

INFT_2203 Final Project – Part 1 (EC2 ALB VPC & S3)

Objectives:

By the end of this project, you will have demonstrated your ability to:

- Create a VPC, EC2 Web Server, ALB, Target Group
- Back up AMI and add to S3 bucket
- Create and configure an S3 bucket.
- Create an AWS Architectural diagram.

Task 1: (Create VPC and EC2 Resource, Instance backup, Backup Disk, and ALB)

1. Create a VPC with /16 CIDR block:
 - Create four subnets:
 - Two public
 - Two private
 - Create a custom Internet Gateway in the new VPC for public traffic.
 - Ensure to create custom route tables.
 - Create a custom security group that allows access to the instance in your private subnet.
2. Create a low resource EC2 instance in your new VPC as a Web Server:
 - a. Create two EC2 instance for register one in each public subnet
 - i. Add appropriate html page to /var/www/html/register/index.html
 - b. Create two EC2 instance for cart one in each public subnet
 - i. Add appropriate html page to /var/www/html/cart/index.html
 - Ensure the EC2 instance is in the public subnets.
 - keys to the instance.
 - Configure the User Data Ensure:
 - Install an Apache web server (httpd)
 - Configure the web server to automatically start on boot
 - Activate the Web server
 - Create a simple web page
3. Back of the AMI for both register and name EC2
 - a. Take the snapshot of the volume by selecting any running instance.
 - b. **DO NOT Exclude** the root volume and exclude specific data volumes from the snapshot
 - c. Make sure to create a proper tag for the snapshot.
 - d. Create a new AMI using snapshot. Use appropriate setting for AMI.
4. Install an Internet facing ALB
 - a. Create a Target Group that will house your Web Server.
 - i. One Target Group for Register EC2 with proper health check
 - ii. One Target Group for Name EC2 with proper health check.
 - b. Setup ALB for both the above Target Group.
 - i. Make sure you attach both the Target Groups using rules.

(Ensure the ALB has proper security group access)

Tasks 2: (S3 bucket, Versioning, Backup to S3 and Lifecycle policy)

(Every other setting should be default)

5. Create S3 bucket in allowed region.
 - Configure versioning on the bucket.
 - Ensure there is no public access to the bucket.
 - Set a life cycle on the bucket to move files to One-Zone IA after 90 days.
 - Add the AMI that you created in step 3 above to s3.
 - Hint: use Cloudshell to accomplish this. (use YouTube to help you)

Task 3: (Create a Windows Server Host that only your external IP address can interact with)

6. Launch a Windows Server host of your choosing
7. Place it in a public subnet of your choosing
8. Apply a NACL to the subnet that only allows your public IP to interact with the Windows server
9. Google search “what is my IP address” and you should see the IP your ISP gave you, use it in your NACL
10. Test out the RDP connection – Provide a screenshot of the RDP connection and your NACL

Task 4: (Architecture Diagram)

11. Produce an Architectural diagram using official AWS icons for your creation (Tasks 1 – 3).

(tutorial vidoe)

<https://www.youtube.com/watch?v=cLnuMtuTB2M&t=95s>

options:

(draw.io diagram tool link)

<https://app.diagrams.net/?splash=0&libs=aws4>

or

(user PowerPoint)

<https://aws.amazon.com/architecture/icons/>

Submission Task:

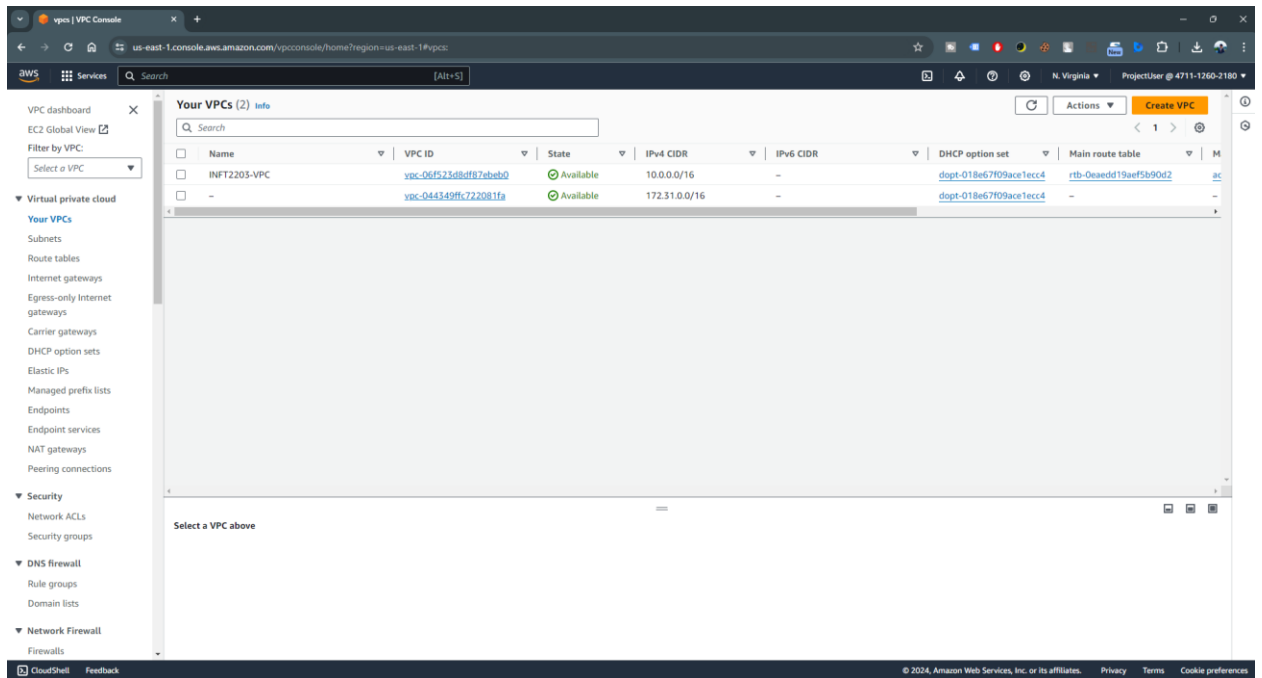
Below screenshot must be submitted.

Each below Item carry 5 marks.

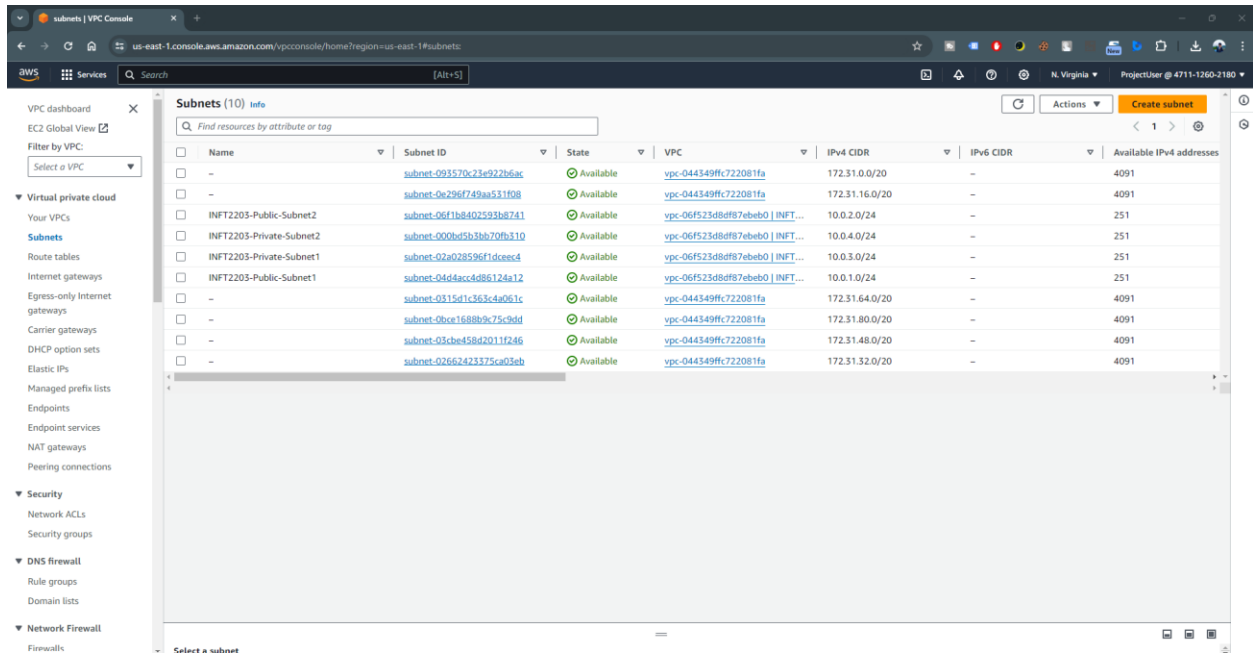
1. As there are 5 students in a group. Please submit details on who worked on which part of the project.

-Worked solo

2. VPC Screenshot



3. All subnet screenshots along with their CIDR blocks



4. All NACLs screenshot that are been used in this project.

Network ACLs (3) Info

Find resources by attribute or tag

| <input type="checkbox"/> | Name | Network ACL ID | Associated with | Default | VPC ID | Inbound rules count | Outbound rules count |
|--------------------------|------|-----------------------|-----------------|---------|-----------------------------------|---------------------|----------------------|
| <input type="checkbox"/> | - | acl-077abeb5c0ee3b9a7 | 2 Subnets | Yes | vpc-06f523d8df87eb0 / INF2203-VPC | 3 Inbound rules | 2 Outbound rules |
| <input type="checkbox"/> | - | acl-03e0c116a8fc0b99d | 6 Subnets | Yes | vpc-044349ffc722081fa | 2 Inbound rules | 2 Outbound rules |
| <input type="checkbox"/> | - | acl-02ef8ea727fb04f41 | 2 Subnets | No | vpc-06f523d8df87eb0 / INF2203-VPC | 2 Inbound rules | 2 Outbound rules |

Select a network ACL

5. All Security Groups screenshot that are been used in this project.

Security Groups (3) Info

Find resources by attribute or tag

| <input type="checkbox"/> | Name | Security group ID | Security group name | VPC ID | Description | Owner |
|--------------------------|------|----------------------|---------------------|-----------------------|--|--------------|
| <input type="checkbox"/> | - | sg-0963f8ca48f016f0d | INF2203-SG-Private | vpc-06f523d8df87eb0 | Security group for private subnet in IN... | 471112602180 |
| <input type="checkbox"/> | - | sg-0b02e59a781f50bda | default | vpc-044349ffc722081fa | default VPC security group | 471112602180 |
| <input type="checkbox"/> | - | sg-05ef86662bb3ff1 | default | vpc-06f523d8df87eb0 | default VPC security group | 471112602180 |

6. Screenshot of all route tables used in this project.

RouteTables | VPC Console

Homepage - 2024111801-01 X | +

us-east-1.console.aws.amazon.com/vpcconsole/home?region=us-east-1#RouteTables

[Alt+S]

Select a VPC

Virtual private cloud

- Your VPCs
- Subnets
- Route tables**
- Internet gateways
- Egress-only Internet gateways
- Carrier gateways
- DHCP option sets
- Elastic IPs
- Managed prefix lists
- Endpoints
- Endpoint services
- NAT gateways
- Peering connections

Security

- Network ACLs
- Security groups

DNS firewall

- Rule groups
- Domain lists

Network Firewall

- Firewalls
- Firewall policies
- Network Firewall rule groups

Route tables (4) info

Find resources by attribute or tag

| <input type="checkbox"/> | Name | Route table ID | Explicit subnet associ... | Edge associations | Main | VPC | Owner ID |
|--------------------------|---------------------|-----------------------|---------------------------|-------------------|------|---------------------------------|--------------|
| <input type="checkbox"/> | INFT2203-Private-RT | rtb-05bfbb6d52fd839e | 2 subnets | - | No | vpc-06f523d8df87ebeb0 INFT... | 471112602180 |
| <input type="checkbox"/> | - | rtb-0eaedd19aef5b90d2 | - | - | Yes | vpc-06f523d8df87ebeb0 INFT... | 471112602180 |
| <input type="checkbox"/> | - | rtb-0f92a3156e5e66818 | - | - | Yes | vpc-044349ffc722081fa | 471112602180 |
| <input type="checkbox"/> | INFT2203-Public-RT | rtb-0d00c7565c51664a3 | 2 subnets | - | No | vpc-06f523d8df87ebeb0 INFT... | 471112602180 |

Select a route table

7. All EC2 instances with their details including which subnet they belong to.

EC2 Dashboard

EC2 Global View

Events

Console-to-Code [Preview](#)

Instances

Instances

Instance TypesLaunch TemplatesSpot RequestsSavings PlansReserved InstancesDedicated HostsCapacityReservations [New](#)

Images

AMIs

AMI Catalog

Elastic Block Store

Volumes

SnapshotsLifecycle Manager

Network & Security

Security Groups

Elastic IPsPlacement GroupsKey Pairs

Instances (1/4) info

Find Instance by attribute or tag (case-sensitive)

All states

| | Name | Instance ID | Instance state | Instance type | Status check | Alarm status | Availability Zone | Public IPv4 DNS | Public IPv4 ... |
|-------------------------------------|-------------------|---------------------|----------------|---------------|-------------------|---------------|-------------------|-----------------|-----------------|
| <input checked="" type="checkbox"/> | INF2203-Cart1 | i-02b2d25d2f4d3e2ec | Running | t2.micro | 2/2 checks passed | View alarms + | us-east-1a | - | 52.0.207.151 |
| <input type="checkbox"/> | INF2203-Register1 | i-06cd95a65a54ef8a7 | Running | t2.micro | 2/2 checks passed | View alarms + | us-east-1a | - | - |
| <input type="checkbox"/> | INF2203-Register2 | i-0cbd1c2a66d574cbd | Running | t2.micro | 2/2 checks passed | View alarms + | us-east-1b | - | - |
| <input type="checkbox"/> | INF2203-Cart2 | i-01cfae447d573c903 | Running | t2.micro | 2/2 checks passed | View alarms + | us-east-1b | - | - |

Instance: i-02b2d25d2f4d3e2ec (INF2203-Cart1)

Details

Status and alarms [New](#)MonitoringSecurityNetworkingStorageTags

Instance summary info

Instance ID

i-02b2d25d2f4d3e2ec (INF2203-Cart1)

Public IPv4 address

52.0.207.151 [open address](#)

Instance state

Running

Private IPv4 addresses

10.0.1.183

IPv6 address

-

Public IPv4 DNS

-

Hostname type

IP name: ip-10-0-1-183.ec2.internal

Private IP DNS name (IPv4 only)

ip-10-0-1-183.ec2.internal

Elastic IP addresses

52.0.207.151 [Public IP]

Answer private resource DNS name

-

Instance type

t2.micro

AWS Compute Optimizer finding

Opt-in to AWS Compute Optimizer for recommendations. [Learn more](#)

Auto-assigned IP address

-

VPC ID

vpc-06f523d8df87ebeb0 (INF2203-VPC)

Auto Scaling Group name

-

IAM Role

-

Subnet ID

subnet-04d4acc4d86124a12 (INF2203-Public-Subnet1)

Instances (1/4) info

Find Instance by attribute or tag (case-sensitive)

All states

| | Name | Instance ID | Instance state | Instance type | Status check | Alarm status | Availability Zone | Public IPv4 DNS | Public IPv4 ... |
|-------------------------------------|-------------------|---------------------|----------------|---------------|-------------------|---------------|-------------------|-----------------|-----------------|
| <input type="checkbox"/> | INF2203-Cart1 | i-02b2d25d2f4d3e2ec | Running | t2.micro | 2/2 checks passed | View alarms + | us-east-1a | - | 52.0.207.151 |
| <input checked="" type="checkbox"/> | INF2203-Register1 | i-06cd95a65a54ef8a7 | Running | t2.micro | 2/2 checks passed | View alarms + | us-east-1a | - | - |
| <input type="checkbox"/> | INF2203-Register2 | i-0cbd1c2a66d574cbd | Running | t2.micro | 2/2 checks passed | View alarms + | us-east-1b | - | - |
| <input type="checkbox"/> | INF2203-Cart2 | i-01cfae447d573c903 | Running | t2.micro | 2/2 checks passed | View alarms + | us-east-1b | - | - |

Instance: i-06cd95a65a54ef8a7 (INF2203-Register1)

Details

Status and alarms [New](#)MonitoringSecurityNetworkingStorageTags

Instance summary info

Instance ID

i-06cd95a65a54ef8a7 (INF2203-Register1)

Public IPv4 address

-

Instance state

Running

Private IPv4 addresses

10.0.1.61

IPv6 address

-

Public IPv4 DNS

-

Hostname type

IP name: ip-10-0-1-61.ec2.internal

Private IP DNS name (IPv4 only)

ip-10-0-1-61.ec2.internal

Elastic IP addresses

-

Answer private resource DNS name

-

Instance type

t2.micro

AWS Compute Optimizer finding

Opt-in to AWS Compute Optimizer for recommendations. [Learn more](#)

Auto-assigned IP address

-

VPC ID

vpc-06f523d8df87ebeb0 (INF2203-VPC)

Auto Scaling Group name

-

IAM Role

-

Subnet ID

subnet-04d4acc4d86124a12 (INF2203-Public-Subnet1)

CloudShell

Feedback

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Instances | EC2 | us-east-1

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

Instances (1/4) info

Find Instance by attribute or tag (case-sensitive) All states

| Name | Instance ID | Instance state | Instance type | Status check | Alarm status | Availability Zone | Public IPv4 DNS | Public IPv4 ... |
|---|---------------------|----------------|---------------|-------------------|--------------|-------------------|-----------------|-----------------|
| <input type="checkbox"/> INF2203-Cart1 | i-02b2d25d2f4d3e2ec | Running | t2.micro | 2/2 checks passed | View alarms | us-east-1a | - | 52.0.207.151 |
| <input type="checkbox"/> INF2203-Register1 | i-06cd95a65a54ef8a7 | Running | t2.micro | 2/2 checks passed | View alarms | us-east-1a | - | - |
| <input checked="" type="checkbox"/> INF2203-Register2 | i-0cbd1c2a66d574cbd | Running | t2.micro | 2/2 checks passed | View alarms | us-east-1b | - | - |
| <input type="checkbox"/> INF2203-Cart2 | i-01fae447d573c903 | Running | t2.micro | 2/2 checks passed | View alarms | us-east-1b | - | - |

Instance: i-0cbd1c2a66d574cbd (INF2203-Register2)

Details Status and alarms new Monitoring Security Networking Storage Tags

Instance summary info

Instance ID i-0cbd1c2a66d574cbd (INF2203-Register2)

IPv6 address -

Hostname type -

IP name: ip-10-0-2-148.ec2.internal

Answer private resource DNS name -

Auto-assigned IP address -

IAM Role -

Public IPv4 address -

Instance state Running

Private IP DNS name (IPv4 only) ip-10-0-2-148.ec2.internal

Instance type t2.micro

VPC ID vpc-06f523d8df87eb0 (INF2203-VPC)

Subnet ID subnet-06f1b8402593b8741 (INF2203-Public-Subnet2)

Private IPv4 addresses 10.0.2.148

Public IPv4 DNS -

Elastic IP addresses -

AWS Compute Optimizer finding Opt-in to AWS Compute Optimizer for recommendations. Learn more

Auto Scaling Group name -

CloudShell Feedback

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Instances | EC2 | us-east-1

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

Instances (1/4) info

Find Instance by attribute or tag (case-sensitive) All states

| Name | Instance ID | Instance state | Instance type | Status check | Alarm status | Availability Zone | Public IPv4 DNS | Public IPv4 ... |
|---|---------------------|----------------|---------------|-------------------|--------------|-------------------|-----------------|-----------------|
| <input type="checkbox"/> INF2203-Cart1 | i-02b2d25d2f4d3e2ec | Running | t2.micro | 2/2 checks passed | View alarms | us-east-1a | - | 52.0.207.151 |
| <input type="checkbox"/> INF2203-Register1 | i-06cd95a65a54ef8a7 | Running | t2.micro | 2/2 checks passed | View alarms | us-east-1a | - | - |
| <input type="checkbox"/> INF2203-Register2 | i-0cbd1c2a66d574cbd | Running | t2.micro | 2/2 checks passed | View alarms | us-east-1b | - | - |
| <input checked="" type="checkbox"/> INF2203-Cart2 | i-01fae447d573c903 | Running | t2.micro | 2/2 checks passed | View alarms | us-east-1b | - | - |

Instance: i-01fae447d573c903 (INF2203-Cart2)

Details Status and alarms new Monitoring Security Networking Storage Tags

Instance summary info

Instance ID i-01fae447d573c903 (INF2203-Cart2)

IPv6 address -

Hostname type -

IP name: ip-10-0-2-132.ec2.internal

Answer private resource DNS name -

Auto-assigned IP address -

IAM Role -

Public IPv4 address -

Instance state Running

Private IP DNS name (IPv4 only) ip-10-0-2-132.ec2.internal

Instance type t2.micro

VPC ID vpc-06f523d8df87eb0 (INF2203-VPC)

Subnet ID subnet-06f1b8402593b8741 (INF2203-Public-Subnet2)

Private IPv4 addresses 10.0.2.132

Public IPv4 DNS -

Elastic IP addresses -

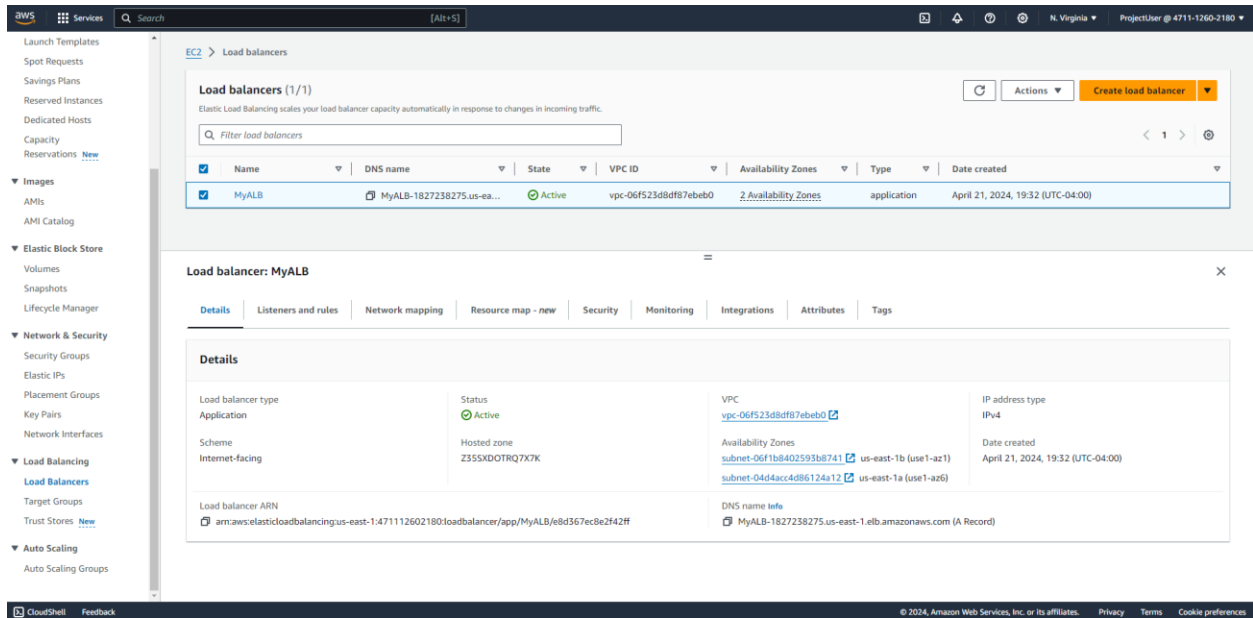
AWS Compute Optimizer finding Opt-in to AWS Compute Optimizer for recommendations. Learn more

Auto Scaling Group name -

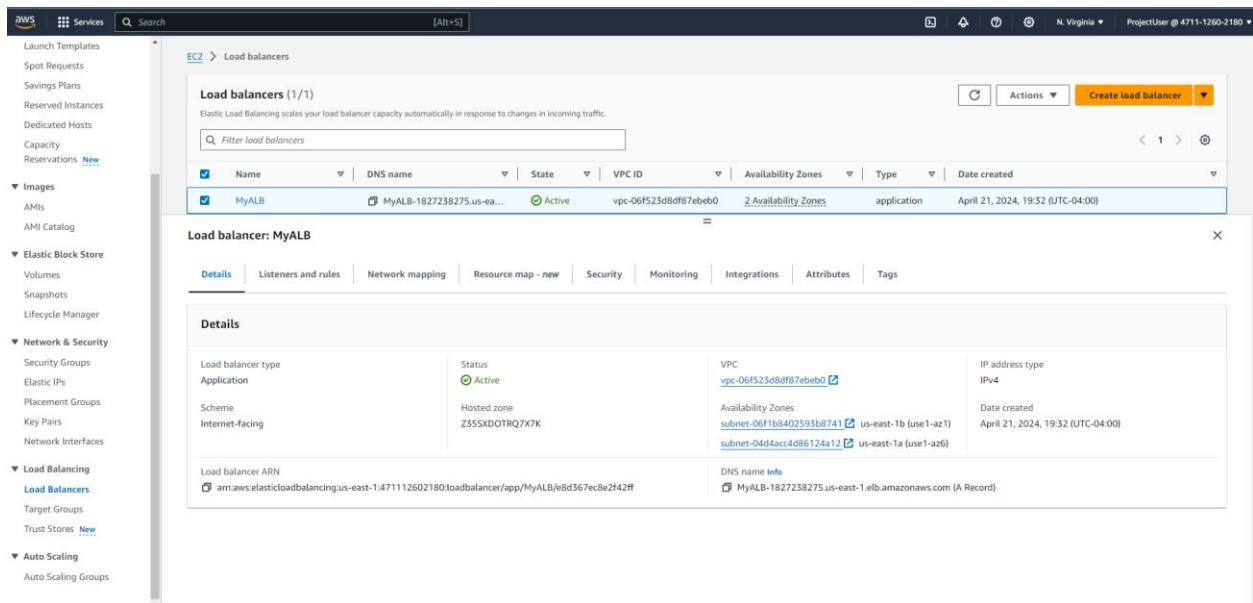
CloudShell Feedback

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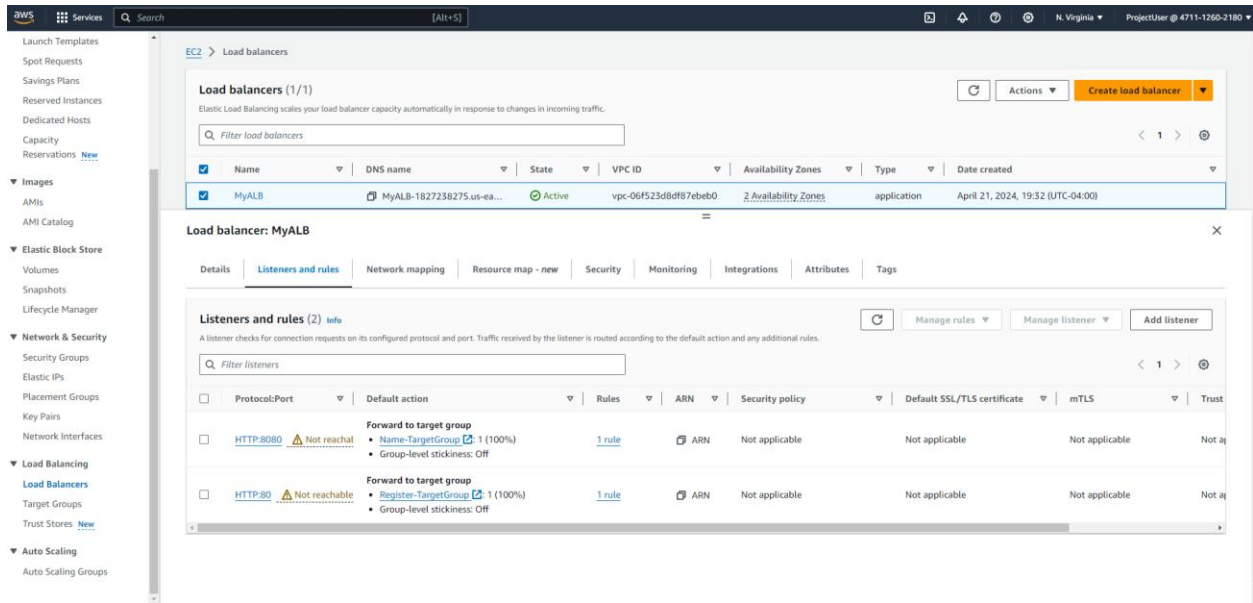
8. Application Load Balancer screenshot with associated Target group.



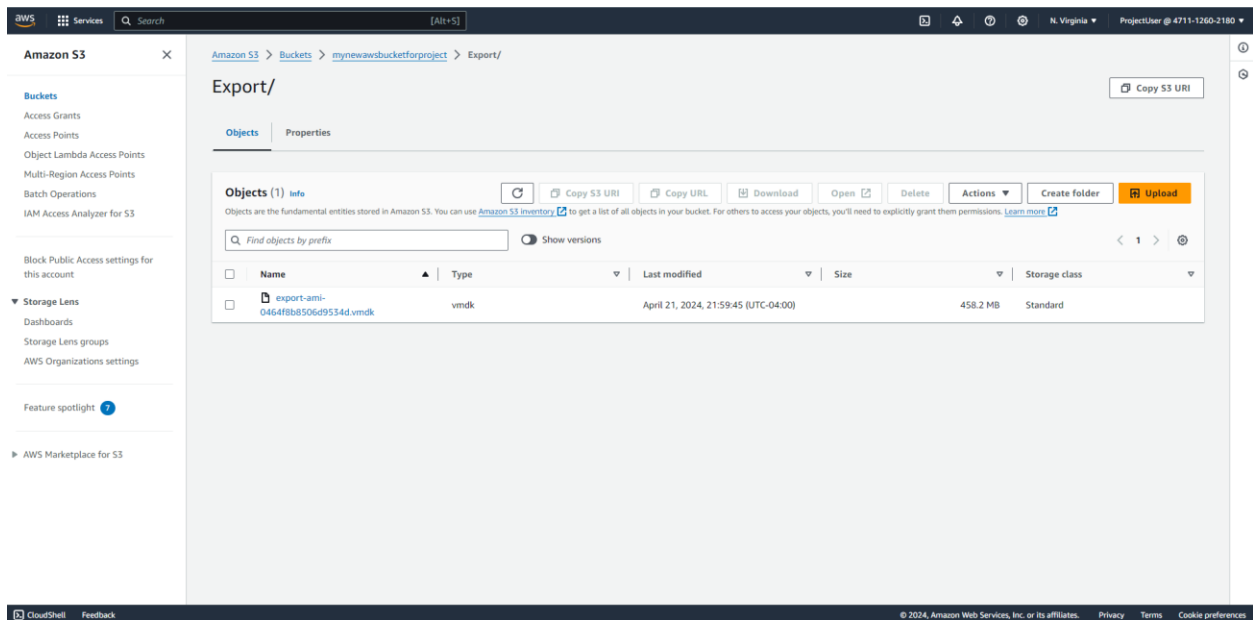
9. Screenshot of register EC2 instances output of HTML using ALB.



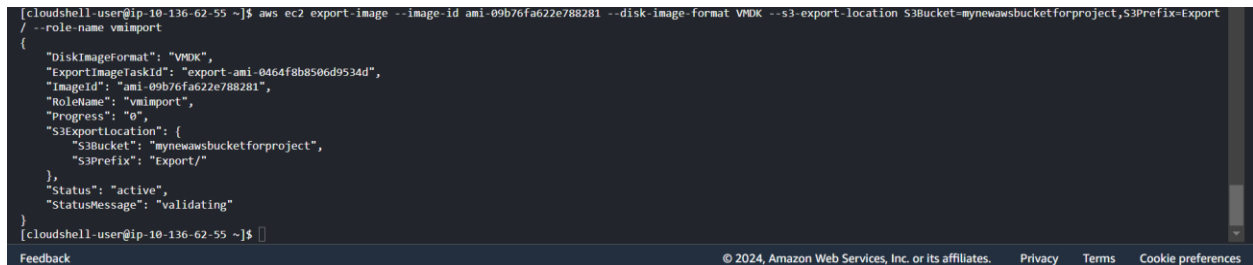
10. Screenshot of rules of Application Load Balancer to handle two Target Groups.



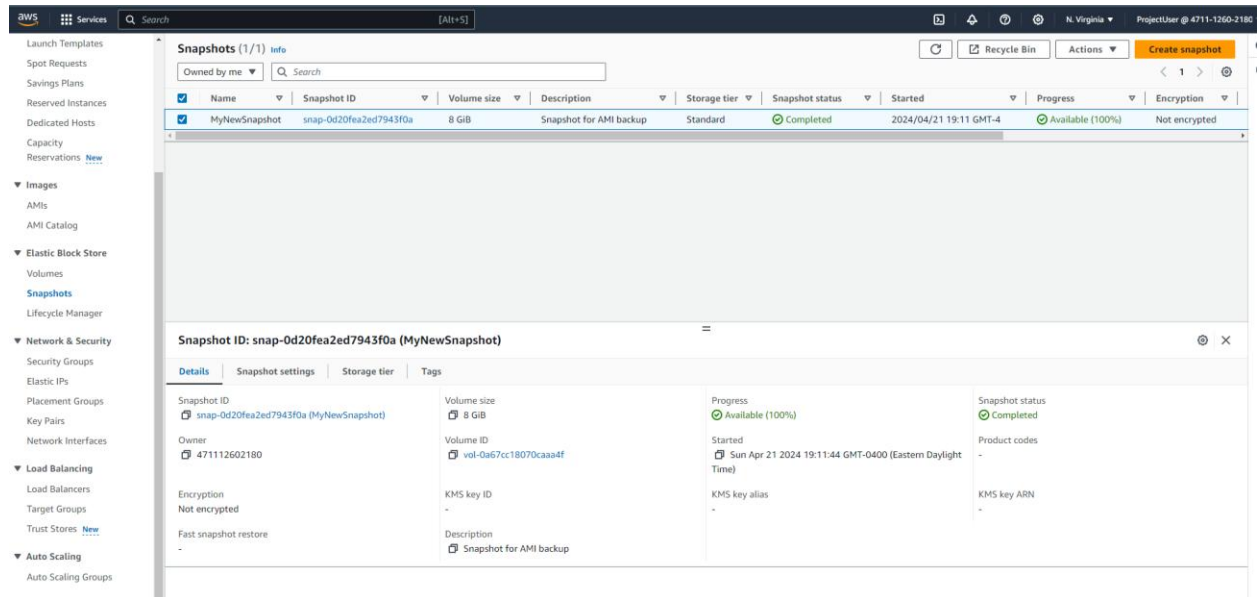
11. Screenshot of S3 bucket that is created with details.



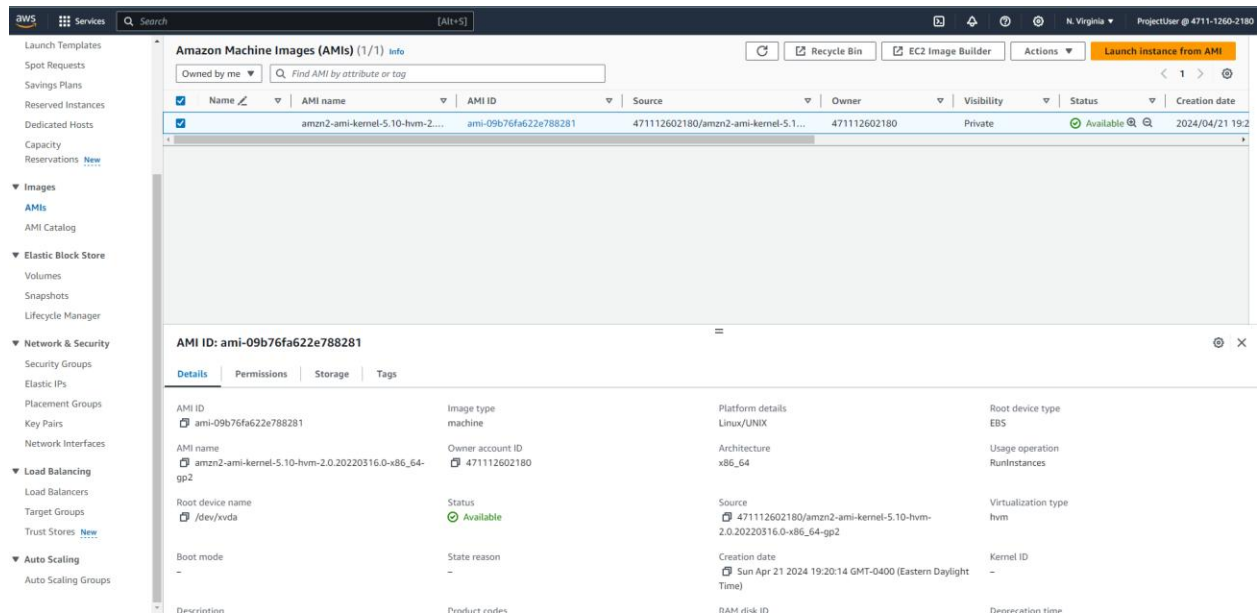
12. Screenshot of Cloudshell with commands that is used to push AMI to S3.



13. Screenshot of Snapshot created from EC2 .



14. Screenshot of AMI created from snapshot.



15. Screenshot of Windows Server RDP access and NACL

16. Architecture Diagram.