AWS-EC2

Elastic Compute Cloud

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AWS EC2

Amazon EC2 is a web service that provides sizable compute capacity in the cloud. It is designed to make web-scale computing easier for developers.

Amazon Elastic Compute Cloud (Amazon EC2) offers the broadest and deepest compute platform, with over 750 instances and choice of the latest processor, storage, networking, operating system.

Features

Instances - Virtual servers.

Amazon Machine Images (AMIs) - Preconfigured templates for your instances that package the components you need for your server (including the operating system and additional software).

Instance types - Various configurations of CPU, memory, storage, networking capacity, and graphics hardware for your instances.

Amazon EBS volumes - Persistent storage volumes for your data using Amazon Elastic Block Store (Amazon EBS).

Instance store volumes - Storage volumes for temporary data that is deleted when you stop,hibernate, or terminate your instance.

Key pair - Secure login information for your instances. AWS stores the public key and you store the private key in a secure place.

Security groups- A virtual firewall that allows you to specify the protocols, ports, and source IP ranges that can reach your instances, and the destination IP ranges to which your instances can connect.

Instances

- Instance is a VM that runs on the AWS datacenter.
- Instance hardware specifications can be given through the Instance type
- Instance OS can be specified through AMI (Amazon Machine Image). One AMI can be used to create multiple Instances.
- An Instance can be created through the web console or CLI.

Instances

Create Instance

- **aws ec2 run-instances --image-id ami-080660c9757080771 --count 1 --instance-type t2.micro --key-name Desktop-key --security-group-ids sg-0df4f7865ece65369**

The above command creates a t2.micro instance using my key named Desktop-key and attaches the default security group into it.

To add a EBS volume to it use --block-device-mapping option

- **--block-device-mappings "[{\"DeviceName\":\"/dev/sdf\",\"Ebs\":{\"VolumeSize\":20,\"DeleteOnTermination\":false}}]"**

Instances

List Instances

You can use the AWS CLI to list your instances and view information about them. You can list all your instances, or filter the results based on the instances that you're interested in.

The following command filters the list to only your `t2.micro` instances and outputs only the `InstanceId` values for each match.

- `$ aws ec2 describe-instances --filters "Name=instance-type,Values=t2.micro" --query "Reservations[].Instances[].InstanceId"`

Terminate Instance

- `aws ec2 terminate-instances --instance-ids i-5203422c`

Assignments

1. Write a Bash script to create a t2.micro instance and ubuntu 22.04 as the AMI.
2. Write a Bash script to create a t2.micro instance and add a ebs volume to it. In the same script, Terminate the earlier instance and create a new t2.micro instance. Attach the EBS volume to the new instance and display the instance ID of the new instance

Spot Instances

AMI and AMI Catalogue

Volumes

Snapshots

Security |Groups

Elastic IP

Load Balancers

Autoscaling Groups

Features of EC2

Amazon EC2 provides the following features:

- Virtual computing environments, known as *instances*
- Preconfigured templates for your instances, known as *Amazon Machine Images (AMIs)*, that package the bits you need for your server (including the operating system and additional software)
- Various configurations of CPU, memory, storage, and networking capacity for your instances, known as *instance types*
- Secure login information for your instances using *key pairs* (AWS stores the public key, and you store the private key in a secure place)
- Storage volumes for temporary data that's deleted when you stop, hibernate, or terminate your instance, known as *instance store volumes*
- Persistent storage volumes for your data using Amazon Elastic Block Store (Amazon EBS), known as *Amazon EBS volumes*
- Multiple physical locations for your resources, such as instances and Amazon EBS volumes, known as *Regions* and *Availability Zones*
- A firewall that enables you to specify the protocols, ports, and source IP ranges that can reach your instances using *security groups*
- Static IPv4 addresses for dynamic cloud computing, known as *Elastic IP addresses*
- Metadata, known as *tags*, that you can create and assign to your Amazon EC2 resources
- Virtual networks you can create that are logically isolated from the rest of the AWS Cloud, and that you can optionally connect to your own network, known as *virtual private clouds*(VPCs)

EC2 CLI Commands

https://docs.aws.amazon.com/cli/latest/reference/ec2/