

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

Cloud security and privacy ensure that data and applications are protected from unauthorized access.

Configuration

- Use **IAM (Identity and Access Management)** to control user access
- Enable **RBAC (Role-Based Access Control)**
- Configure **firewalls and security groups**
- Enable **encryption** for data at rest and in transit

Development

- Follow **secure coding practices**
- Use **DevSecOps** (security integrated into development)
- Apply **API security**
- Perform vulnerability testing

Maintenance

- Regular patch updates
- Continuous monitoring and logging
- Backup and disaster recovery planning
- Compliance audits (ISO, GDPR, HIPAA)

Result: Ensures confidentiality, integrity, and availability of data.

2. What is Portability in Cloud?

Portability is the ability to move applications and data **from one cloud provider to another** with minimal changes.

Importance

- Avoids vendor lock-in
- Increases flexibility
- Enables multi-cloud strategy

Examples

- Using containers (Docker)
- Using standard APIs
- Migrating VMs between clouds

3. What is Reliability and High Availability in Cloud?

Reliability

- Ability of cloud systems to **perform consistently without failure**
- Ensures correct operation over time

High Availability (HA)

- Ensures services are **always accessible**
- Achieved by:
 - Load balancing
 - Redundancy
 - Multiple availability zones

Example

If one server fails, another server automatically takes over.

4. Describe Mobility Cloud Computing

Mobility Cloud Computing allows users to access cloud services **anytime, anywhere** using mobile devices.

Features

- Access via smartphones, tablets, laptops
- Supports mobile apps
- Uses wireless networks (4G, 5G, Wi-Fi)

Benefits

- Increased productivity
 - Real-time data access
 - Device independence
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5. Describe AWS, Azure, and Google Cloud Platforms

Amazon Web Services (AWS)

- Market leader in cloud computing
- Offers IaaS, PaaS, and SaaS
- Services: EC2, S3, RDS, Lambda

- Highly scalable and secure
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Microsoft Azure

- Strong integration with Microsoft tools
 - Services: Virtual Machines, Azure Storage, Azure SQL
 - Widely used by enterprises
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Google Cloud Platform (GCP)

- Known for data analytics and AI
 - Services: Compute Engine, Cloud Storage, BigQuery
 - Strong performance and networking
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6. Accessing Cloud Platforms (Example: AWS Portal)

Steps to Access AWS

1. Open browser → Go to AWS Management Console
2. Sign in using:
 - Root user or IAM user
3. Select region
4. Access services like EC2, S3, VPC

Other Platforms

- Azure → Azure Portal
 - GCP → Google Cloud Console
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7. Create Compute, Network, and Storage on AWS, Azure, and GCP

A. AWS

- **Compute:** EC2
- **Network:** VPC
- **Storage:** S3 / EBS

B. Azure

- **Compute:** Azure Virtual Machine

- **Network:** Virtual Network (VNet)
- **Storage:** Blob Storage / Disk Storage

C. Google Cloud Platform

- **Compute:** Compute Engine
 - **Network:** VPC Network
 - **Storage:** Cloud Storage
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General Steps

1. Login to cloud portal
 2. Select service
 3. Configure settings
 4. Launch resource
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8. Compare Cloud Pricing of Resources and Services

Pricing Factors

- Compute hours
- Storage used
- Data transfer
- Region

Pricing Comparison

Feature	AWS	Azure	GCP
Compute Pricing	Pay-per-second	Pay-per-minute	Pay-per-second
Free Tier	Yes	Yes	Yes
Discounts	Reserved Instances	Reserved VM	Sustained Use
Pricing Tool	AWS Pricing Calculator	Azure Pricing Calculator	GCP Pricing Calculator

Conclusion

- **AWS:** Most service options
- **Azure:** Best for Microsoft users
- **GCP:** Cost-effective for analytics