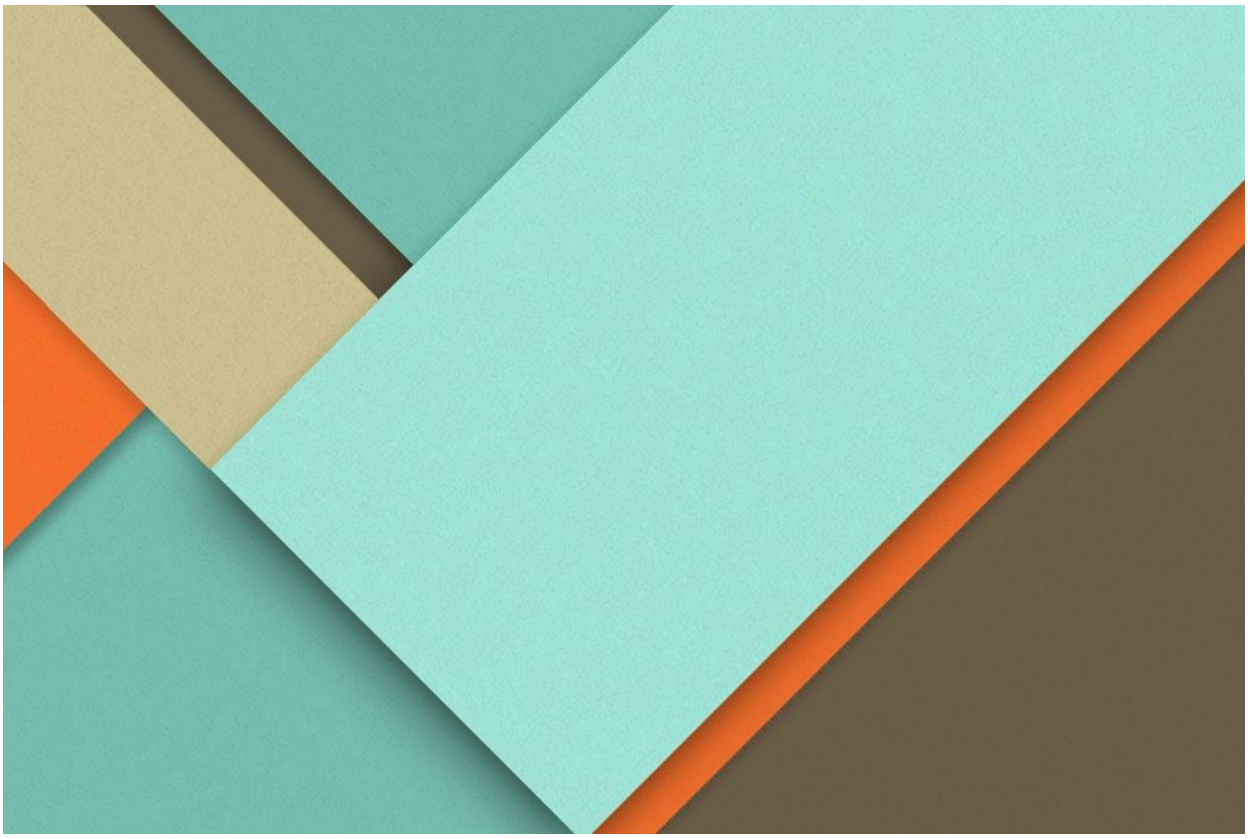

AWS Project

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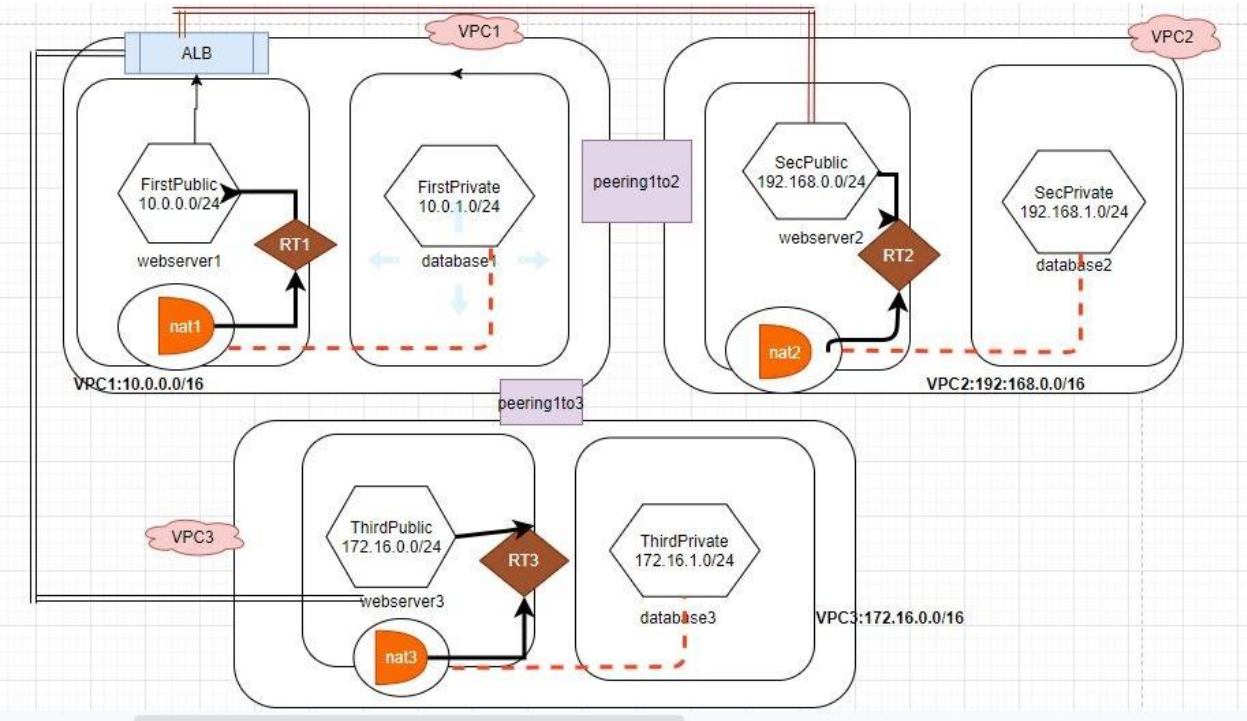
Overview

Creating three VPC, implementing three different modulus and each modulo having their own public subnet which represents web server and private subnet represents database server.

Creating a load balancer in first VPC which has to be connect with the web server of the other two VPC

Peering connection made between first VPC to second and third VPC with proper route table edit, then Elastic Load Balancing automatically distributes incoming application traffic across multiple targets, using Amazon EC2 private IP addresses.



Goals

ELB scales your load balancer dynamically, i.e. as traffic on your application changes over time keeping your application prepared for various situations.

Milestones

I. Step 1 : Create three VPC

a few details for creating three VPC

- **firstVPC** uses the CIDR block 10.0.0.0/16
- **secVPC** uses the CIDR block 192.168.0.0/16
- **thirdVPC** uses the CIDR block 172.16.0.0/16

Name	VPC ID	State	IPv4 CIDR	IPv6 CIE	DHCP options	Main Route table	Main Ne
secVPC	vpc-058a9f7eea97b39d0	available	192.168.0.0/16	-	dopt-06c8df61	rtb-032aa77ea21dd209c | secDefaultRT	acl-0d37
firstVPC	vpc-05f6926a9887de026	available	10.0.0.0/16	-	dopt-06c8df61	rtb-0448d1f196aaf7f12 | firstDefaultRT	acl-0f75
thirdVPC	vpc-087e68f19ec06b7e9	available	172.16.0.0/16	-	dopt-06c8df61	rtb-0d3c01ebf49eb3ba2 | thirdDefaultRT	acl-0a96

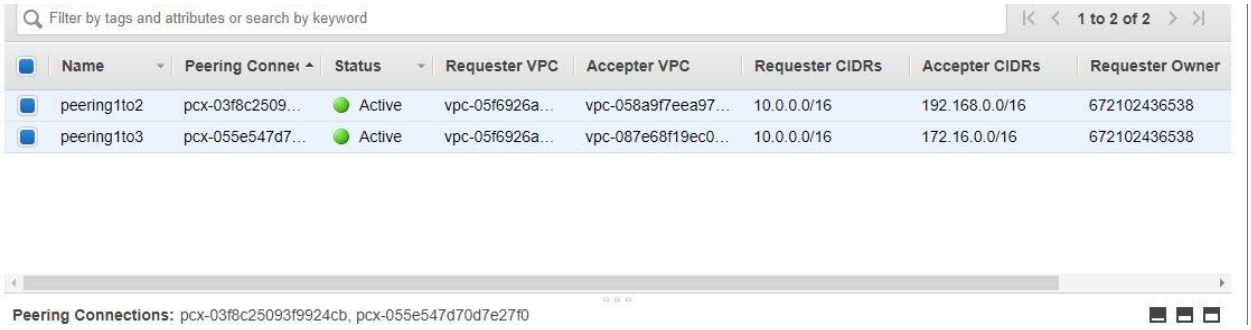
II. Step 2 : Create three public and private subnet for three VPC

- firstPublicSubenet with IPv4 CIDR block 10.0.1.0/24 and firstPrivateSubenet with IPv4 CIDR block 10.0.2.0/24
- secPublicSubenet with IPv4 CIDR block 192.168.1.0/24 and secPrivateSubenet with IPv4 CIDR block 192.168.2.0/24
- thirdPublicSubenet with IPv4 CIDR block 172.16.1.0/24 and thirdPrivateSubenet with IPv4 CIDR block 172.16.2.0/24

Name	Subnet ID	State	VPC	IPv4 CIDR	Available IPv4	IPv6 CIDR
secPubSub	subnet-01899fa1e6ceeec95	available	vpc-058a9f7eea97b39d0 |...	192.168.1.0/24	251	-
thirdPrivate...	subnet-02fd3b02ae80531dc	available	vpc-087e68f19ec06b7e9 |...	172.16.2.0/24	251	-
thirdPubSub	subnet-05f755fbecaf6182d	available	vpc-087e68f19ec06b7e9 |...	172.16.1.0/24	251	-
firstPubSub...	subnet-0b58ed24d3b4bec57	available	vpc-05f6926a9887de026 |...	10.0.1.0/24	251	-
firstPrivateS...	subnet-0ea151d1ed30be4d5	available	vpc-05f6926a9887de026 |...	10.0.2.0/24	251	-
secPrivateS...	subnet-0fcd25e4933255e1f	available	vpc-058a9f7eea97b39d0 |...	192.168.2.0/24	251	-

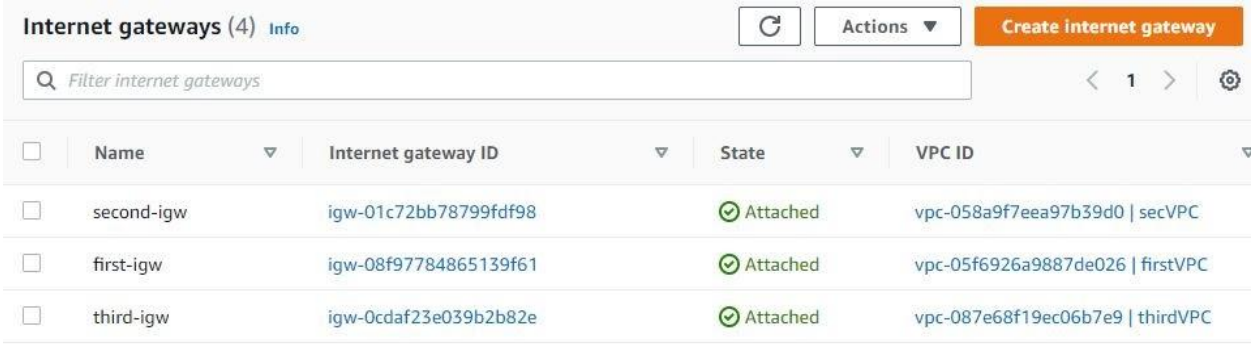
III. Step 3 : Create peering connection from firstVPC to secondVPC and thirdVPC

- **Peering1to2** where firstVPC is a requester and secondVPC is a accepter
- **Peering1to3** where firstVPC is a requester and thirdVPC is a accepter



IV. Step 4: Creating Internet Gateway and attach to specific VPC

- Created **first-igw** attached to **firstVPC**
- Created **second-igw** attached to **secondVPC**
- Created **third-igw** attached to **thirdVPC**

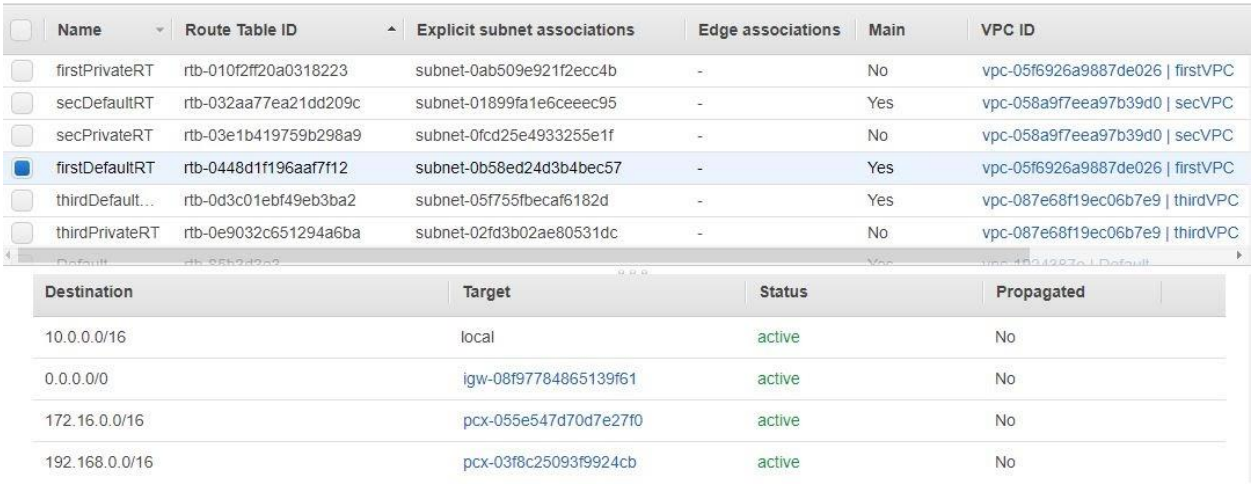


V. Step 5: Create and edit route table

For each VPC one default route table is created, let's call this route table as the **public** default route table and along with this create three **private** route tables for each VPC.

All the public route tables are attached to Internet Gateway and private networks will not have internet access.

1. **firstDefaultRT** is attached to internet gateway i.e. first-igw , a route with a destination of 0.0.0.0/0 for IPv4 traffic, also peering1to2 with IPv4 192.168.0.0/16 and peering 1to3 with IPv4 172.16.0.0/16.



firstPrivateRT is attached to peering1to2 with IPv4 192.168.0.0/16 and peering 1to3 with IPv4 172.16.0.0/16.

Name	Route Table ID	Explicit subnet associations	Edge associations	Main	VPC ID
firstPrivateRT	rtb-010f2ff20a0318223	subnet-0ab509e921f2ecc4b	-	No	vpc-05f6926a9887de026 | firstVPC
secDefaultRT	rtb-032aa77ea21dd209c	subnet-01899fa1e6ceeec95	-	Yes	vpc-058a9f7eea97b39d0 | secVPC
secPrivateRT	rtb-03e1b419759b298a9	subnet-0fcd25e4933255e1f	-	No	vpc-058a9f7eea97b39d0 | secVPC
firstDefaultRT	rtb-0448d1f196aaf7f12	subnet-0b58ed24d3b4bec57	-	Yes	vpc-05f6926a9887de026 | firstVPC
thirdDefault...	rtb-0d3c01ebf49eb3ba2	subnet-05f755fbecaf6182d	-	Yes	vpc-087e68f19ec06b7e9 | thirdVPC
thirdPrivateRT	rtb-0e9032c651294a6ba	subnet-02fd3b02ae80531dc	-	No	vpc-087e68f19ec06b7e9 | thirdVPC

View All routes

Destination	Target	Status	Propagated
10.0.0.0/16	local	active	No
172.16.0.0/16	pcx-055e547d70d7e27f0	active	No
192.168.0.0/16	pcx-03f8c25093f9924cb	active	No

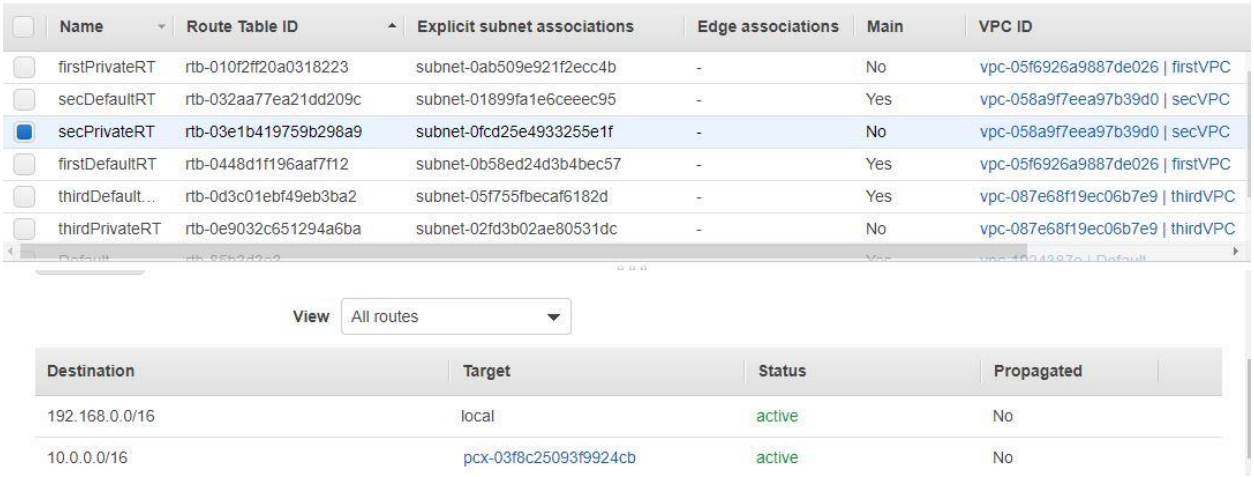
2. **SecDefaultRT** is attached to internet gateway i.e. second-igw , a route with a destination of 0.0.0.0/0 for IPv4 traffic, also peering1to2 with IPv4 10.0.0.0/16

Name	Route Table ID	Explicit subnet associations	Edge associations	Main	VPC ID
firstPrivateRT	rtb-010f2ff20a0318223	subnet-0ab509e921f2ecc4b	-	No	vpc-05f6926a9887de026 | firstVPC
secDefaultRT	rtb-032aa77ea21dd209c	subnet-01899fa1e6ceeec95	-	Yes	vpc-058a9f7eea97b39d0 | secVPC
secPrivateRT	rtb-03e1b419759b298a9	subnet-0fcd25e4933255e1f	-	No	vpc-058a9f7eea97b39d0 | secVPC
firstDefaultRT	rtb-0448d1f196aaf7f12	subnet-0b58ed24d3b4bec57	-	Yes	vpc-05f6926a9887de026 | firstVPC
thirdDefault...	rtb-0d3c01ebf49eb3ba2	subnet-05f755fbecaf6182d	-	Yes	vpc-087e68f19ec06b7e9 | thirdVPC
thirdPrivateRT	rtb-0e9032c651294a6ba	subnet-02fd3b02ae80531dc	-	No	vpc-087e68f19ec06b7e9 | thirdVPC

View All routes

Destination	Target	Status	Propagated
192.168.0.0/16	local	active	No
0.0.0.0/0	igw-01c72bb78799fdf98	active	No
10.0.0.0/16	pcx-03f8c25093f9924cb	active	No

secPrivateRT is attached to peering1to2 with IPv4 10.0.0.0/16

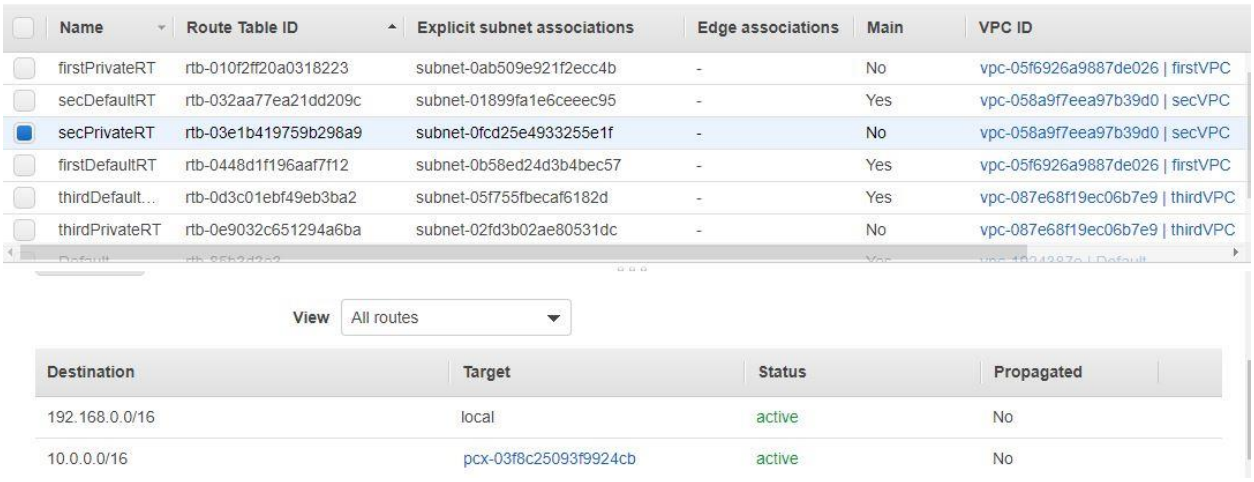


Name	Route Table ID	Explicit subnet associations	Edge associations	Main	VPC ID
firstPrivateRT	rtb-010f2ff20a0318223	subnet-0ab509e921f2ecc4b	-	No	vpc-05f6926a9887de026 | firstVPC
secDefaultRT	rtb-032aa77ea21dd209c	subnet-01899fa1e6ceeec95	-	Yes	vpc-058a9f7eea97b39d0 | secVPC
secPrivateRT	rtb-03e1b419759b298a9	subnet-0fcd25e4933255e1f	-	No	vpc-058a9f7eea97b39d0 | secVPC
firstDefaultRT	rtb-0448d1f196aaf7f12	subnet-0b58ed24d3b4bec57	-	Yes	vpc-05f6926a9887de026 | firstVPC
thirdDefault...	rtb-0d3c01ebf49eb3ba2	subnet-05f755fbecaf6182d	-	Yes	vpc-087e68f19ec06b7e9 | thirdVPC
thirdPrivateRT	rtb-0e9032c651294a6ba	subnet-02fd3b02ae80531dc	-	No	vpc-087e68f19ec06b7e9 | thirdVPC

View: All routes

Destination	Target	Status	Propagated
192.168.0.0/16	local	active	No
10.0.0.0/16	pcx-03f8c25093f9924cb	active	No

3. **thirdDefaultRT** is attached to internet gateway i.e. third-igw , a route with a destination of 0.0.0.0/0 for IPv4 traffic, also peering1to3 with IPv4 10.0.0.0/16



Name	Route Table ID	Explicit subnet associations	Edge associations	Main	VPC ID
firstPrivateRT	rtb-010f2ff20a0318223	subnet-0ab509e921f2ecc4b	-	No	vpc-05f6926a9887de026 | firstVPC
secDefaultRT	rtb-032aa77ea21dd209c	subnet-01899fa1e6ceeec95	-	Yes	vpc-058a9f7eea97b39d0 | secVPC
secPrivateRT	rtb-03e1b419759b298a9	subnet-0fcd25e4933255e1f	-	No	vpc-058a9f7eea97b39d0 | secVPC
firstDefaultRT	rtb-0448d1f196aaf7f12	subnet-0b58ed24d3b4bec57	-	Yes	vpc-05f6926a9887de026 | firstVPC
thirdDefault...	rtb-0d3c01ebf49eb3ba2	subnet-05f755fbecaf6182d	-	Yes	vpc-087e68f19ec06b7e9 | thirdVPC
thirdPrivateRT	rtb-0e9032c651294a6ba	subnet-02fd3b02ae80531dc	-	No	vpc-087e68f19ec06b7e9 | thirdVPC

View: All routes

Destination	Target	Status	Propagated
192.168.0.0/16	local	active	No
10.0.0.0/16	pcx-03f8c25093f9924cb	active	No

thirdPrivateRT is attached to peering1to3 with IPv4 10.0.0.0/16

Name	Route Table ID	Explicit subnet associations	Edge associations	Main	VPC ID
firstPrivateRT	rtb-010f2ff20a0318223	subnet-0ab509e921f2ecc4b	-	No	vpc-05f6926a9887de026 | firstVPC
secDefaultRT	rtb-032aa77ea21dd209c	subnet-01899fa1e6ceeec95	-	Yes	vpc-058a9f7eea97b39d0 | secVPC
secPrivateRT	rtb-03e1b419759b298a9	subnet-0fcd25e4933255e1f	-	No	vpc-058a9f7eea97b39d0 | secVPC
firstDefaultRT	rtb-0448d1f196aaf7f12	subnet-0b58ed24d3b4bec57	-	Yes	vpc-05f6926a9887de026 | firstVPC
thirdDefault...	rtb-0d3c01ebf49eb3ba2	subnet-05f755fbecaf6182d	-	Yes	vpc-087e68f19ec06b7e9 | thirdVPC
thirdPrivateRT	rtb-0e9032c651294a6ba	subnet-02fd3b02ae80531dc	-	No	vpc-087e68f19ec06b7e9 | thirdVPC

View All routes

Destination	Target	Status	Propagated
172.16.0.0/16	local	active	No
10.0.0.0/16	pcx-055e547d70d7e27f0	active	No

Step 5: Create three web server(public instance) and data base server instance(private instance)

- Create three web server instance connect with putty
- install apache tomcat web server on all the instance and start the server
- Copy the public IP of the instances and paste it on a browser like a URL, to check if apache tomcat has been installed successfully
- Create a web application on each server and run it

Name	Instance ID	Instance Type	Availability Zone	Instance State	Status Checks	Alarm Status	Public I	IPv4 Public IP
database2	i-01edf8ce68dd14324	t2.micro	ap-southeast-1c	running	2/2 checks ...	None		-
webserver1	i-058945f900430a18a	t2.micro	ap-southeast-1a	running	2/2 checks ...	None		13.250.8.142
webserver2	i-071b3bc6e733eb616	t2.micro	ap-southeast-1b	running	2/2 checks ...	None		13.229.84.130
database3	i-0c3cc78f1ed4c73ef	t2.micro	ap-southeast-1b	running	2/2 checks ...	None		-
webserver3	i-0c97b0985139d9d51	t2.micro	ap-southeast-1a	running	2/2 checks ...	None		54.179.15.142
database1	i-0e7d903be6c4f1545	t2.micro	ap-southeast-1a	running	2/2 checks ...	None		-

Step 6: Create an Application Load Balancer in firstVPC

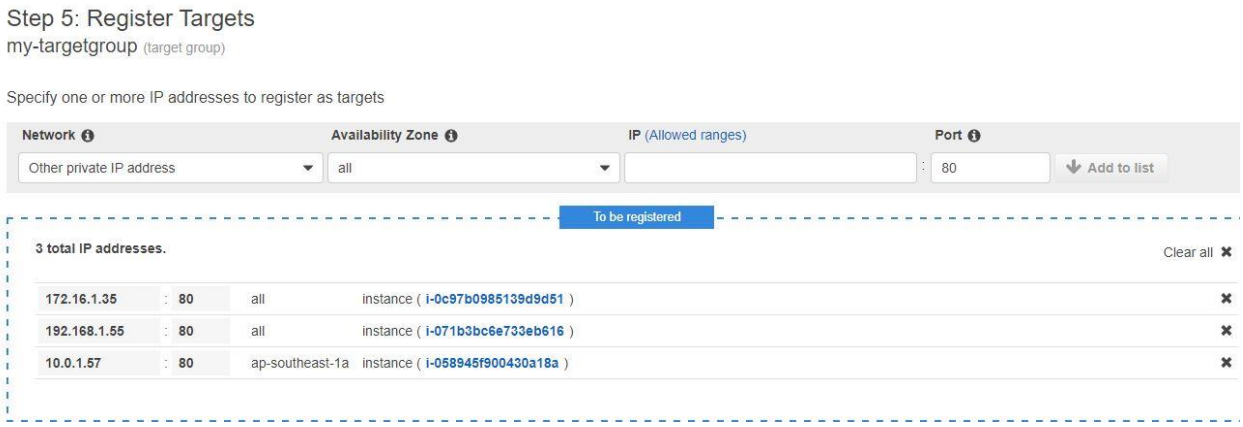
- Create an internet-facing load balancer my-lab
- Select **firstVPC** and the subnet for that Availability Zone both public and private

Name	DNS name	State	VPC ID	Availability Zones	Type
my-alb	my-alb-1135867816.ap-sout...	provisioning	vpc-05f6926a9887de026	ap-southeast-1b, ap-so...	application

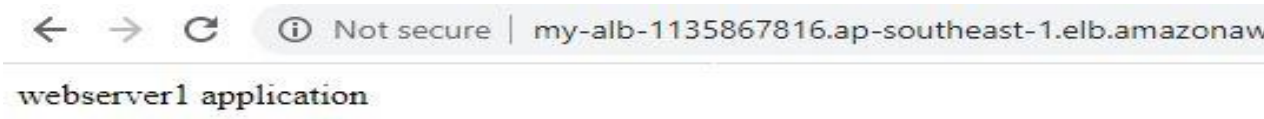
Basic Configuration

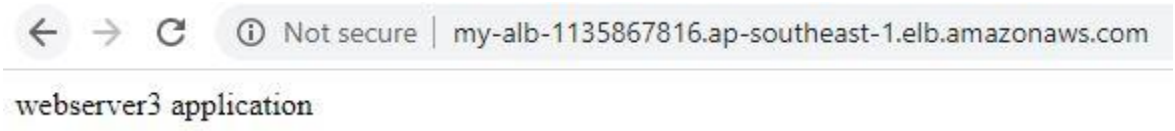
Name	my-alb
ARN	arn:aws:elasticloadbalancing:ap-southeast-1:672102436538:loadbalancer/app/my-alb/59aad67b3d89f0ef
DNS name	my-alb-1135867816.ap-southeast-1.elb.amazonaws.com (A Record)
State	provisioning
Type	application
Scheme	internet-facing
IP address type	ipv4
	Edit IP address type
VPC	vpc-05f6926a9887de026

- Select a **New target Group** give name as **my-targetgroup**. Select the **Target type** as IP address, as we are attaching private IP address of the web server.
- Keeping default Health Checks and Advanced Health Checks
- **Register target** with private IP of the web server



- Copy the DNS name of your load balancer and paste it on a browser like a URL. we see the output ,





Elastic Load Balancing automatically distributes incoming application traffic across multiple targets