**Elastic Load Balancing (ELB):**

Automatically distributes your incoming traffic across multiple targets, such as EC2 instances, containers, and IP addresses, in one or more Availability Zones. It monitors the health of its registered targets, and routes traffic only to the healthy targets. Elastic Load Balancing scales your load balancer capacity automatically in response to changes in incoming traffic.

L**oad balancer benefits:**

A load balancer distributes workloads across multiple compute resources, such as virtual servers. Using a load balancer increases the availability and fault tolerance of your applications.

You can add and remove compute resources from your load balancer as your needs change, without disrupting the overall flow of requests to your applications.

You can configure health checks, which monitor the health of the compute resources, so that the load balancer sends requests only to the healthy ones. You can also offload the work of encryption and decryption to your load balancer so that your compute resources can focus on their main work.

**4 Types:** Application, Network, Gateway, and Classic.

ALB: A **listener** checks for connection requests from clients, using the protocol and port that you configure. Each listener has **rules** to route traffic to its registered targets.

A **target group** routes requests to registered targets on port/protocol that you choose. **Health checks** are performed on all targets registered to a target group.

**Features**:

OSI Layer 7 LB (Application layer), it uses a routing algorithm (default: round robin) can be changed to “least outstanding requests” routing algorithm.

Supports path (example: /kids /footwear) and host based routing (This enables you to support multiple subdomains).

Supports multiple target types: EC2 Instances or IP addresses (AWS ECS Tasks).

**Network Load Balancer (NLB):**

A **listener** checks for connection requests from clients, using the protocol and port that you configure, and forwards requests to a **target group**. Network Load Balancer target groups support the TCP, UDP, TCP\_UDP, and TLS protocols. You can register a target with multiple target groups. You can configure health checks on a per target group basis. **Health checks** are performed on all targets registered to a target group that is specified in a listener rule for your load balancer.

**Features:**

OSI Layer 4 LB (Transport layer),  It can handle millions of requests per second.

When you enable an Availability Zone for the load balancer, Elastic Load Balancing creates a load balancer node in the Availability Zone. By default, each load balancer node distributes traffic across the registered targets in its Availability Zone only. If you enable cross-zone load balancing, each load balancer node distributes traffic across the registered targets in all enabled Availability Zones.

For TCP and UDP traffic, the load balancer selects a target using a **flow hash** algorithm based on **the protocol, source IP address, source port, destination IP address, destination port, and TCP sequence number**.

Elastic Load Balancing creates a network interface for each Availability Zone you enable. Each load balancer node in the Availability Zone uses this network interface to get **a static IP address**.

Supports EC2 instances, AWS ECS Tasks.

**Gateway Load Balancers (GLB):**

Enable you to deploy, scale, and manage virtual appliances, such as firewalls, intrusion detection and prevention systems.

**Features:**

OSI Layer 3 LB (Network layer), it listens for all IP packets across all ports and forwards traffic to the target group that's specified in the listener rule.

**Classic Load Balancer (CLB):**

A **listener** checks for connection requests from clients, using the protocol and port that you configure, and forwards requests to one or more registered instances using the protocol and port number that you configure. You add one or more listeners to your load balancer. You can configure **health checks**, which are used to monitor the health of the registered instances so that the load balancer only sends requests to the healthy instances.

<https://aws.amazon.com/elasticloadbalancing/features/#Product_comparisons>

**Demo Time:**



