Elastic Load Balancing and Load Balancer

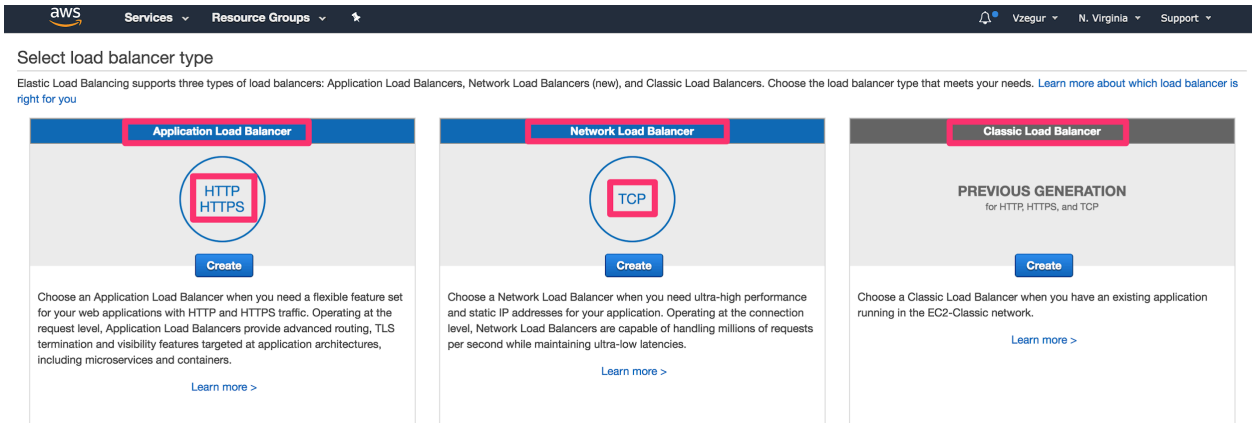
What Is Elastic Load Balancing?

Elastic Load Balancing distributes incoming application traffic across multiple EC2 instances, in multiple Availability Zones. This increases the fault tolerance of your applications.

The load balancer serves as a single point of contact for clients, which increases the availability of your application. You can add and remove instances from your load balancer as your needs change, without disrupting the overall flow of requests to your application. Elastic Load Balancing scales your load balancer as traffic to your application changes over time, and can scale to the vast majority of workloads automatically.

You can configure health checks, which are used to monitor the health of the registered instances so that the load balancer can send requests only to the healthy instances. You can also offload the work of encryption and decryption to your load balancer so that your instances can focus on their main work.

Types of Load Balancers



Application Load Balancer

Application Load Balancer operates at the request level (layer 7), routing traffic to targets - EC2 instances, containers and IP addresses based on the content of the request. Ideal for advanced load balancing of HTTP and HTTPS traffic, Application Load Balancer provides advanced request routing targeted at delivery of modern application architectures, including microservices and container-based applications. Application Load Balancer simplifies and improves the security of your application, by ensuring that the latest SSL/TLS ciphers and protocols are used at all times.

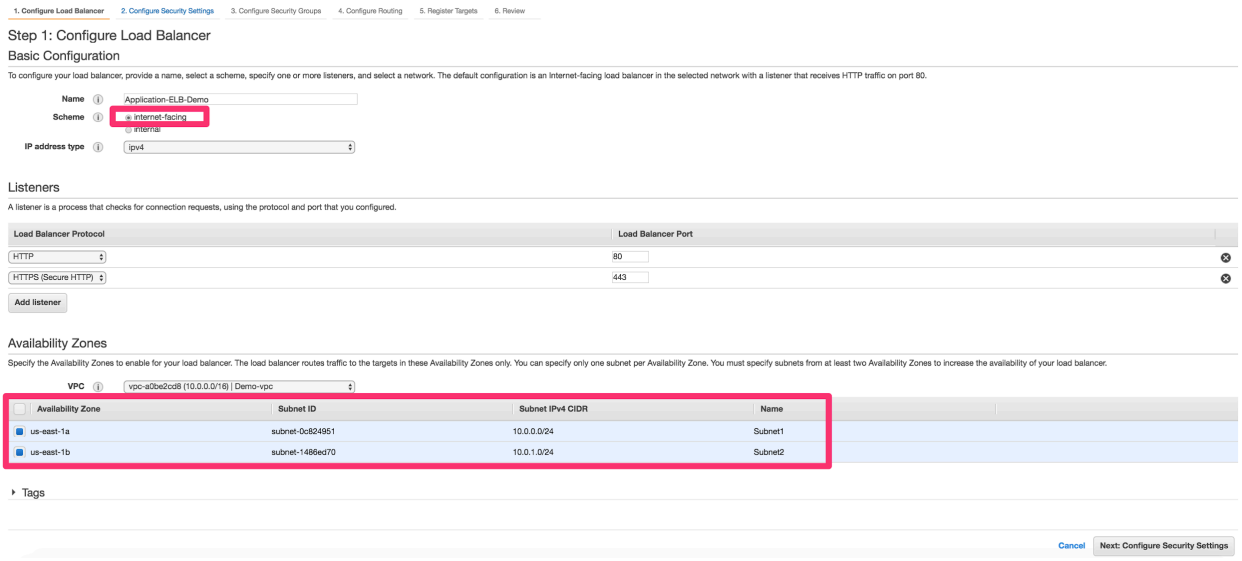
Network Load Balancer

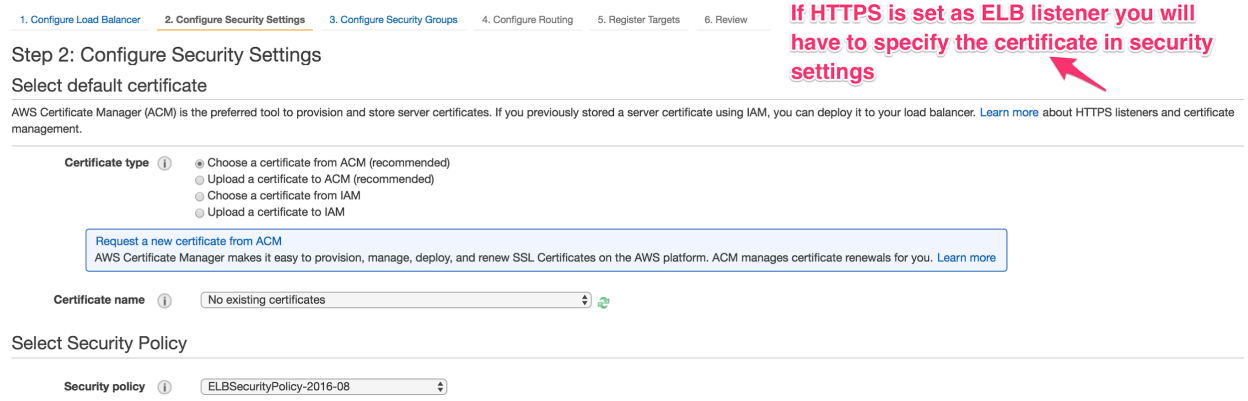
Network Load Balancer operates at the connection level (Layer 4), routing connections to targets - Amazon EC2 instances, containers and IP addresses based on IP protocol data. Ideal for load balancing of TCP traffic, Network Load Balancer is capable of handling millions of requests per second while maintaining ultra-low latencies. Network Load Balancer is optimized to handle sudden and volatile traffic patterns while using a single static IP address per Availability Zone. It is integrated with other popular AWS services such as Auto Scaling, Amazon EC2 Container Service (ECS), and Amazon CloudFormation.

Classic Load Balancer

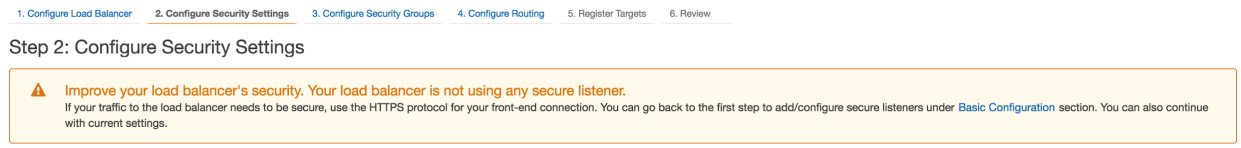
Classic Load Balancer provides basic load balancing across multiple Amazon EC2 instances and operates at both the request level and connection level. Classic Load Balancer is intended for applications that were built within the EC2-Classic network. We recommend Application Load Balancer for Layer 7 and Network Load Balancer for Layer 4 when using Virtual Private Cloud (VPC).

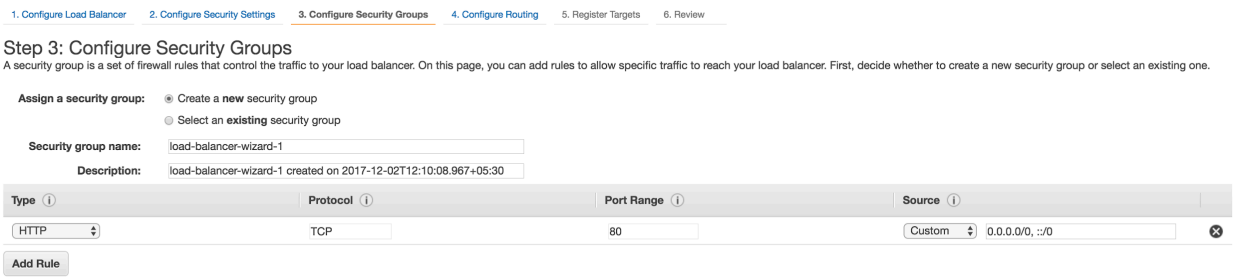
Application ELB

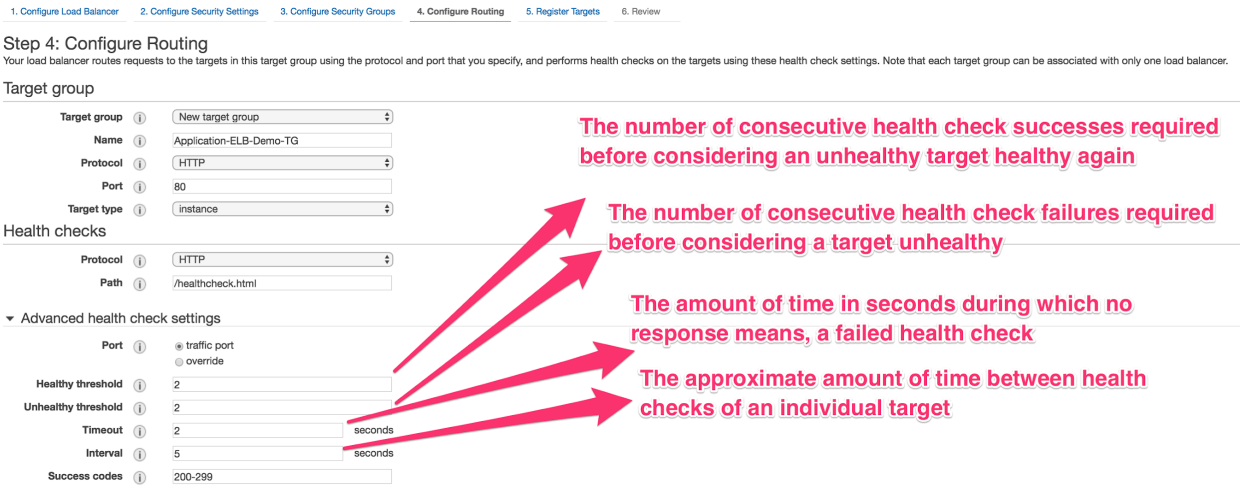




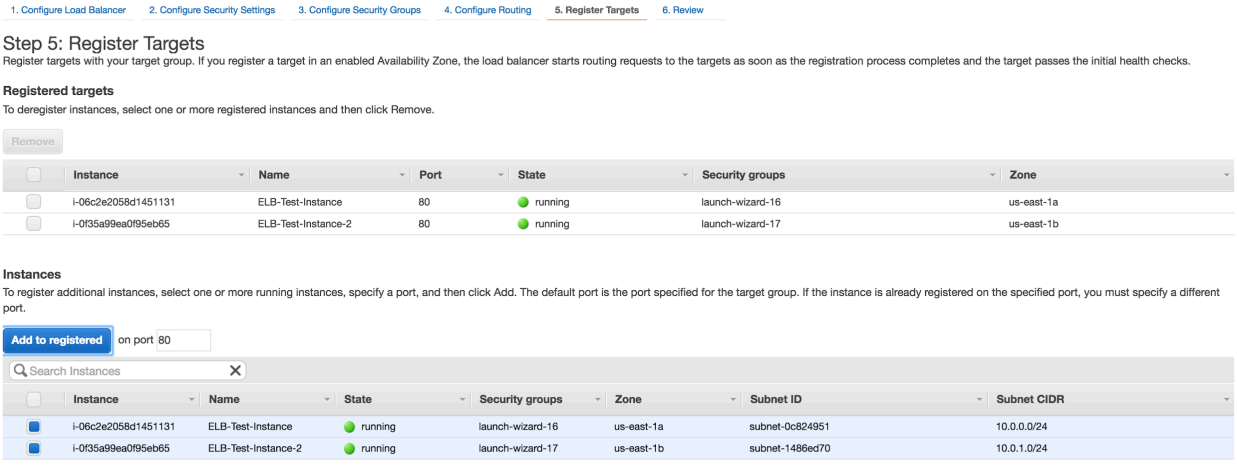
Ignore the warning If not using HTTPS

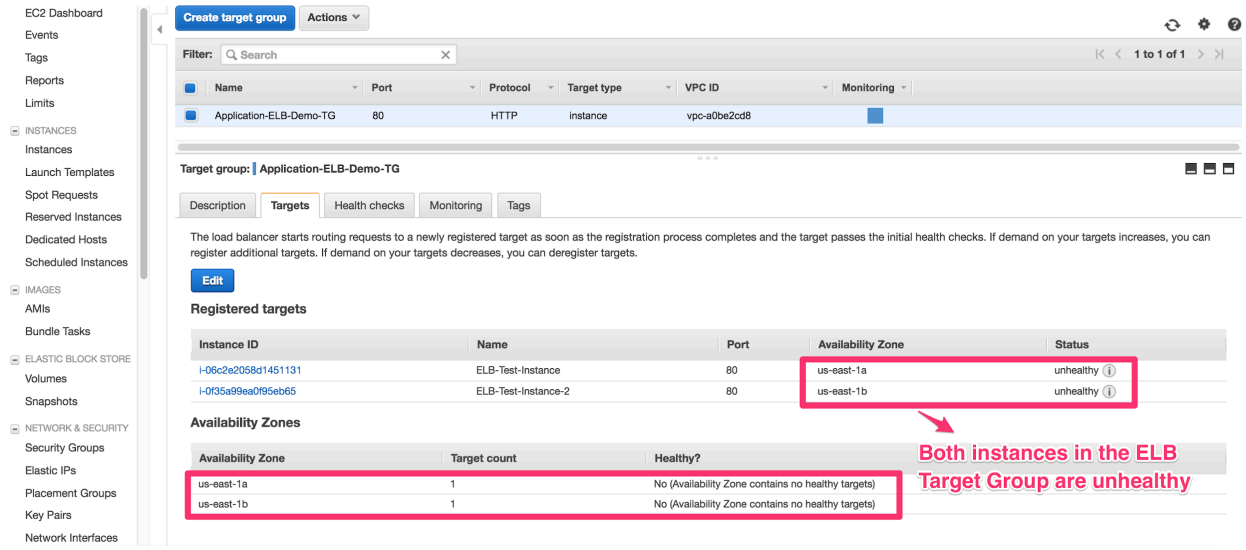


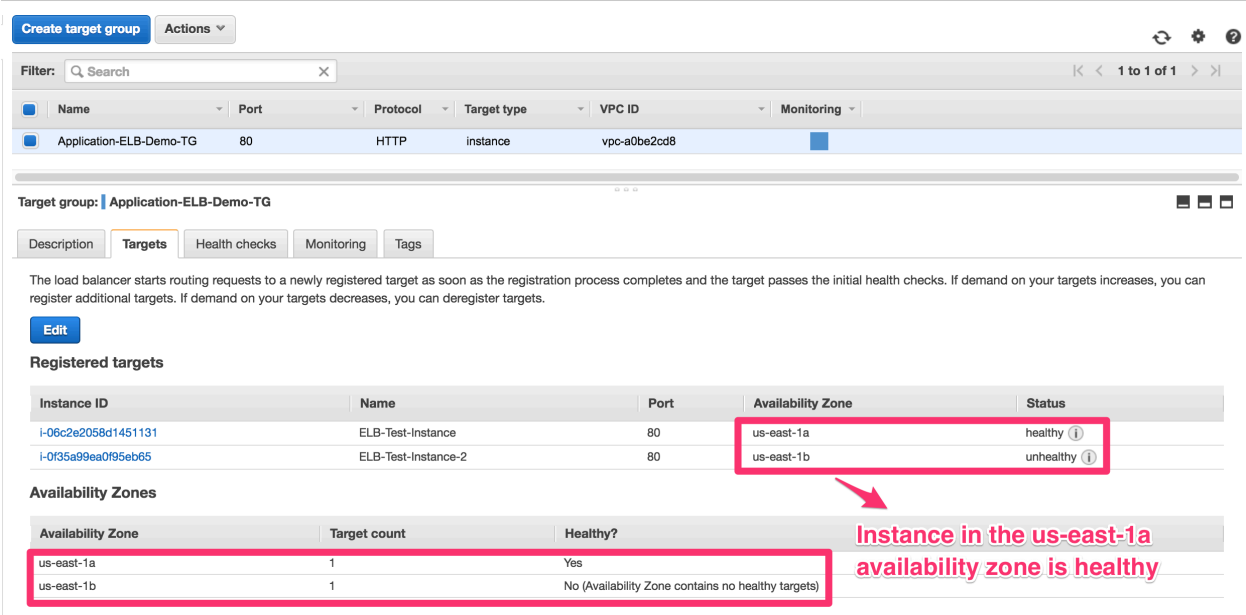


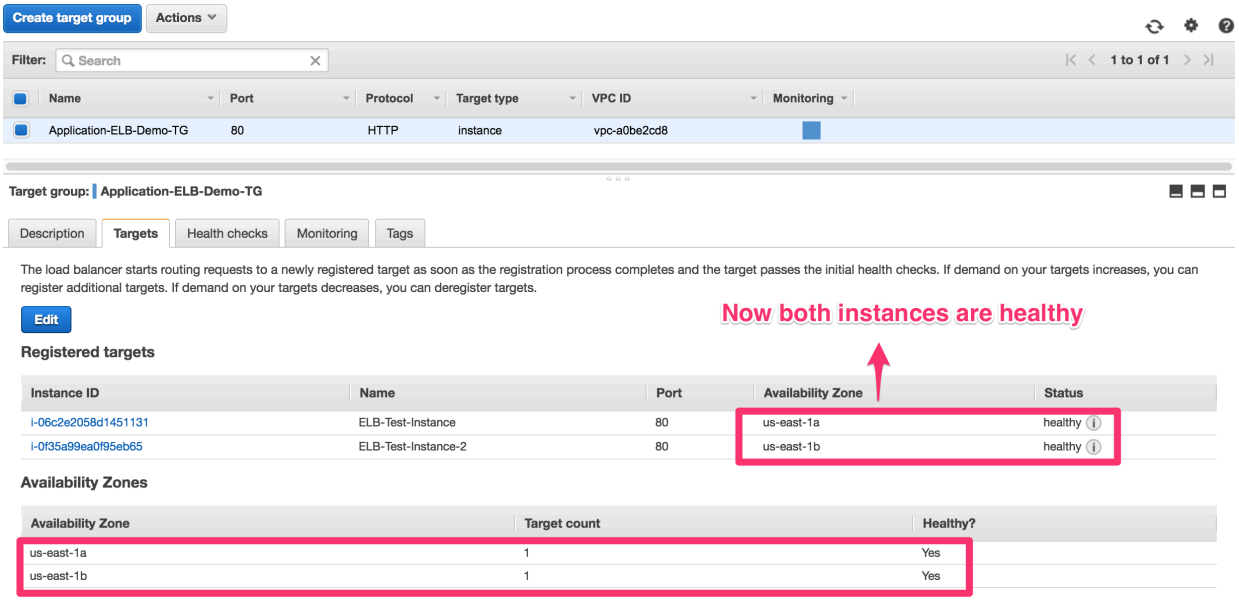


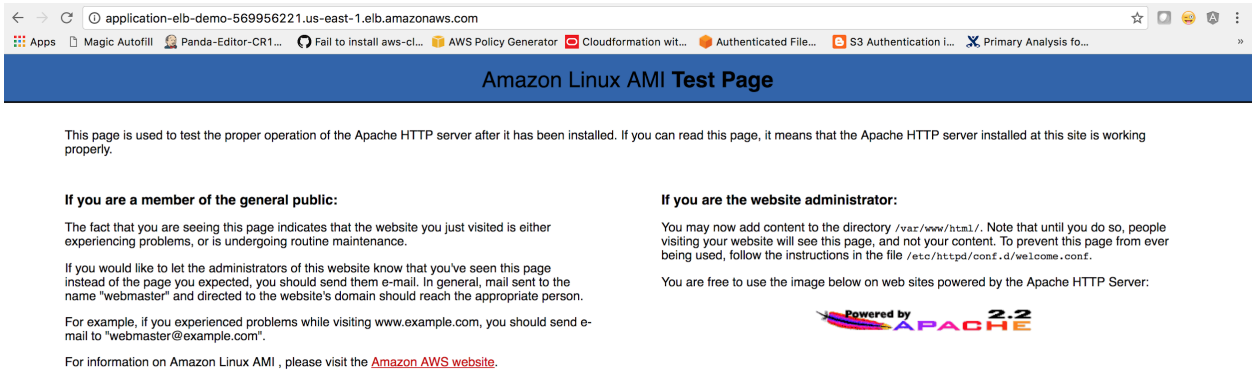
Register Targets



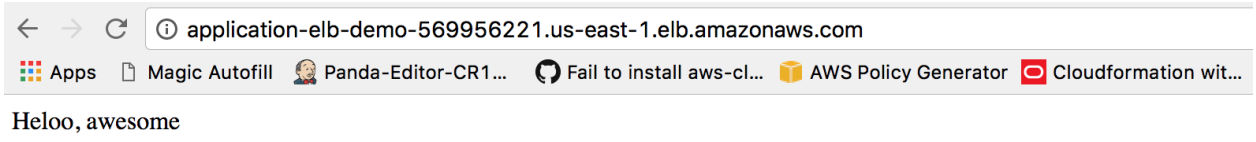

EC2 Dashboard
Events
Tags
Reports
Limits
INSTANCES
Instances
Launch Templates
Spot Requests
Reserved Instances
Dedicated Hosts
Scheduled Instances
IMAGES
AMIs
Bundle Tasks
ELASTIC BLOCK STORE
Volumes
Snapshots
NETWORK & SECURITY
Security Groups
Elastic IPs
Placement Groups
Key Pairs
Network Interfaces
Create target group
Actions
Filter:
Search
1 to 1 of 1
Name
Port
Protocol
Target type
VPC ID
Monitoring
Application-ELB-Demo-TG
80
HTTP
instance
vpc-a0be2cd8
Target group: Application-ELB-Demo-TG
Description
Targets
Health checks
Monitoring
Tags
The load balancer starts routing requests to a newly registered target as soon as the registration process completes and the target passes the initial health checks. If demand on your targets increases, you can register additional targets. If demand on your targets decreases, you can deregister targets.
Edit
Registered targets
Instance ID
Name
Port
Availability Zone
Status
i-06c2e2058d1451131
ELB-Test-Instance
80
us-east-1a
unhealthy
i-0f35a99ea0f95eb65
ELB-Test-Instance-2
80
us-east-1b
unhealthy
Availability Zones
Availability Zone
Target count
Healthy?
us-east-1a
1
No (Availability Zone contains no healthy targets)
us-east-1b
1
No (Availability Zone contains no healthy targets)
Both instances in the ELB
Target Group are unhealthy

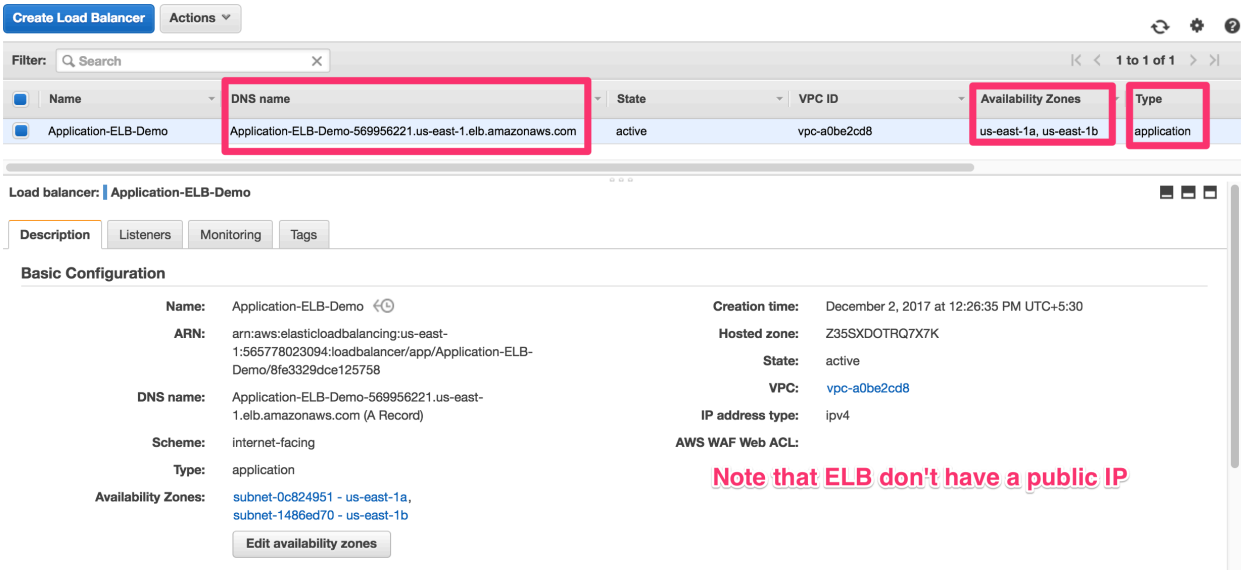

Create target group
Actions
Filter:
Search
1 to 1 of 1
Name
Port
Protocol
Target type
VPC ID
Monitoring
Application-ELB-Demo-TG
80
HTTP
instance
vpc-a0be2cd8
Target group: Application-ELB-Demo-TG
Description
Targets
Health checks
Monitoring
Tags
The load balancer starts routing requests to a newly registered target as soon as the registration process completes and the target passes the initial health checks. If demand on your targets increases, you can register additional targets. If demand on your targets decreases, you can deregister targets.
Edit
Registered targets
Instance ID
Name
Port
Availability Zone
Status
i-06c2e2058d1451131
ELB-Test-Instance
80
us-east-1a
healthy
i-0f35a99ea0f95eb65
ELB-Test-Instance-2
80
us-east-1b
unhealthy
Availability Zones
Availability Zone
Target count
Healthy?
us-east-1a
1
Yes
us-east-1b
1
No (Availability Zone contains no healthy targets)
Instance in the us-east-1a
availability zone is healthy

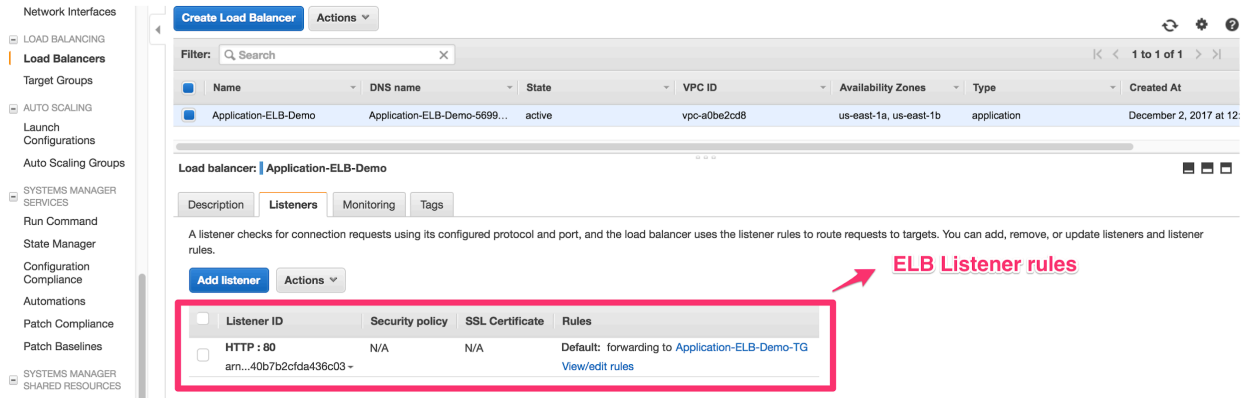




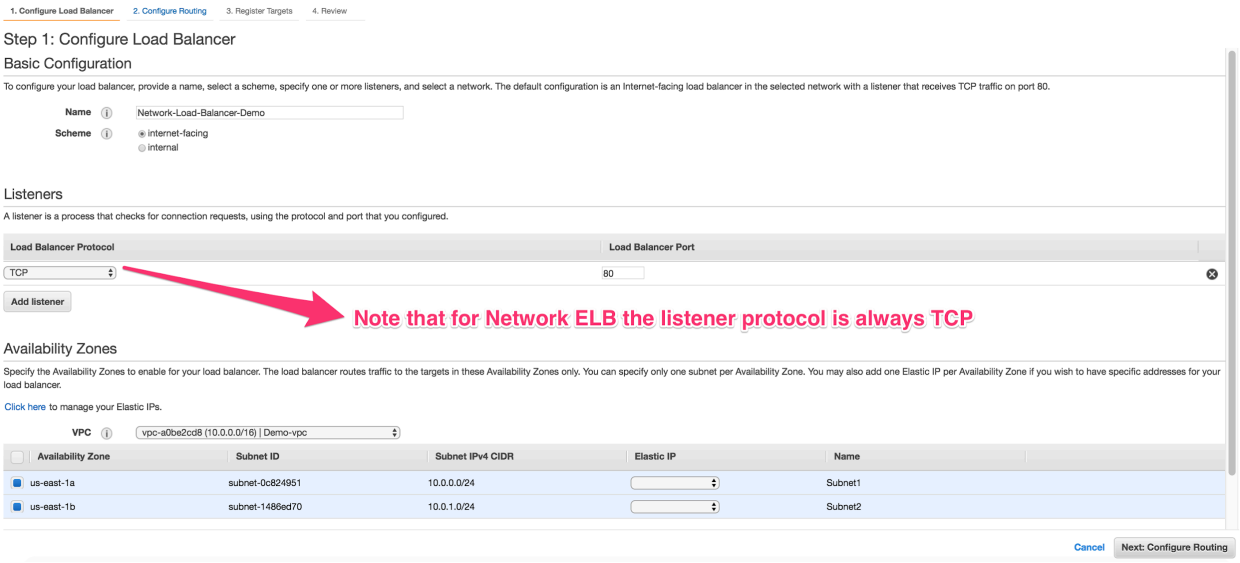
After adding the index.html in /var/www/html directory.

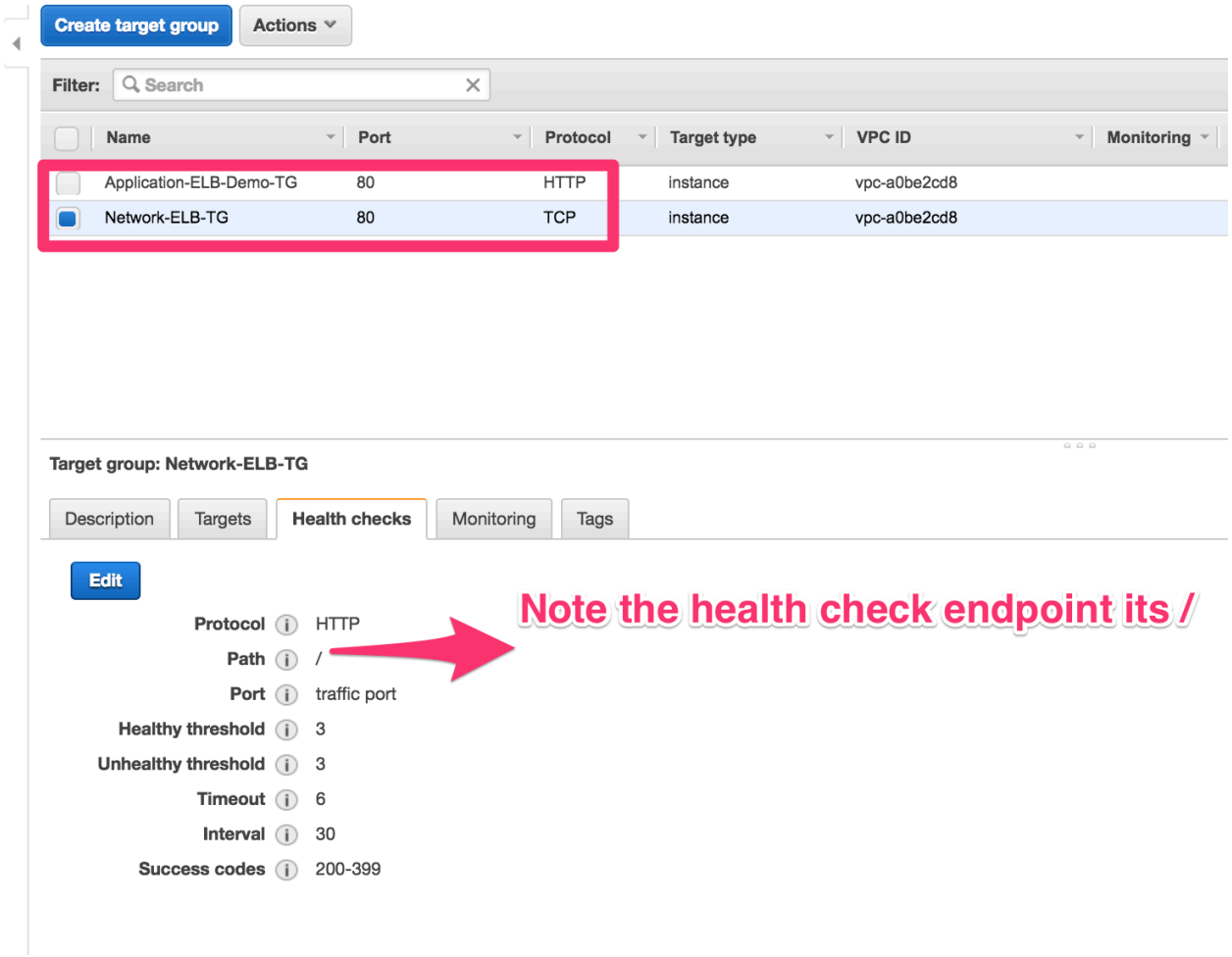


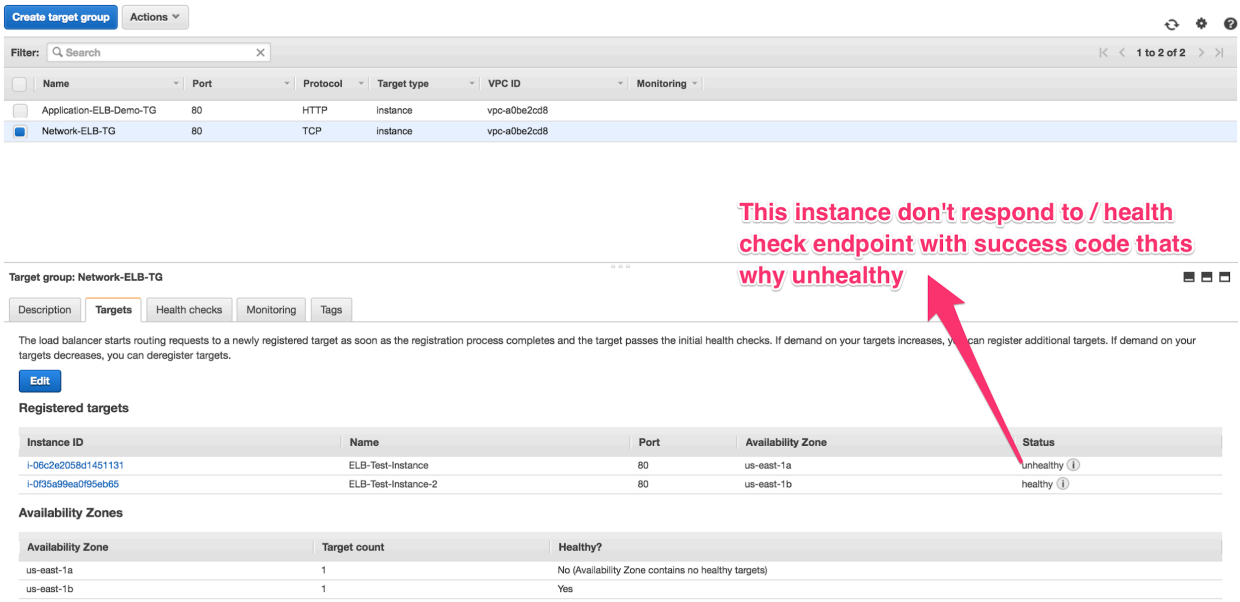

Create Load Balancer
Actions
Filter: Search
1 to 1 of 1
Name
DNS name
State
VPC ID
Availability Zones
Type
Application-ELB-Demo
Application-ELB-Demo-569956221.us-east-1.elb.amazonaws.com
active
vpc-a0be2cd8
us-east-1a, us-east-1b
application
Load balancer: Application-ELB-Demo
Description
Listeners
Monitoring
Tags
Basic Configuration
Name: Application-ELB-Demo
ARN: arn:aws:elasticloadbalancing:us-east-1:565778023094:loadbalancer/app/Application-ELB-Demo/8fe3329dce125758
DNS name: Application-ELB-Demo-569956221.us-east-1.elb.amazonaws.com (A Record)
Scheme: internet-facing
Type: application
Availability Zones: subnet-0c824951 - us-east-1a, subnet-1486ed70 - us-east-1b
Edit availability zones
Creation time: December 2, 2017 at 12:26:35 PM UTC+5:30
Hosted zone: Z35SXDOTRQ7X7K
State: active
VPC: vpc-a0be2cd8
IP address type: ipv4
AWS WAF Web ACL:
Note that ELB don't have a public IP

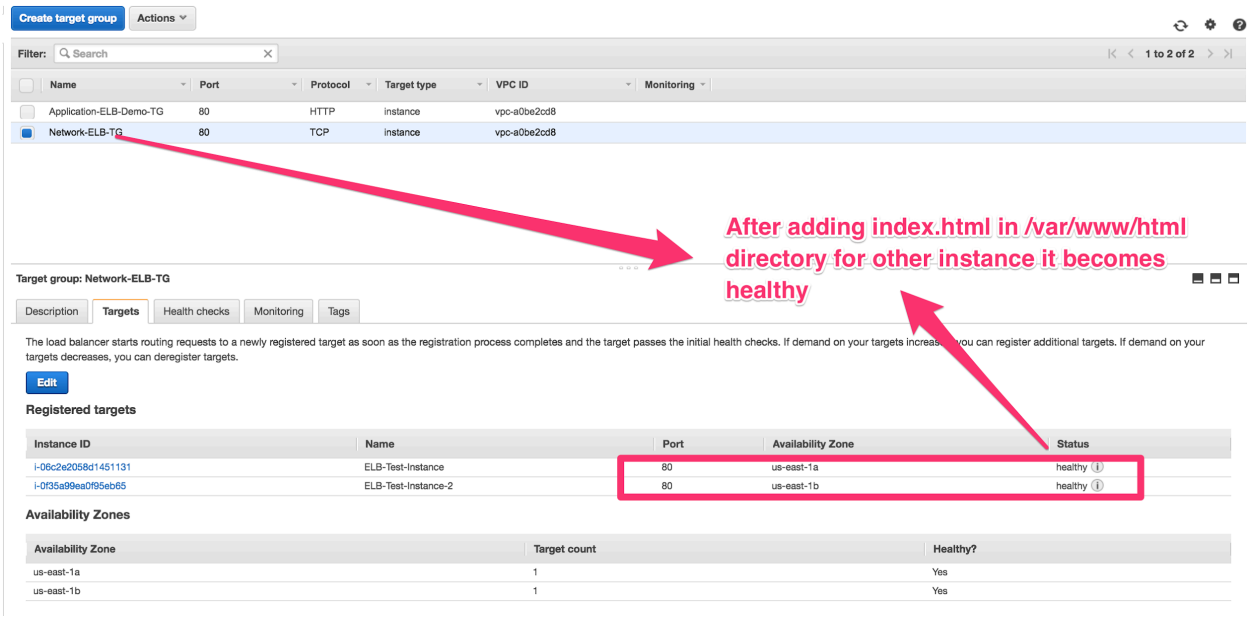

Network Interfaces
LOAD BALANCING
Load Balancers
Target Groups
AUTO SCALING
Launch Configurations
Auto Scaling Groups
SYSTEMS MANAGER SERVICES
Run Command
State Manager
Configuration Compliance
Automations
Patch Compliance
Patch Baselines
SYSTEMS MANAGER SHARED RESOURCES
Create Load Balancer
Actions
Filter: Search
1 to 1 of 1
Name
DNS name
State
VPC ID
Availability Zones
Type
Created At
Application-ELB-Demo
Application-ELB-Demo-5699...
active
vpc-a0be2cd8
us-east-1a, us-east-1b
application
Load balancer: Application-ELB-Demo
Description
Listeners
Monitoring
Tags
A listener checks for connection requests using its configured protocol and port, and the load balancer uses the listener rules to route requests to targets. You can add, remove, or update listeners and listener rules.
Add listener
Actions
ELB Listener rules
Listener ID
Security policy
SSL Certificate
Rules
HTTP : 80
arn...40b7b2cfda436c03
N/A
N/A
Default: forwarding to Application-ELB-Demo-TG
View/edit rules

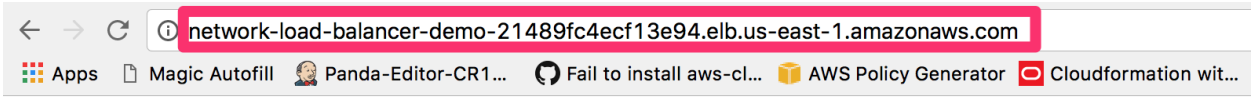
Network Load Balancer




Create target group
Actions
Filter:
Search
Name
Port
Protocol
Target type
VPC ID
Monitoring
Application-ELB-Demo-TG 80 HTTP instance vpc-a0be2cd8
Network-ELB-TG 80 TCP instance vpc-a0be2cd8
Target group: Network-ELB-TG
Description
Targets
Health checks
Monitoring
Tags
Edit
Protocol HTTP
Path /
Port traffic port
Healthy threshold 3
Unhealthy threshold 3
Timeout 6
Interval 30
Success codes 200-399
Note the health check endpoint its /

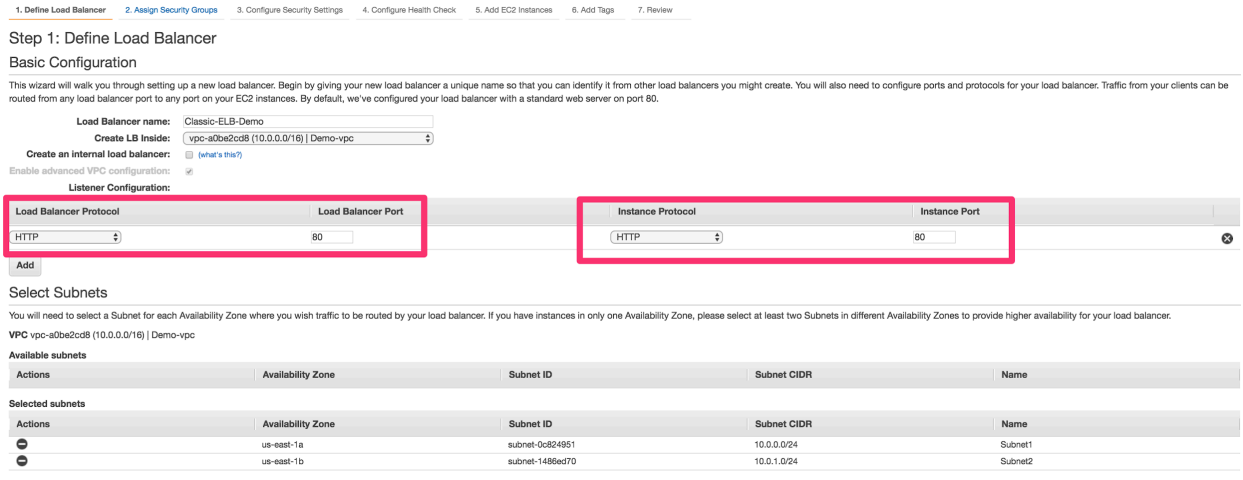

Create target group
Actions
Filter:
Search
1 to 2 of 2
Name
Port
Protocol
Target type
VPC ID
Monitoring
Application-ELB-Demo-TG 80 HTTP instance vpc-a0be2cd8
Network-ELB-TG 80 TCP instance vpc-a0be2cd8
This instance don't respond to / health check endpoint with success code thats why unhealthy
Target group: Network-ELB-TG
Description
Targets
Health checks
Monitoring
Tags
The load balancer starts routing requests to a newly registered target as soon as the registration process completes and the target passes the initial health checks. If demand on your targets increases, you can register additional targets. If demand on your targets decreases, you can deregister targets.
Edit
Registered targets
Instance ID
Name
Port
Availability Zone
Status
i-06c2e2058d1451131 ELB-Test-Instance 80 us-east-1a unhealthy
i-0f35a99ea0f95eb65 ELB-Test-Instance-2 80 us-east-1b healthy
Availability Zones
Availability Zone
Target count
Healthy?
us-east-1a 1 No (Availability Zone contains no healthy targets)
us-east-1b 1 Yes

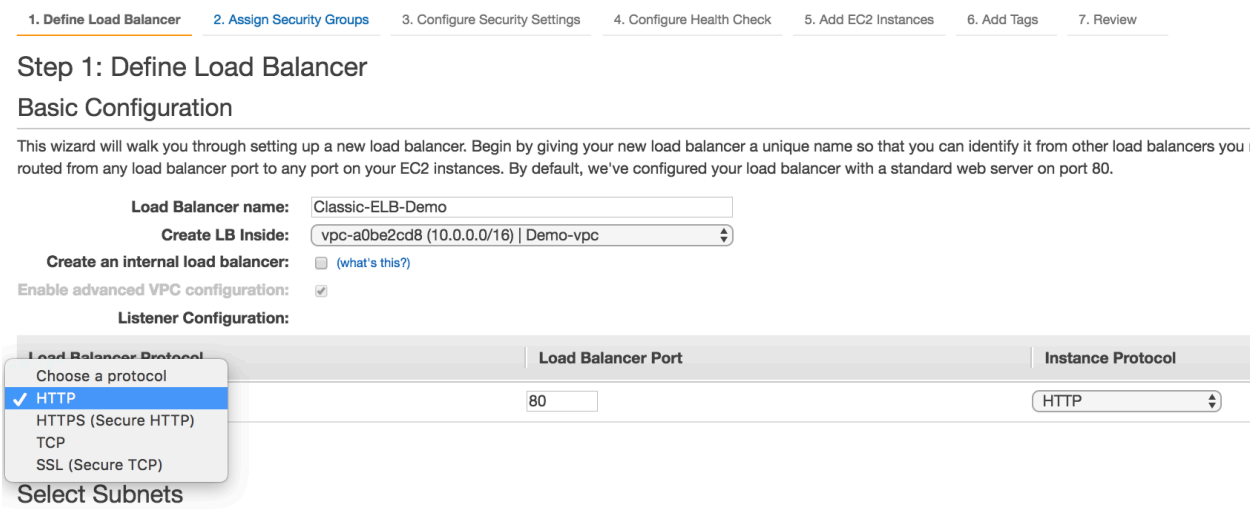




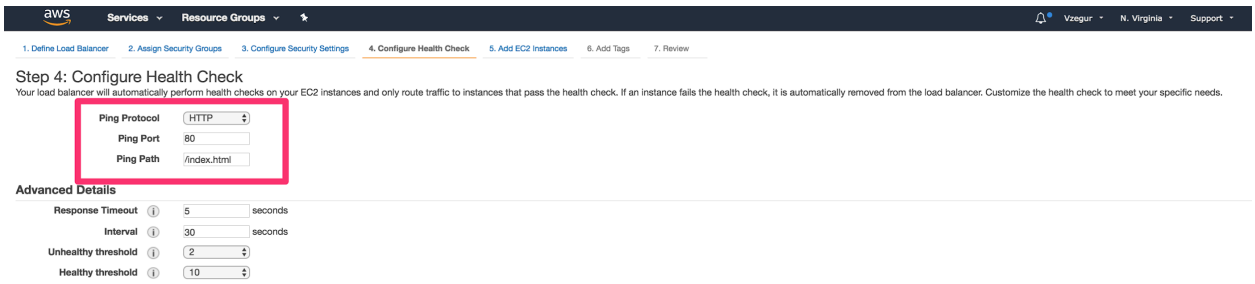
Heloo from Network ELB

Classic Load Balancer

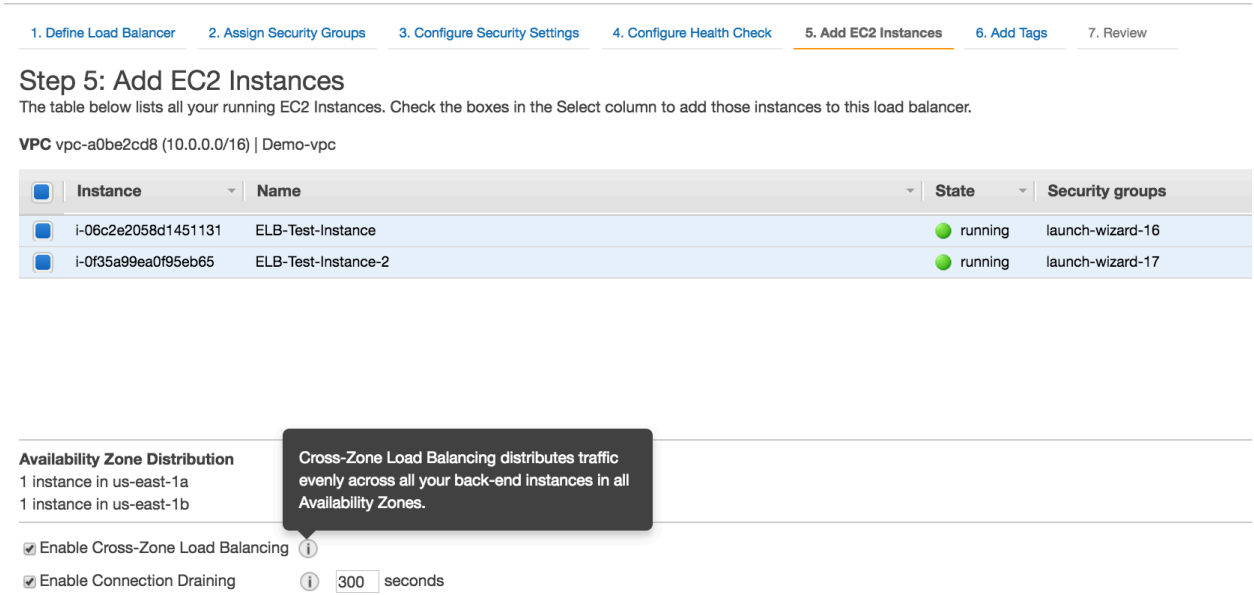




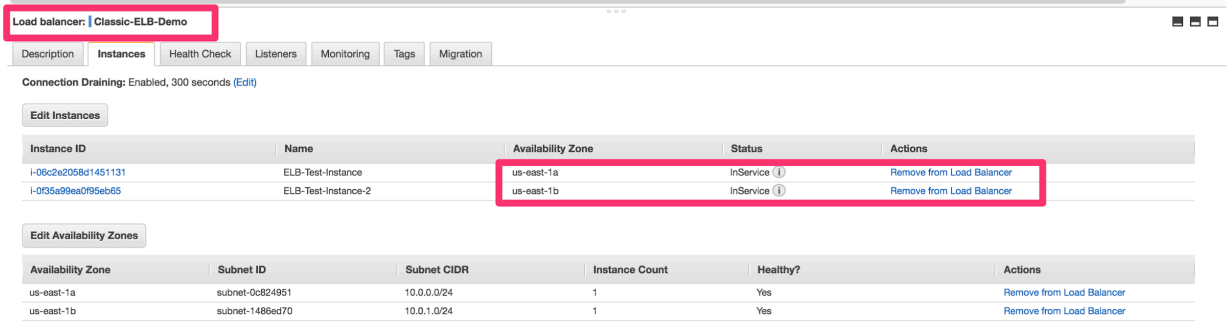
Note that you we can choose HTTP, HTTPs, TCP and SSL for listener configuration

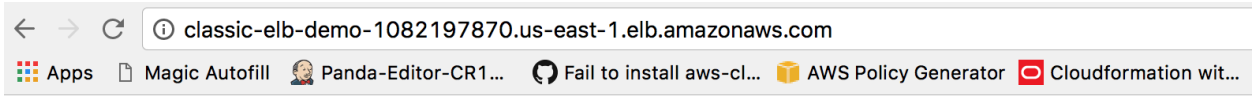


Cross Zone Load Balancing




Create Load Balancer
Actions
Filter:
Search
1 to 3 of 3
Name
DNS name
State
VPC ID
Availability Zones
Type
Created At
Classic-ELB-Demo
Classic-ELB-Demo-1082197870.us-east-1.elb.amazonaws.com
vpc-a0be2cd8
us-east-1a, us-east-1b
classic
December 2, 2017 at 2:0
Network-Load-Balancer-Demo
Network-Load-Balancer-Demo-21489fc4ecf13e94.elb.us-east-1.amazonaws.com
active
vpc-a0be2cd8
us-east-1a, us-east-1b
network
December 2, 2017 at 1:1
Application-ELB-Demo
Application-ELB-Demo-569956221.us-east-1.elb.amazonaws.com
active
vpc-a0be2cd8
us-east-1a, us-east-1b
application
December 2, 2017 at 12:


Load balancer: Classic-ELB-Demo
Description
Instances
Health Check
Listeners
Monitoring
Tags
Migration
Connection Draining: Enabled, 300 seconds (Edit)
Edit Instances
Instance ID
Name
Availability Zone
Status
Actions
i-06c2e2058d1451131
ELB-Test-Instance
us-east-1a
InService
Remove from Load Balancer
i-0f35a99ea0f95eb65
ELB-Test-Instance-2
us-east-1b
InService
Remove from Load Balancer
Edit Availability Zones
Availability Zone
Subnet ID
Subnet CIDR
Instance Count
Healthy?
Actions
us-east-1a
subnet-0c824951
10.0.0.0/24
1
Yes
Remove from Load Balancer
us-east-1b
subnet-1486ed70
10.0.1.0/24
1
Yes
Remove from Load Balancer


classic-elb-demo-1082197870.us-east-1.elb.amazonaws.com
Apps
Magic Autofill
Panda-Editor-CR1...
Fail to install aws-cl...
AWS Policy Generator
Cloudformation wit...

Helly

Terminating multiple instances together