



**Course Title : AWS ELB**

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# Amazon - ELB

## ☰ What Is Amazon Elastic Load Balancing?

“Elastic Load Balancing distributes incoming application or network traffic across multiple targets, such as Amazon EC2 instances, containers, and IP addresses, in multiple Availability Zones.

ELB scales your load balancer as traffic to application changes over time, and can scale to the vast majority of workloads automatically”



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## Amazon ELB Features

**High Availability:** Elastic Load Balancing automatically distributes traffic across multiple targets – Amazon EC2 instances, containers and IP addresses – in a single Availability Zone or multiple Availability Zones.

**Health Checks:** Elastic Load Balancing can detect unhealthy targets, stop sending traffic to them, and then spread the load across the remaining healthy targets.

**Security features:** Elastic Load Balancing provides integrated certificate management and SSL/TLS decryption, allowing you the flexibility to centrally manage the SSL settings of the load balancer and offload CPU intensive work from your application.

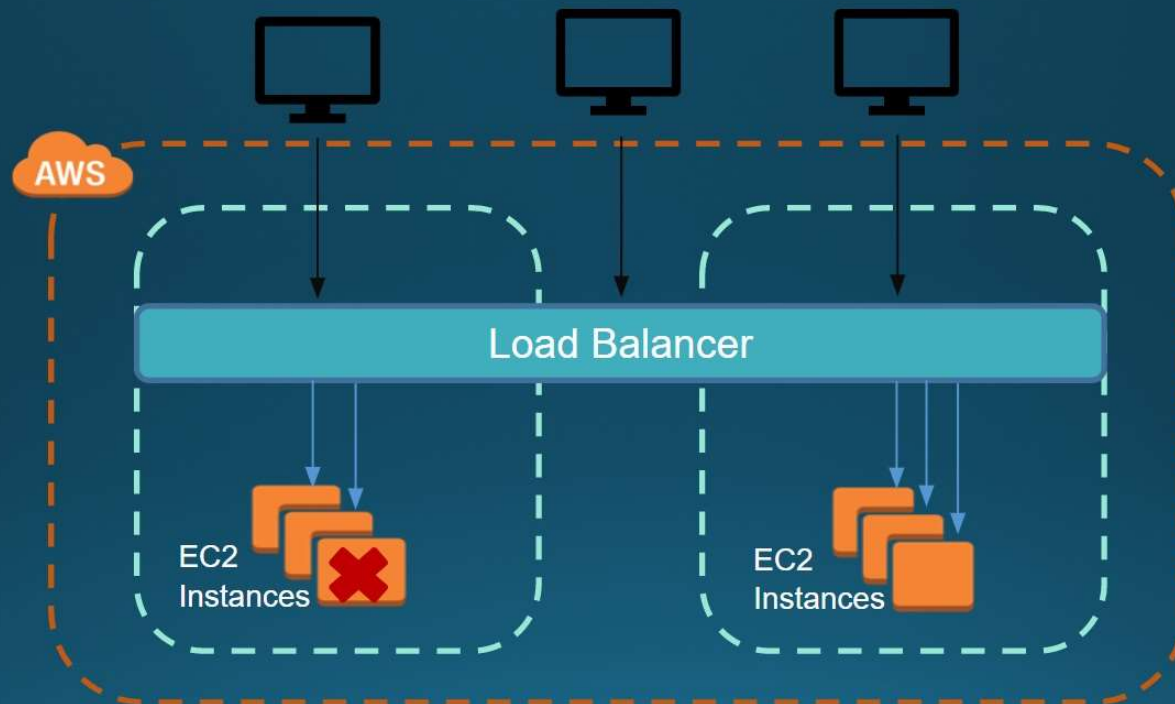


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## Amazon ELB Features

Layer 3,4 or Layer 7 load balancing: You can load balance HTTP/HTTPS applications for layer 7-specific features, or use strict layer 4 load balancing for applications that rely on the TCP and UDP protocols.

Operational monitoring: Elastic Load Balancing provides integration with Amazon CloudWatch metrics and request tracing in order to monitor performance of your applications in real time.

Pricing: With Elastic Load Balancer you only pay for what you use.



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## Amazon ELB Types

Elastic Load Balancing supports Four types of load balancers:

1. Application Load Balancers.
2. Network Load Balancers.
3. Classic Load Balancers. - OLD Generation
4. Gateway Load Balancer - New



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## Amazon ELB Features

## CLASSIC LOAD BALANCERS OVERVIEW

A Classic Load Balancer makes routing decisions at either the transport layer (TCP/SSL) or the application layer (HTTP/HTTPS).

- Classic Load Balancers require a fixed relationship between the load balancer port and the container instance port.
- Classic Load Balancer supports SSL termination, including offloading SSL decryption from application instances, centralized management of SSL certificates.
- Classic Load Balancer supports the ability to stick user sessions to specific Amazon EC2 instances using cookies. Traffic will be routed to the same instances as the user continues to access your application.



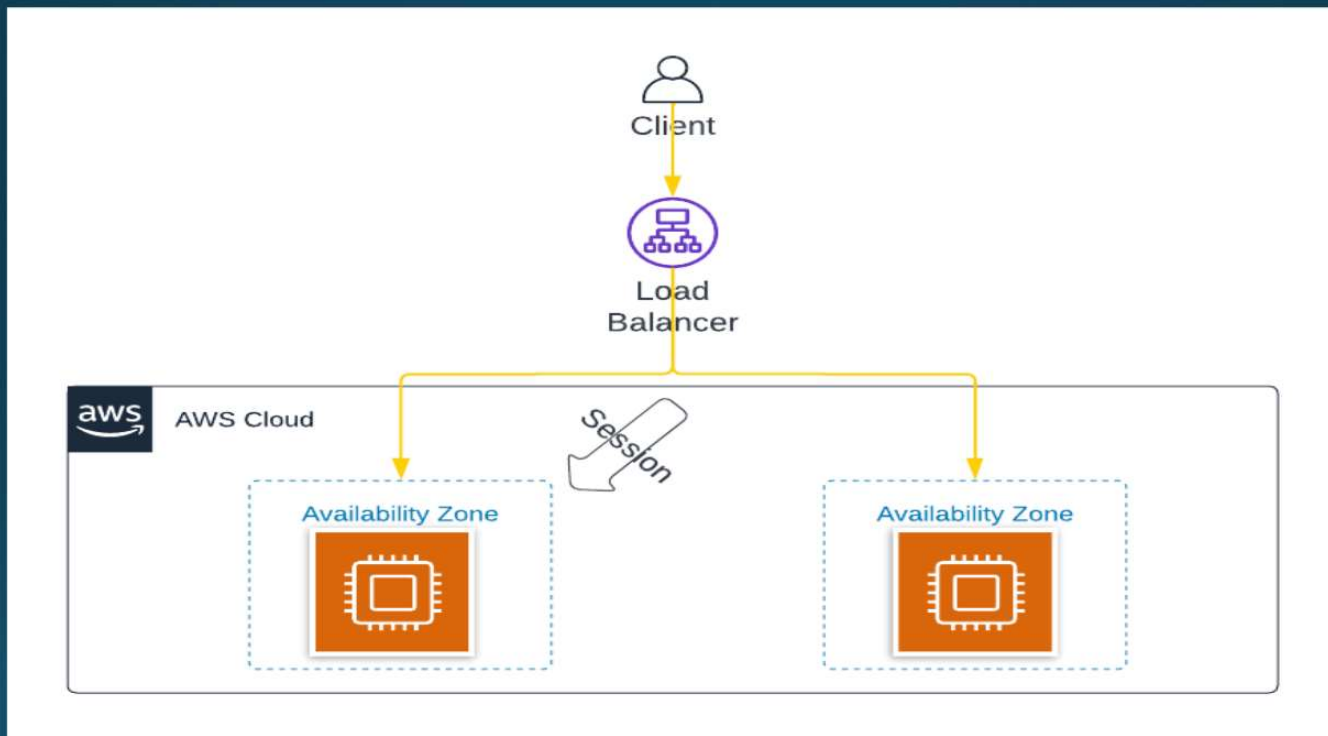
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## Amazon ELB Features | Sticky Sessions



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## Amazon ELB Features

### CLASSIC LOAD BALANCERS OVERVIEW

- Classic Load Balancer metrics such as request count and request latency are reported by Amazon CloudWatch.
- Access Logs feature to record all requests sent to your load balancer, and store the logs in Amazon S3 for later analysis.



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## Amazon ELB Features | CLASSIC LOAD BALANCERS OVERVIEW

- To ensure that registered instances are able to handle the request load in each AZ, it is important to keep approximately the same number of instances in each AZ registered with the load balancer
- To distribute traffic evenly across all registered instances in all enabled Availability Zones, enable cross-zone load balancing on the load balancer.



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## Amazon ELB Features | APPLICATION LOAD BALANCERS OVERVIEW

An Application Load Balancer functions at the application layer, the seventh layer of the Open Systems Interconnection (OSI) model.

- After the load balancer receives a request, it evaluates the listener rules in priority order to determine which rule to apply, and then selects a target from the target group for the rule action.
- User can configure listener rules to route requests to different target groups based on the content of the application traffic.
- Routing is performed independently for each target group, even when a target is registered with multiple target groups.





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## Amazon ELB Features | APPLICATION LOAD BALANCERS OVERVIEW

- User can add and remove targets from the load balancer as changes required, without disrupting the overall flow of requests to the application.
- Configure health checks, which are used to monitor the health of the registered targets so that the load balancer can send requests only to the healthy targets.



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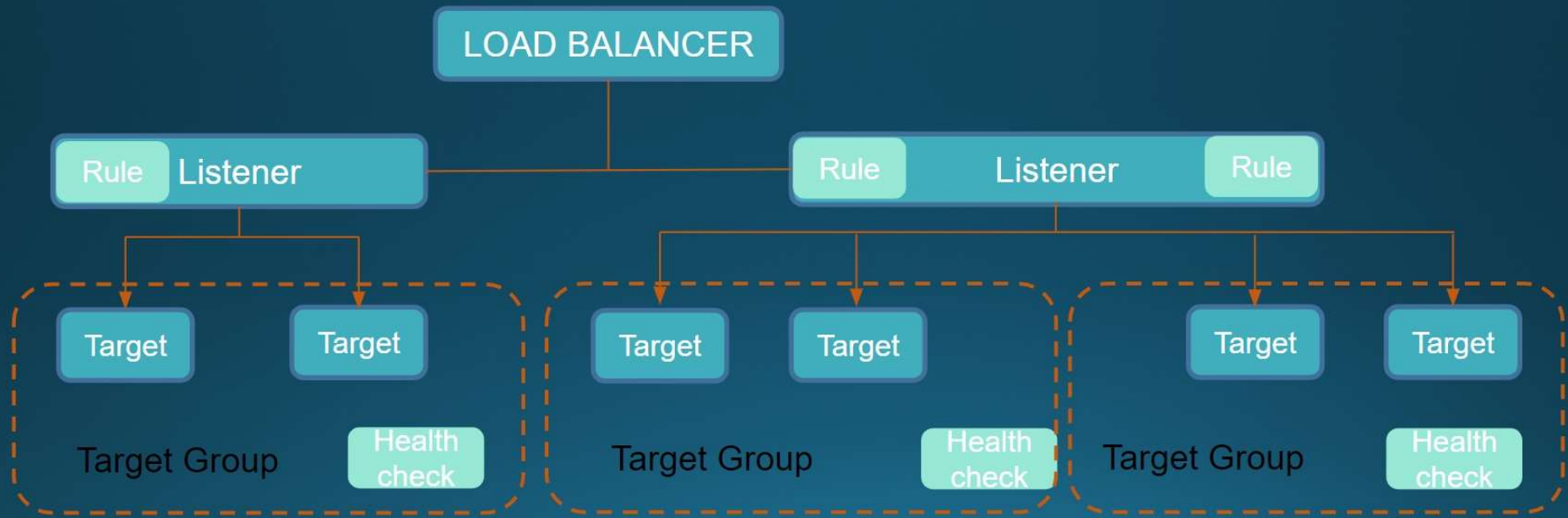






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## Application Load Balancer



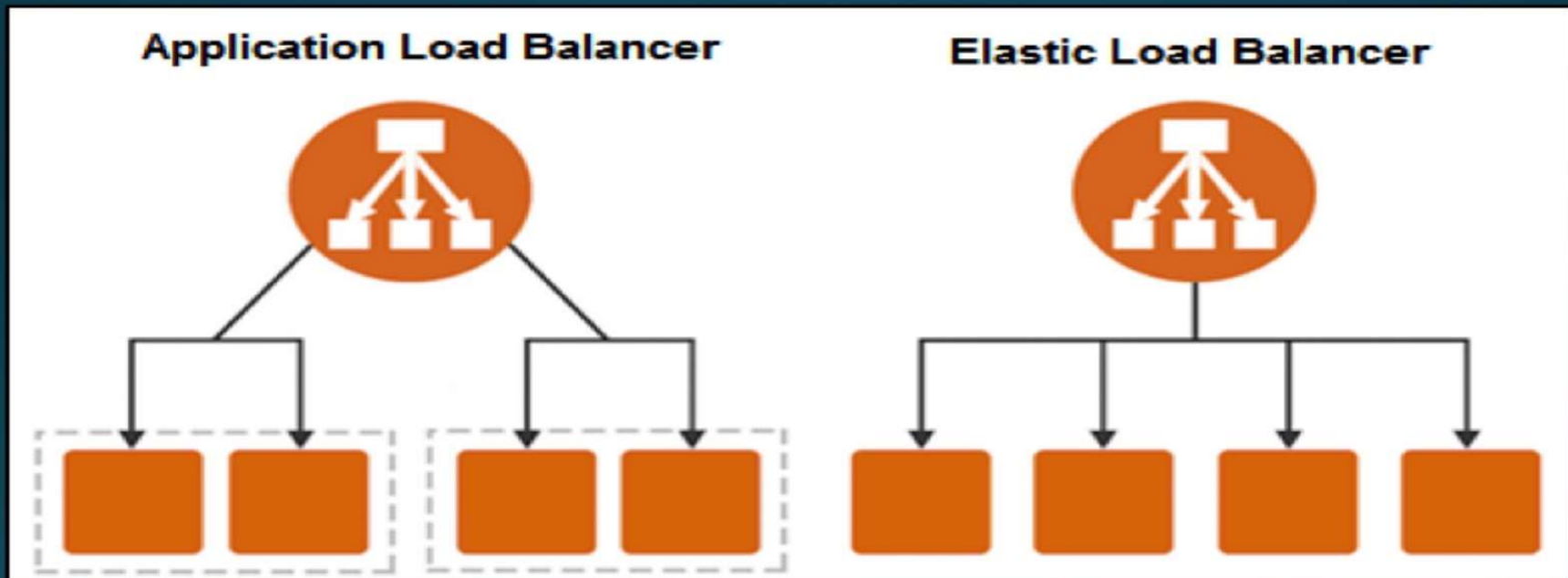
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## Application VS Classic Load Balancer



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## Amazon ELB Features | NETWORK LOAD BALANCERS OVERVIEW

A Network Load Balancer functions at the fourth layer of the Open Systems Interconnection (OSI) model.

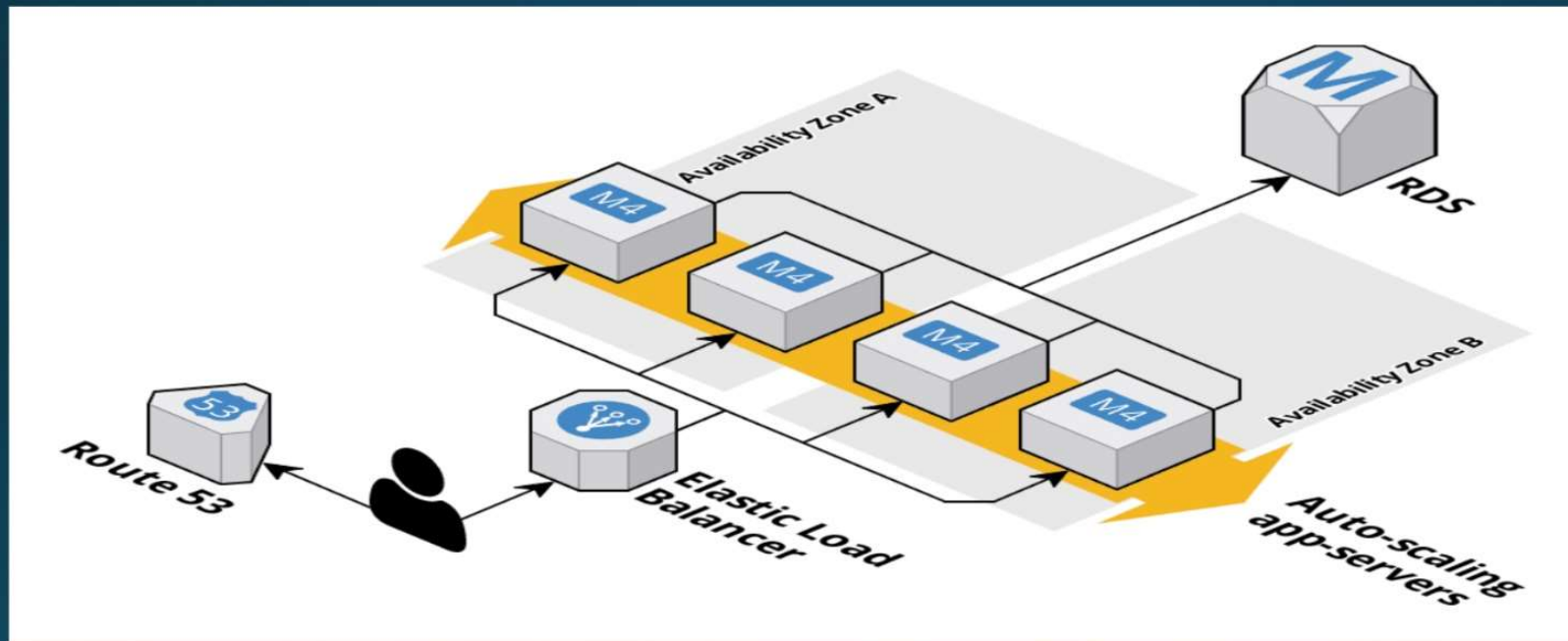
- Network Load Balancer is designed to handle traffic as it grows and can load balance millions of requests/sec.
- Network Load Balancer offers extremely low latencies for latency-sensitive applications..
- Network Load Balancer automatically provides a static IP per Availability Zone (subnet) that can be used by applications as the front-end IP of the load balancer.
- NLB handles connections with built-in fault tolerance, and can handle connections that are open for months or years, making them a great fit for IoT, gaming, and messaging applications.





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## Load Balancer Architecture





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## Amazon ELB Features | GATEWAY LOAD BALANCERS OVERVIEW

A Gateway Load Balancer functions at the Third layer of the Open Systems Interconnection (OSI) model.

- Gateway Load Balancers enable you to deploy, scale, and manage virtual appliances, such as firewalls, intrusion detection and prevention systems, and deep packet inspection systems.
- It listens for all IP packets across all ports and forwards traffic to the target group that's specified in the listener rule
- Gateway Load Balancers use Gateway Load Balancer endpoints(VPC endpoints) to securely exchange traffic across VPC boundaries.
- You must create the Gateway Load Balancer endpoint and the application servers in different subnets.





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## Accessing Elastic Load Balancing

1. AWS Management Console
2. AWS Command Line Interface (AWS CLI)
3. AWS SDKs
4. Query API

## Elastic Load Balancing Related Services

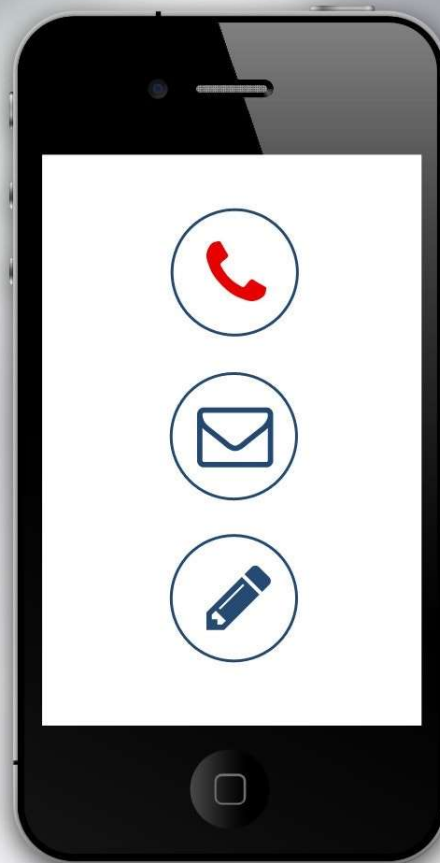
1. Amazon EC2
2. Amazon ECS
3. Auto Scaling
4. Amazon CloudWatch
5. Route 53



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