

# Lab Assignment-3

## ECSE373L: Cloud Infrastructure and Services

**Name:** Tanvi Penumudy

**Enroll no:** E18CSE187

**Batch:** EB02

**AWS Free Tier Name –** Tanvi

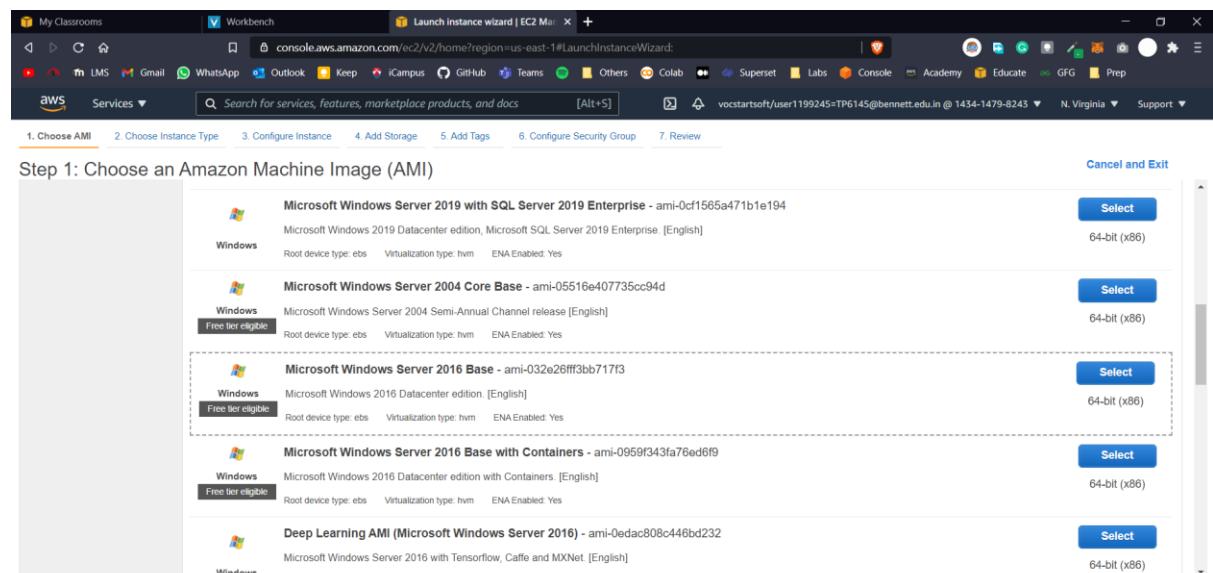
**AWS Educate Console Name –** vocstartsoft/user1199245=TP6145@bennett.edu.in

### Lab Activities:

- **Task 1:** Launch 2 AWS Window R2 base server Instance by selecting general-purpose t2micro instance in different availability zones.
- **Task 2:** Configure both the EC2 web servers.
- **Task 3:** Create Load Balancer and attach both the EC2 server to it.
- **Task 4:** Register EC2 servers and set the target group the Configure and review.
- **Task 5:** Check the working of Load Balancing.
- **Task 6:** Add one more EC2 webserver on existing Load Balancer.
- **Task 7:** Check the proper working of all the three Web servers with proper working.
- **Task 8:** Take the snapshots of all performed tasks and create a doc/pdf of your enrolment number\_lab03 and upload the file on LMS.

### Implementation Screenshots (Step-by-Step):

#### Task 1



**Step 2: Choose an Instance Type**

Amazon EC2 provides a wide selection of instance types optimized to fit different use cases. Instances are virtual servers that can run applications. They have varying combinations of CPU, memory, storage, and networking capacity, and give you the flexibility to choose the appropriate mix of resources for your applications. [Learn more](#) about instance types and how they can meet your computing needs.

Family	Type	vCPUs	Memory (GiB)	Instance Storage (GiB)	EBS-Optimized Available	Network Performance	IPv6 Support
t2	t2.nano	1	0.5	EBS only	-	Low to Moderate	Yes
t2	<b>t2.micro</b> Free tier eligible	1	1	EBS only	-	Low to Moderate	Yes
t2	t2.small	1	2	EBS only	-	Low to Moderate	Yes
t2	t2.medium	2	4	EBS only	-	Low to Moderate	Yes
t2	t2.large	2	8	EBS only	-	Low to Moderate	Yes
t2	t2.xlarge	4	16	EBS only	-	Moderate	Yes
t2	t2.2xlarge	8	32	EBS only	-	Moderate	Yes
t3	t3.nano	2	0.5	EBS only	Yes	Up to 5 Gbps	Yes

**Filter by:** All instance families **Current generation:** ShowHide Columns

**Currently selected:** t2.micro (- ECUs, 1 vCPUs, 2.5 GHz, ~ 1 GiB memory, EBS only)

**Cancel** **Previous** **Review and Launch** **Next: Configure Instance Details**

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**Step 3: Configure Instance Details**

Configure the instance to suit your requirements. You can launch multiple instances from the same AMI, request Spot Instances to take advantage of the lower pricing, assign an access management role to the instance, and more.

Number of instances	1	Launch into Auto Scaling Group
Purchasing option	<input type="checkbox"/> Request Spot Instances	
Network	vpc-1ef35563 (default)	<input type="button"/> Create new VPC
Subnet	subnet-2a5ecf0b   Default in us-east-1a	<input type="button"/> Create new subnet 4091 IP Addresses available
Auto-assign Public IP	Use subnet setting (Enable)	
Placement group	<input type="checkbox"/> Add instance to placement group	
Capacity Reservation	Open	
Domain join directory	No directory	<input type="button"/> Create new directory
IAM role	None	<input type="button"/> Create new IAM role
CPU options	<input type="checkbox"/> Specify CPU options	
Shutdown behavior	Stop	

**Cancel** **Previous** **Review and Launch** **Next: Add Storage**

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**Step 4: Add Storage**

Your instance will be launched with the following storage device settings. You can attach additional EBS volumes and instance store volumes to your instance, or edit the settings of the root volume. You can also attach additional EBS volumes after launching an instance, but not instance store volumes. [Learn more about storage options in Amazon EC2.](#)

Volume Type	Device	Snapshot	Size (GiB)	Volume Type	IOPS	Throughput (MB/s)	Delete on Termination	Encryption
Root	/dev/sda1	snap-0d215df121638fa10	30	General Purpose SSD (gp2)	100 / 3000	N/A	<input checked="" type="checkbox"/>	Not Encrypted

[Add New Volume](#)

Free tier eligible customers can get up to 30 GB of EBS General Purpose (SSD) or Magnetic storage. [Learn more about free usage tier eligibility and usage restrictions.](#)

**Step 6: Configure Security Group**

A security group is a set of firewall rules that control the traffic for your instance. On this page, you can add rules to allow specific traffic to reach your instance. For example, if you want to set up a web server and allow Internet traffic to reach your instance, add rules that allow unrestricted access to the HTTP and HTTPS ports. You can create a new security group or select from an existing one below. [Learn more about Amazon EC2 security groups.](#)

Assign a security group:  Create a new security group  
 Select an existing security group

Security group name:   
 Description: launch-wizard-1 created 2021-02-06T13:27:53.226+05:30

Type	Protocol	Port Range	Source	Description
RDP	TCP	3389	Anywhere	0.0.0.0/0, ::/0 e.g. SSH for Admin Desktop
HTTP	TCP	80	Anywhere	0.0.0.0/0, ::/0 e.g. SSH for Admin Desktop
HTTPS	TCP	443	Anywhere	0.0.0.0/0, ::/0 e.g. SSH for Admin Desktop

[Add Rule](#)

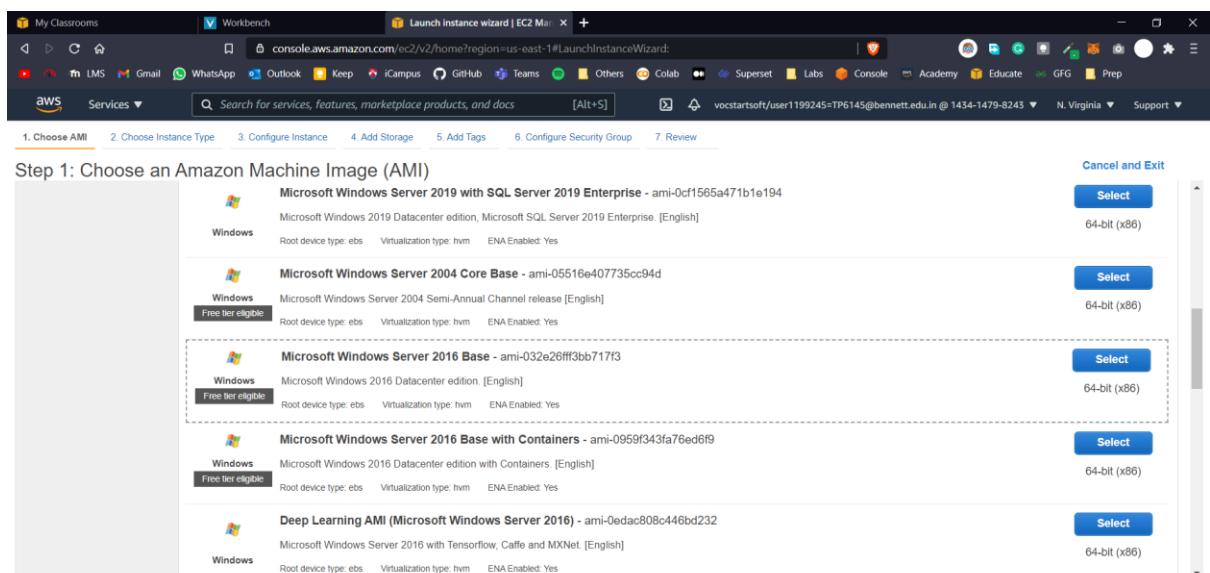
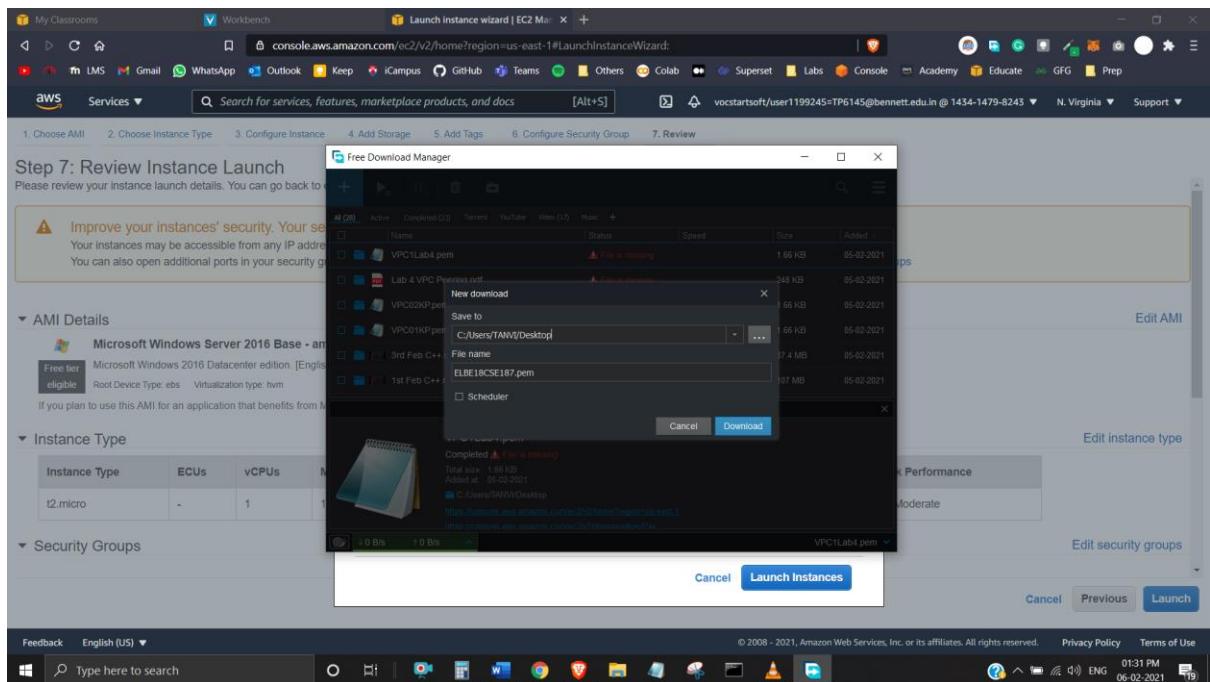
**Warning**  
 Rules with source of 0.0.0.0/0 allow all IP addresses to access your instance. We recommend setting security group rules to allow access from known IP addresses only.

[Cancel](#) [Previous](#) [Review and Launch](#)

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**Step 2: Choose an Instance Type**

Amazon EC2 provides a wide selection of instance types optimized to fit different use cases. Instances are virtual servers that can run applications. They have varying combinations of CPU, memory, storage, and networking capacity, and give you the flexibility to choose the appropriate mix of resources for your applications. [Learn more](#) about instance types and how they can meet your computing needs.

Filter by: All instance families ▾ Current generation ▾ Show/Hide Columns

Currently selected: t2.micro (- ECUs, 1 vCPUs, 2.5 GHz, ~ 1 GiB memory, EBS only)

	Family	Type	vCPUs	Memory (GiB)	Instance Storage (GiB)	EBS-Optimized Available	Network Performance	IPv6 Support
<input type="checkbox"/>	t2	t2.nano	1	0.5	EBS only	-	Low to Moderate	Yes
<input checked="" type="checkbox"/>	t2	t2.micro Free tier eligible	1	1	EBS only	-	Low to Moderate	Yes
<input type="checkbox"/>	t2	t2.small	1	2	EBS only	-	Low to Moderate	Yes
<input type="checkbox"/>	t2	t2.medium	2	4	EBS only	-	Low to Moderate	Yes
<input type="checkbox"/>	t2	t2.large	2	8	EBS only	-	Low to Moderate	Yes
<input type="checkbox"/>	t2	t2.xlarge	4	16	EBS only	-	Moderate	Yes
<input type="checkbox"/>	t2	t2.2xlarge	8	32	EBS only	-	Moderate	Yes
<input type="checkbox"/>	t3	t3.nano	2	0.5	EBS only	Yes	Up to 5 Gbps	Yes

Cancel Previous Review and Launch Next: Configure Instance Details

**Step 3: Configure Instance Details**

Configure the instance to suit your requirements. You can launch multiple instances from the same AMI, request Spot instances to take advantage of the lower pricing, assign an access management role to the instance, and more.

Number of instances: 1 Launch into Auto Scaling Group

Purchasing option: Request Spot Instances

Network: vpc-1ef35563 (default) Create new VPC

Subnet: subnet-b04913fd | Default in us-east-1b Create new subnet  
4091 IP Addresses available

Auto-assign Public IP: Use subnet setting (Enable)

Placement group: Add instance to placement group

Capacity Reservation: Open

Domain join directory: No directory Create new directory

IAM role: None Create new IAM role

CPU options: Specify CPU options

Shutdown behavior: Stop

Cancel Previous Review and Launch Next: Add Storage



1. Choose AMI   2. Choose Instance Type   3. Configure Instance   4. Add Storage   5. Add Tags   6. Configure Security Group   7. Review

#### Step 4: Add Storage

Your instance will be launched with the following storage device settings. You can attach additional EBS volumes and instance store volumes to your instance, or edit the settings of the root volume. You can also attach additional EBS volumes after launching an instance, but not instance store volumes. [Learn more about storage options in Amazon EC2.](#)

Volume Type	Device	Snapshot	Size (GiB)	Volume Type	IOPS	Throughput (MB/s)	Delete on Termination	Encryption
Root	/dev/sda1	snap-0d215df121638fa10	30	General Purpose SSD (gp2)	100 / 3000	N/A	<input checked="" type="checkbox"/>	Not Encrypted

[Add New Volume](#)

Free tier eligible customers can get up to 30 GB of EBS General Purpose (SSD) or Magnetic storage. [Learn more about free usage tier eligibility and usage restrictions.](#)

[Cancel](#) [Previous](#) [Review and Launch](#) [Next: Add Tags](#)

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#### Step 6: Configure Security Group

A security group is a set of firewall rules that control the traffic for your instance. On this page, you can add rules to allow specific traffic to reach your instance. For example, if you want to set up a web server and allow Internet traffic to reach your instance, add rules that allow unrestricted access to the HTTP and HTTPS ports. You can create a new security group or select from an existing one below. [Learn more about Amazon EC2 security groups.](#)

Assign a security group:  Create a new security group  
 Select an existing security group

Security Group ID	Name	Description	Actions
<input type="checkbox"/> sg-772047ff	default	default VPC security group	<a href="#">Copy to new</a>
<input checked="" type="checkbox"/> sg-0a178c83cc2d3b144	ELB E18CSE187	launch-wizard-1 created 2021-02-06T13:27:53.226+05:30	<a href="#">Copy to new</a>

Inbound rules for sg-0a178c83cc2d3b144 (Selected security groups: sg-0a178c83cc2d3b144)

Type	Protocol	Port Range	Source	Description
HTTP	TCP	80	0.0.0.0/0	
HTTP	TCP	80	::/0	
RDP	TCP	3389	0.0.0.0/0	

[Cancel](#) [Previous](#) [Review and Launch](#)

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**Step 7: Review Instance Launch**

Please review your instance launch details. You can go back to edit changes for each section. Click **Launch** to assign a key pair to your instance and complete the launch process.

**Select an existing key pair or create a new key pair**

A key pair consists of a **public key** that AWS stores, and a **private key file** that you store. Together, they allow you to connect to your instance securely. For Windows AMIs, the private key file is required to obtain the password used to log into your instance. For Linux AMIs, the private key file allows you to securely SSH into your instance.

Note: The selected key pair will be added to the set of keys authorized for this instance. Learn more about [removing existing key pairs from a public AMI](#).

Choose an existing key pair  
Select a key pair  
[ELB E18CSE187]

I acknowledge that I have access to the selected private key file (ELB E18CSE187.pem), and that without this file, I won't be able to log into my instance.

**Cancel** **Launch Instances**

**AMI Details**

**Microsoft Windows Server 2016 Base - ami**  
Free tier eligible  
Root Device Type: ebs Virtualization type: hvm

If you plan to use this AMI for an application that benefits from Microsoft's security and compliance features, consider using the Microsoft Windows Server 2016 Datacenter edition.

**Instance Type**

Instance Type	ECUs	vCPUs	Memory (GiB)
t2.micro	-	1	1

**Security Groups**

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**Instances | EC2 Management Con**

**Instances (2) Info**

Name	Instance ID	Instance state	Instance type	Status check	Alarm status	Availability Zone	Public IP
E18CSE187 Server A	i-06af1dabbe5f56d6d0	Running	t2.micro	2/2 checks ...	1 alarm... +	us-east-1a	ec2-10C...
E18CSE187 Server B	i-00166bb2798c220a1	Running	t2.micro	Initializing	1/1 h... +	us-east-1b	ec2-3-9...

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Screenshot of the AWS Management Console showing the "Change security groups" dialog for an EC2 instance.

The dialog shows the following details:

- Instance details:** Instance ID: i-06af1dabef56d6d0 (E18CSE187 Server A), Network interface ID: eni-06a978782e4afc5eb
- Associated security groups:** Security group associated with the network interface (eni-06a978782e4afc5eb): default (sg-f72047ff)

Buttons at the bottom: Cancel, Save.

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Screenshot of the AWS Management Console showing the "Change security groups" dialog for another EC2 instance.

The dialog shows the following details:

- Instance details:** Instance ID: i-00166bb2798c220a1 (E18CSE187 Server B), Network interface ID: eni-09575f35900794bf7
- Associated security groups:** Security group associated with the network interface (eni-09575f35900794bf7): default (sg-f72047ff)

Buttons at the bottom: Cancel, Save.

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Inbound rules control the incoming traffic that's allowed to reach the instance.

**Inbound rules** [Info](#)

Type	Protocol	Port range	Source	Description - optional
All traffic	All	All	Anywhere	
RDP	TCP	3389	Anywhere	
HTTP	TCP	80	Anywhere	

[Add rule](#)

**NOTE:** Any edits made on existing rules will result in the edited rule being deleted and a new rule created with the new details. This will cause traffic that depends on that rule to be dropped for a very brief period of time until the new rule can be created.

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## Task 2

Connect to instance [Info](#)

Connect to your instance i-00166bb2798c220a1 (E10CSE187 Server B) using any of these options

[Session Manager](#) [RDP client](#)

You can connect to your Windows instance using a remote desktop client of your choice, and by downloading and running the RDP shortcut file below:

[Download remote desktop file](#)

When prompted, connect to your instance using the following details:

Public DNS: [ec2-3-90-179-150.compute-1.amazonaws.com](#) User name: [Administrator](#)

Password: [Password copied](#) [/@ac-r-p5L](#)

If you've joined your instance to a directory, you can use your directory credentials to connect to your instance.

E10CSE187 Server B - ec2-3-90-179-150.compute-1.amazonaws.com - Remote Desktop...

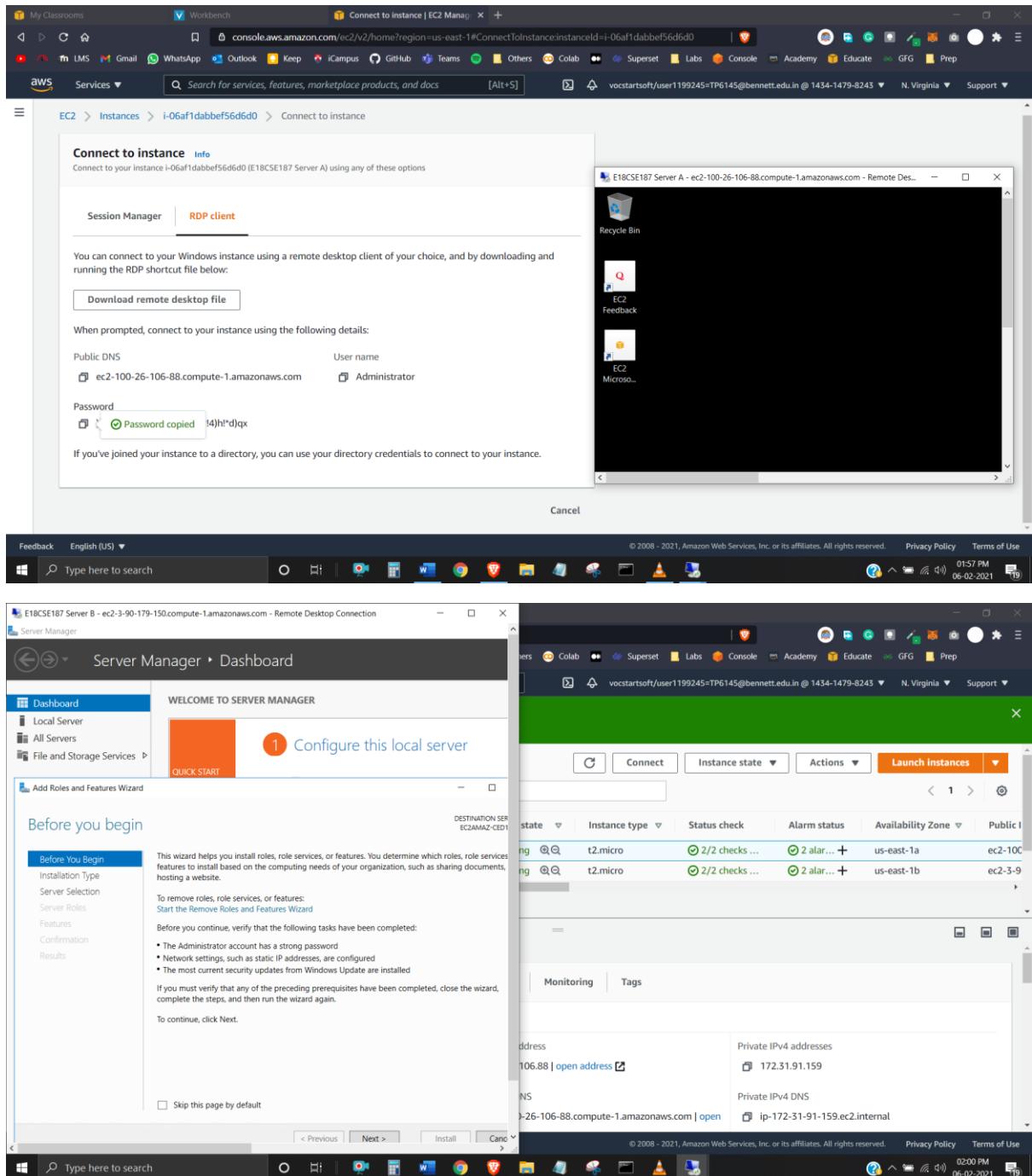
Recycle Bin

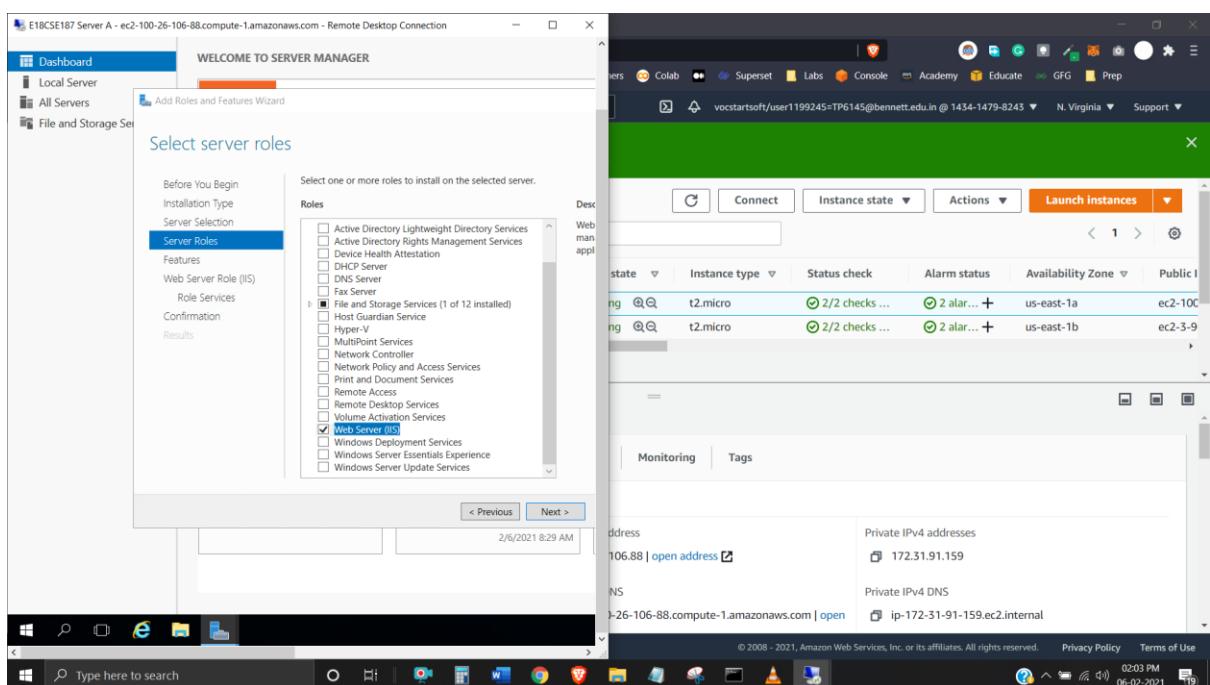
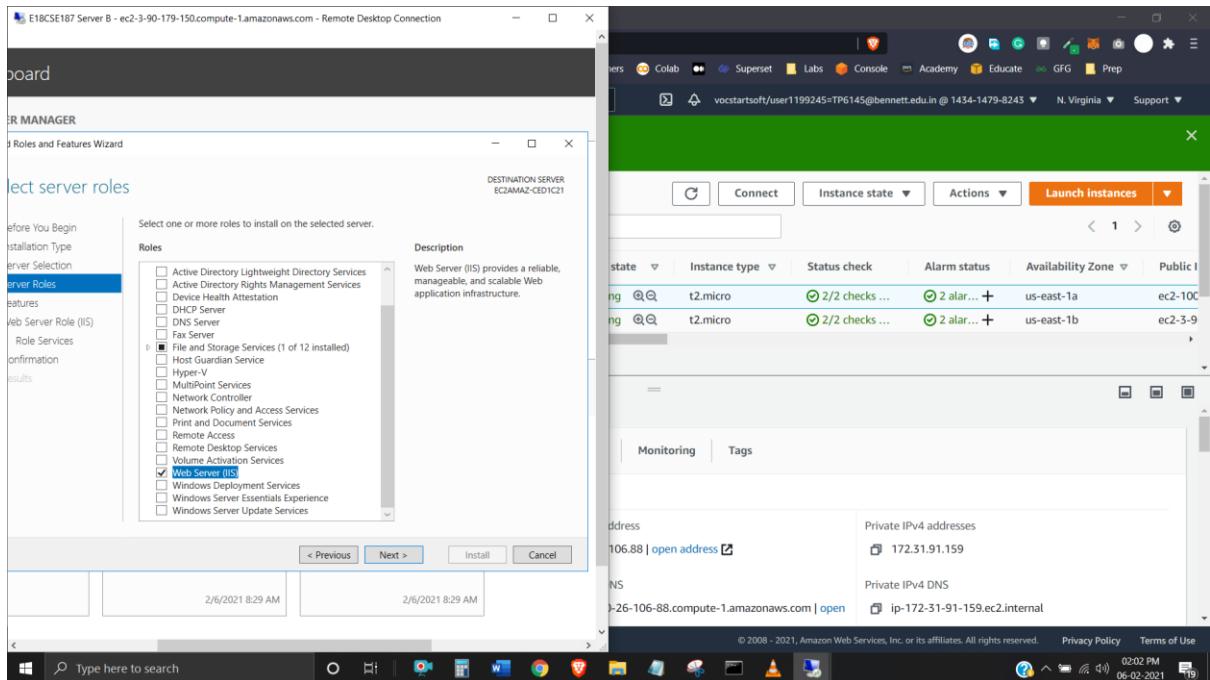
EC2 Feedback

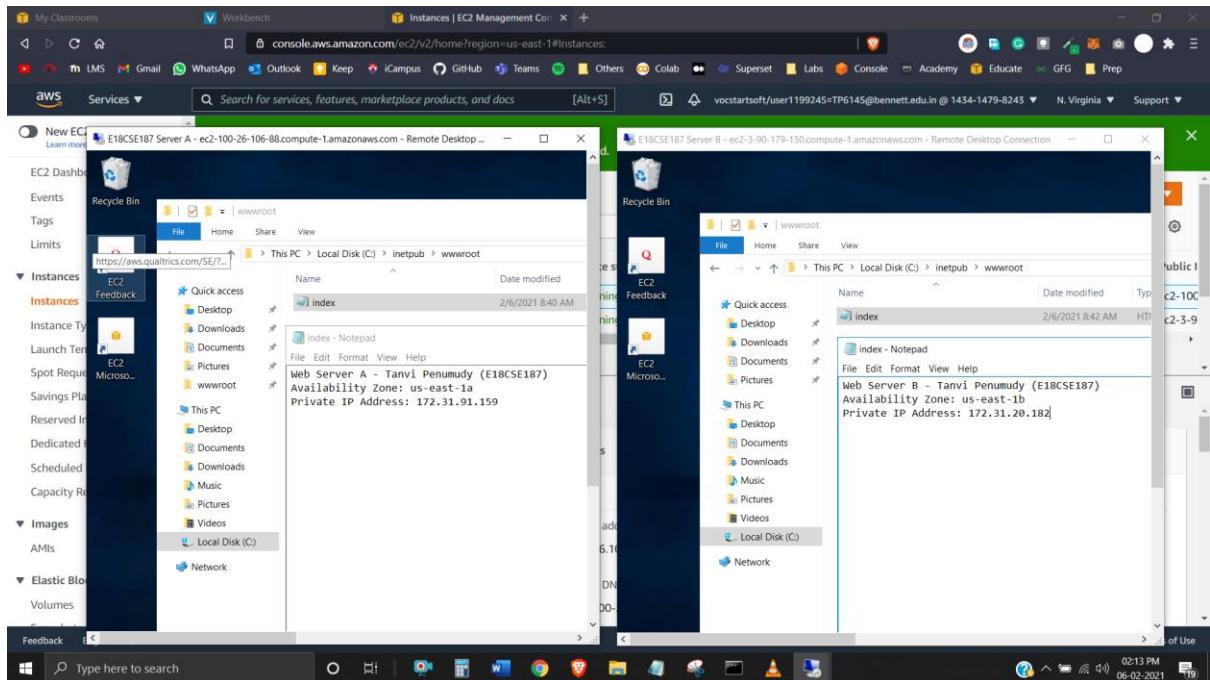
EC2 Microsoft...

Cancel

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## Task 3 & 4

Select load balancer type

Elastic Load Balancing supports four types of load balancers: Application Load Balancers, Network Load Balancers, Gateway Load Balancers, and Classic Load Balancers. Choose the load balancer type that meets your needs. Learn more about which load balancer is right for you.

**Application Load Balancer**

**Create**

Choose an Application Load Balancer when you need a flexible feature set for your web applications with HTTP and HTTPS traffic. Operating at the request level, Application Load Balancers provide advanced routing and visibility features targeted at application architectures, including microservices and containers.

[Learn more >](#)

**Network Load Balancer**

**Create**

Choose a Network Load Balancer when you need ultrahigh performance, TLS offloading at scale, centralized certificate deployment, support for UDP, and static IP addresses for your application. Operating at the connection level, Network Load Balancers are capable of handling millions of requests per second securely while maintaining ultra-low latencies.

[Learn more >](#)

**Gateway Load Balancer**

**Create**

Choose a Gateway Load Balancer when you need to deploy and manage a fleet of third-party virtual appliances that support GENEVE. These appliances enable you to improve security, compliance, and policy controls.

[Learn more >](#)

**Classic Load Balancer**

[Cancel](#)

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console.aws.amazon.com/e2/v2/home?region=us-east-1#V2CreateELBWizard?type=application: |

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1. Configure Load Balancer 2. Configure Security Settings 3. Configure Security Groups 4. Configure Routing 5. Register Targets 6. Review

## Step 1: Configure Load Balancer

### Basic Configuration

To configure your load balancer, provide a name, select a scheme, specify one or more listeners, and select a network. The default configuration is an Internet-facing load balancer in the selected network with a listener that receives HTTP traffic on port 80.

Name: E18CSE187ELB

Scheme: Internet-facing (radio button selected)

IP address type: ipv4

### Listeners

A listener is a process that checks for connection requests, using the protocol and port that you configured.

Load Balancer Protocol	Load Balancer Port
HTTP	80

Add listener

### Availability Zones

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console.aws.amazon.com/ec2/v2/home?region=us-east-1#V2CreateELBWizard?type=application:

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1. Configure Load Balancer 2. Configure Security Settings 3. Configure Security Groups 4. Configure Routing 5. Register Targets 6. Review

## Step 1: Configure Load Balancer

### Availability Zones

Specify the Availability Zones to enable for your load balancer. The load balancer routes traffic to the targets in these Availability Zones only. You can specify only one subnet per Availability Zone. You must specify subnets from at least two Availability Zones to increase the availability of your load balancer.

VPC vpc-1ef35563 (172.31.0.0/16) (default)

Availability Zones	Subnet
<input checked="" type="checkbox"/> us-east-1a	subnet-2a5ecf0b
<input checked="" type="checkbox"/> us-east-1b	subnet-b04913fd
<input type="checkbox"/> us-east-1c	subnet-7ceb7c23
<input type="checkbox"/> us-east-1d	subnet-75ce4413
<input type="checkbox"/> us-east-1e	subnet-b069b781
<input type="checkbox"/> us-east-1f	subnet-94410d9a

Cancel Next: Configure Security Settings

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1. Configure Load Balancer 2. Configure Security Settings 3. Configure Security Groups 4. Configure Routing 5. Register Targets 6. Review

### Step 3: Configure Security Groups

A security group is a set of firewall rules that control the traffic to your load balancer. On this page, you can add rules to allow specific traffic to reach your load balancer. First, decide whether to create a new security group or select an existing one.

Assign a security group  Create a new security group  Select an existing security group

Filter VPC security groups

Security Group ID	Name	Description	Actions
<input checked="" type="checkbox"/> sg-f72047ff	default	default VPC security group	<a href="#">Copy to new</a>
<input type="checkbox"/> sg-0a178c83cc2d3b144	ELB E18CSE187	launch-wizard-1 created 2021-02-06T13:27:53.226+05:30	<a href="#">Copy to new</a>

Cancel Previous Next: Configure Routing

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1. Configure Load Balancer 2. Configure Security Settings 3. Configure Security Groups 4. Configure Routing 5. Register Targets 6. Review

## Step 4: Configure Routing

Your load balancer routes requests to the targets in this target group using the protocol and port that you specify, and performs health checks on the targets using these health check settings. The target group you specify in this step will apply to all of the listeners configured on this load balancer; you can edit the listeners and add listeners after the load balancer is created.

### Target group

Target group

Name

Target type  Instance  IP  Lambda function

Protocol

Port

Protocol version  HTTP1 Send requests to targets using HTTP/1.1. Supported when the request protocol is HTTP/1.1 or HTTP/2.  
 HTTP2 Send requests to targets using HTTP/2. Supported when the request protocol is HTTP/2 or gRPC, but gRPC-specific features are not available.  
 gRPC Send requests to targets using gRPC. Supported when the request protocol is gRPC.

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1. Configure Load Balancer 2. Configure Security Settings 3. Configure Security Groups 4. Configure Routing 5. Register Targets 6. Review

**Step 5: Register Targets**

**Registered targets**

To deregister instances, select one or more registered instances and then click Remove.

Remove

Instance	Name	Port	State	Security groups	Zone
i-06af1dabbe56d6d0	E18CSE187 Server A	80	running	default	us-east-1a
i-00166bb2798c220a1	E18CSE187 Server B	80	running	default	us-east-1b

**Instances**

To register additional instances, select one or more running instances, specify a port, and then click Add. The default port is the port specified for the target group. If the instance is already registered on the specified port, you must specify a different port.

Add to registered on port 80

Search Instances

Instance	Name	State	Security groups	Zone	Subnet ID	Subnet CIDR
i-06af1dabbe56d6d0	E18CSE187 Server A	running	default	us-east-1a	subnet-2a5ecf0b	172.31.80.0/20
i-00166bb2798c220a1	E18CSE187 Server B	running	default	us-east-1b	subnet-b04913fd	172.31.16.0/20

Cancel Previous Next: Review

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### Load Balancer Creation Status

- Successfully created load balancer  
Load balancer E18CSE187ELB was successfully created.  
Note: It might take a few minutes for your load balancer to be fully set up and ready to route traffic, and for the targets to complete the registration process and pass the initial health checks.
- Suggested next steps
- Discover other services that you can integrate with your load balancer. Visit the [Integrated services](#) tab within E18CSE187ELB.
  - Consider using AWS Global Accelerator to further improve the availability and performance of your applications. [AWS Global Accelerator console](#)

[Close](#)

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console.aws.amazon.com/ec2/v2/home?region=us-east-1#LoadBalancers:sort=loadBalancerName

Scheduled Instances Capacity Reservations

Images AMIs

Elastic Block Store Volumes Snapshots Lifecycle Manager

Network & Security Security Groups New

Elastic IPs New Placement Groups Key Pairs Network Interfaces New

Load Balancing Load Balancers Target Groups New

Auto Scaling Launch Configurations Auto Scaling Groups

Create Load Balancer Actions

Filter by tags and attributes or search by keyword

Name	DNS name	State	VPC ID	Availability Zones	Type	Created
E18CSE187ELB	E18CSE187ELB-113843150...	provisioning	vpc-1ef35563	us-east-1a, us-east-1b	application	February

Load balancer: E18CSE187ELB

Description Listeners Monitoring Integrated services Tags

Basic Configuration

Name	E18CSE187ELB
ARN	arn:aws:elasticloadbalancing:us-east-1:143414798243:loadbalancer/app/E18CSE187ELB/b17b677b9fca24c8

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Feedback English (US)

Type here to search

The screenshot shows the AWS EC2 Management Console interface. On the left, there's a navigation sidebar with links for Scheduled Instances, Capacity Reservations, Images, AMIs, 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, Auto Scaling, Launch Configurations, and Auto Scaling Groups. The main content area shows a table of existing load balancers. One row is selected, showing details like Name (E18CSE187ELB), DNS name (E18CSE187ELB-113843150...), State (provisioning), VPC ID (vpc-1ef35563), Availability Zones (us-east-1a, us-east-1b), Type (application), and Creation date (February). Below the table, a specific load balancer configuration is shown with tabs for Description, Listeners, Monitoring, Integrated services, and Tags. The 'Basic Configuration' section includes fields for Name, ARN, DNS name (E18CSE187ELB-1138431504.us-east-1.elb.amazonaws.com), State (active), Type (application), Scheme (internet-facing), and IP address type (IPv4). The status bar at the bottom indicates the session is from vocstartsoft/user1199245=TP6145@bennett.edu.in @ 1434-1479-8243, location N. Virginia, and the date/time is 06-02-2021 02:31 PM.

My Classrooms Workbench EC2 Management Console

console.aws.amazon.com/ec2/v2/home?region=us-east-1#LoadBalancers:sort=loadBalancerName

Scheduled Instances Capacity Reservations

Images AMIs

Elastic Block Store Volumes Snapshots Lifecycle Manager

Network & Security Security Groups New

Elastic IPs New Placement Groups Key Pairs Network Interfaces New

Load Balancing Load Balancers Target Groups New

Auto Scaling Launch Configurations Auto Scaling Groups

Create Load Balancer Actions

Filter by tags and attributes or search by keyword

Name	DNS name	State	VPC ID	Availability Zones	Type	Created
E18CSE187ELB	E18CSE187ELB-113843150...	active	vpc-1ef35563	us-east-1a, us-east-1b	application	February

Load balancer: E18CSE187ELB

Description Listeners Monitoring Integrated services Tags

Basic Configuration

Name	E18CSE187ELB
ARN	arn:aws:elasticloadbalancing:us-east-1:143414798243:loadbalancer/app/E18CSE187ELB/b17b677b9fca24c8
DNS name	E18CSE187ELB-1138431504.us-east-1.elb.amazonaws.com (A Record)
State	active
Type	application
Scheme	internet-facing
IP address type	IPv4

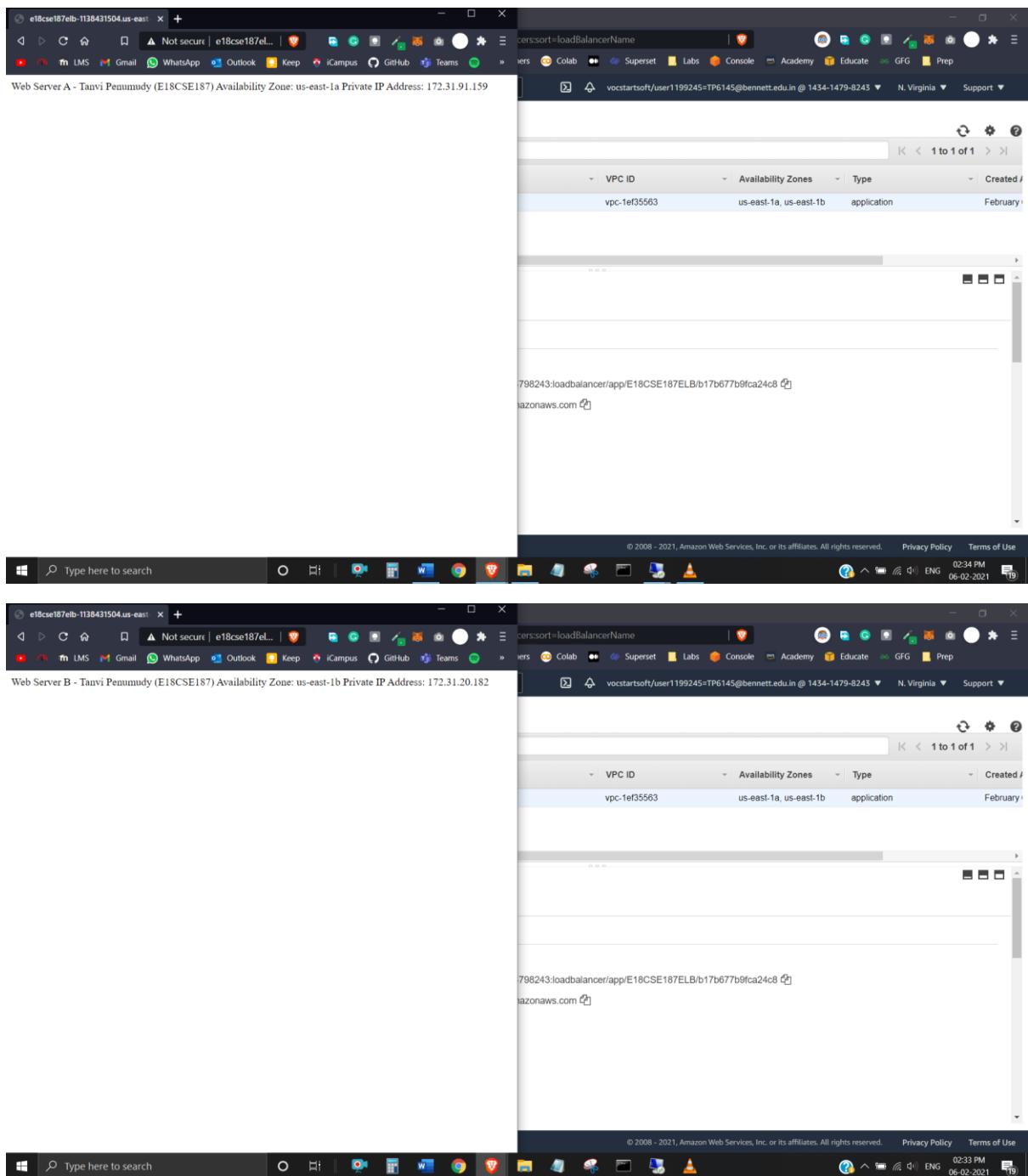
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Type here to search

This screenshot is nearly identical to the one above, showing the AWS EC2 Management Console. The main difference is in the table of existing load balancers. The row for 'E18CSE187ELB' now has 'State' listed as 'active' instead of 'provisioning'. The rest of the interface, including the navigation sidebar, the detailed view of the selected load balancer, and the status bar at the bottom, remains the same.

## Task 5



## Task 6

Step 1: Choose an Amazon Machine Image (AMI)

Microsoft Windows Server 2019 with SQL Server 2019 Enterprise - ami-0cf1565a471b1e194  
Windows Microsoft Windows 2019 Datacenter edition, Microsoft SQL Server 2019 Enterprise [English]  
Root device type: ebs Virtualization type: hvm ENA Enabled: Yes

Microsoft Windows Server 2004 Core Base - ami-05516e407735cc94d  
Windows Microsoft Windows Server 2004 Semi-Annual Channel release [English]  
Free tier eligible Root device type: ebs Virtualization type: hvm ENA Enabled: Yes

Microsoft Windows Server 2016 Base - ami-032e26ff3bb717f3  
Windows Microsoft Windows 2016 Datacenter edition [English]  
Free tier eligible Root device type: ebs Virtualization type: hvm ENA Enabled: Yes

Microsoft Windows Server 2016 Base with Containers - ami-0959f343fa76ed6f9  
Windows Microsoft Windows 2016 Datacenter edition with Containers. [English]  
Free tier eligible Root device type: ebs Virtualization type: hvm ENA Enabled: Yes

Deep Learning AMI (Microsoft Windows Server 2016) - ami-0edac808c446bd232  
Windows Microsoft Windows Server 2016 with TensorFlow, Caffe and MXNet. [English]  
Root device type: ebs Virtualization type: hvm ENA Enabled: Yes

**Select** 64-bit (x86)

Feedback English (US) ▾ Workbench Launch instance wizard | EC2 Main +

console.aws.amazon.com/ec2/v2/home?region=us-east-1#LaunchInstanceWizard:

1. Choose AMI 2. Choose Instance Type 3. Configure Instance 4. Add Storage 5. Add Tags 6. Configure Security Group 7. Review

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Step 2: Choose an Instance Type

Amazon EC2 provides a wide selection of instance types optimized to fit different use cases. Instances are virtual servers that can run applications. They have varying combinations of CPU, memory, storage, and networking capacity, and give you the flexibility to choose the appropriate mix of resources for your applications. Learn more about instance types and how they can meet your computing needs.

Filter by: All instance families ▾ Current generation ▾ Show/Hide Columns

Family	Type	vCPUs	Memory (GiB)	Instance Storage (GB)	EBS-Optimized Available	Network Performance	IPv6 Support
i2	i2.nano	1	0.5	EBS only	-	Low to Moderate	Yes
<input checked="" type="checkbox"/> t2	t2.micro Free tier eligible	1	1	EBS only	-	Low to Moderate	Yes
i2	i2.small	1	2	EBS only	-	Low to Moderate	Yes
i2	i2.medium	2	4	EBS only	-	Low to Moderate	Yes
i2	i2.large	2	8	EBS only	-	Low to Moderate	Yes
i2	i2.xlarge	4	16	EBS only	-	Moderate	Yes
i2	i2.2xlarge	8	32	EBS only	-	Moderate	Yes
i3	i3.nano	2	0.5	EBS only	Yes	Up to 5 Gigabit	Yes

Cancel Previous **Review and Launch** Next: Configure Instance Details

Feedback English (US) ▾ Workbench Launch instance wizard | EC2 Main +

console.aws.amazon.com/ec2/v2/home?region=us-east-1#LaunchInstanceWizard:

1. Choose AMI 2. Choose Instance Type 3. Configure Instance 4. Add Storage 5. Add Tags 6. Configure Security Group 7. Review

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**Step 3: Configure Instance Details**

Configure the instance to suit your requirements. You can launch multiple instances from the same AMI, request Spot Instances to take advantage of the lower pricing, assign an access management role to the instance, and more.

---

Number of instances	<input type="text" value="1"/> Launch into Auto Scaling Group
Purchasing option	<input type="checkbox"/> Request Spot Instances
Network	vpc-1ef35563 (default) <input type="button" value="Create new VPC"/>
Subnet	subnet-1c6b7c23   Default in us-east-1c 4091 IP Addresses available <input type="button" value="Create new subnet"/>
Auto-assign Public IP	<input type="button" value="Use subnet setting (Enable)"/>
Placement group	<input type="checkbox"/> Add instance to placement group
Capacity Reservation	<input type="button" value="Open"/>
Domain join directory	No directory <input type="button" value="Create new directory"/>
IAM role	None <input type="button" value="Create new IAM role"/>
CPU options	<input type="checkbox"/> Specify CPU options
Shutdown behavior	<input type="button" value="Stop"/>

The screenshot shows the AWS Management Console with the URL `console.aws.amazon.com/ec2/v2/home?region=us-east-1#LaunchInstanceWizard`. The top navigation bar includes links for Feedback, English (US), Privacy Policy, and Terms of Use. The main content area is titled "Step 4: Add Storage". It displays a table for adding storage volumes:

Volume Type	Device	Snapshot	Size (GiB)	Volume Type	IOPS	Throughput (MB/s)	Delete on Termination	Encryption
Root	/dev/sda1	snapshot-0d215df121638fa10	30	General Purpose SSD (gp2)	100 / 3000	N/A	<input checked="" type="checkbox"/>	Not Encrypted

Below the table, there is a link to "Add New Volume". A note at the bottom states: "Free tier eligible customers can get up to 30 GB of EBS General Purpose (SSD) or Magnetic storage. Learn more about free usage tier eligibility and usage restrictions."

Feedback English (US) ▾ Cancel Previous Review and Launch Next: Add Tags © 2008 - 2021, Amazon Web Services, Inc. or its affiliates. All rights reserved. Privacy Policy Terms of Use

**Step 6: Configure Security Group**

A security group is a set of firewall rules that control the traffic for your instance. On this page, you can add rules to allow specific traffic to reach your instance. For example, if you want to set up a web server and allow Internet traffic to reach your instance, add rules that allow unrestricted access to the HTTP and HTTPS ports. You can create a new security group or select from an existing one below. [Learn more](#) about Amazon EC2 security groups.

Assign a security group:  Create a new security group  Select an existing security group

Security Group ID	Name	Description	Actions
sg-f72047ff	default	default VPC security group	<a href="#">Copy to new</a>
sg-0a178c83cc2d3b144	ELB E18CSE187	launch-wizard-1 created 2021-02-06T13:27:53.226+05:30	<a href="#">Copy to new</a>

Inbound rules for sg-f72047ff (Selected security groups: sg-f72047ff)

Type	Protocol	Port Range	Source	Description
HTTP	TCP	80	0.0.0.0/0	
HTTP	TCP	80	::/0	
All traffic	All	All	0.0.0.0/0	

[Cancel](#) [Previous](#) [Review and Launch](#)

**Instances | EC2 Management Con**

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New EC2 Experience [Learn more](#)

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- Events
- Tags
- Limits
- Instances
  - Instances [New](#)
  - Instance Types
  - Launch Templates
  - Spot Requests
  - Savings Plans
  - Reserved Instances
  - Dedicated Hosts [New](#)
  - Scheduled Instances
  - Capacity Reservations
- Images
- AMIs
- Elastic Block Store
  - Volumes

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Screenshot of the AWS Management Console showing the connection to an EC2 instance.

**EC2 > Instances > i-0d4699fc76db3fabb > Connect to instance**

**Connect to instance** Info

Connect to your instance i-0d4699fc76db3fabb (E18CSE187 Server C) using any of these options

**RDP client** (Selected)

You can connect to your Windows instance using a remote desktop client of your choice, and by downloading and running the RDP shortcut file below:

[Download remote desktop file](#)

When prompted, connect to your instance using the following details:

Public DNS	User name
ec2-52-206-56-133.compute-1.amazonaws.com	Administrator

Password

d(tP.4mvji&HrplzA8=4ufjA8F%7qMyT

If you've joined your instance to a directory, you can use your directory credentials to connect to your instance.

**E18CSE187 Server C - ec2-52-206-56-133.compute-1.amazonaws.com - Remote Desktop...**

Recycle Bin  
EC2 Feedback  
EC2 Micros...

**Feedback English (US) ▾**

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**Server Manager**

**Server Manager • Dashboard**

**WELCOME TO SERVER MANAGER**

**Select server roles**

Before You Begin  
Installation Type  
Server Selection  
**Server Roles**  
Features  
Web Server Role (IIS)  
Role Services  
Confirmation  
Results

Select one or more roles to install on the selected server.

**Roles**

- Active Directory Lightweight Directory Services
- Active Directory Rights Management Services
- Device Health Attestation
- DHCP Server
- DNS Server
- Fax Server
- File and Storage Services (1 of 12 installed)
  - Hyper-V
  - MultiPoint Services
  - Network Controller
  - Network Policy and Access Services
  - Print and Document Services
  - Remote Access
  - Remote Desktop Services
  - Volume Activation Services
  - Web Server (IIS)
  - Windows Deployment Services
  - Windows Server Essentials Experience
  - Windows Server Update Services
- Windows Firewall with Advanced Security
- Windows File Protection
- Windows File Recovery
- Windows Homegroup
- Windows Intelligent File System
- Windows Performance
- Windows Resource Protection
- Windows Server Update Services
- Windows Storage
- Windows System Protection
- Windows System Recovery
- Windows Task Sequence
- Windows Virtualization
- Windows Web Server
- Windows XML Web Services

**Descripti... Web man... appli...**

**Launch instances**

state	Instance type	Status check	Alarm status	Availability Zone	Public I...
running	t2.micro	2/2 checks ...	2 alar... +	us-east-1a	ec2-100...
running	t2.micro	2/2 checks ...	2 alar... +	us-east-1b	ec2-3-9
running	t2.micro	2/2 checks ...	2 alar... +	us-east-1c	ec2-52-...

**Monitoring Tags**

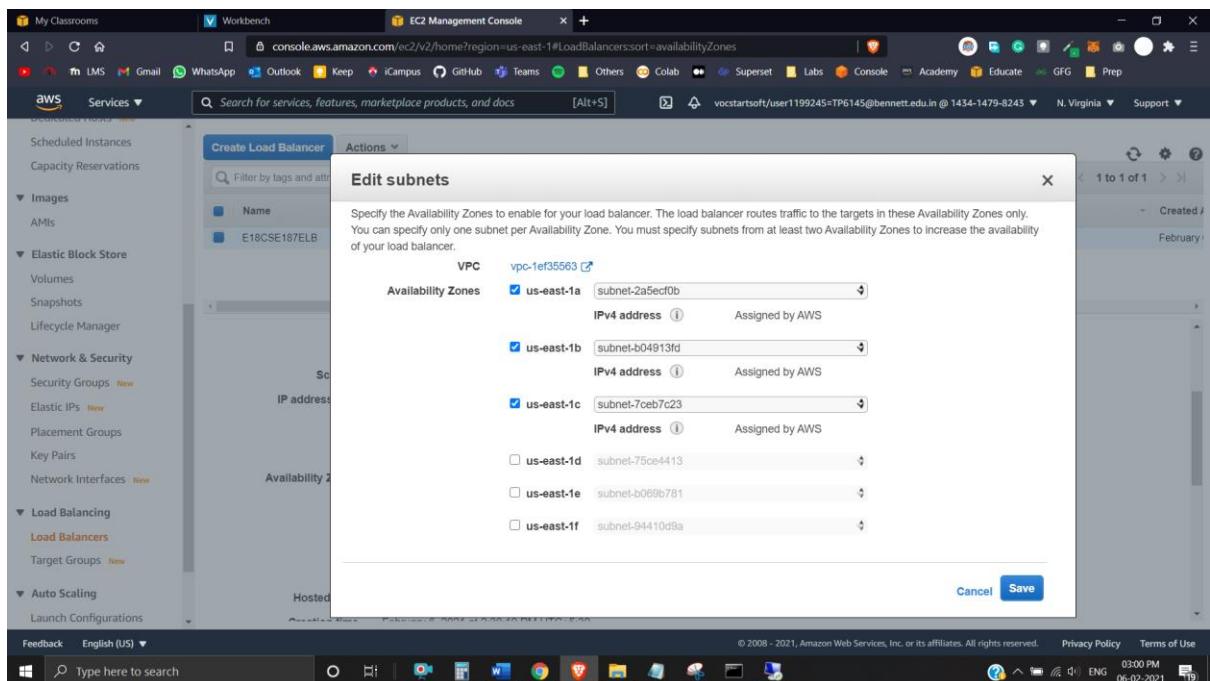
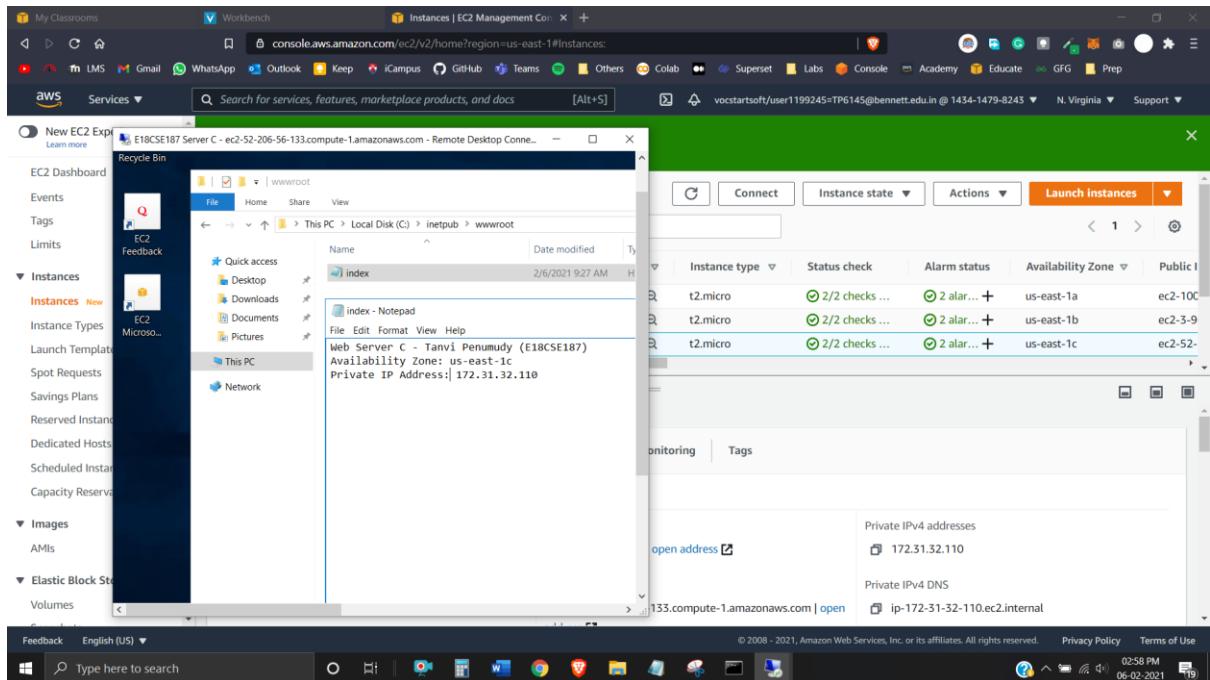
Address: 56.133 | open address Private IPv4 addresses: 172.31.32.110

NS: 206-56-133.compute-1.amazonaws.com | open Private IPv4 DNS: ip-172-51-52-110.ec2.internal

**Feedback English (US) ▾**

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My Classrooms Workbench Target groups | EC2 Management how to register target in load balance +

console.aws.amazon.com/ec2/v2/home?region=us-east-1#CreateTargetGroup:

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vocstartsoft/user1199245=TP6145@bennett.edu.in @ 1434-1479-8243 N. Virginia Support

aws Services Search for services, features, marketplace products, and docs [Alt+S]

Step 2 Register targets

**Basic configuration**

Choose a target type

Instances

- Supports load balancing to instances within a specific VPC.

IP addresses

- Supports load balancing to VPC and on-premises resources.
- Facilitates routing to multiple IP addresses and network interfaces on the same instance.
- Offers flexibility with microservice based architectures, simplifying inter-application communication.

Lambda function

- Facilitates routing to a single Lambda function.
- Accessible to Application Load Balancers only.

Target group name

USEastABC

Up to 32 alphanumeric characters, including hyphens. Must not begin or end with a hyphen.

Protocol : Port

HTTP : 80

VPC Select the VPC containing the instances you want to choose from for inclusion in this target group.

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03:04 PM 06-02-2021

My Classrooms Workbench Target groups | EC2 Management how to register target in load balance +

console.aws.amazon.com/ec2/v2/home?region=us-east-1#CreateTargetGroup:

LMS Gmail WhatsApp Outlook Keep iCampus GitHub Teams Others Colab Superset Labs Console Academy Educate GFG Prep

vocstartsoft/user1199245=TP6145@bennett.edu.in @ 1434-1479-8243 N. Virginia Support

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EC2 > Target groups > Create target group

Step 1 Specify group details

Step 2 Register targets

**Register targets**

Available instances (3/3)

Filter resources by property or value

Instance ID	Name	State	Security groups	Zone	Subnet ID
i-06af1dabbe56d6d0	E18CSE187 Serv...	running	default	us-east-1a	subnet-2a5ecf0b
i-00166bb2798c220a1	E18CSE187 Serv...	running	default	us-east-1b	subnet-b04913fd
i-0d4699fc76db3fabb	E18CSE187 Serv...	running	default	us-east-1c	subnet-7ceb7c23

3 selected

Ports for the selected instances  
Ports for routing traffic to the selected instances (separate multiple ports with commas):  
80

Include as pending below

Targets (0)

Remove all pending

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03:05 PM 06-02-2021

Screenshot of the AWS Management Console showing the creation of a target group and its association with EC2 instances.

**Target groups | EC2 Management**

**Ports for the selected instances**  
Ports for routing traffic to the selected instances (separate multiple ports with commas):  
80

**Targets (3)**

All	Remove	Status	Instance ID	Name	Port	State	Security groups	Zone	Subnet ID
	X	Pending	i-06af1dabef56d6d0	E18CSE187 Server A	80	running	default	us-east-1a	subnet-2a5ecf0b
	X	Pending	i-00166bb2798c220a1	E18CSE187 Server B	80	running	default	us-east-1b	subnet-b04913fd
	X	Pending	i-0d4699fc76db3fabb	E18CSE187 Server C	80	running	default	us-east-1c	subnet-7ceb7c23

**Targets (3)**

3 pending

**Successfully created target group: USEastABC**

**Target groups (2)**

Name	ARN	Port	Protocol	Target type	Load balancer	VPC ID
USEastAB	arn:aws:elasticloadbalancing:us-east-1:143414798243:targetgroup/USEastAB/1ef35563	80	HTTP	Instance	E18CSE187ELB	vpc-1ef35563
USEastABC	arn:aws:elasticloadbalancing:us-east-1:143414798243:targetgroup/USEastABC/1ef35563	80	HTTP	Instance	-	vpc-1ef35563

The screenshot shows the AWS EC2 Management Console with the 'Listeners' tab selected. A new listener is being created for the load balancer 'E18CSE187ELB'. The 'Protocol' is set to 'HTTP' and the 'Port' is '80'. Under 'Default action(s)', there is one rule: 'Forward to...' with a target group 'Weight (0-999)' named 'USEastABC' (Traffic distribution 100%). There is also a checked option for 'Group-level stickiness'. The status bar at the bottom indicates the user is in N. Virginia.

## Task 7

The screenshot shows the AWS VPC console with a new VPC named 'e18cse187elb-1138431504.us-east-1'. The table lists the VPC details: VPC ID 'vpc-1ef35563', Availability Zones 'us-east-1a, us-east-1c, ...', Type 'application', and Created 'February'. The status bar at the bottom indicates the user is in N. Virginia.

The image displays a Windows desktop environment with two separate sessions, each featuring a browser window, a taskbar, and a system tray.

**Session 1 (Top):**

- Browser:** Microsoft Edge (Version 87.0.664.52) showing the URL `vocstartsoft/user1199245=TP6145@bennett.edu.in @ 1434-1479-8243`.
- Taskbar:** Shows pinned icons for LMS, Gmail, WhatsApp, Outlook, Keep, iCampus, GitHub, and Teams.
- System Tray:** Displays the date and time as 03:10 PM on 06-02-2021.

**Session 2 (Bottom):**

- Browser:** Microsoft Edge (Version 87.0.664.52) showing the URL `vocstartsoft/user1199245=TP6145@bennett.edu.in @ 1434-1479-8243`.
- Taskbar:** Shows pinned icons for LMS, Gmail, WhatsApp, Outlook, Keep, iCampus, GitHub, and Teams.
- System Tray:** Displays the date and time as 03:10 PM on 06-02-2021.

**Content of Browser Windows:**

**Web Server C - Tanvi Penumudy (E18CSE187) Availability Zone: us-east-1c Private IP Address: 172.31.32.110**

**Web Server B - Tanvi Penumudy (E18CSE187) Availability Zone: us-east-1b Private IP Address: 172.31.20.182**

**AWS Lambda Function Details:**

VPC ID	Availability Zones	Type	Created
vpc-1ef35563	us-east-1a, us-east-1c, ...	application	February

**Logs:**

```
798243:loadbalancer/app/E18CSE187ELB/b17b677b9fca24c8 [2]
amazonaws.com [2]
```