AWS Certified Cloud Practitioner

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1 Cloud Computing

1.1 What is

Cloud computing is the **on-demand delivery** of it resources (database storage, compute power, etc), which you can access and **provision the right type and size of computing almost instantly** and have a **pay-as-you-go** pricing.

1.2 Deployment Models of the Cloud

1. **Private:**
   - Complete control, meet specific business needs
   - Used by single organization
   - Cloud owned by third-party
2. **Public:**
   - Cloud resources owned and operated by third-party.
3. **Hybrid:**
   - Keep the control of some servers and extend some capabilities to the Cloud

1.3 Five Characteristics of Cloud Computing (Amazon POV)

- **On-demand self service:** Users can provide it resources without human interaction.
- **Broad network access:** Can access the AWS panel from the internet.
- **Multi-tenancy and resource pooling:** Multiple users share the same physical resources yet their it resources are isolated with security and privacy.
- **Rapid elasticity and scalability:** Automatically and quickly add or remove it resources.
- **Measured service:** Usage is measured and you pay what you use.

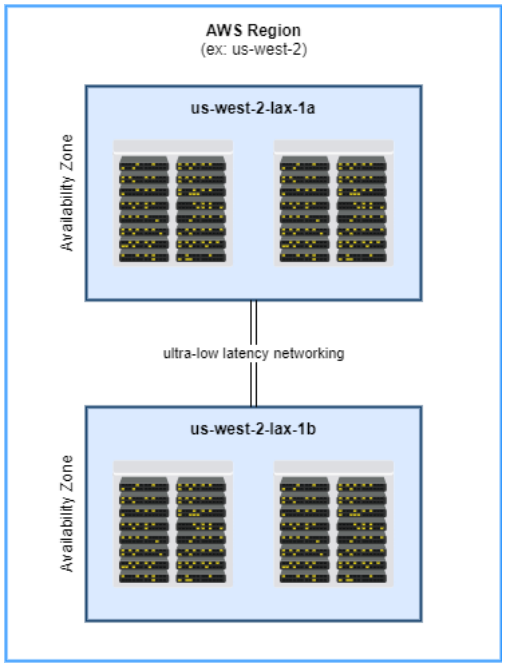
1.4 Advantages of Cloud Computing

- **Trade CAPEX for OPEX:** Pay on-demand don't own hardware.
- **Benefit from economies of scale:** If more people use AWS, AWS will acquire more hardware and become more efficient, then the pricing goes lower.
- **Use what you need:** Scale based on actual usage measure.
- **Increase speed and agility:** Instance resources almost immediately.
- **Globality:** Instance IT resources in many geographical locations.

1.5 Problems solved by the Cloud (Business with IT needs POV)

- **Flexibility:** Add, remove and change IT resources when needed.
- **Cost-effectiveness:** Pay as-you-go.
- **Scalability:** Increase IT resources when receiving larger loads.
- **Elasticity:** Scale-in and scale-out when needed.
- **High-availability and‘ Fault-tolerant:** You gotta trust AWS.
- **Agility:** Quick development process, test and launch software applications.

1.6 AWS Global Infrastructure



2 IAM

2.1 What is

IAM (**Identity and Access Management**) is a **global** AWS service that helps you manage the permissions of the access to AWS services and resources.

2.2 Users, Groups, Roles, Policies

2.2.1 Users

People within the organization. One AWS user account per physical user. You can assign policies to a user.

2.2.2 Groups

Can contain users only (not other groups). You can assign policies to a group.

2.2.3 Roles

In order to bind a policy to an AWS service or resource (EC2, Lambda, etc), we need to it through a role.

2.2.4 Policies

JSON document that defines the access level of AWS services and resources. Example:

```
// AmazonEC2ReadOnlyAccess
{
    "Version": "2012-10-17",
    "Statement": [
        {
            "Effect": "Allow",
            "Action": "ec2:Describe*",
            "Resource": "*"
        },
        {
            "Effect": "Allow",
            "Action": "elasticloadbalancing:Describe*",
            "Resource": "*"
        },
        {
            "Effect": "Allow",
            "Action": [
                "cloudwatch:ListMetrics",
                "cloudwatch:GetMetricStatistics",
                "cloudwatch:Describe*"
            ],
            "Resource": "*"
        },
        {
            "Effect": "Allow",
            "Action": "autoscaling:Describe*",
            "Resource": "*"
        }
    ]
}
```

2.3 IAM Elements Relationships