**AWS Application load balancer VS Api gateway**

In modern software development, ensuring application security, scalability, and efficient traffic management is essential. Hosting applications without considering these factors does not align with industry best practices, especially in cloud environments, where compliance standards must be strictly followed. It is equally important to establish a single-entry point for applications and effectively distribute traffic to maintain performance and reliability.

1. **Application Load Balancer (ALB)**: A Layer 7 load balancer in AWS that efficiently distributes HTTP/HTTPS traffic across multiple targets, such as EC2 instances, containers, and IP addresses. It enables intelligent routing based on request attributes, supports SSL termination, and enhances application scalability.
2. **API Gateway**: A fully managed AWS service that acts as a front door for APIs, handling request routing, authentication, rate limiting, and monitoring. It is ideal for serverless applications, integrating seamlessly with AWS Lambda, and provides security features like OAuth and API key management.

Difference with API Gateway and application Load balancer

|  |  |  |
| --- | --- | --- |
| S. No | API Gateway | Load Balancer |
| 1 | Supports rate limiting and burst capacity for APIs | Does not offer rate limiting or bursting capabilities |
| 2 | Integrates seamlessly with AWS Web Application Firewall (WAF) | Also integrates with AWS WAF |
| 3 | Does not provide a static public IP for endpoints | Supports static public IP when integrated with CloudFront |
| 4 | Accepts only HTTPS traffic | Accepts both HTTP and HTTPS traffic |
| 5 | Provides request validation and request/response mapping | Supports request validation and response mapping |
| 6 | Handles traffic spikes with a default capacity of 10K requests per second and 5K burst rate before throttling | Manages traffic spikes by pre-allocating LCUs, but incurs additional costs |
| 7 | Allows API import/export across platforms using Swagger | No direct functionality for cross-platform import/export |
| 8 | Offers extensive authentication & authorization options: API Key, IAM, Cognito User Pool, Cognito Identity Pool, and external IDPs | Can integrate with any OIDC-compliant identity provider |
| 9 | Supports response caching for performance optimization | Does not provide caching capabilities |
| 10 | Can integrate with all AWS services | Supports integration with EC2, Lambda, and IP-based backends |
| 11 | Does not offer health checks | Provides health check capabilities |
| 12 | Follows a pay-per-use model | Charges for idle instances as well |