In the context of Amazon Web Services (AWS), ELB stands for Elastic Load Balancing. It is a managed load balancing service that automatically distributes incoming application traffic across multiple targets, such as Amazon EC2 instances, containers, and IP addresses. ELB helps improve the availability and fault tolerance of applications by ensuring that traffic is evenly distributed across healthy targets.

AWS offers three types of Elastic Load Balancers:

1. Classic Load Balancer (CLB):
   * CLB is the original load balancer provided by AWS and supports both HTTP and HTTPS traffic.
   * It operates at Layer 4 (Transport Layer) and Layer 7 (Application Layer) of the OSI model.
   * CLB uses a round-robin algorithm for distributing traffic across backend instances.
2. Application Load Balancer (ALB):
   * ALB operates at Layer 7 and is designed to route traffic to different backend services based on content-based rules and conditions.
   * It supports advanced routing features like path-based routing, host-based routing, and redirect rules.
   * ALB is ideal for applications composed of multiple microservices or those requiring flexible routing.
3. Network Load Balancer (NLB):
   * NLB operates at Layer 4 and is designed to handle high-throughput, low-latency traffic.
   * It is suitable for scenarios where extreme performance is required, such as for TCP and UDP-based applications.
   * NLB provides a static IP address for the load balancer, making it easier to integrate with applications that rely on IP whitelisting.

Key features of AWS Elastic Load Balancing:

1. Auto Scaling Integration: ELB works seamlessly with AWS Auto Scaling to automatically scale the number of instances based on traffic load.
2. Health Checks: ELB performs regular health checks on backend instances, removing unhealthy instances from the pool and directing traffic only to healthy instances.
3. SSL Termination: ELB can offload SSL/TLS decryption, reducing the processing load on backend instances and simplifying certificate management.
4. Sticky Sessions: ELB supports session stickiness, allowing it to direct subsequent requests from a client to the same backend instance to maintain session state.
5. Cross-Zone Load Balancing: ELB can distribute traffic evenly across multiple availability zones to ensure better fault tolerance and high availability.
6. Access Logs: ELB can capture access logs for each request received, helping with troubleshooting and monitoring.

AWS Elastic Load Balancing is a fundamental component for achieving high availability, scalability, and fault tolerance in AWS environments. It is widely used in cloud-based architectures to distribute incoming traffic across multiple instances, containers, or IP addresses, ensuring a smooth and reliable experience for users.