AWS Assignment 4

1. Explain the Snowball concept.

Snowball is a petabyte-scale data transport solution that uses secure appliances to transfer large amounts of data into and out of the AWS cloud. Using Snowball addresses common challenges with large-scale data transfers including high network costs, long transfer times, and security concerns.

1. Make a distinction between NAT Gateways and NAT Instances.

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| Attribute | NAT gateway | NAT instance |
| Availability | Highly available. NAT gateways in each Availability Zone are implemented with redundancy. Create a NAT gateway in each Availability Zone to ensure zone-independent architecture. | Use a script to manage failover between instances. |
| Bandwidth | Scale up to 45 Gbps. | Depends on the bandwidth of the instance type. |
| Maintenance | Managed by AWS. You do not need to perform any maintenance. | Managed by you, for example, by installing software updates or operating system patches on the instance. |
| Performance | Software is optimized for handling NAT traffic. | A generic AMI that's configured to perform NAT. |
| Cost | Charged depending on the number of NAT gateways you use, duration of usage, and amount of data that you send through the NAT gateways. | Charged depending on the number of NAT instances that you use, duration of usage, and instance type and size. |
| Type and size | Uniform offering; you don’t need to decide on the type or size. | Choose a suitable instance type and size, according to your predicted workload. |
| Public IP addresses | Choose the Elastic IP address to associate with a public NAT gateway at creation. | Use an Elastic IP address or a public IP address with a NAT instance. You can change the public IP address at any time by associating a new Elastic IP address with the instance. |
| Private IP addresses | Automatically selected from the subnet's IP address range when you create the gateway. | Assign a specific private IP address from the subnet's IP address range when you launch the instance. |
| Security groups | You cannot associate security groups with NAT gateways. You can associate them with the resources behind the NAT gateway to control inbound and outbound traffic. | Associate with your NAT instance  and the resources behind your NAT instance to control inbound and outbound traffic. |
| Network ACLs | Use a network ACL to control the traffic to and from the subnet in which your NAT gateway resides. | Use a network ACL to control the traffic to and from the subnet in which your NAT instance resides. |
| Port forwarding | Not supported. | Manually customize the configuration to support port forwarding. |
| IP fragmentation | Supports forwarding of IP fragmented packets for the UDP protocol.Does not support fragmentation for the TCP and ICMP protocols. Fragmented packets for these protocols will get dropped. | Supports reassembly of IP fragmented packets for the UDP, TCP, and ICMP protocols. |

1. Describe the essential components of Amazon Web Services (AWS)

There are different components of AWS, but only for key components.

Amazon Cluster

Storage

Databases

Management and security

Networks

Analytics

1. When should you utilize a spin-up server? Use examples to demonstrate your point.

There are multiple scenarios in which spin up of server required. Its mean starting a new instance of a particular service on Amazon Web Services.

Spinning of the server can be either done by manual or automatic approach.

For example If any sales is going on for some product then at that time there might be higher chances of spike than usual .In this situation we spin up the server to handle the load if it reaches a certain threshold.

1. Explain the concept of EC2 auto scaling.

AWS Auto Scaling monitors your applications and automatically adjusts capacity to maintain steady, predictable performance at the lowest possible cost. .AWS Auto Scaling makes scaling simple with recommendations that allow you to optimize performance, costs, or balance between them.

It’s easy to get started with AWS Auto Scaling using the [AWS Management Console](https://console.aws.amazon.com/console/home), Command Line Interface (CLI), or SDK. AWS Auto Scaling is available at no additional charge. You pay only for the AWS resources needed to run your applications and [Amazon CloudWatch](https://aws.amazon.com/cloudwatch/) monitoring fees.