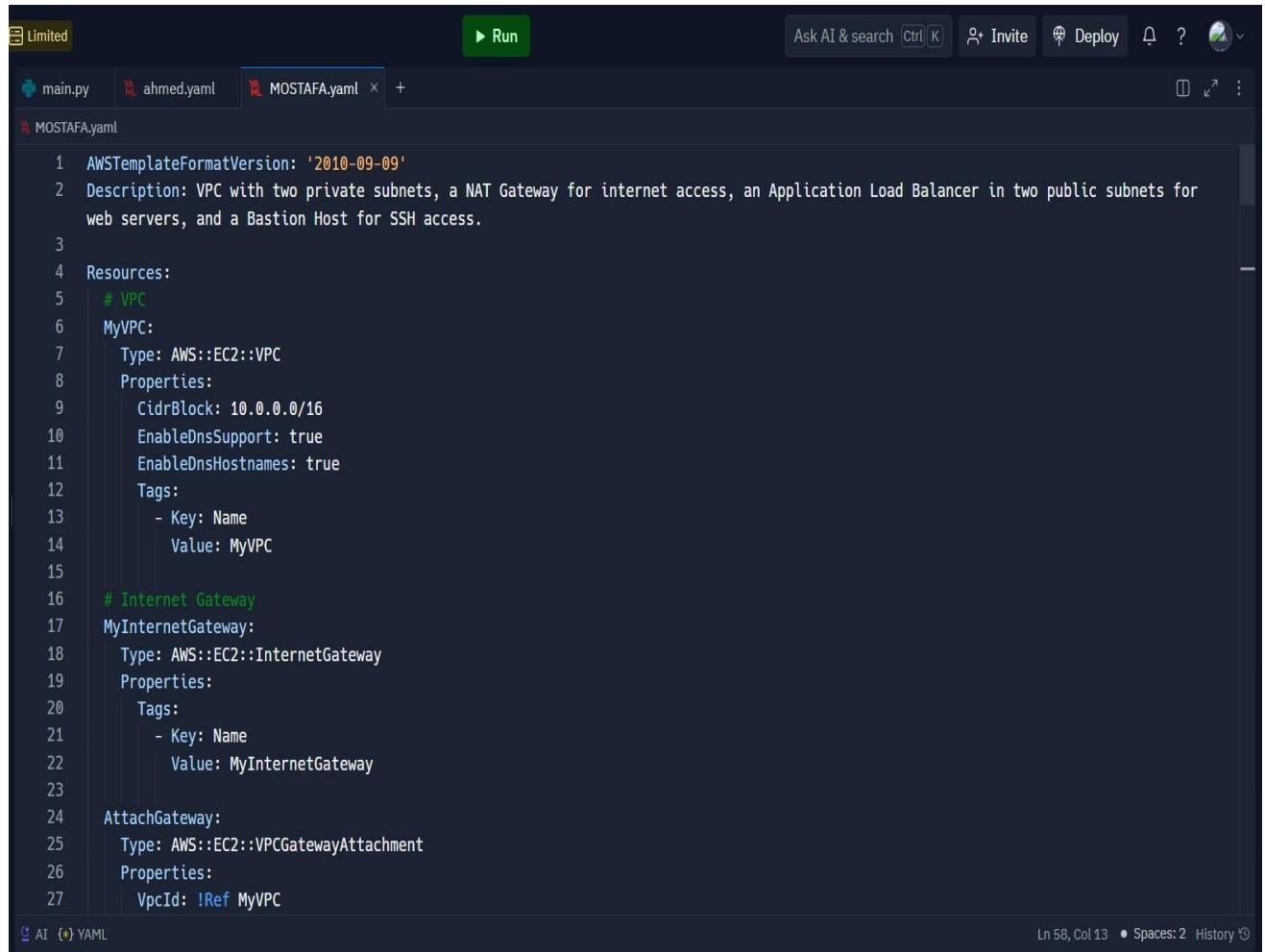


Final Project Documentation:

1. Create Network Environment with Infrastructure as Code (IaC)

Use AWS Cloud Formation or Terraform to define and manage our network infrastructure programmatically.

Use version control for IaC templates, segment our network using Subnets, and secure access with Security Groups and Network ACLs. Deploy a NAT Gateway to allow private instances internet access without exposing them to the public.



The screenshot shows the AWS CloudFormation console interface. At the top, there are tabs for 'main.py', 'ahmed.yaml', and 'MOSTAFA.yaml'. A green 'Run' button is visible. The main area contains the AWS CloudFormation YAML template code. The code defines a VPC with two private subnets, a NAT Gateway for internet access, an Application Load Balancer in two public subnets for web servers, and a Bastion Host for SSH access. It also defines an Internet Gateway and attaches it to the VPC. The template uses AWS::EC2::VPC, AWS::EC2::InternetGateway, and AWS::EC2::VPCGatewayAttachment resources. The code is well-structured with comments and tags. At the bottom right, there are status indicators: 'Ln 58, Col 13 • Spaces: 2 History'.

```
AWSTemplateFormatVersion: '2010-09-09'
Description: VPC with two private subnets, a NAT Gateway for internet access, an Application Load Balancer in two public subnets for web servers, and a Bastion Host for SSH access.

Resources:
# VPC
MyVPC:
  Type: AWS::EC2::VPC
  Properties:
    CidrBlock: 10.0.0.0/16
    EnableDnsSupport: true
    EnableDnsHostnames: true
  Tags:
    - Key: Name
      Value: MyVPC

# Internet Gateway
MyInternetGateway:
  Type: AWS::EC2::InternetGateway
  Properties:
    Tags:
      - Key: Name
        Value: MyInternetGateway

AttachGateway:
  Type: AWS::EC2::VPCGatewayAttachment
  Properties:
    VpcId: !Ref MyVPC
```

```
main.py ahmed.yaml MOSTAFA.yaml + :  
MOSTAFA.yaml  
27     VpcId: !Ref MyVPC  
28     InternetGatewayId: !Ref MyInternetGateway  
29  
30 # NAT Gateway  
31 NatEIP:  
32     Type: AWS::EC2::EIP  
33     Properties:  
34         Domain: vpc  
35  
36 MyNatGateway:  
37     Type: AWS::EC2::NatGateway  
38     Properties:  
39         AllocationId: !GetAtt NatEIP.AllocationId  
40         SubnetId: !Ref PublicSubnet1  
41         Tags:  
42             - Key: Name  
43             Value: MyNatGateway  
44  
45 # Route Tables  
46 PublicRouteTable:  
47     Type: AWS::EC2::RouteTable  
48     Properties:  
49         VpcId: !Ref MyVPC  
50         Tags:  
51             - Key: Name  
52             Value: PublicRouteTable  
53  
54 PrivateRouteTable:
```

```
main.py MOSTAFA.yaml + :  
MOSTAFA.yaml  
54 PrivateRouteTable:  
55     Type: AWS::EC2::RouteTable  
56     Properties:  
57         VpcId: !Ref MyVPC  
58         Tags: - Key: Name  
59             Value: PrivateRouteTable  
60  
61 # Public Route  
62 PublicRoute:  
63     Type: AWS::EC2::Route  
64     Properties:  
65         RouteTableId: !Ref PublicRouteTable  
66         DestinationCidrBlock: 0.0.0.0/0  
67         GatewayId: !Ref MyInternetGateway  
68  
69 # Private Route  
70 PrivateRoute:  
71     Type: AWS::EC2::Route  
72     Properties:  
73         RouteTableId: !Ref PrivateRouteTable  
74         DestinationCidrBlock: 0.0.0.0/0  
75         NatGatewayId: !Ref MyNatGateway  
76  
77 # Subnets  
78 PublicSubnet1:  
79     Type: AWS::EC2::Subnet  
80     Properties:  
81         VpcId: !Ref MyVPC
```

```
main.py MOSTAFA.yaml +  
R MOSTAFA.yaml  
80 Properties:  
81   VpcId: !Ref MyVPC  
82   CidrBlock: 10.0.1.0/24  
83   AvailabilityZone: us-east-1a  
84   MapPublicIpOnLaunch: true  
85   Tags:  
86     - Key: Name  
87       Value: PublicSubnet1  
88  
89 PublicSubnet2:  
90   Type: AWS::EC2::Subnet  
91   Properties:  
92     VpcId: !Ref MyVPC  
93     CidrBlock: 10.0.2.0/24  
94     AvailabilityZone: us-east-1b  
95     MapPublicIpOnLaunch: true  
96     Tags:  
97       - Key: Name  
98         Value: PublicSubnet2  
99  
100 PrivateSubnet1:  
101   Type: AWS::EC2::Subnet  
102   Properties:  
103     VpcId: !Ref MyVPC  
104     CidrBlock: 10.0.3.0/24  
105     AvailabilityZone: us-east-1a  
106     MapPublicIpOnLaunch: false  
107   Tags:
```

```
main.py MOSTAFA.yaml +  
R MOSTAFA.yaml  
107   Tags:  
108     - Key: Name  
109       Value: PrivateSubnet1  
110  
111 PrivateSubnet2:  
112   Type: AWS::EC2::Subnet  
113   Properties:  
114     VpcId: !Ref MyVPC  
115     CidrBlock: 10.0.4.0/24  
116     AvailabilityZone: us-east-1b  
117     MapPublicIpOnLaunch: false  
118     Tags:  
119       - Key: Name  
120         Value: PrivateSubnet2  
121  
122 PublicSubnet1RouteTableAssociation:  
123   Type: AWS::EC2::SubnetRouteTableAssociation  
124   Properties:  
125     SubnetId: !Ref PublicSubnet1  
126     RouteTableId: !Ref PublicRouteTable  
127  
128 PublicSubnet2RouteTableAssociation:  
129   Type: AWS::EC2::SubnetRouteTableAssociation  
130   Properties:  
131     SubnetId: !Ref PublicSubnet2  
132     RouteTableId: !Ref PublicRouteTable  
133  
134 PrivateSubnet1RouteTableAssociation:
```

Ln 134, Col 39 • Spaces: 2 History ⌂

```
main.py MOSTAFA.yaml +  
MOSTAFA.yaml  
134 PrivateSubnet1RouteTableAssociation:  
135   Type: AWS::EC2::SubnetRouteTableAssociation  
136   Properties:  
137     SubnetId: !Ref PrivateSubnet1  
138     RouteTableId: !Ref PrivateRouteTable  
139  
140 PrivateSubnet2RouteTableAssociation:  
141   Type: AWS::EC2::SubnetRouteTableAssociation  
142   Properties:  
143     SubnetId: !Ref PrivateSubnet2  
144     RouteTableId: !Ref PrivateRouteTable  
145  
146 # Security Group for Bastion Host  
147 BastionSecurityGroup:  
148   Type: AWS::EC2::SecurityGroup  
149   Properties:  
150     GroupDescription: Allow SSH from anywhere  
151     VpcId: !Ref MyVPC  
152     SecurityGroupIngress:  
153       - IpProtocol: tcp  
154         FromPort: 22  
155         ToPort: 22  
156         CidrIp: 0.0.0.0/0 # Limit this to a specific IP for security  
157  
158 # Bastion EC2 Instance (in Public Subnet)  
159 BastionHost:  
160   Type: AWS::EC2::Instance  
161   Properties:  
Ln 161, Col 16 • Spaces: 2 History
```

```
main.py MOSTAFA.yaml +  
MOSTAFA.yaml  
159 BastionHost:  
160   Type: AWS::EC2::Instance  
161   Properties:  
162     InstanceType: t2.micro  
163     KeyName: vockey # Replace with your KeyPair name  
164     ImageId: ami-04d40dba56f6e1303 # Replace with the latest Amazon Linux AMI for your region  
165     NetworkInterfaces:  
166       - AssociatePublicIpAddress: true  
167         DeviceIndex: 0  
168         SubnetId: !Ref PublicSubnet1  
169         GroupSet:  
170           - !Ref BastionSecurityGroup  
171     Tags:  
172       - Key: Name  
173         Value: BastionHost  
174  
175 # Security Group for Web Servers (allow SSH from Bastion Host)  
176 WebServerSG:  
177   Type: AWS::EC2::SecurityGroup  
178   Properties:  
179     GroupDescription: Allow HTTP, HTTPS, and SSH from Bastion  
180     VpcId: !Ref MyVPC  
181     SecurityGroupIngress:  
182       - IpProtocol: tcp  
183         FromPort: 80  
184         ToPort: 80  
185         SourceSecurityGroupId: !Ref ALBSecurityGroup  
186       - IpProtocol: tcp  
Ln 186, Col 26 • Spaces: 2 History
```

```
main.py MOSTAFA.yaml + : 

# MOSTAFA.yaml
186     - IpProtocol: tcp
187         FromPort: 443
188         ToPort: 443
189         SourceSecurityGroupId: !Ref ALBSecurityGroup
190     - IpProtocol: tcp
191         FromPort: 22
192         ToPort: 22
193         SourceSecurityGroupId: !Ref BastionSecurityGroup
194
195 # ALB Security Group
196 ALBSecurityGroup:
197     Type: AWS::EC2::SecurityGroup
198     Properties:
199         GroupDescription: Allow HTTP and HTTPS access
200         VpcId: !Ref MyVPC
201         SecurityGroupIngress:
202             - IpProtocol: tcp
203                 FromPort: 80
204                 ToPort: 80
205                 CidrIp: 0.0.0.0/0
206             - IpProtocol: tcp
207                 FromPort: 443
208                 ToPort: 443
209                 CidrIp: 0.0.0.0/0
210
211 # Web Server Launch Template
212 WebServerLaunchTemplate:
213     Type: AWS::EC2::LaunchTemplate
```

Ln 213, Col 26 • Spaces: 2 History

```
main.py MOSTAFA.yaml + : 

# MOSTAFA.yaml
210
211 # Web Server Launch Template
212 WebServerLaunchTemplate:
213     Type: AWS::EC2::LaunchTemplate
214     Properties:
215         LaunchTemplateName: WebServerLaunchTemplate
216         LaunchTemplateData:
217             KeyName: vockey
218             ImageId: ami-04d40dba56f6e1303
219             InstanceType: t2.micro
220             SecurityGroupIds:
221                 - !Ref WebServerSG
222             UserData:
223                 Fn::Base64: !Sub |
224                     #!/bin/bash
225                     yum update -y
226                     yum install -y httpd
227                     systemctl start httpd
228                     systemctl enable httpd
229                     echo "<h1>Web Server launched by Auto Scaling Group</h1>" > /var/www/html/index.html
230
231 # Auto Scaling Group for Web Servers
232 WebServerAutoScalingGroup:
233     Type: AWS::AutoScaling::AutoScalingGroup
234     Properties:
235         VPCZoneIdentifier:
236             - !Ref PrivateSubnet1
237             - !Ref PrivateSubnet2
```

Ln 213, Col 26 • Spaces: 2 History

```
main.py MOSTAFA.yaml +
```

```
200     - !Ref PrivateSubnet1
201     - !Ref PrivateSubnet2
202 
203     LaunchTemplate:
204         LaunchTemplateId: !Ref WebServerLaunchTemplate
205         Version: !GetAtt WebServerLaunchTemplate.LatestVersionNumber
206         MinSize: '2'
207         MaxSize: '4'
208         DesiredCapacity: '2'
209         TargetGroupARNs:
210             - !Ref ALBTargetGroup
211         HealthCheckType: ELB
212         HealthCheckGracePeriod: 300
213 
214     Tags:
215         - Key: Name
216             Value: WebServer
217         PropagateAtLaunch: true
218 
219 # ALB
220 
221 ALB:
222     Type: AWS::ElasticLoadBalancingV2::LoadBalancer
223     Properties:
224         Name: MyALB
225         Subnets:
226             - !Ref PublicSubnet1
227             - !Ref PublicSubnet2
228         Scheme: internet-facing
229         LoadBalancerAttributes:
230             - Key: idle_timeout.timeout_seconds
231                 Value: '60'
```

AI { } YAML

Ln 213, Col 26 • Spaces: 2 History ⌂

```
main.py MOSTAFA.yaml +
```

```
262     LoadBalancerAttributes:
263         - Key: idle_timeout.timeout_seconds
264             Value: '60'
265     SecurityGroups:
266         - !Ref ALBSecurityGroup
267     Tags:
268         - Key: Name
269             Value: MyALB
270 
271 ALBTARGETGROUP:
272     Type: AWS::ElasticLoadBalancingV2::TargetGroup
273     Properties:
274         VpcId: !Ref MyVPC
275         Port: 80
276         Protocol: HTTP
277         TargetType: instance
278         HealthCheckProtocol: HTTP
279         HealthCheckPort: 80
280         HealthCheckPath: /
281         HealthCheckIntervalSeconds: 30
282         HealthCheckTimeoutSeconds: 5
283         HealthyThresholdCount: 3
284         UnhealthyThresholdCount: 2
285     Tags:
286         - Key: Name
287             Value: ALBTARGETGROUP
288 
289 ALBLISTENER:
```

```
main.py MOSTAFA.yaml +
```

```
 288
 289 ALBListener:
 290   Type: AWS::ElasticLoadBalancingV2::Listener
 291   Properties:
 292     LoadBalancerArn: !Ref ALB
 293     Port: 80
 294     Protocol: HTTP
 295     DefaultActions:
 296       - Type: forward
 297         TargetGroupArn: !Ref ALBTarGetGroup
 298
 299 Outputs:
300   VPCId:
301     Description: The ID of the VPC
302     Value: !Ref MyVPC
303
304   PublicSubnet1Id:
305     Description: The ID of Public Subnet 1
306     Value: !Ref PublicSubnet1
307
308   PublicSubnet2Id:
309     Description: The ID of Public Subnet 2
310     Value: !Ref PublicSubnet2
311
312   PrivateSubnet1Id:
313     Description: The ID of Private Subnet 1
314     Value: !Ref PrivateSubnet1
315
```

Generate Ctrl+I
Ln 315, Col 1 • Spaces: 2 History

```
main.py MOSTAFA.yaml +
```

```
 312   PrivateSubnet1Id:
313     Description: The ID of Private Subnet 1
314     Value: !Ref PrivateSubnet1
315
316   PrivateSubnet2Id:
317     Description: The ID of Private Subnet 2
318     Value: !Ref PrivateSubnet2
319
320   LoadBalancerDNSName:
321     Description: The DNS name of the ALB
322     Value: !GetAtt ALB.DNSName
323
324   BastionHostPublicIp:
325     Description: Public IP address of the Bastion Host
326     Value: !GetAtt BastionHost.PublicIp
327
```

Ln 294, Col 21 • Spaces: 2 History

AWS Services Search [Alt+S] N. Virginia v vocabs/user3383544=Bilal_Ali @ 9765-3269-0140 ▾

Capacity Reservations

Images AMIs AMI Catalog

Elastic Block Store Volumes Snapshots Lifecycle Manager

Network & Security Security Groups Elastic IPs Placement Groups Key Pairs Network Interfaces

Load Balancing Load Balancers Target Groups Trust Stores New

Auto Scaling Auto Scaling Groups

EC2 Target groups

Target groups (1) Info

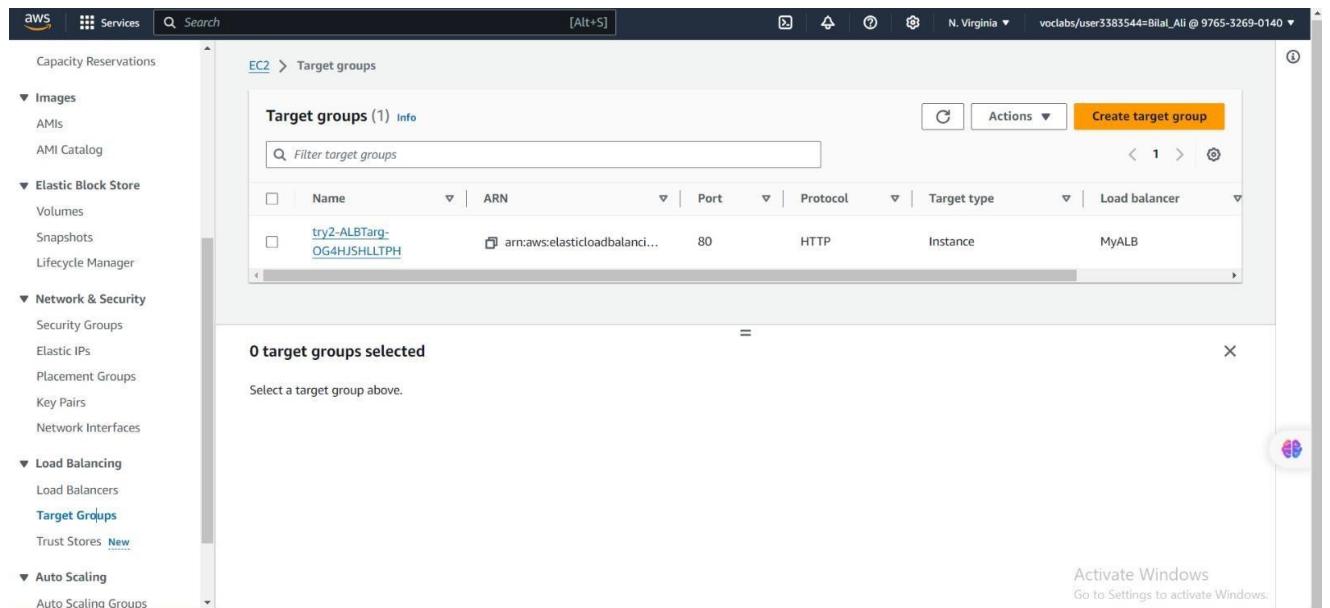
Filter target groups

Name	ARN	Port	Protocol	Target type	Load balancer
try2-ALBTarg-OG4HJSHLTPH	arn:aws:elasticloadbalanci...	80	HTTP	Instance	MyALB

0 target groups selected

Select a target group above.

Activate Windows Go to Settings to activate Windows.



us-east-1.console.aws.amazon.com/ec2/home?region=us-east-1#Instances:

EC2 Dashboard EC2 Global View Events Console-to-Code Preview

Instances Instances Instance Types Launch Templates Spot Requests Savings Plans Reserved Instances Dedicated Hosts Capacity Reservations

Images AMIs AMI Catalog

Elastic Block Store Volumes Snapshots Lifecycle Manager

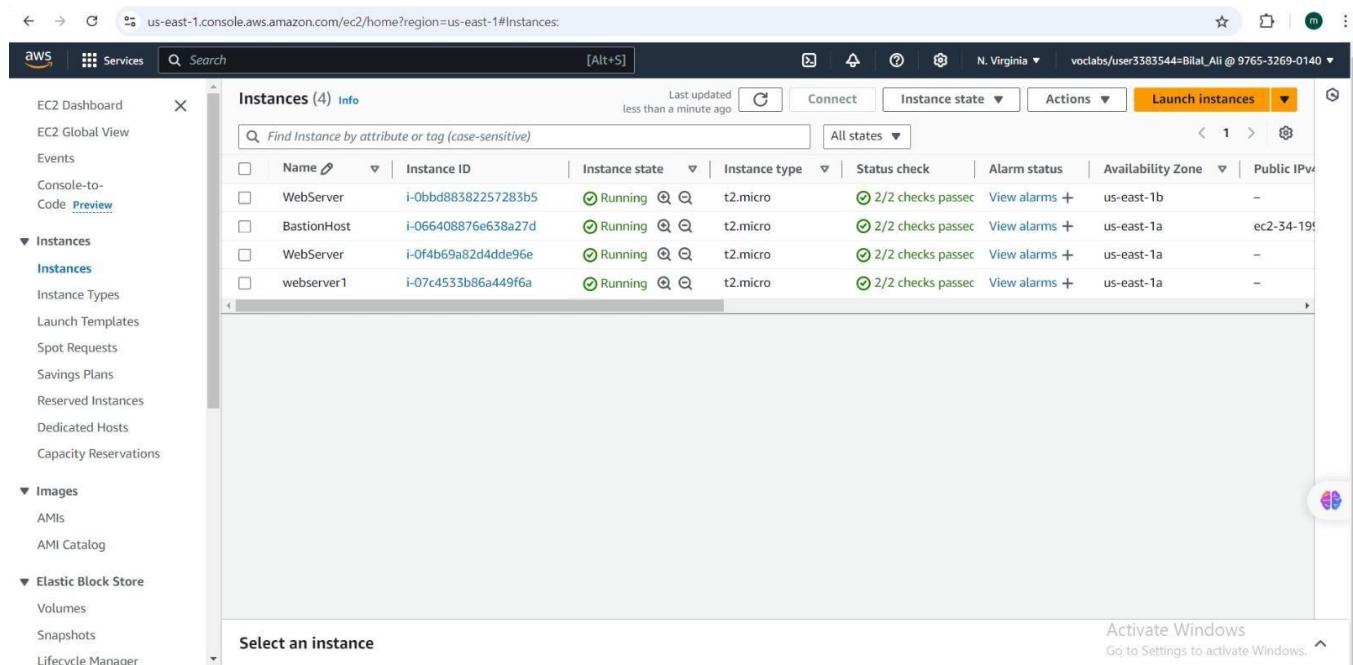
Instances (4) Info Last updated less than a minute ago

Find Instance by attribute or tag (case-sensitive)

Name	Instance ID	Instance state	Instance type	Status check	Alarm status	Availability Zone	Public IPv4
WebServer	i-0bbdb88382257283b5	Running	t2.micro	2/2 checks passed	View alarms +	us-east-1b	-
BastionHost	i-066408876e638a27d	Running	t2.micro	2/2 checks passed	View alarms +	us-east-1a	ec2-34-195
WebServer	i-0f4b69a82d4dde96e	Running	t2.micro	2/2 checks passed	View alarms +	us-east-1a	-
webserver1	i-07c4533b86a449f6a	Running	t2.micro	2/2 checks passed	View alarms +	us-east-1a	-

Select an instance

Activate Windows Go to Settings to activate Windows.



The screenshot shows the AWS Management Console with the EC2 service selected. In the left navigation pane, under the Load Balancing section, 'Target Groups' is selected. The main content area displays a table titled 'Target groups (1)'. The table has columns for Name, ARN, Port, Protocol, Target type, and Load balancer. One row is listed: 'try2-ALBTarg-OG4HJSHLTPH' with ARN 'arn:aws:elasticloadbalancing...', Port '80', Protocol 'HTTP', Target type 'Instance', and Load balancer 'MyALB'. Below the table, a message says '0 target groups selected' and 'Select a target group above.'

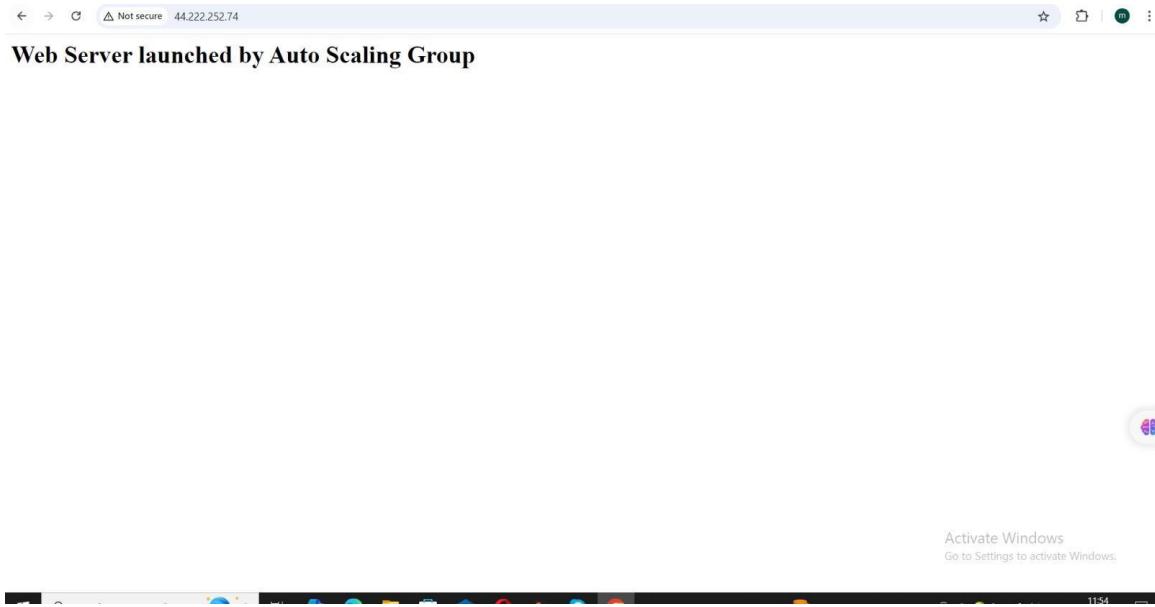
2. Host Web App on EC2 or Using Microservices

Use Amazon EC2 or Amazon ECS/EKS for deploying web apps or containerized microservices.

Use Auto Scaling to ensure high availability and scalability. Deploy Elastic Load Balancers across multiple Availability Zones for redundancy and traffic distribution.

The screenshot shows a web browser window with the title 'Landing Page'. The address bar shows 'Not secure 34.199.78.156'. The main content area displays a landing page with the following sections:

- Welcome to Our Landing Page**: A header with a subtext 'Your tagline or description goes here.'
- Our Gallery**: A section containing two screenshots of software interfaces (possibly AWS services like CloudWatch Metrics or CloudWatch Logs) and a scenic image of a lone tree on a hill at sunset.
- Some additional information about the images or your services.**: A descriptive text block.
- © 2024 Your Company Name. All rights reserved.**: A footer copyright notice.



3. Store App Static Content on External Storage (S3)

Enable S3 Versioning for backup and recovery and use CloudFront as a CDN to improve latency and user experience globally.

A screenshot of a terminal window titled "root@ip-10-0-4-155:/var/www/html". The window contains the code for an "index.html" file, which includes an HTML structure with a header section, a container div with three images, and a footer section. The terminal window has a dark background and uses color-coded syntax highlighting for HTML tags and attributes. The bottom of the window shows a menu bar with various keyboard shortcuts for navigating and editing the file.

```
root@ip-10-0-4-155:/var/www/html
GNU nano 5.8                               index.html
</head>
<body>

<header>
    <h1>Welcome to Our Landing Page</h1>
    <p>Your tagline or description goes here.</p>
</header>

<div class="container">
    <h2>Our Gallery</h2>
    <div class="image-gallery">
        
        
        
    </div>
    <p>Some additional information about the images or your services.</p>
</div>

<footer>
    <p>&copy; 2024 Your Company Name. All rights reserved.</p>
</footer>

</body>
</html>
```

^G Help ^O Write Out ^W Where Is ^K Cut ^T Execute ^C Location M-U Undo
^X Exit ^R Read File ^\ Replace ^U Paste ^J Justify ^/ Go To Line M-E Redo

Objects (6) [Info](#)

[Delete](#) [Actions ▾](#) [Create folder](#)

Objects are the fundamental entities stored in Amazon S3. You can use [Amazon S3 inventory](#) to get a list of all objects in your bucket. For others to access your objects, you'll need to explicitly grant them permissions. [Learn more](#)

[Find objects by prefix](#) [1](#)

<input type="checkbox"/>	Name	Type	Last modified	Size	Storage class
<input type="checkbox"/>	 bastion+ec2.jpg	jpg	September 30, 2024, 13:32:49 (UTC+03:00)	223.8 KB	Standard
<input type="checkbox"/>	 cloudformation.jpg	jpg	September 30, 2024, 13:34:53 (UTC+03:00)	186.3 KB	Standard
<input type="checkbox"/>	 newfile.html	html	October 3, 2024, 17:03:14 (UTC+03:00)	14.0 B	Standard
<input type="checkbox"/>	 OIP (1).jpg	jpg	September 29, 2024, 09:56:52 (UTC+03:00)	23.6 KB	Standard
<input type="checkbox"/>	 OIP (2).jpg	jpg	September 29, 2024, 09:56:51 (UTC+03:00)	33.4 KB	Standard
<input type="checkbox"/>	 OIP.jpg	jpg	September 29, 2024, 09:56:54 (UTC+03:00)	24.9 KB	Standard

4. Secure, Scalable, High Availability, and Disaster Recovery

Use IAM for security, Auto Scaling for scalability, and Multi-AZ deployment for high availability.

← → ⌂ us-east-1.console.aws.amazon.com/ec2/home?region=us-east-1#Instances:

[aws](#) [Services](#) [Search](#) [Alt+S] Last updated [Instance state ▾](#) Actions ▾ Launch instances ▾

Instances (4) [Info](#)

Find Instance by attribute or tag (case-sensitive)

<input type="checkbox"/>	Name	Instance ID	Instance state	Instance type	Status check	Alarm status	Availability Zone	Public IPv4	
<input type="checkbox"/>	WebServer	i-0bbd88382257283b5		t2.micro		2/2 checks passed	View alarms +	us-east-1b	-
<input type="checkbox"/>	BastionHost	i-066408876e638a27d		t2.micro		2/2 checks passed	View alarms +	us-east-1a	ec2-34-191-
<input type="checkbox"/>	WebServer	i-0f4b69a82d4dde96e		t2.micro		2/2 checks passed	View alarms +	us-east-1a	-
<input type="checkbox"/>	webserver1	i-07c4553b86a449f6a		t2.micro		2/2 checks passed	View alarms +	us-east-1a	-

Select an instance

Activate Windows
Go to Settings to activate Windows

Highly available with two availability zones

Successfully initiated termination (deletion) of i-0de0b7d4fca308f65

Instances (1/3) Info

Name	Instance ID	Instance state	Instance type	Status check	Alarm status	Availability Zone	Public IPv4 DNS	Public IP
<input checked="" type="checkbox"/> name	i-0de0b7d4fca308f65	Shutting-d...	t2.micro	-	View alarms +	us-east-1a	ec2-54-242-107-81.co...	54.242.1
<input type="checkbox"/> WebServer	i-00394610b1b17c7ef	Running	t2.micro	2/2 checks passed	View alarms +	us-east-1b	ec2-44-222-252-74.co...	44.222.2
<input type="checkbox"/> WebServer	i-05582471a5d2da396	Running	t2.micro	2/2 checks passed	View alarms +	us-east-1a	ec2-54-165-73-181.co...	54.165.7

i-0de0b7d4fca308f65 (name)

Web server multi-AZ

Auto Scaling groups (1) Info

Name	Launch template/configuration	Instances	Status	Desired capacity	Min	Max	Avai...
<input type="checkbox"/> moatasem- WebServerAutoScalingGroup- FhMhp0EK3eB	WebServerLaunchTemplate Version 1	2	-	2	2	4	us-eas...

Auto scaling

5. Enable Redirection on Load Balancer (HTTP to HTTPS)

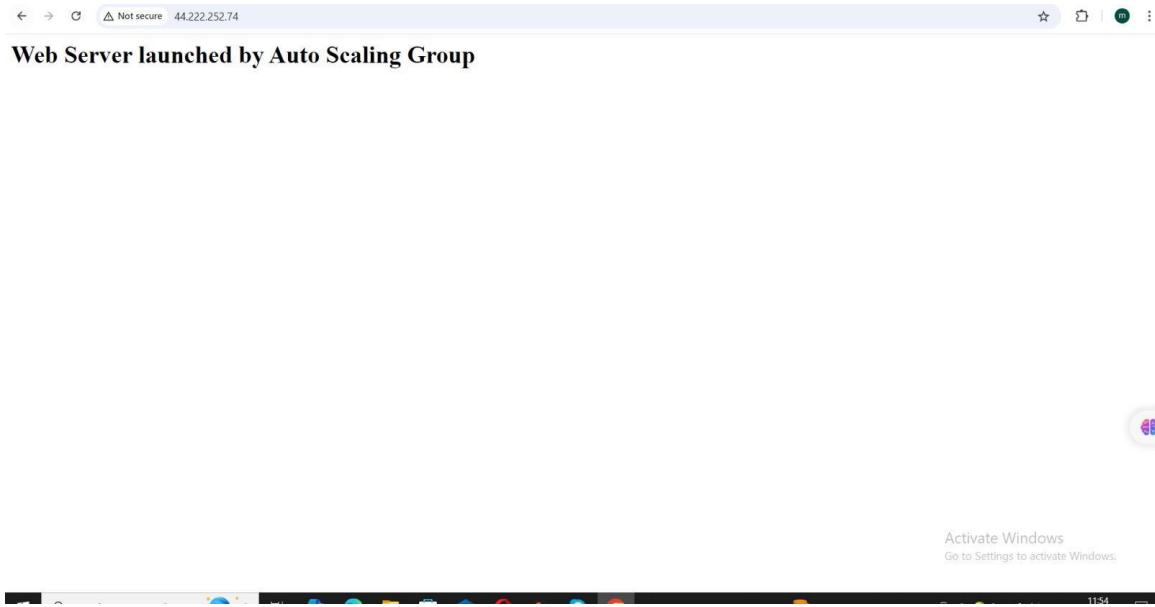
: Use an Application Load Balancer to redirect HTTP requests to HTTPS.

Load balancers (1)

Elastic Load Balancing scales your load balancer capacity automatically in response to changes in incoming traffic.

Name	DNS name	State	VPC ID	Availability Zones	Type	Date created
<input type="checkbox"/> MyALB	MyALB-222611561.us-eas...	Active	vpc-09ba784b0a33a1...	2 Availability Zones	application	September 23, 2024, 0...

Use SSL/TLS certificates self-signed certificate to ensure encrypted communications.



6. Mount S3 on EC2

: Use s3fs or AWS CLI to mount an S3 bucket on your EC2 instance.

```
ec2-user@ip-10-0-4-155:/var/www/html
>Last login: Thu Oct  3 14:32:44 2024 from 41.46.205.232
[ec2-user@ip-10-0-1-61 ~]$ ssh -i labsuser.pem ec2-user@10.0.4.155

A newer release of "Amazon Linux" is available.
  Version 2023.5.20241001:
Run "/usr/bin/dnf check-release-update" for full release and version update info
      #_
      _###_
      Amazon Linux 2023
      _###|
      \#/
      https://aws.amazon.com/linux/amazon-linux-2023
      V~'__>
      /
      ~~~.-
      /_/
      /m/,'

Last login: Thu Oct  3 13:49:42 2024 from 10.0.1.61
[ec2-user@ip-10-0-4-155 ~]$ cd /var/www/html/
[ec2-user@ip-10-0-4-155 html]$ ls
ls: cannot access 'mounted': Permission denied
index.html  mount-s3.rpm  mounted
[ec2-user@ip-10-0-4-155 html]$
```

```
root@ip-10-0-4-155:~# /usr/bin/dnf check-release-update
Run "/usr/bin/dnf check-release-update" for full release and version update info
'          #_
~\_ ##_ Amazon Linux 2023
~~ \###
~~ \|##|
~~ \#/ https://aws.amazon.com/linux/amazon-linux-2023
~~ V~' '-->
~~~ /
~~ .- / /
~/m/,-
Last login: Thu Oct  3 13:49:42 2024 from 10.0.1.61
[ec2-user@ip-10-0-4-155 ~]$ cd /var/www/html/
[ec2-user@ip-10-0-4-155 html]$ ls
ls: cannot access 'mounted': Permission denied
index.html  mount-s3.rpm  mounted
[ec2-user@ip-10-0-4-155 html]$ cd mounted
-bash: cd: mounted: Permission denied
[ec2-user@ip-10-0-4-155 html]$ sudo su
[root@ip-10-0-4-155 html]# cd mounted/
[root@ip-10-0-4-155 mounted]# ls
'OIP (1).jpg'  OIP.jpg      cloudformation.jpg
'OIP (2).jpg'  bastion+ec2.jpg  newfile.html
[root@ip-10-0-4-155 mounted]#
```

user@34.199.78.156