Session 1 : Load Balancer --Application,Network,Classic Load Balancers

Load Balancer : LB distributes the web traffic to the available server (or) LB refers to efficient distributing of incoming traffic across a group of backend servers

LB Types : APP LB,Network LB,Classic LB

- An internet facing load balancer has a publically resolvable DNS name
- Domain names for content on the ec2 instances served by the elb,is resolved by the internet dns server to the elb dns name(and hence ip addr)
- This is how traffic from the internet is directed to the ELB front end
- Classic load balancer services support http,https,tcp,ssl
- Protocol ports supported are 1-65535
- It support ipv4,ipv6 and dual stack
- App LB distributes incoming app traffic across multiple targets such as ec2 instances in multiple AZ
- This increases the availability of our application
- Network LB has ability to handle volatile workloads and scale to millions of requests per second

Session 2 : ELB Listener

ELB Listener :

- An ELB listener is the process that checks for connection request
- We can configure the protocol/port number on which our ELB listener listen for connection request
- Frontend listeners check for traffic from client to the listener
- Backend listeners are configured with protocol/port to check for traffic from the ELB to the EC2 instances
- It may take sometime for the registration of the ec2 instances under the ELB to complete
- Registered ec2 instances are those that are defined under the ELB
- ELB has nothing to do with the outbound traffic that is initiated/generated from the registered ec2 instances destined to the internet or to any other instances within the VPC
- ELB only has to do with imbound traffic destined to the ec2 registered instances(as the destination) and the respective return traffic
- We start to be charged hourly(also for partial hours) once our ELB is active
- If we do not want to be charged as we do not need ELB anymore,we can delete it
- Before we delete the ELB,it is recommended that we point the route 53 to somewhere else other than the ELB
- Deleting the ELB does not effect or delete the ec2 instance registered with it
- ELB forwards traffic to eth0 of our registered insatnce
- In case the ec2 registered instances has multiple ip address on eth0,elb will route the traffic to its primary IP address

Session 3 : How LB finds Unhealthy Instances

- ELB supports IPv4 address only in VPC
- To ensure that the ELB service can scale elb nodes in each AZ,ensure that the subnet defined for the LB is at least /27 in a size, and has atleast 8 available IP addresses for the ELB nodes an use to scale
- For fault tolerance,it is recommended that we distribute our registered ec2 instances across multiple AZ, within the VPC region
- If possible,try to allocate same number of registered instances in each AZ
- The LB also monitors the health of its reg. instances and ensure that it routes traffic only to

healthy instances
• A healthy instances show as ‘healthy’ under ELB
• When the ELB detects an unhealthy instance it stop routing traffic to the instance
• An unhealthy instance shows ‘unhealthy’ under the ELB
• By default aws console uses ping http(port80) for health check
• Registered instances must respond with a http 200 Ok message within the timeout period else it will be considered as Unhealthy
• AWS API uses ping TCP(port 80) for health check
• Response timeout is 5 sec (range is 2-60sec)

• *Health check interval :* Period of time between health checks -default 30 sec(range from 5 to 300 sec)
• *Unhealthy Threshold :* Number of consecutive failed health check that should occur before the instance is declared unhealthy(range is 2-10) -Default 2
• *Healthy Threshold :* Number of consecutive successful health check that must occur before the instance considered unhealthy(range 2-10)-Default -10

Session 4 : ELB Listener and Target Groups

• By default the elb distributes traffic evenly between the AZ it is defined in without consideration to the number of registered ec2 instances in each AZ

Cross Zone LB :

• Disabled by default
• When enabled,the elb will distribute traffic evenly between registered ec2 instances
• If we have 7 ec2 instances in One AZ and 3 in another AZ,and we enabled cross zone LB,each registered ec2 instances will get around the same amount of traffic load from the ELB
• ELB name we choose must be unique within the account
• ELB is region specific.So all registered ec2 instances must be in same region,but can be in diff AZ
• To define our elb in an AZ,we can select one subnet in that AZ.Subnet can be public or private
• Only one subnet can be defined for the ELB in an AZ
• If we try to select another one in the same AZ,it will replace the former one
• If we register instance in an AZ with elb,But do not define a subnet in that AZ for the ELB.These instances will not receive traffic from ELB
• ELB should always be accessed using DNS and not IP

• An ELB can be Internet Facing or Internal Facing :

Internet Facing : ELB nodes will have public IP address
• DNS will resolve the ELB DNS name to these IP addresses
• It routes traffic to the private IP address of our instances with private IP
• We need an public subnet in each AZ where the internet facing ELB will be defined,such that the ELB will be able to route Internet Traffic
• Format of the public ELB Dns name of internet facing ELB : name-1234567890region.elb. amazonaws.com

Internal Facing : internal-name 1234567890region.elb. amazonaws.com

ELB Listener :

• An elb listener is the process that checks for connection request
• Each Network LB needs at least one listener to accept traffic
• We must assign a security group to our ELB.This will control traffic that can reach our ELB front end listeners

Target Group : Logical grouping of targets behind the load balancer
• TG can exist independently from the load balancer

• TG can be associated with an autoscaling group
• TG can contain upto 200 Targets

LABS :

Session 5 : Application Load Balancer

Session 6 : Network Load Balancer

Session 7 : Establishing Load Balancer between 2 VPC's