AWS Cloud EC2

Topics : AWS
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Amazon Elastic Compute Cloud (Amazon EC2) is one of the foundational services provided by Amazon Web Services (AWS). It allows users to rent virtual servers in the cloud, commonly known as instances, to run applications and workloads. EC2 instances offer a flexible and scalable computing environment, providing various configurations to meet different performance, capacity, and security requirements.

Here are key features and aspects of Amazon EC2:

1. **Instances:**

   - EC2 instances are virtual servers that users can launch in the AWS cloud.
   - There are various instance types optimized for different use cases, such as compute-optimized, memory-optimized, storage-optimized, and GPU instances.

2. **Instance Families:**

   - Instances are grouped into families based on their target application use cases. For example, the "t" family is burstable performance instances suitable for general-purpose applications, while the "m" family is balanced for memory and general-purpose usage.

3. **AMI (Amazon Machine Image):**

   - An AMI is a pre-configured virtual machine image that users can use to create an EC2 instance. It contains the necessary information to launch an instance, including the operating system, application server, and applications.

4. **Pricing Models:**

   - EC2 operates on a pay-as-you-go pricing model, where users pay for the compute capacity they consume. Pricing can vary based on instance type, region, and other factors.
   - Spot Instances allow users to bid for unused EC2 capacity, potentially reducing costs.

5. **Instance Lifecycle:**

   - Instances can be launched, stopped, terminated, and restarted as needed.
   - Auto Scaling allows users to automatically adjust the number of EC2 instances based on demand, ensuring optimal performance and cost efficiency.

6. **Elastic Load Balancing (ELB):**

- ELB distributes incoming traffic across multiple EC2 instances to ensure high availability and fault tolerance.
- It helps improve the overall performance and reliability of applications by balancing the load.

7. **Security Groups and Networking:**

- Security Groups act as virtual firewalls, controlling inbound and outbound traffic to EC2 instances.
- EC2 instances can be launched in Amazon Virtual Private Cloud (VPC) for additional networking and security customization.

8. **EBS (Elastic Block Store):**

- EC2 instances can be attached to EBS volumes, providing scalable and high-performance block storage.
- EBS volumes persist independently of the EC2 instances and can be used for data storage.

9. **Key Pairs and SSH Access:**

- Instances launched in EC2 are typically accessed via Secure Shell (SSH) for Linux instances or Remote Desktop Protocol (RDP) for Windows instances.
- Key pairs are used for secure SSH access to Linux instances.

10. **Monitoring and Management:**

- AWS provides monitoring tools like Amazon CloudWatch to track performance metrics, set alarms, and gain insights into the health of EC2 instances.
- AWS Management Console, AWS Command Line Interface (CLI), and SDKs enable users to manage EC2 instances.

11. **Dedicated Hosts:**

- For specific compliance and regulatory requirements, users can launch instances on Dedicated Hosts, which provide physical servers dedicated to their use.