

# AWS Certified Solutions Architect — Associate (SAA-C01)

---



# Module 4

## Elastic Load Balancer

# Agenda

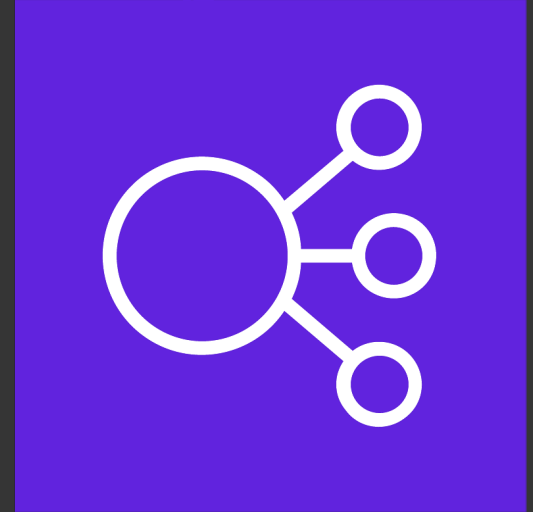
- 📦 Classic Load Balancer
- 📦 Application Load Balancer
- 📦 Network Load Balancer
- 📦 Labs

# Load Balancers

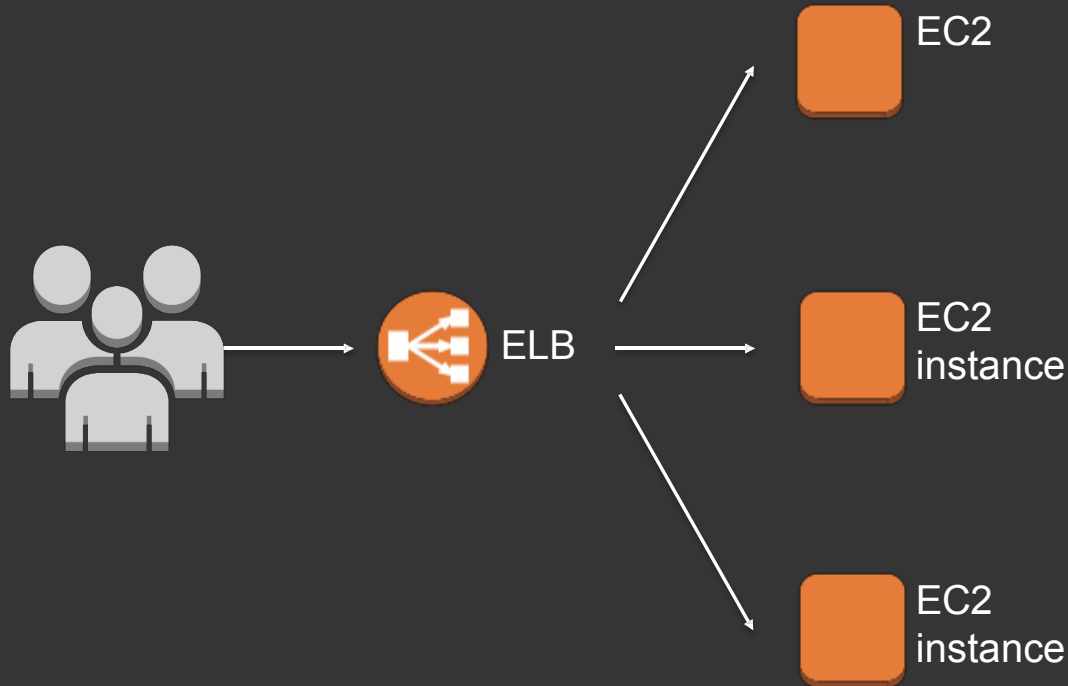
## Elastic Load Balancing (ELB)

### *Application Load Balancing*

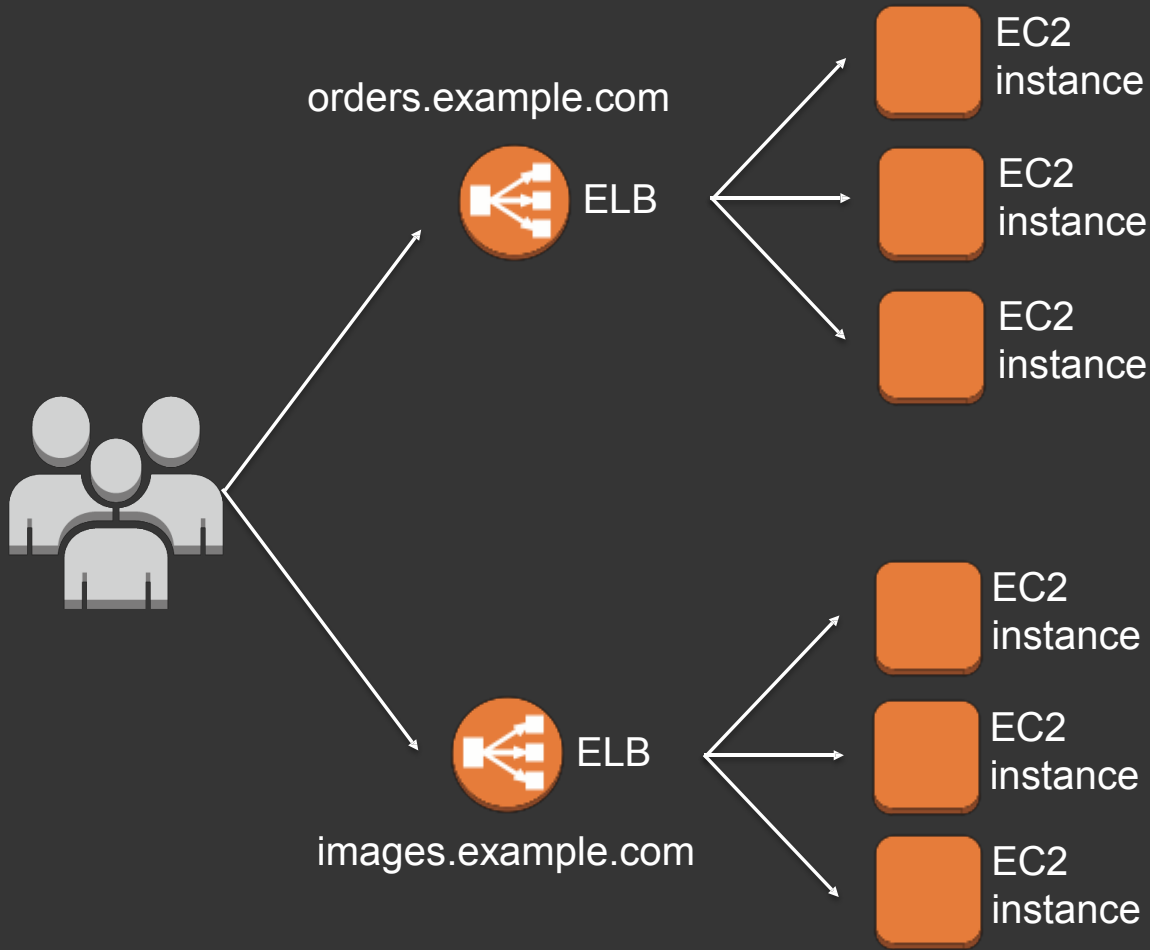
- Supports load balancing of HTTP, HTTPS and TCP traffic to EC2 instances, IP or ECS endpoints
- Detects and removes failing instances
- Dynamically grows and shrinks based on traffic
- Integrates with Auto Scaling



# Classic Load Balancer

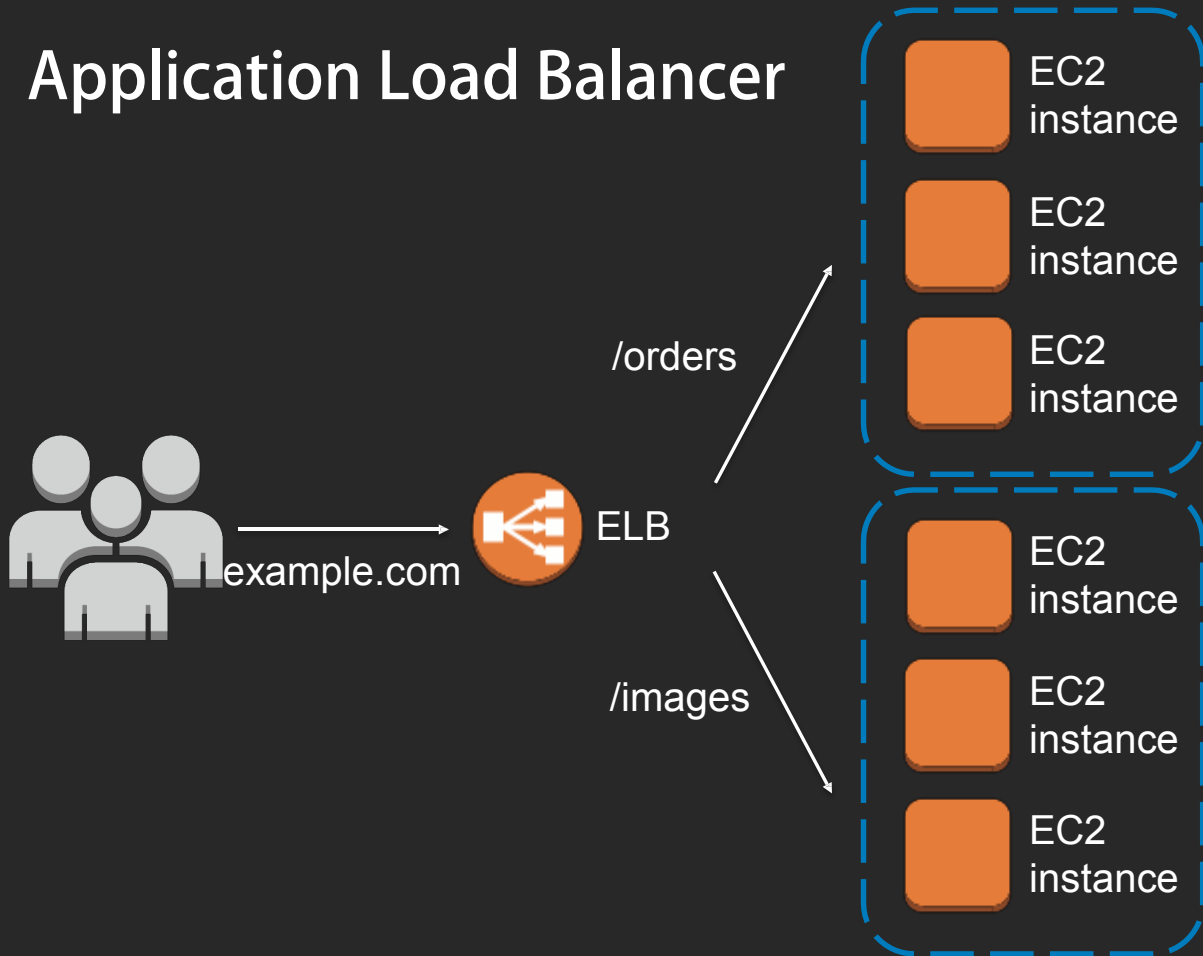


Amazon EC2 instances registered behind a Classic Load Balancer









Running two separate services with Classic Load Balancer

# Application Load Balancer



Application Load Balancer allows for multiple services to be hosted behind a single load balancer

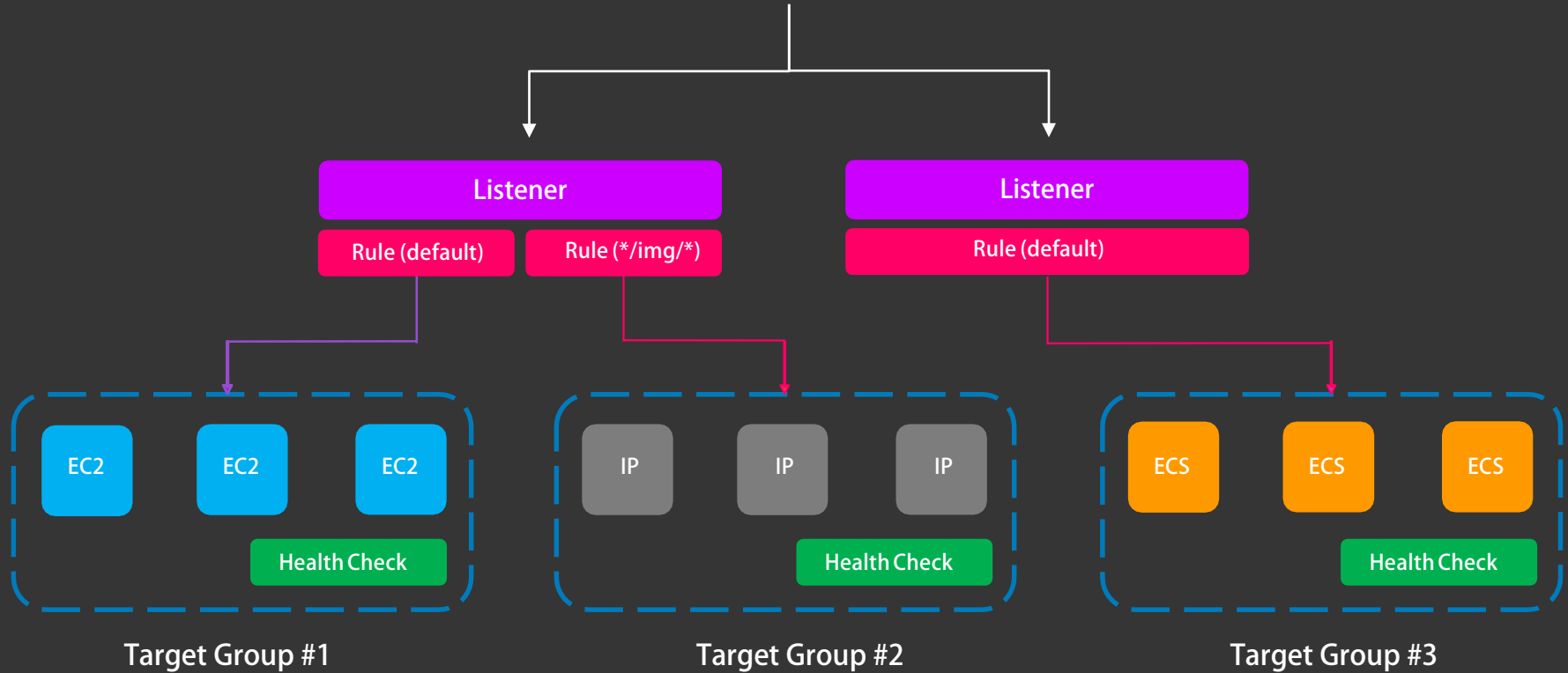
# Application Load Balancer

-  Feature rich, layer 7 load-balanced platform w/ support for WebSockets and HTTP/2
-  Content-based routing allows requests to be routed to different applications behind a single load balancer
-  Path- and host-based routing
-  Support for microservices and container-based applications, including deep integration with Amazon Elastic Container Service (Amazon ECS)
-  Improved health checks and additional Amazon CloudWatch metrics
-  Load balancer API deletion protection



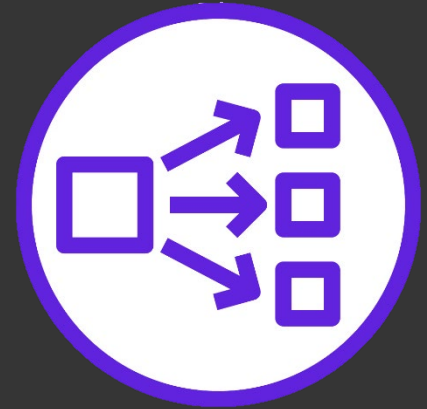


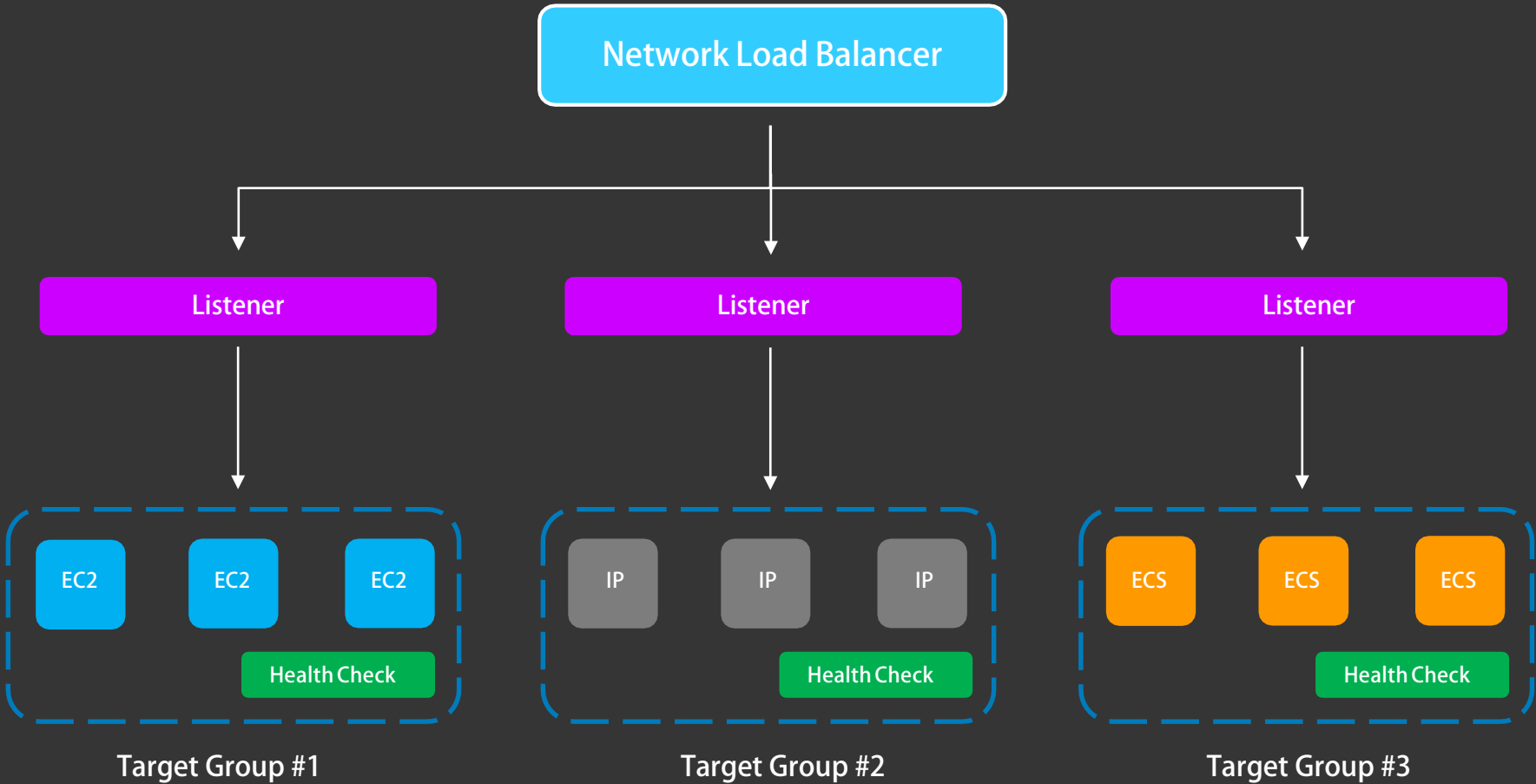
# Application Load Balancer



# Network Load Balancer

- Layer 4 load-balancing platform Connection-based load balancing TCP protocol
- High performance
- Can handle millions of requests per sec
- Static IP support
- Ideal for applications with long running connections





Feature	Application Load Balancer	Network Load Balancer	Classic Load Balancer
Protocols	HTTP, HTTPS	TCP, UDP, TLS	TCP, SSL/TLS, HTTP, HTTPS
Platforms	VPC	VPC	EC2-Classic, VPC
Health checks	✓	✓	✓
CloudWatch metrics	✓	✓	✓
Logging	✓	✓	✓
Zonal fail-over	✓	✓	✓
Connection draining (deregistration delay)	✓	✓	✓
Load Balancing to multiple ports on the same instance	✓	✓	
IP addresses as targets	✓	✓ (TCP, TLS)	
Load balancer deletion protection	✓	✓	
Configurable idle connection timeout	✓		✓
Cross-zone load balancing	✓	✓	✓
Sticky sessions	✓		✓
Static IP		✓	
Elastic IP address		✓	
Preserve Source IP address		✓	
Resource-based IAM Permissions	✓	✓	✓
Tag-based IAM permissions	✓	✓	
Slow start	✓		
WebSockets	✓	✓	
PrivateLink Support		✓ (TCP, TLS)	
Source IP address CIDR-based routing	✓		

Feature	Application Load Balancer	Network Load Balancer	Classic Load Balancer
Layer 7			
Path-Based Routing	✓		
Host-Based Routing	✓		
Native HTTP/2	✓		
Redirects	✓		
Fixed response	✓		
Lambda functions as targets	✓		
HTTP header-based routing	✓		
HTTP method-based routing	✓		
Query string parameter-based routing	✓		
Security			
SSL offloading	✓	✓	✓
Server Name Indication (SNI)	✓		
Back-end server encryption	✓	✓	✓
User authentication	✓		
Custom Security Policy			✓

# Load Balancer Capacity Units (LCU)

An LCU measures the dimensions on which the Application Load Balancer processes your traffic (averaged over an hour). You are charged only on one of these dimensions that has the highest usage for the hour. The dimensions measured are:

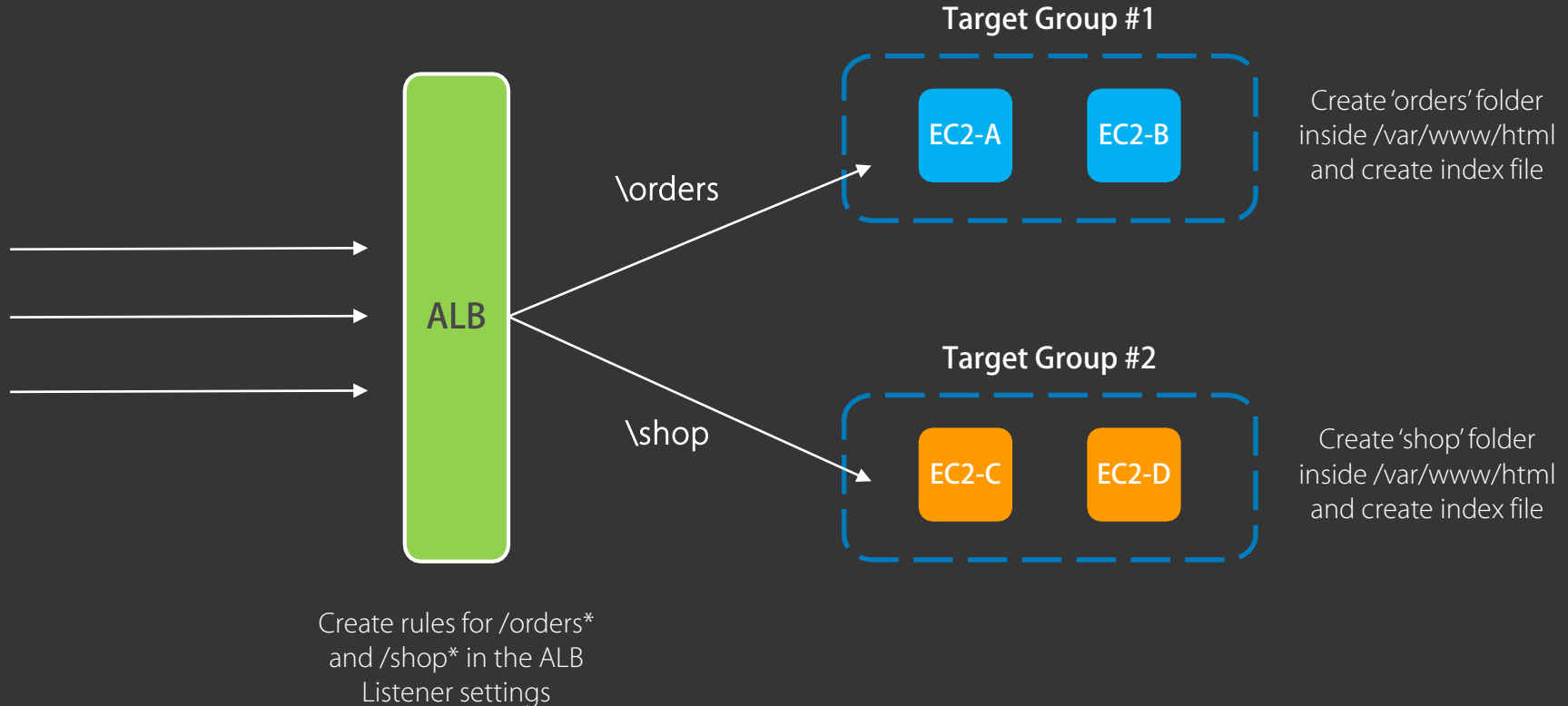
## Application Load Balancer:

- 25 new connections per second.
- 3,000 active connections per minute.
- 2.22 Mbps (which translates to 1 GB per hour)
- 1,000 rule evaluations per second

## Network Load Balancer:

- 25 new connections per second.
- 800 new non-SSL connections or flows per second.
- 100,000 active connections or flows (sampled per minute)
- 2.22 Mbps (which translates to 1GB per hour)

# Labs - Application Load Balancer Example



# Thank You!

## Q & A