

-----EC2---

1)What is Elastic IP ? Why do we require Elastic IP ? Does Elastic IP is a Private or Public?

An Elastic IP address is a **reserved public IP** address that you can assign to any EC2 instance in a particular region, until you choose to release it. and you can the mask **failure of an instance or software** by rapidly remapping the address to another instance in your account, and also called as Static IP

And **Elastic IP is public IPv4**, Public IP is a **routable address over internet**.

2. What is KeyPairs ? What is the difference between .pem & .ppk ?

A key pair, consisting of a **public key and private key**, is a set of **security credentials** that you use to **prove your identity** when connecting to an Amazon EC2 instance. Amazon EC2 stores the public key on your instance, and you store the private key.

The .pem and .ppk files are similar because they are both private key file formats.

PEM (**Privacy Enhanced Mail**) is a base64 container format for **encoding keys** and certificates. .pem download from AWS when you created your key-pair. This is only a one time download and you cannot download it again.

PPK(**Putty Private Key**) is a **windows ssh client**, it does **not support .pem format**. Hence you have to convert it to .ppk format using PuTTYGen.

3. What is SnapShots ? Why do we require SnapShot ?

Snapshots can be used to create a **backup** of critical workloads, such as a large database or a file system that spans across multiple EBS volumes.snapshot is just a point-in-time copy of an Amazon EBS volume with limited storage and recovery options.

Snapshots are a **common way to protect data and systems**.

4. What is Load Balancer ?

A load balancer acts as the “**traffic cop**” sitting in front of your servers and **routing client requests across all servers** capable of fulfilling those requests in a **manner that maximizes speed and capacity utilization** and ensures that no one server is overworked, which could degrade performance.

5. What is Security Groups ?

A security group **acts as a virtual firewall** for your EC2 instances to **control incoming and outgoing traffic**. Inbound rules control the incoming traffic to your instance, and outbound rules control the outgoing traffic from your instance.

6. What are Volumes?

EC2 Volumes (called Elastic Block Storage by Amazon) are essentially **disk images that can be mounted on any system running on EC2**, and continue to exist even if the system they were attached to is deleted.

(or)

An Amazon EBS volume is **a durable, block-level storage device that you can attach to your instances**. After you attach a volume to an instance, you can use it as you would use a physical hard drive. EBS volumes are flexible.

1. **General Purpose SSD (gp2) Volumes** (balances performance and price; used for low-latency app, dev and test environments)
2. **Provisioned IOPS SSD (io1) Volumes**(low-latency, or high-throughput applications; used for large databases, and critical business applications)
3. **Throughput Optimized HDD (st1) Volumes**(low -cost,used for log processing, data warehouses, and streaming workloads)
4. **Cold HDD (sc1) Volumes**(low-cost, used as a cheap storage solution)

7. What do you mean by Tags? Why do we require it ?

Tag is a **label** consisting of **a user-defined key and value**. Tags can help you **manage, identify, organize, search for, and filter resources**.

8. What is the difference between public ip and private ip ?

Public IP	Private IP
The scope of Private IP is local.	The scope of Public IP is global.
It is used to communicate within the network	It is used to communicate outside the network.
Private IP addresses of the systems connected in a network differ in a uniform manner.	Public IP may differ in a uniform or non-uniform manner.
It works only on LAN.	It is used to get internet service.
It is available free of cost.	It is available free of cost.
Private IP uses numeric code that is not unique and can be used again	Public IP uses a numeric code that is unique and cannot be used by other
Private IP addresses are secure	Public IP address has no security and is subjected to attack
Ex: 10.0.0.0 – 10.255.255.255, 172.16.0.0 – 172.31.255.255, 192.168.0.0 – 192.168.255.255	Range: Besides private IP addresses, the rest are public.

09. List out the Private IPs ?

Class A – 10.0.0.0 to 10.255.255.255

Class B – 172.16.0.0 to 172.31.255.255

Class C—192.168.0.0 to 192.168.255.255

10. How do you change the instance type of a running instance ?

No, that not possible while running. We need to stop instance and need to be change,

Select the instance → Action → Instance setting → change the instance type → Select as per requirement

11. How do you attach and IAM role on a running instance ?

Yes, we can attach or deatch IAM role while running but after modification need to be reboot the instance

Select the instance → Action → security → modify IAM role → Select as per requirement

12. What is Termination Protection ?

Termination protection **prevents an instance from accidental termination**. By default, this option is disabled for EC2 instances. Enable this option to protect your instance from any unintentional termination.

Select the instance → choose Actions → Instance Settings → Change Termination Protection → Choose Yes, → Disable.

13. How do you bootstrap an instance with set of commands ?

Yum install httpd* -y → first we need to install httpd in instance

Service httpd status → inactive → **systemctl start httpd.service**

Cd /var/www/html → create **file** with content and **save as (.html)**

systemctl restart httpd.service

goto **Browser** → search your instance **public IP**

14. How do you edit the User Data ?

Yes, we can change our userdata, but while running instance not possible

Stop instance → Select the instance → Action → instance setting → edit user data → Modify user data → save and start instance

15. How do you create an image from a running/stopped instance ?

Yes, we can create Amazon Machine Images (AMIs) from either running or stopped instances.

Select the instance → Action → images and templates → create AMI

If the image is created on a running instance, the file system integrity on the created image cannot be guaranteed. If you're confident that your instance is in a consistent state appropriate for image creation, you can tell Amazon EC2 not to power down and reboot the instance. To do this, for No reboot, select the Enable checkbox.

16. How do you get the System Log from an instance ?

Yes, we can get system log in instance

Select the instance → Action → Monitor and troubleshoot → Get system log → Download

17. Will I be able to choose a different AMI while the instance is running?

No, replacing the "AMI" is literally the process of creating a new server. If IP address consistency is a concern then you should be using an Elastic IP

18. What is the difference between I/B & O/B rules in Security Groups ?

I/B Security Group	O/B security Group
Inbound rules control the incoming traffic to your instance	Outbound rules control the outgoing traffic from your instance.
inbound traffic that's allowed to reach the resources that are associated with the security group	Outbound rule that allows all outbound traffic from the resource.(O/B rule max. 60)
The number of inbound rules per security groups in amazon is 60.	You can remove the rule and add outbound rules that allow specific outbound traffic only.
	If your security group has no outbound rules, no outbound traffic is allowed.

19. List the number of Ports ?

20,21	File Transfer Protocol (FTP) Data Transfer
22	Secure Shell (SSH)
53	Domain Name System (DNS) service
123	Network Time Protocol (NTP)
443	HTTP Secure (HTTPS) HTTP over TLS/SSL
110	Post Office Protocol (POP3) used by e-mail clients to retrieve e-mail from a server
25	Simple Mail Transfer Protocol (SMTP) E-mail Routing
3389	Remote Desktop Protocol
23	Telnet
69	(TFTP) Trivial File Transfer Protocol

20. What is Subnet? Why do we require Subnet ? What is the difference between Public and Private Subnet ?

A subnetwork or subnet is a logical subdivision of an IP network. The practice of dividing a network into two or more networks is called subnetting. (or)

A subnet, or subnetwork, is **a network inside a network**. Subnets make networks more efficient. Through subnetting, network traffic can travel a shorter distance without passing through unnecessary routers to reach its destination.

The difference between public and private subnets

The instances in the public subnet can send outbound traffic directly to the Internet with the help of Internet Gateway, where as the instances in the private subnet can't because we are not attaching Internet Gateway to the Private Subnets.

21. What do you mean by Root Device Name in Storage ?

A bootable block device of the EC2 instance is called a root device. Each instance that you launch has an associated root device volume, which is either an Amazon EBS volume or an instance store volume.

Root device types

1. Amazon EBS-backed AMI (uses permanent block storage to store data)
2. Instance store-backed AMI (which uses ephemeral block storage to store data)

22. What is EBS ?

Amazon Elastic Block Store (Amazon EBS) **provides block level storage** volumes for use with EC2 instances. EBS volumes behave like **raw, unformatted block devices**. You can mount these volumes as devices on your instances.(or)

EBS volumes are particularly **well-suited for use as the primary storage** for file systems, **databases**, or for any **applications** that require fine granular updates and access to raw, unformatted, **block-level storage**.

25. What is Instance Store ?

(Amazon EC2) instance types **come with a form of directly attached, block-device storage known as the instance store**. The instance store is **ideal for temporary storage**, because the **data stored in instance store volumes** is not persistent through **instance stops, terminations, or hardware failures**.

26. What is the difference between System Status checks and Instance Status checks?

System status checks monitor the AWS **hardware and systems** on running instances. A failing system status check will typically require intervention from AWS to be fixed. AWS recommends contacting support if a system status check is failing for more than 20 minutes. If the instance is backed by an EBS volume, you can stop and start the instance yourself to move it onto a different physical host.

The following are examples of problems that can cause instance status checks to fail:

- 1)Failed system status checks 2)Exhausted memory 3)Corrupted file system
- 4)Incorrect networking or startup configuration

Instance status checks indicate a **problem with instance configuration or software**.

The following are examples of problems that can cause instance status checks to fail:

- 1)Failed system status checks 2)Incorrect networking or startup configuration
- 3)Exhausted memory 4)Corrupted file system

2/2: It Means Both the status has Passed

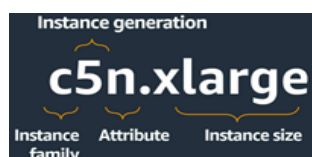
1/2: It Means System check is Passed & Instance check is Failed

0/2: It Means Both the status has Failed

27. How do you check the CPU Utilization of an instance ?

CPU utilization is the **percentage of allocated EC2 compute units** that are currently in use on **the instance**. This metric measures the percentage of allocated CPU cycles that are being utilized on an instance. The **CPU Utilization CloudWatch metric shows CPU usage per instance** and not **CPU usage per core**. / “**Top**”command is to check CPU usage.

28. List out the minimum and maximum configuration of instance type?



Instance Family	Current Generation Instance Types
General purpose	t2.nano t2.micro t2.small t2.medium t2.large m4.large m4.xlarge m4.2xlarge m4.4xlarge m4.10xlarge m3.medium m3.large m3.xlarge m3.2xlarge
Compute optimized	c4.large c4.xlarge c4.2xlarge c4.4xlarge c4.8xlarge c3.large c3.xlarge c3.2xlarge c3.4xlarge c3.8xlarge
Memory optimized	r3.large r3.xlarge r3.2xlarge r3.4xlarge r3.8xlarge
Storage optimized	i2.xlarge i2.2xlarge i2.4xlarge i2.8xlarge d2.xlarge d2.2xlarge d2.4xlarge d2.8xlarge
GPU instances	g2.2xlarge g2.8xlarge

29. What is Spot Instance ?

A Spot Instance is an instance that uses spare EC2 capacity that is available for less than the On-Demand price. Because Spot Instances enable you to request unused EC2 instances at steep discounts, you can lower your Amazon EC2 costs significantly. The hourly price for a Spot Instance is called a Spot price.

You can use Spot Instances for applications and workloads that require a fast network, quick storage, massive amounts of memory, and high computing capabilities

30. What is Reserved Instance ?

An Amazon Reserved Instance (RI) is a billing discount that allows you to save on your Amazon EC2 usage costs. When you purchase a Reserved Instance, you can set **attributes such as instance type, platform, tenancy, Region, or Availability Zone** (optional). networking type of their Standard Reserved Instances. **and** can be purchased for a **1-year or 3-year term**

31. What is the difference between HVM and PV Virtualization ?

The main differences between PV and HVM AMIs are the way in which they boot and whether they can take advantage of special hardware extensions (CPU, network, and storage) for better performance.

HVM AMIs are presented with a fully virtualized set of hardware and boot by executing the master boot record of the root block device of your image. This virtualization type provides the ability to run an operating system directly on top of a virtual machine without any modification, as if it were run on the bare-metal hardware. The Amazon EC2 host system emulates some or all of the underlying hardware that is presented to the guest. Unlike PV guests, HVM guests can take advantage of hardware extensions that provide fast access to the underlying hardware on the host system. HVM AMIs are required to take advantage of enhanced networking and GPU processing.

PV AMIs boot with a special boot loader called PV-GRUB, which starts the boot cycle and then chain loads the kernel specified in the menu.lst file on your image. Paravirtual guests can run on host hardware that does not have explicit support for virtualization, but they cannot take advantage of special hardware extensions such as enhanced networking or GPU processing. Historically, PV guests had better performance than HVM guests in many cases, but because of enhancements in HVM virtualization and the availability of PV drivers for HVM AMIs, this is no longer true.

32. Will you be able to share your custom AMI to different AWS Accounts ?

Yes, You can share an AMI with specific AWS accounts without making the AMI public. All you need is the AWS account IDs.

Choose AMIs. → Actions → Edit AMI permissions → Choose Private → **Under Shared accounts, choose Add account ID** → Enter the **AWS account ID** with which you want to share the AMI, and then choose Share AMI → Save changes.

33. Will you be able to copy your custom AMI from one region to different region ?

Yes, You can copy an Amazon Machine Image (AMI) into or to another AWS Region using the AWS Management Console, the AWS Command Line Interface, or SDKs, or the Amazon EC2 API

Choose AMIs. → Actions → Copy AMI → AMI copy name → Choose your Destination Region → copy tags(optional) & Encrypt EBS snapshots of AMI copy(optional) → Copy AMI.

34. List Out the different Volume types?

- **General Purpose SSD volumes.**

Volume type -	gp2 and gp3	
Volume size	1 GiB - 16 TiB	
Max IOPS per volume (16 KiB I/O) **	16,000	
Max throughput per volume **	1,000 MiB/s	250 MiB/s *
Amazon EBS Multi-attach	Not supported	
Boot volume	Supported	

- **Provisioned IOPS SSD volumes**

Volume type -	io2 Block Express io2 io1	
Volume size	4 GiB - 64 TiB	4 GiB - 16 TiB
Max IOPS per volume (16 KiB I/O)	256,000	64,000 †
Max throughput per volume	4,000 MiB/s	1,000 MiB/s †
Amazon EBS Multi-attach	Supported	
Boot volume	Supported	

- **Throughput Optimized HDD and Cold HDD volumes.**

	Throughput Optimized HDD	Cold HDD
Volume type	st1	sc1
Volume size	125 GiB - 16 TiB	125 GiB - 16 TiB
Max IOPS per volume (1 MiB I/O)	500	250
Max throughput per volume	500 MiB/s	250 B/s

- **Previous generation Magnetic volumes.**

Volume type	standard
Use cases	Workloads where data is infrequently accessed
Volume size	1 GiB-1 TiB
Max IOPS per volume	40-200
Max throughput per volume	40-90 MiB/s
Boot volume	Supported

35. Will you be able to modify a Volume ?

Yes, we can modify our volume

choose Volumes → Select the volume to modify and choose Actions → Modify volume. The Modify volume screen displays the volume ID and the volume's current configuration, including type, size(increase) , IOPS, and throughput.

- ✓ After modifying a volume, you must wait at **least six hours** and ensure that the volume is in the **in-use or available** state before you can modify the same.

36. Will you be able to copy a Snapshot from one region to another region ?

Go to the volume where your EBS snapshot resides. Select the EBS snapshot you want to copy to another region and then click on the Copy Snapshot button. Put a name and description on the EBS snapshot you want to copy to another region and then select the region you want to copy it to.

37. I want to create an AMI/Image from a Snapshot. Is it possible ?

Under Elastic Block Store, choose Snapshots. Choose the snapshot and choose Actions, Create Image. In the Create Image from EBS Snapshot dialog box, complete the fields to create your AMI, then choose Create.

38. What is Nested Security Groups?

The process of putting one group inside another group. Nested groups inherit the permissions and privileges of the group they are put under, and hence this makes privilege administration easier.

39. What do you mean by Placement Groups?

A cluster placement group is a **logical grouping** of instances within a **single Availability Zone** that benefit from **low network latency, high network throughput**. A spread placement group places instances on distinct hardware.

You can use placement groups **to influence the placement of a group of interdependent instances to meet the needs of your workload**. Depending on the type of workload

Cluster Placement Group is basically a directive to launch EC2 instances within the same Rack. Visualize thousands of servers placed in Amazon Data Centers and they are placed in different racks, so when you give 'Cluster' as placement group, all the instances will be launched within the same RAC (in same AZ).

Types of Placement Groups

- Cluster
- Partition
- Spread

40. Is it possible to create an Internal Application Load Balancer ?

under Load Balancing, choose Load Balancers. Choose Create Load Balancer. Under Application Load Balancer, choose Create. **in Application Load**

41. What do you mean by Listener Balancer ?

A listener is a process that checks for connection requests, using the protocol and port that you configure. The rules that you define for a listener determine how the load balancer routes requests to its registered targets.

42. What are the available Listener protocols in Application Load Balancer ?

A listener is **a process that checks for connection requests, using the protocol and port that you configure**. The rules that you define for a listener determine how the load balancer routes requests to its registered targets. Application Load Balancers provide native support for HTTP/2 with HTTPS listeners. You can send up to 128 requests in parallel using one HTTP/2 connection. You can use the protocol version to send the request to the targets using HTTP/2.

43. What are the different Target Types in Application Load Balancer Target Groups ?



Instances

- Supports load balancing to instances within a specific VPC.
- Facilitates the use of [Amazon EC2 Auto Scaling](#) to manage and scale your EC2 capacity.



IP addresses

- Supports load balancing to VPC and on-premises resources.
- Facilitates routing to multiple IP addresses and network interfaces on the same instance.
- Offers flexibility with microservice based architectures, simplifying inter-application communication.
- Supports IPv6 targets, enabling end-to-end IPv6 communication, and IPv4-to-IPv6 NAT.



Lambda function

- Facilitates routing to a single Lambda function.
- Accessible to Application Load Balancers only.



Application Load Balancer

- Offers the flexibility for a Network Load Balancer to accept and route TCP requests within a specific VPC.
- Facilitates using static IP addresses and PrivateLink with an Application Load Balancer.

When you create a target group, you specify its target type, which determines the type of target you specify when registering targets with this target group. After you create a target group, you cannot change its target type.

44. What are the available Target Group Protocols in Application Load Balancer Target Group ?

TCP → 80, HTTP→80, HTTPS→443, TLS→443, UDP→53,
TCP_UDP→53, GENEVE→6081

45. What are all the available Health Check Protocols available in Target Group ?

Health Check Protocol	The protocol the load balancer uses when performing health checks on targets. The possible protocols are HTTP and HTTPS. The default is the HTTP protocol.
Health Check Port	The port the load balancer uses when performing health checks on targets. The default is to use the port on which each target receives traffic from the load balancer.
Health Check Path	The destination for health checks on the targets. If the protocol version is HTTP/1.1 or HTTP/2, specify a valid URI (<i>/path? query</i>). The default is /.If the protocol version is gRPC, specify the path of a custom health check method with the format <i>/package. service/method</i> . The default is <i>/AWS.ALB/health check</i> .
Health Check Timeout Seconds	The amount of time, in seconds, during which no response from a target means a failed health check. The range is 2–120 seconds. The default is 5 seconds if the target type is instance or ip and 30 seconds if the target type is lambda.
Health Check Interval Seconds	The approximate amount of time, in seconds, between health checks of an individual target. The range is 5–300 seconds. The default is 30 seconds if the target type is instance or ip and 35 seconds if the target type is lambda.
Healthy Threshold Count	The number of consecutive successful health checks required before considering an unhealthy target healthy. The range is 2–10. The default is 5.
Unhealthy Threshold Count	The number of consecutive failed health checks required before considering a target unhealthy. The range is 2–10. The default is 2.

46. What is the difference between SSL/TLS/TCP/UDP/HTTP/HTTPS/SSH/FTP/PING/ICMP ?

SSL→ Secure sockets layer (SSL) is a networking protocol designed for securing connections between web clients and web servers over an insecure network.

TLS→ TLS is a cryptographic protocol that provides end-to-end security of data sent between applications over the Internet.

TCP→ Transmission Control Protocol (TCP) is a standard that defines how to establish and maintain a network conversation by which applications can exchange data.

UDP→ User datagram protocol (UDP) operates on top of the Internet Protocol (IP) to transmit datagrams over a network. UDP does not require the source and destination to establish a three-way handshake before transmission takes place. Additionally, there is no need for an end-to-end connection.

HTTP→ (HyperText Transfer Protocol) The communications protocol used to connect to Web servers on the Internet or on a local network (intranet). The primary function of HTTP is to establish a connection with the server and send HTML pages back to the user's browser. It is also used to download data from the server either to the browser or to any requesting application that uses HTTP.

HTTPS→ HTTPS stands for Hypertext Transfer Protocol Secure. It is the protocol where encrypted HTTP data is transferred over a secure connection. By using secure connection such as Transport Layer Security or Secure Sockets Layer, the privacy and integrity of data are maintained and authentication of websites is also validated.

SSH→ SSH stands for Secure Shell or Secure Socket Shell. It is a cryptographic network protocol that allows two computers to communicate and share the data over an insecure network such as the internet. It is used to login to a remote server to execute commands and data transfer from one machine to another machine. The SSH protocol was developed by SSH communication security Ltd to safely communicate with the remote machine.

FTP→ File Transfer Protocol, FTP is the most common way of sending and receiving files between two computers. File Transfer Protocol (FTP) is a client/server protocol used for transferring files to or from a host computer. FTP may be authenticated with user names and passwords

PING→ A ping (Packet Internet or Inter-Network Groper) is a basic Internet program that allows a user to test and verify if a particular destination IP address exists and can accept requests in computer network administration

ICMP→ Internet Control Message Protocol (ICMP) is a **network level protocol**. ICMP messages communicate information about network connectivity issues back to the source of the compromised transmission. It sends control messages such as destination network unreachable, source route failed, and source quench.

47. What is Healthy Threshold / Unhealthy Threshold / Timeout / Interval ?

Healthy Threshold	The number of consecutive successful health checks that must occur before declaring an EC2 instance healthy. Valid values: 2 to 10. Default: 10.
Unhealthy Threshold	The number of consecutive failed health checks that must occur before declaring an EC2 instance unhealthy. Valid values: 2 to 10. Default: 2
Timeout / Response timeout	The amount of time to wait when receiving a response from the health check, in seconds. Valid values: 2 to 60. Default: 5
Interval	The amount of time between health checks of an individual instance, in seconds. Valid values: 5 to 300. Default: 30
Protocal	The protocol to use to connect with the instance. Valid values: TCP, HTTP, HTTPS, and SSL Console default: HTTP, CLI/API default: TCP
Path	The port to use to connect with the instance, as a <code>protocol:port</code> pair. If the load balancer fails to connect with the instance at the specified port within the configured response timeout period, the instance is considered unhealthy.

•**Response Timeout:** The amount of time to wait when receiving a response from the health check, in seconds. Valid values: 2 to 60

•**Interval:** The amount of time between health checks of an individual instance, in seconds. Valid values: 5 to 300

•**Unhealthy Threshold:** The number of consecutive failed health checks that must occur before declaring an EC2 instance unhealthy. Valid values: 2 to 10

•**Healthy Threshold:** The number of consecutive successful health checks that must occur before declaring an EC2 instance healthy. Valid values: 2 to 10

48. What are the available Target Group Protocols in Network Load Balancer Target Group ?

Protocols: TCP → 80, TLS→443, UDP→53, TCP_UDP→53

49. List out Listener rule Conditions ?

Listener: A listener is a process that checks for connection requests, using the protocol and port that you configure. The rules that you define for a listener determine how the load balancer routes requests to its registered targets. (or) A listener is a process that checks for connection requests.

Listener rule: The rules that you define for your listener determine how the load balancer routes requests to the targets in one or more target groups.

Each rule must include exactly one of the following actions: **forward**, **redirect**, **or fixed-response**, and it must be the last action to be performed.

Each rule can include zero or one of the following conditions: **host-header**, **http-request-method**, **path-pattern**, **and source-ip**, and zero or more of the following conditions: **http-header** **and query-string**.

You can specify up to three comparison strings per condition and up to five per rule.

50. Should you use Launch Configurations or No ?

A *launch configuration* is an instance configuration template that an Auto Scaling group uses to launch EC2 instances. When you create a launch configuration, you specify information for the instances. Include the ID of the Amazon Machine Image (AMI), the instance type, a key pair, one or more security groups, and a block device mapping. If you've launched an EC2 instance before, you specified the same information in order to launch the instance.

You can specify your launch configuration with multiple Auto Scaling groups. However, you can only specify one launch configuration for an Auto Scaling group at a time, and you can't modify a launch configuration after you've created it. To change the launch configuration for an Auto Scaling group, you must create a launch configuration and then update your Auto Scaling group with it.

Keep in mind that whenever you create an Auto Scaling group, you must specify a launch configuration, a launch template, or an EC2 instance. When you create an Auto Scaling group using an EC2 instance, Amazon EC2 Auto Scaling automatically creates a launch configuration for you and associates it with the Auto Scaling group.

51. What is Auto Scaling Groups ?

Auto Scaling group contains a collection of EC2 instances that are treated as a logical grouping for the purposes of automatic scaling and management. An Auto Scaling group also lets you use Amazon EC2 Auto Scaling features such as health check replacements and scaling policies. Both maintaining the number of instances in an Auto Scaling group and automatic scaling are the core functionality of the Amazon EC2 Auto Scaling service.

The size of an Auto Scaling group depends on the number of instances that you set as the desired capacity. You can adjust its size to meet demand, either manually or by using automatic scaling.

52. What is the difference between Launch Configuration vs Launch Templates ?

AWS Auto Scaling Launch Template vs Launch Configuration

	Launch Template	Launch Configuration
Versioning	Supports Versioning	Immutable - Cannot be modified once created.
Dedicated Hosts Support	Yes	No
Override Instance Types	Yes - Instance types specified in launch template can be overridden	No
Multiple Instance Types & Purchase Options	Yes - supports Mix of On-demand & Spot instances.	No
Features Parity	Yes	No - AWS has stopped adding new features to Launch Configuration
Combining CPU architectures Support	Yes - Combining CPU architectures such as Intel, AMD, and ARM	No
Automate Deployment using Instance Refresh	Yes	No
AWS Recommended	Yes	No

53. What do you mean by Desired, Minimum and Maximum Capacity in Auto Scaling Group ?

- **Desired capacity:** Represents the initial capacity of the Auto Scaling group at the time of creation. An Auto Scaling group attempts to maintain the desired capacity. It starts by launching the number of instances that are specified for the desired capacity, and maintains this number of instances as long as there are no scaling policies or scheduled actions attached to the Auto Scaling group.
- **Minimum capacity:** Represents the minimum group size. When scaling policies are set, an Auto Scaling group cannot decrease its desired capacity lower than the minimum size limit.
- **Maximum capacity:** Represents the maximum group size. When scaling policies are set, an Auto Scaling group cannot increase its desired capacity higher than the maximum size limit.

54.Differences between step scaling policies and simple scaling policies?

Step scaling policies and simple scaling policies are two of the **dynamic scaling options** available for you to use. Both require you to **create CloudWatch alarms** for the scaling policies. Both require you to specify **the high and low thresholds** for the alarms. Both require you to define whether to **add or remove instances**, and how many, or set the group to an exact size.

The main difference between the policy types **is the step adjustments that you get with step scaling policies**. When *step adjustments* are applied, and they increase or decrease the current capacity of your Auto Scaling group, the adjustments vary based on the size of the alarm breach.

54. What is Scaling Policies in Auto Scaling Group ?

AWS Auto Scaling monitors your applications and automatically adjusts capacity to maintain steady, predictable performance at the lowest possible cost. Using AWS Auto Scaling, it's easy to setup application scaling for multiple resources across multiple services in minutes.(or)

Step scaling policies increase or decrease the current capacity of a scalable target based on a set of scaling adjustments, known as step adjustments. The adjustments vary based on the size of the alarm breach. All alarms that are breached are evaluated by Application Auto Scaling as it receives the alarm messages.

The three components of EC2 Auto Scaling are **scaling policies, scaling activities, and scaling processes**.

55. What is Target Tracking Scaling Policy ?

A target tracking scaling policy prioritizes availability during periods of fluctuating traffic levels by scaling in more gradually when traffic is decreasing. If you want your Auto Scaling group to scale in immediately when a workload finishes, you can disable the scale-in portion of the policy.

56. List out the Metric types available in Target Tracking Scaling Policy ?

- **ASGAverageCPUUtilization**—Average CPU utilization of the Auto Scaling group.
- **ASGAverageNetworkIn**—Average number of bytes received by a single instance on all network interfaces.
- **ASGAverageNetworkOut**—Average number of bytes sent out from a single instance on all network interfaces.
- **ALBRequestCountPerTarget**—Average Application Load Balancer request count per target.

57. How can you add Notification in Auto Scaling Groups ?

[AWS Auto Scaling](#) is a way to manage a dynamic fleet of EC2 instances. The Auto Scaling Group will keep the number of running instances in sync with the desired value. While the desired value stays in a boundary defined by min and max instances. [AWS Auto Scaling Notifications](#) are triggered on:

- Successful instance launch
 - Failed instance launch
 - Successful instance termination
 - Failed instance termination
1. Click on the **Auto Scaling Groups** link on the left
 2. Select the Auto Scaling Group you want to monitor
 3. Select the **Notifications** tab
 4. Click on the **Create notification** button
 5. Set **Send a notification to** the mail SNS topic
 6. In **Whenever instances**, select the events you are interested in
 7. Save by clicking the **Save** button.

59. What is Dynamic Scaling Policy in Auto Scaling Group ?

The dynamic scaling capabilities of Amazon EC2 Auto Scaling refers to the functionality that automatically increases or decreases capacity based on load or other metrics. For example, if your CPU spikes above 80% (and you have an alarm setup) Amazon EC2 Auto Scaling can add a new instance dynamically.

Dynamic scaling scales the capacity of your Auto Scaling group as traffic changes occur

- **Dynamic Horizontal Scaling** – IT resource instances are scaled out and in to handle fluctuating workloads. ...
- **Dynamic Vertical Scaling** – IT resource instances are scaled up and down when there is a need to adjust the processing capacity of a single IT resource.

60. What are the Policy types in Dynamic Scaling Policy ?

- **Dynamic Horizontal Scaling** – IT resource instances are scaled out and in to handle fluctuating workloads. ...
- **Dynamic Vertical Scaling** – IT resource instances are scaled up and down when there is a need to adjust the processing capacity of a single IT resource.

Target tracking scaling—Increase and decrease the current capacity of the group based on a Amazon CloudWatch metric and a target value. It works similar to the way that your thermostat maintains the temperature of your home—you select a temperature and the thermostat does the rest.

Step scaling—Increase and decrease the current capacity of the group based on a set of scaling adjustments, known as *step adjustments*, that vary based on the size of the alarm breach.

Simple scaling—Increase and decrease the current capacity of the group based on a single scaling adjustment, with a cooldown period between each scaling activity.

-

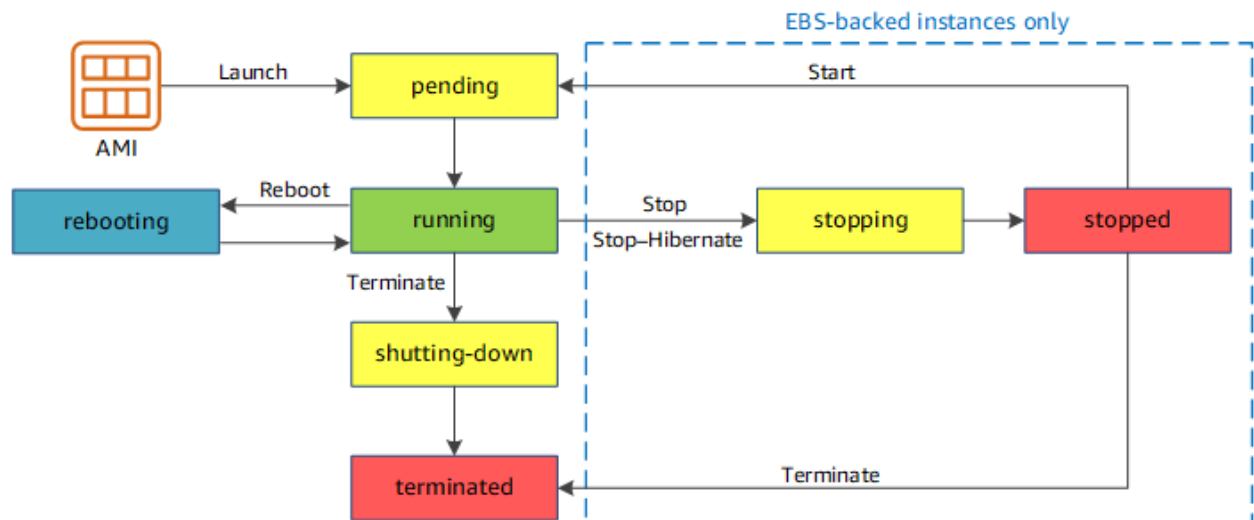
61. What is Lifecycle hook in Auto Scaling Group ?

Lifecycle hooks **allow you to control what happens when your Amazon EC2 instances are launched and terminated as you scale out and in**. For example, you might download and install software when an instance is launching, and archive instance log files in Amazon Simple Storage Service (S3) when an instance is terminating.

Characteristic	Reboot	Stop/start (Amazon EBS-backed instances only)	Hibernate (Amazon EBS-backed instances only)	Terminate
Host computer	The instance stays on the same host computer	We move the instance to a new host computer (though in some cases, it remains on the current host).	We move the instance to a new host computer (though in some cases, it remains on the current host).	None
Private and public IPv4 addresses	These addresses stay the same	The instance keeps its private IPv4 address. The instance gets a new public IPv4 address, unless it has an Elastic IP address, which doesn't change during a stop/start.	The instance keeps its private IPv4 address. The instance gets a new public IPv4 address, unless it has an Elastic IP address, which doesn't change during a stop/start.	None
Elastic IP addresses (IPv4)	The Elastic IP address remains associated with the instance	The Elastic IP address remains associated with the instance	The Elastic IP address remains associated with the instance	The Elastic IP address is disassociated from the instance
IPv6 address	The address stays the same	The instance keeps its IPv6 address	The instance keeps its IPv6 address	None
Instance store volumes	The data is preserved	The data is erased	The data is erased	The data is erased
Root device volume	The volume is preserved	The volume is preserved	The volume is preserved	The volume is deleted by default
RAM (contents of memory)	The RAM is erased	The RAM is erased	The RAM is saved to a file on the root volume	The RAM is erased
Billing	The instance billing hour	You stop incurring charges for an instance as soon as its state changes to stopping.	You incur charges while the instance is in the stopping state, but stop incurring charges	You stop incurring charges for an instance

Instance state	Description	Instance usage billing
pending	The instance is preparing to enter the running state. An instance enters the pending state when it launches for the first time, or when it is started after being in the stopped state.	Not billed
running	The instance is running and ready for use.	Billed
stopping	The instance is preparing to be stopped or stop-hibernated.	Not billed if preparing to stop Billed if preparing to hibernate
stopped	The instance is shut down and cannot be used. The instance can be started at any time.	Not billed
shutting-down	The instance is preparing to be terminated.	Not billed
terminated	The instance has been permanently deleted and cannot be started.	Not billed Note Reserved Instances that applied to terminated instances are billed until the end of their term according to their payment option. For more information, see Reserved Instances

65.Can you explain me the instance Life Cycle ?



The data in an instance store persists only during the lifetime of its associated instance. If an instance reboots (intentionally or unintentionally), data in the instance store persists. the transitions between instance states. Notice that you can't stop and start an instance store-backed instance. For more information about instance store-backed instances, see [Storage for the root device](#).

66. What is Launch Template ?

A launch template is similar to a launch configuration, in that it specifies instance configuration information. It includes the ID of the Amazon Machine Image (AMI), the instance type, a key pair, security groups, and other parameters used to launch EC2 instances.

67.Can you modify a launch template?

You cannot specify, change, or replace the numbering of launch template versions. Launch templates are immutable; after you create a launch template, you can't modify it. Instead, you can create a new version of the launch template that includes any changes you require.

68. Can we schedule an instance at some time ? Is it possible ?

69. Show me how to create Auto Scaling Group ?

70. What is Instance Refresh in Auto Scaling Group?

71. How do you check the Service Health of a Region ?

72. How can I see the Limits ?

Q1.Explain EC2 in Amazon?

Amazon EC2 stands for Elastic Compute Cloud which is a web service interface. It also provides resizable. compute capacity in the AWS cloud. It is used by developers to have complete control over web-scaling and computing resources Amazon ECC or Amazon EC2 stands for **Amazon Elastic Compute Cloud** and is one of the other parts of the larger Amazon Cloud services for the computing-based platforms offered by it. With the help of this service, Amazon users can avail the facility of virtual computer rentals as a framework on which they can easily run their own web programs or applications.

Q2. Mention some pros and cons of using Amazon EC2?

Some Pros and Cons of using Amazon EC2 is as follows.

Pros

- It has the ability to expand resources for the deployment of your cloud according to demand makes it extremely likable
- .Cloud hosting offers excellent backup capabilities, so it's a breeze to go back to the previous version.
- The cloud infrastructure prevents us from maintaining local hardware resources.

Cons

- The entire configuration and spin-up process require comprehensive technical knowledge.
- It has a little lack of training documentation and support. We tried to use Lambda expressions in the execution of program flow and found no great resources on this subject.
-

Q3.For what purpose EC2 instance tags are used?

- It helps you to manage your instances, images, and other Amazon EC2 resources.
- It allows you to assign your own metadata to each resource in the form of tags.
- It enables you to categorize your AWS resources in different ways such as by purpose, owner, or environment.

1) Explain EC2 in Amazon? 2) Mention some pros and cons of using Amazon EC2?

3) List types of EC2 instances available in AWS? 4) What is the easiest and safest way to backup in Amazon EC2?

5) For what purpose EC2 instance tags are used? 6) Why do we create instances in AWS?

7) List some tools to monitor AWS? 8) How do you route a domain name to an EC2 Instance?

9) What is the difference between a public IP and an elastic IP in AWS?

10) How to regenerate a .pem file for my AWS EC2 server?

11) What is the difference between a spot instance and an on-demand instance?

12) How to set AWS EC2 CPU utilization to max or use all cores?

13) How do we permanently terminate or delete AWS EC2 instance?

14) What is the purpose of 'Reservations' in Amazon EC2?

15) What is the difference between Amazon ECS and Amazon EC2?

16) I am not able to ping my AWS EC2 instance. What is the problem?

17) How to find EC2 instances running a certain AMI? 18) What is '2' signifies in EC2 of AWS?

