud provider companies using an Internet connection.