ChatGPT

AWS Certified Cloud Practitioner (CCP) Study Notes

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1. AWS Global Infrastructure

Overview

- **Regions**: Physical locations worldwide with multiple AZs (e.g., `us-east-1`)
- **Availability Zones (AZs)**: Data centers designed for fault isolation
- **Edge Locations**: Used by **CloudFront** for content delivery (CDN)
- **Local Zones**: Extend AWS regions closer to users (low latency)
- **Wavelength Zones**: For 5G app deployment at telecom locations

Example Scenario:

- A video streaming platform uses **S3** in `us-east-1`, combined with **CloudFront** for global caching.

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2. Compute Services

Amazon EC2 (Elastic Compute Cloud)

- **Definition**: Scalable virtual servers in the cloud
- **Key Features**:
- Instance types: General, Compute, Memory, Storage optimized

• AMIs (Amazon Machine Images) for OS and pre-configured software
• Auto Scaling, Elastic Load Balancing (ELB)
• **Real-World Example**:
• Hosting backend services of a web application.

Use Case:

• Launch a **Linux** or **Windows** VM to host a company's web server.

Amazon Lambda

• **Definition**: Serverless, event-driven code execution platform
• **Key Features**:
• Triggers from **S3**, **DynamoDB**, **API Gateway**
• Supports multiple programming languages (Python, Node.js, etc.)
• **Real-World Example**:
• Resize images uploaded to an S3 bucket automatically.

Elastic Beanstalk

• **Definition**: Platform as a Service (PaaS)
• **Real-World Example**:
• Deploy a Python Django app without configuring servers manually.

Amazon ECS / EKS

• ECS (Elastic Container Service): Docker containers managed by AWS
• EKS (Elastic Kubernetes Service): Managed Kubernetes

Scenario Example:

• Hosting microservices architecture using ECS.

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3. Storage Services

Amazon S3 (Simple Storage Service)

• **Definition**: Object storage for the internet
• **Key Features**:
• Storage classes (Standard, IA, Glacier)
• Versioning, lifecycle policies, replication
• **Real-World Example**:
• Store backups, logs, or website static files.

Scenario:

• Company stores customer invoices securely in **S3 Standard**, older invoices moved to **S3 Glacier**.

Amazon EBS (Elastic Block Store)

- **Definition**: Block storage for EC2 instances
- **Real-World Example**:
- Attach an EBS volume for a MySQL database.

Amazon EFS (Elastic File System)

- **Definition**: Scalable NFS (file system) for EC2
- **Real-World Example**:
- Share access to files across multiple EC2 instances.

Amazon Glacier / S3 Glacier

- **Definition**: Archival storage with low retrieval frequency
- **Real-World Example**:
- Legal document archiving for 7 years.

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4. Database Services

Amazon RDS (Relational Database Service)

- **Definition**: Managed relational database
- **Supports**: MySQL, PostgreSQL, MariaDB, Oracle, SQL Server, Aurora
- **Real-World Example**:
- An eCommerce application uses RDS MySQL for order data.

DynamoDB

- **Definition**: Managed NoSQL key-value store
- **Real-World Example**:
- Shopping cart for an online store with millisecond response times.

Amazon Aurora

- **Definition**: Highly available relational database engine (MySQL/PostgreSQL-compatible)
- **Real-World Example**:
- Large SaaS platforms needing fault tolerance and high throughput.

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5. Networking & Content Delivery

Amazon VPC (Virtual Private Cloud)

- **Definition**: Private network environment
- **Key Features**: Subnets, route tables, NAT gateways
- **Real-World Example**:

• Securely isolate a company's databases within private subnets.

CloudFront

• **Definition**: CDN to cache and distribute web content globally
• **Real-World Example**:
• Serve website images faster to global users.

AWS Route 53

• **Definition**: DNS service
• **Real-World Example**:
• Register domains and route traffic to web apps.

AWS Direct Connect

• **Definition**: Dedicated network connection between on-premises and AWS
• **Real-World Example**:
• Enterprises needing private, low-latency connections.

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6. Security, Identity & Compliance

AWS IAM (Identity and Access Management)

• **Definition**: Manage permissions and access controls
• **Features**: Policies, roles, MFA
• **Real-World Example**:
• Developers have access to **S3 buckets**; finance team restricted to **Billing** only.

AWS KMS (Key Management Service)

• **Definition**: Manage encryption keys
• **Real-World Example**:
• Encrypt sensitive database backups.

AWS WAF (Web Application Firewall)

• **Definition**: Protects apps from common exploits like SQL injection

AWS Shield

• **Definition**: DDoS protection
• **Tiers**: Standard (Free), Advanced (Paid)

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7. Monitoring & Management Tools

AWS CloudWatch

- **Definition**: Monitoring and observability
- **Real-World Example**:
- Alert when EC2 CPU utilization exceeds 80%.

AWS CloudTrail

- **Definition**: Logs AWS API calls for auditing
- **Real-World Example**:
- Trace who deleted an S3 bucket.

AWS Trusted Advisor

- **Definition**: Best practice recommendations (security, cost, fault tolerance)
- **Real-World Example**:
- Identify unused EC2 instances to reduce cost.

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8. Analytics & Machine Learning

Amazon Athena

- **Definition**: Query data in S3 using SQL
- **Real-World Example**:
- Generate reports from log files stored in S3.

Amazon SageMaker

- **Definition**: Build, train, deploy machine learning models
- **Real-World Example**:
- Predict customer churn in a SaaS product.

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9. Application Integration

Amazon SQS (Simple Queue Service)

- **Definition**: Message queuing service for decoupling
- **Real-World Example**:
- Process online orders asynchronously.

Amazon SNS (Simple Notification Service)

- **Definition**: Publish-subscribe messaging system

- **Real-World Example**:
- Send SMS alerts when website goes down.

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10. Pricing & Billing

Pricing Models

- **Pay-as-you-go**: Most common
- **Reserved Instances**: 1-3 year commitment
- **Spot Instances**: Bid for unused EC2 capacity
- **Savings Plans**: Flexible, commitment-based pricing

Cost Management Tools

- **AWS Budgets**: Set cost targets
- **AWS Cost Explorer**: Visual usage analysis
- **Consolidated Billing**: For Organizations

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11. Support Plans

Plan	Features
Basic	Free, documentation, support forums
Developer	Email during business hours
Business	24/7 support, Trusted Advisor
Enterprise	TAM, architectural guidance, 24/7

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12. AWS Well-Architected Framework

5 Pillars

1. **Operational Excellence**
2. **Security**
3. **Reliability**
4. **Performance Efficiency**
5. **Cost Optimization**

Scenario Example:

- A SaaS provider uses multiple AZs (Reliability), encrypts data (Security), monitors via CloudWatch (Operational Excellence).

13. Real-World Scenarios & Exam Tips

Scenarios

1. **Serverless Architecture**:

2. Use API Gateway + Lambda + DynamoDB for cost-efficient applications.

3. **Hybrid Cloud**:

4. Use **Direct Connect** for secure, high-performance hybrid cloud environments.

5. **Disaster Recovery**:

6. Use **S3 Cross-Region Replication** for critical data.

7. **Global Application**:

8. Combine **Route 53**, **CloudFront**, and **S3** for fast global content delivery.

Exam Tips

- Know **service definitions** and **common use cases**.
- Be clear on **pricing models**.
- **Global Infrastructure** questions are common.
- **IAM, S3, EC2** are often tested.
- Understand the **support plans** and **billing tools**.

Final Tip: Read scenarios carefully in the exam — pick the solution that's secure, reliable, cost-effective, and scalable.

Let me know if you want tailored practice questions based on these notes!