**AWS DOCUMENT**

1. **WHAT IS CLOUD**

The cloud refers to a network of remote servers that are used to store, manage, and process data, rather than using a local server or personal computer. When people talk about "the cloud," they are generally referring to services that enable online storage, computing, and software applications, rather than relying on physical hardware in your immediate environment.

There are some key points:

1. Storage
2. Computing Power
3. Scalability and Flexibility
4. Access Anywhere

2. **WHAT IS DIFFERENCE PRIVATE CLOUD AND PUBLIC CLOUD**

The difference between **public** and **private** generally refers to the level of access, ownership, and control over a resource or service, whether it’s related to **cloud computing**, **networks**, or even **data**.

|  |  |  |
| --- | --- | --- |
| Feature | Public Cloud | Private Cloud |
| Ownership | Third-party provider (AWS, Google, Microsoft) | Owned by a single organization or private entity |
| Access | Over the internet, shared by multiple users | Restricted to a specific organization or users |
| Cost | Pay-as-you-go, low upfront costs | Higher upfront costs, long-term investment |
| Scalability | Highly scalable, flexible resource allocation | Limited by own infrastructure, but can scale with investment |
| |  | | --- | |  |   Security | Strong security, but shared resources can be a concern | More control over security and compliance requirements |
| Performance | Can fluctuate, depending on shared resources | Consistent and predictable performance |
| |  | | --- | | Use Cases | | Startups, small businesses, web apps, SaaS | Large enterprises, sensitive data, high-performance computing |

**3. WHAT ARE TOP 10 PROVIDERS.**

|  |  |  |
| --- | --- | --- |
| Provider | Key Strengths | Key Services |
| AWS | Largest global market share, flexible, extensive services | EC2, S3, Lambda, RDS, SageMaker |
| Microsoft Azure | Strong integration with Microsoft products, hybrid cloud | Virtual Machines, SQL Database, Cognitive Services |
| Google Cloud | Big data, AI, Kubernetes, high-performance computing | Compute Engine, BigQuery, AI Platform, Kubernetes Engine |
| IBM Cloud | AI, blockchain, hybrid cloud, enterprise integration | Watson, Kubernetes, Blockchain, Cloud Databases |
| Oracle Cloud | Database-as-a-Service, enterprise apps | Autonomous Database, Compute, Oracle Applications |
| Alibaba Cloud | Market leader in Asia, e-commerce and retail solutions | ECS, OSS, ApsaraDB, CDN |
| Salesforce | CRM, SaaS for business apps | Sales Cloud, Service Cloud, Marketing Cloud, Heroku |
| Digital Ocean | Simplicity, developer tools, low-cost offerings | Droplets, Kubernetes, Managed Databases |
| |  |  |  | | --- | --- | --- | | |  | | --- | |  |  |  | | --- | | VMware Cloud | | |  | |  |  | | --- | |  | | Hybrid cloud, enterprise VMware integration | vSphere, vSAN, Hybrid Cloud |
| Tencent Cloud | Strong in gaming and media | Virtual Machine, COS, Cloud Database, Gaming Services |

**4. WHAT IS A SERVER**

A **server** is a type of computer or software system that provides services, data, or resources to other computers, called **clients**, over a network. It plays a central role in client-server architecture, where the server acts as a provider of resources and the client is the requester.

There are six types of servers;

### 1. ****Web Server****

* A web server hosts websites and responds to requests from web browsers (clients). When you enter a website URL in your browser, the browser sends a request to the web server, which then sends the requested web pages (HTML, images, etc.) back to the client.
* Example: **Apache HTTP Server**, **Nginx**

### 2. File Server

* A file server stores and manages files, allowing clients on a network to access, upload, or download them. It's commonly used in businesses or large organizations
* Example: **FTP Servers**, **Network Attached Storage (NAS)**

### 3. ****Database Server****

* A database server stores and manages databases. It provides clients with access to data, allowing them to query, update, and retrieve information.
* Example: **MySQL**, **PostgreSQL**, **Microsoft SQL Server**

### 4. ****Mail Server****

* A mail server handles email communication. It sends, receives, and stores emails, allowing users to access their inboxes through email clients (like Gmail or Outlook).
* Example: **Microsoft Exchange**, **Postfix**, **Sendmail**

### 5. ****Game Server****

* A game server hosts multiplayer video games, enabling players to connect to a shared environment. The server keeps track of game data, player interactions, and other real-time actions.
* Example: **Minecraft server**, **Counter-Strike server**

### 6. ****Application Server****

* An application server runs and manages software applications, handling requests and responses between the client and the backend. It typically works with a database server and can be part of a more complex distributed system.
* Example: **Tomcat**, **WebLogic**

1. **DIFFERENCE BETWEEN CLOUD AND SERVER**

**Server**:

* A server is a computer program or device that provides a service to another computer program and its user, also known as the client. In a data center, the physical computer that a server program runs on is also frequently referred to as a server.

**Cloud:**

* **Cloud computing** refers to the delivery of computing services (such as storage, processing power, and software) over the **internet** rather than on a local computer or on a local server.
* In the cloud, the data and services are hosted remotely on a network of servers managed by a cloud service provider (e.g., Amazon Web Services, Microsoft Azure, Google Cloud).

|  |  |  |
| --- | --- | --- |
| Feature | Server | Cloud |
| Ownership | Typically owned or leased by the user | Owned and maintained by a cloud provider |
| |  |  |  | | --- | --- | --- | | |  | | --- | | **Management** |  |  | | --- | |  | |  |  | | --- | |  | | Managed by the user (or IT team) | Managed by the cloud provider |
| Scalability | Limited by hardware, scaling is complex | Elastic, can scale easily and instantly |
| Cost | High upfront cost, fixed expenses | Pay-as-you-go, no upfront investment |
| Accessibility | Local or remote with configuration | Accessible from anywhere over the internet |
| Security | Managed by the user, needs maintenance | Managed by the provider with high redundancy |

**6. WHAT IS CLOUD COMPUTING**

**Cloud computing** refers to the delivery of computing resources such as **servers**, **storage**, **databases**, **software**, **analytics**, and **networking** over the **internet** . Instead of maintaining physical hardware or running software applications on your own computer or server, cloud computing allows you to access and use these resources on-demand from a **cloud service provider**.

Cloud computing enables businesses and individuals to access powerful computing capabilities without needing to own or manage the physical infrastructure. It offers flexibility, scalability, cost-efficiency, and the ability to access resources from anywhere with an internet connection.

Key types of cloud computing:

* 1. On-Demand Self-Service
  2. Broad Network Access
  3. Resource Pooling
  4. Rapid Elasticity
  5. Measured Service

**7. TYPES OF CLOUD COMPUTING**

There are three types of cloud computing they are:

 **Infrastructure as a Service (IaaS)**:

* IaaS provides virtualized computing resources over the internet. This includes things like virtual machines (VMs), storage, and networking.
* Users can rent these resources and use them to run applications, store data, and manage their infrastructure without having to maintain physical hardware.
* Examples: **Amazon Web Services (AWS)**, **Microsoft Azure**, **Google Cloud Platform (GCP)**

 **Platform as a Service (PaaS)**:

* PaaS provides a platform that allows developers to build, run, and deploy applications without worrying about managing the underlying hardware or software layers.
* It offers tools for application development, databases, middleware, and runtime environments.
* Examples: **Heroku**, **Google App Engine**, **Microsoft Azure App Services**

 **Software as a Service (SaaS)**:

* SaaS delivers software applications over the internet. These applications are typically accessed via a web browser and do not need to be installed or maintained on local machines.
* SaaS applications are often used for business functions like email, customer relationship management (CRM), office productivity, and collaboration.
* Examples: **Google Workspace (Docs, Sheets)**, **Microsoft 365 (Word, Excel, Outlook)**, **Salesforce**

 **Function as a Service (FaaS) / Serverless**:

* FaaS, often called **serverless computing**, allows you to run individual functions or pieces of code without managing servers. The cloud provider automatically scales resources based on demand, and you only pay for the compute time your code runs
* Examples: AWS Lambda, Azure Functions

### Deployment Models of Cloud Computing:

1. **Public Cloud**:
   * In a **public cloud**, services are provided over the internet and shared across multiple organizations. This is the most common model for many cloud applications.
   * The cloud provider owns and operates the infrastructure, and users pay for what they consume.
2. **Private Cloud**:
   * A **private cloud** is used by a single organization. It may be hosted on-site or by a third-party provider, but the infrastructure is dedicated to that organization only.
   * This model offers more control and customization but can be more expensive and complex to maintain.
3. **Hybrid Cloud**:
   * A **hybrid cloud** is a combination of **public and private clouds**, allowing data and applications to be shared between them. This model provides greater flexibility, as organizations can use the public cloud for less-sensitive workloads while keeping critical operations on a private cloud.
4. **Community Cloud**:
   * A **community cloud** is shared by multiple organizations with similar needs . It could be managed by a third-party or by the organizations themselves.

**8. BASIC KNOWLEDGE OF SOFTWARE DEVELOPMENT LIFE CYCLE**

It is a structured process for creating software that helps ensure the quality and cost of the final product. The SDLC has several phases, each with its own deliverables and process. The cost-effective and time-efficient process that development teams use to design and build high-quality software.

SDLC There are :

1. **Planning**
2. **Design**
3. **Implementation**
4. **Testing**
5. **Deployment**
6. **Maintenance**