**Security In The Cloud**

**1. How to Configure, Develop and Maintain Security and Privacy in Cloud?**

**Configuration & Development:**

* **Use secure APIs**
* Apply **Identity and Access Management (IAM)**
* Enable **data encryption** (at rest & in transit)
* Use **secure coding practices**
* Keep VMs and applications **patched & updated**

**Maintaining Security & Privacy:**

* Regular **audits and vulnerability scans**
* Enable **Multi-Factor Authentication (MFA)**
* Log and monitor using tools like **AWS CloudTrail**, **Azure Monitor**
* Create **private networks**, avoid public IPs unless needed

**2. What is Portability in Cloud?**

**Portability** means the ability to **move applications and data** between different cloud environments **without major changes**.

**Example:**

* Moving a virtual machine from AWS to Azure.
* Using **containers** (e.g., Docker) improves portability.

**💡 3. What is Reliability and High Availability in Cloud?**

**Reliability:**

* System performs **consistently** over time.
* Redundancy, backups, and failover are used to ensure reliability.

**High Availability (HA):**

* System remains **accessible even if parts fail**.
* Uses:
  + **Load balancers**
  + **Multi-region deployments**
  + **Auto-scaling**

Example: AWS uses **Availability Zones**, Azure uses **Availability Sets**, GCP uses **Regions & Zones** for HA.

**4. Describe Mobile Cloud Computing**

**Mobile Cloud Computing** = Mobile devices + Cloud computing.

**Features:**

* Apps run on **cloud servers**, not device
* Saves **device resources** (CPU, memory)
* Allows **real-time access** from anywhere

**Example:**

* Google Docs on your phone – processed in the cloud, accessed on mobile

**☁️ 5. Describe AWS, Azure, Google Cloud Platforms**

| **Feature** | **AWS** | **Microsoft Azure** | **Google Cloud Platform (GCP)** |
| --- | --- | --- | --- |
| Founded | 2006 | 2010 | 2008 |
| Services | EC2, S3, Lambda, RDS | VM, Blob, Azure SQL | Compute Engine, GCS, BigQuery |
| Console | AWS Console | Azure Portal | Google Cloud Console |
| Strength | Compute & storage variety | Integration with Windows | Big Data & AI |

**6. Accessing AWS, Azure, or GCP (Example: AWS Portal)**

**Steps to Access AWS:**

1. Go to <https://aws.amazon.com>
2. Click **"Sign In to the Console"**
3. Create or use an **AWS Free Tier account**
4. Access services like EC2, S3, VPC from the **Management Console**

**7. Create Compute, Network, Storage on AWS / Azure / GCP**

**Example: AWS**

**Create Compute:**

* Go to **EC2**
* Launch a virtual machine (choose OS, size, key pair)

**Create Network:**

* Go to **VPC**
* Create a **Virtual Private Cloud**, **Subnets**, **Route Tables**

**Create Storage:**

* Use **S3** for object storage
* Use **EBS** for block storage
* Use **EFS** for shared file storage