TNGS Learning Solutions
AWS Solutions Architect
Online Course
Elastic Load Balancers (ELB)

Elastic Load Balancers (ELB)

- Elastic Load Balancers (ELB) are managed load balancing services provided by Amazon Web Services (AWS) that distribute incoming network traffic across multiple Amazon Elastic Compute Cloud (EC2) instances or other resources, improving the availability and fault tolerance of your applications.
- AWS offers several types of Elastic Load Balancers, each designed for specific use cases.

Application Load Balancer (ALB)

- **Layer 7 Load Balancer**: ALB operates at the application layer (Layer 7) of the OSI model and is designed to route traffic based on content or application-specific information, such as HTTP/HTTPS requests.
- **Path and Host-Based Routing**: ALB can route traffic to different target groups (sets of instances) based on the URL path and host header of incoming requests, making it suitable for hosting multiple applications on a single load balancer.
- **Advanced Routing and Content-Based Rules**: ALB supports content-based rules and enables advanced features like URL rewriting, redirecting, and adding or modifying headers.
- **WebSockets and HTTP/2**: ALB supports WebSocket and HTTP/2 traffic, making it suitable for modern web applications.

Network Load Balancer (NLB)

- **Layer 4 Load Balancer**: NLB operates at the transport layer (Layer 4) of the OSI model and is designed for low-latency, high-throughput traffic routing.
- **TCP and UDP Load Balancing**: NLB can route TCP and UDP traffic to a target group of instances, making it suitable for non-HTTP applications, such as gaming or IoT applications.
- **Static IP Addresses**: NLB provides a static IP address that remains constant, making it suitable for applications that require a consistent endpoint for clients.

Classic Load Balancer (CLB)

- **Legacy Load Balancer**: CLB is the original Elastic Load Balancer offering from AWS and is less commonly used compared to ALB and NLB.
- **Layer 4 and Layer 7 Load Balancing**: CLB provides both Layer 4 (TCP/UDP) and Layer 7 (HTTP/HTTPS) load balancing capabilities.
- **Basic Routing**: While ALB and NLB offer more advanced features, CLB is suitable for basic load balancing requirements.

Elastic Load Balancers (ELB)

- **High Availability**: ELBs are designed to be highly available and fault-tolerant. They automatically distribute incoming traffic across healthy instances and monitor the health of instances to avoid sending traffic to unhealthy ones.
- **Auto Scaling Integration**: ELBs seamlessly integrate with Auto Scaling groups, allowing you to automatically scale your application based on traffic demands.

Elastic Load Balancers (ELB)

- **Security**: ELBs support SSL/TLS termination, allowing you to offload SSL/TLS decryption at the load balancer, enhancing security and reducing the computational load on your instances.
- **Connection Draining**: ELBs support connection draining, which ensures that in-flight requests are completed before instances are terminated or taken out of service.

Elastic Load Balancers (ELB)

- **Monitoring and Logging**: ELBs integrate with AWS CloudWatch, allowing you to monitor performance metrics and configure alarms. You can also enable access logs to capture details of each request.
- **Cross-Zone Load Balancing**: ELBs can distribute traffic evenly across Availability Zones (AZs) to ensure high availability and fault tolerance.
- **Integration with Other AWS Services**: ELBs can be integrated with other AWS services, such as AWS Certificate Manager, to manage SSL/TLS certificates, and AWS WAF for web application firewall protection.

Elastic Load Balancers (ELB)

- Elastic Load Balancers play a crucial role in ensuring the availability, scalability, and reliability of applications hosted in AWS environments, making them an essential component of modern cloud architectures.