AWS Basic:

Cloud Computing

Cloud computing is a model that enables convenient, on-demand access to a shared pool of configurable computing resources, such as networks, servers, storage, applications, and services. This model allows users to access technology and services over the internet rather than relying on local servers or personal computers. Key characteristics of cloud computing include on-demand self-service, broad network access, resource pooling, rapid elasticity, and measured service.

On-Premises vs. Cloud Computing

On-Premises Computing:

- Involves maintaining physical servers and data centers within an organization.
- Requires significant upfront investment in hardware and software licenses.
- Ongoing costs include maintenance, upgrades, security, and staffing.
- Offers greater control over data security and compliance but can be resource-intensive.

Cloud Computing:

- Operates on a pay-as-you-go model, allowing users to access resources without owning them.
- Reduces the need for physical infrastructure and associated maintenance costs.
- Provides scalability and flexibility to adjust resources based on demand.
- Typically includes subscription fees for various services like storage and computing power.

Cloud Computing Providers

Major cloud service providers include:

- Amazon Web Services (AWS): Offers over 200 services including EC2 (Elastic Compute Cloud) and S3 (Simple Storage Service).
- Microsoft Azure: Provides a wide range of cloud services for building, testing, deploying, and managing applications.
- Google Cloud Platform (GCP): Focuses on data analytics and machine learning capabilities alongside traditional cloud services.

These providers deliver various computing resources over the internet, allowing businesses to scale their operations efficiently.

Cloud Computing Models

Cloud computing can be categorized into three primary deployment models:

1. Public Cloud: Services are owned and operated by third-party providers. Resources are delivered over the internet, with users paying only for what they consume. Examples include AWS EC2 and Google Cloud.
2. Private Cloud: Dedicated infrastructure is maintained within an organization. This model provides enhanced security and control but requires significant investment in hardware and management.
3. Hybrid Cloud: Combines public and private clouds to allow data and applications to be shared between them. This model offers greater flexibility and optimization of existing infrastructure while leveraging the scalability of public clouds.

Key Features of Cloud Computing

Pay-As-You-Go Service

Cloud computing operates on a pay-as-you-go basis, allowing organizations to avoid the costs associated with purchasing and maintaining physical servers. Instead, they can access computing power, storage, databases, and other services as needed.

Types of Services

Cloud computing encompasses several service models:

- Infrastructure as a Service (IaaS): Provides virtualized computing resources over the internet (e.g., AWS EC2).
- Platform as a Service (PaaS): Offers a platform allowing customers to develop, run, and manage applications without dealing with the underlying infrastructure.
- Software as a Service (SaaS): Delivers software applications over the internet on a subscription basis (e.g., Google Workspace) .

Additional Considerations

Organizations must consider aspects such as security, compliance, and data management when choosing between on-premises solutions and cloud services. The

shift towards cloud computing often leads to reduced operational costs and enhanced agility in responding to market demands.

In summary, cloud computing represents a significant evolution in how organizations manage their IT resources, providing flexibility, scalability, and cost-effectiveness compared to traditional on-premises solutions.