TNGS Learning Solutions
AWS Solutions Architect
Online Course
Cloud Computing
Models

Cloud Computing Models

- Cloud computing models refer to the various service and deployment models that define how cloud computing resources are delivered, managed, and accessed. These models are fundamental in understanding the different approaches to using cloud technology and the roles of both cloud providers and users.
- The two primary dimensions of cloud computing models are:
  - **Service Models**
  - **Deployment Models**

Cloud Computing Models

Service Models

Infrastructure as a Service (IaaS) is a fundamental cloud computing service model that provides virtualized computing resources over the internet. IaaS delivers the foundational IT infrastructure components required to build and manage applications, services, and other computing resources without the need to own or manage physical hardware.

Infrastructure as a Service (IaaS)

On-Demand Resources: IaaS offers scalable computing resources on a pay-as-you-go basis. Users can provision and de-provision virtualized resources like virtual machines (VMs), storage, and networking as needed, making it highly flexible.

Infrastructure as a Service (IaaS)

Virtualization: IaaS relies heavily on virtualization technology. It abstracts physical hardware and creates virtual instances that can be managed through a web interface or API. Users can select CPU, memory, storage, and other resources based on their requirements.

Infrastructure as a Service (IaaS)

Self-Service: IaaS users typically have self-service access to a web-based console or API (Application Programming Interface) that allows them to create, manage, and configure virtualized resources. This self-service approach reduces the need for direct involvement from IT administrators.

Infrastructure as a Service (IaaS)

Scalability: IaaS platforms offer elasticity, enabling users to scale resources up or down to meet changing demand. This scalability is essential for accommodating fluctuations in workloads efficiently.

Infrastructure as a Service (IaaS)

Resource Monitoring and Management: IaaS providers often include tools for monitoring resource utilization, setting up automated scaling policies, and optimizing resource allocation for cost-efficiency.

Infrastructure as a Service (IaaS)

Network Connectivity: IaaS services include networking features such as load balancing, firewalls, and virtual private networks (VPNs) to facilitate secure and efficient data transfer.

Infrastructure as a Service (IaaS)

Security and Compliance: IaaS providers offer security features like encryption, identity and access management (IAM), and compliance certifications to help protect data and meet regulatory requirements.

Infrastructure as a Service (IaaS)

High Availability and Redundancy: IaaS platforms provide options for creating highly available and redundant architectures, ensuring system uptime and minimizing disruptions.

Common references of IaaS

Virtual Machines (VMs): These are virtualized instances of computing resources that include CPU, memory, storage, and an operating system. Users can run applications and workloads on VMs without the need for physical servers.

Common references of IaaS

Storage: IaaS platforms offer scalable and flexible storage options, including block storage, object storage, and file storage. Users can store data, files, and backups in the cloud.

Common references of IaaS

Networking: IaaS provides network-related services such as virtual networks, subnets, IP addressing, routing, and load balancing to manage the network infrastructure.

Common references of IaaS

Data Centers: IaaS providers operate data centers with a vast array of physical hardware, which they manage and maintain. Users leverage these resources virtually.

Common use-cases of IaaS

Web Hosting: IaaS is commonly used for hosting websites and web applications, as users can deploy virtualized resources to run their online services.

Common use-cases of IaaS

Development and Testing: Development teams use IaaS to create development and testing environments, reducing the need for on-premises hardware.

Common use-cases of IaaS

Data Storage: IaaS is suitable for storing large volumes of data, backups, and archives in a scalable manner.

Common use-cases of IaaS

Disaster Recovery: Organizations use IaaS for disaster recovery solutions by replicating on-premises infrastructure in the cloud to ensure business continuity in emergencies.

Common use-cases of IaaS

Big Data and Analytics: IaaS provides the computational power and storage capacity needed to process and analyze large datasets for data analytics and machine learning.

Common use-cases of IaaS

Hybrid Cloud: Enterprises often adopt a hybrid cloud model, combining on-premises infrastructure with IaaS resources to achieve greater flexibility and scalability.

Conclusion

Popular IaaS providers include Amazon Web Services (AWS), Microsoft Azure, Google Cloud Platform (GCP), IBM Cloud, and others. Users can choose the provider that best fits their specific needs, budget, and geographic requirements for deploying cloud infrastructure.