



Elastic Load Balancer - ELB

Ponnam Phani Krishna
PONNAM.PHANI@GMAIL.COM

Elastic Load Balancing

The Elastic Load Balancing service allows you to distribute traffic across a group of Amazon EC2 instances enabling you to achieve high availability in your applications.

Elastic Load Balancing supports routing and load balancing of Hypertext Transfer Protocol (HTTP), Hypertext Transfer Protocol Secure (HTTPS), Transmission Control Protocol (TCP), and Secure Sockets Layer (SSL) traffic to Amazon EC2 instances.

Elastic Load Balancing supports health checks for Amazon EC2 instances to ensure traffic is not routed to unhealthy or failing instances.

We will not get any public IP address for ELBs, we will get a DNS record for every LB.

Advantages of ELB

Elastic Load Balancing is a managed service, it scales in and out automatically to meet the demands of increased application traffic and is highly available within a region itself as a service.

ELB helps you achieve high availability for your applications by distributing traffic across healthy instances in multiple Availability Zones.

ELB seamlessly integrates with the Auto Scaling service to automatically scale the Amazon EC2 instances behind the load balancer.

ELB is secure, working with Amazon Virtual Private Cloud (Amazon VPC) to route traffic internally between application tiers, allowing you to expose only Internet-facing public IP addresses.

ELB also supports integrated certificate management and SSL termination.

Internet-Facing Load Balancers: An Internet-facing load balancer is a load balancer that takes requests from clients over the Internet and distributes them to Amazon EC2 instances that are registered with the load balancer.

Internal load balancers: Internal Load Balancers that connect and route traffic to private subnets. We can use internal load balancers to route traffic to your Amazon EC2 instances in VPCs with private subnets.

Listeners: Every load balancer must have one or more listeners configured. A listener is a process that checks for connection requests.

Health Checks

Elastic Load Balancing supports health checks to test the status of the AmazonEC2 instances behind an Elastic Load Balancing load balancer.

The status of the instances that are healthy at the time of the health check is In Service. The status of any instances that are unhealthy at the time of the health check is OutOfService.

The load balancer performs health checks on all registered instances to determine whether the instance is in a healthy state or an unhealthy state.

A health check is a ping, a connection attempt, or a page that is checked periodically. You can set the time interval between health checks and also the amount of time to wait to respond in case the health check page includes a computational aspect.

We can set a Threshold for the number of consecutive health check failures before an instance is marked as unhealthy

Types of Elastic load Balancers:

Elastic Load balancer offers four types of load balancers that all features the high availability, automatic scaling to make your applications fault tolerant.

- Application load balancer
- Network load balancer
- Gateway load balancer
- Classic Load Balancer

Application Load Balancer:

It is best suited for load balancing HTTP and HTTPS traffic and provides advanced request routing targeted at the delivery of modern application architectures.

Application Load Balancers route traffic to targets with in amazon VPC based on the content of the request.

Features:

- Layer-7 Load balancing: you can load balance HTTP/HTTPS traffic to targets
- Security Features: You can create and manage security groups associated with load balancing to provide additional networking & Security options.
- HTTPS Support
- Sticky Session: sticky sessions are a mechanism to route request from the same client to the same target [using cookies generated by ALB]
- Content-based routing: if your application is composed of several individual services, an ALB can route a request to a service based on the content of the request such as
 - Host field
 - Path url
 - HTTP Header
 - HTTP method
 - Source IP
 - Query-string parameter

Network Load Balancers:

Are best suited for load balancing of TCP Traffic where extreme performance is required. Network load Balancers are capable of handling millions of requests per second, while maintaining ultra-low latencies.

Use for extreme performance!

Features:

- It operates at layer 4 (connection level), routing connections to targets based on IP Protocol data
- Ideal for load balancing of both TCP & UDP Traffic
- Network load balancing is capable of handling millions of requests per second while maintaining ultra-low latencies.

Gateway Load Balancers:

It makes easy to deploy, scale and manage your third-party appliances. It gives you one gateway for distributing traffic across multiple virtual appliances, while scaling them UP or DOWN based on demand

This eliminates point of failure in your network and increases availability. Gateway load balancer can be used for GENEVE Protocol [Generic Networking Virtualization Encapsulation]

Classic Load Balancers:

Are the legacy elastic load balancers. You can load balance HTTP/HTTPS applications and use layer 7-specific features, such as X-Forwarded and sticky sessions. You can also use strict layer 4 load balancing for applications that rely purely on the TCP protocol.

Old generation of Elastic Load Balancer

Elastic Load Balancer (ELB) Lab:

ToDo List 1:

1. Create 2 EC2 instance in 2 different availability zones in the same region (N.Virginia)
2. Install Webserver and host a website with different content (to identify the connectivity)
3. Create an Application Load Balancer to add those 2 EC2 instances as Targets.