

LAB3

Demonstrate Load balancer and Elastic IPs concept in cloud

Step1: LOG into the AWS Account. Search for EC2. Select Launch Instances option. Select the Microsoft Windows Server 2019 Base.

Step 1: Choose an Amazon Machine Image (AMI)

An AMI is a template that contains the software configuration (operating system, application server, and applications) required to launch your instance. You can select an AMI provided by AWS, our user community, or the AWS Marketplace; or you can select one of your own AMIs.

Search for an AMI by entering a search term e.g. "Windows"

Quick Start

- My AMIs
- AWS Marketplace
- Community AMIs

☒ Free tier only ⓘ

Image Icon	Name	Description	Root device type	Virtualization type	ENA Enabled	Select
	Amazon Linux 2 AMI (HVM), SSD Volume Type - ami-04b1ddd35fd71475a (64-bit x86) / ami-0dc5c7546de7618191 (64-bit Arm)	Amazon Linux 2 comes with five years support. It provides Linux kernel 4.14 tuned for optimal performance on Amazon EC2, systemd 219, GCC 7.3, Glibc 2.28, Binutils 2.29.1, and the latest software packages through extras. This AMI is the successor of the Amazon Linux AMI that is approaching end of life on December 31, 2020 and has been removed from this wizard.	Root device type: ebs	Virtualization type: hvm	ENA Enabled: Yes	<input checked="" type="radio"/> 64-bit (x86) <input type="radio"/> 64-bit (Arm)
	Red Hat Enterprise Linux 8 (HVM), SSD Volume Type - ami-0a9d27a9f45c0efc (64-bit x86) / ami-0d46b0a8ba9a483af (64-bit Arm)	Red Hat Enterprise Linux version 8 (HVM), EBS General Purpose (SSD) Volume Type	Root device type: ebs	Virtualization type: hvm	ENA Enabled: Yes	<input checked="" type="radio"/> 64-bit (x86) <input type="radio"/> 64-bit (Arm)
	SUSE Linux Enterprise Server 15 SP2 (HVM), SSD Volume Type - ami-0b3acf3edf2397475 (64-bit x86) / ami-0ab71076ab9b53b0d (64-bit Arm)	SUSE Linux Enterprise Server 15 Service Pack 2 (HVM), EBS General Purpose (SSD) Volume Type. Amazon EC2 AMI Tools preinstalled: Apache 2.2, MySQL 5.5, PHP 5.3, and Ruby 1.8.7 available.	Root device type: ebs	Virtualization type: hvm	ENA Enabled: Yes	<input checked="" type="radio"/> 64-bit (x86) <input type="radio"/> 64-bit (Arm)
	Ubuntu Server 20.04 LTS (HVM), SSD Volume Type - ami-0a4a70bd98c6d6441 (64-bit x86) / ami-00e24e2d9b2d70f5c (64-bit Arm)	Ubuntu Server 20.04 LTS (HVM), EBS General Purpose (SSD) Volume Type. Support available from Canonical (http://www.ubuntu.com/cloud/services).	Root device type: ebs	Virtualization type: hvm	ENA Enabled: Yes	<input checked="" type="radio"/> 64-bit (x86) <input type="radio"/> 64-bit (Arm)
	Microsoft Windows Server 2019 Base - ami-0c7b2e7kd5f6b0210	Microsoft Windows 2019 Datacenter edition. [English]	Root device type: ebs	Virtualization type: hvm	ENA Enabled: Yes	<input checked="" type="radio"/> 64-bit (x86)

Step2: Choose the Instance Type.

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 <small>Free tier eligible</small>	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 Gigabit	Yes
<input type="checkbox"/>	t3	t3.micro	2	1	EBS only	Yes	Up to 5 Gigabit	Yes
<input type="checkbox"/>	t3	t3.small	2	2	EBS only	Yes	Up to 5 Gigabit	Yes
<input type="checkbox"/>	t3	t3.medium	2	4	EBS only	Yes	Up to 5 Gigabit	Yes

[Cancel](#)
[Previous](#)
[Review and Launch](#)
[Next: Configure Instance Details](#)

Step 3: Configure the Instance Details. Change Number of Instance to 2.

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

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 ⓘ


2

Launch into Auto Scaling Group ⓘ


Purchasing option ⓘ

☐ Request Spot instances


Network ⓘ

vpc-424d229 (default)  Create new VPC

Subnet ⓘ

No preference (default subnet in any Availability Zone)  Create new subnet


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 

Stop - Hibernate behavior ⓘ

☐ Enable hibernation as an additional stop behavior


Enable termination protection ⓘ

☐ Protect against accidental termination

Monitoring ⓘ

☐ Enable CloudWatch detailed monitoring
Additional charges apply.

Tenancy ⓘ

Shared - Run a shared hardware instance 
Additional charges will apply for dedicated tenancy.

Cancel

Previous

Review and Launch

Next: Add Storage

Step4: Add Storage to the Instance.

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-04d5d0148ace5df2	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

Step5: Add Tags To the Instance if any needed.

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

Step 5: Add Tags

A tag consists of a case-sensitive key-value pair. For example, you could define a tag with key = Name and value = Webserver. A copy of a tag can be applied to volumes, instances or both. Tags will be applied to all instances and volumes. [Learn more](#) about tagging your Amazon EC2 resources.

Key (128 characters maximum)

Value (256 characters maximum)

Instances ⓘ

Volumes ⓘ

This resource currently has no tags

Choose the Add tag button or click to add a Name tag.

Make sure your IAM policy includes permissions to create tags.

Add Tag (Up to 50 tags maximum)

Cancel Previous Review and Launch Next: Configure Security Group

Step 6: Configure Security Group.Add One More Security Http to the Security Group.

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

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:

Type ①	Protocol ①	Port Range ①	Source ①	Description ①	
RDP ▾	TCP	3389	Custom ▾ 0.0.0.0/0	e.g. SSH for Admin Desktop	✕
HTTP ▾	TCP	80	Custom ▾ 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**

Step 7: Review and Launch the Instance.

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

Step 7: Review Instance Launch

AMI Details

Edit AMI

Microsoft Windows Server 2019 Base - ami-0c7b2e7fd5f6b0210

Free tier eligible
Microsoft Windows 2019 Datacenter edition. [English]
Root Device Type: ebs Virtualization type: hvm

If you plan to use this AMI for an application that benefits from Microsoft License Mobility, fill out the [License Mobility Form](#). Don't show me this again

Instance Type

Edit instance type

Instance Type	ECUs	vCPUs	Memory (GiB)	Instance Storage (GB)	EBS-Optimized Available	Network Performance
t2.micro	-	1	1	EBS only	-	Low to Moderate

Security Groups

Edit security groups

Security group name launch-wizard-14
Description launch-wizard-14 created 2021-01-02T20:48:07.521+05:30

Type ①	Protocol ①	Port Range ①	Source ①	Description ①
RDP	TCP	3389	0.0.0.0/0	
HTTP	TCP	80	0.0.0.0/0	
HTTP	TCP	80	::/0	

Instance Details

Edit instance details

Storage

Edit storage

Tags

Edit tags

Cancel Previous **Launch**

Step 8: During Launching The Instance Select an existing key pair or create a new pair to access the instance.

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.](#)

Create a new key pair

Key pair name

LAB3

Download Key Pair

You have to download the private key file (*.pem file) before you can continue. Store it in a secure and accessible location. You will not be able to download the file again after it's created.

Cancel

Launch Instances

Step 9:Two instances will be created.

Welcome to the new Instances experience!
We're redesigning the EC2 console to make it easier to use. To switch between the old console and the new console, use the New EC2 Experience toggle above the navigation panel. We'll release updates continuously based on customer feedback.

Instances (1/2)
Info

Filter instances

Refresh
Connect
Instance state
Actions
Launch instances

1

	Name	Instance ID	Instance state	Instance type	Status check	Alarm status	Availability Zone	Public IPv4 DNS	Public IPv4 ...
<input type="checkbox"/>	Instance1	i-0141fde3a023fbb5e	Running	t2.micro	--	No alarms	us-east-1c	ec2-54-159-11-24.co...	54.159.11.24
<input checked="" type="checkbox"/>	Instance2	i-0107cf0e5b80a295d	Running	t2.micro	--	No alarms	us-east-1c	ec2-35-174-170-40.co...	35.174.170.40


Step10: To launch the instance Decrypt the .pem file we created during the creation of new key pair and get the password.

EC2 > Instances > i-0141fde3a023fbb5e > Get windows password


Get Windows password Info


Retrieve and decrypt the initial Windows administrator password for this instance.

To decrypt the password, you will need your key pair for this instance.

 **Key pair associated with this instance**
CCLAB3

Browse to your key pair:

 Browse

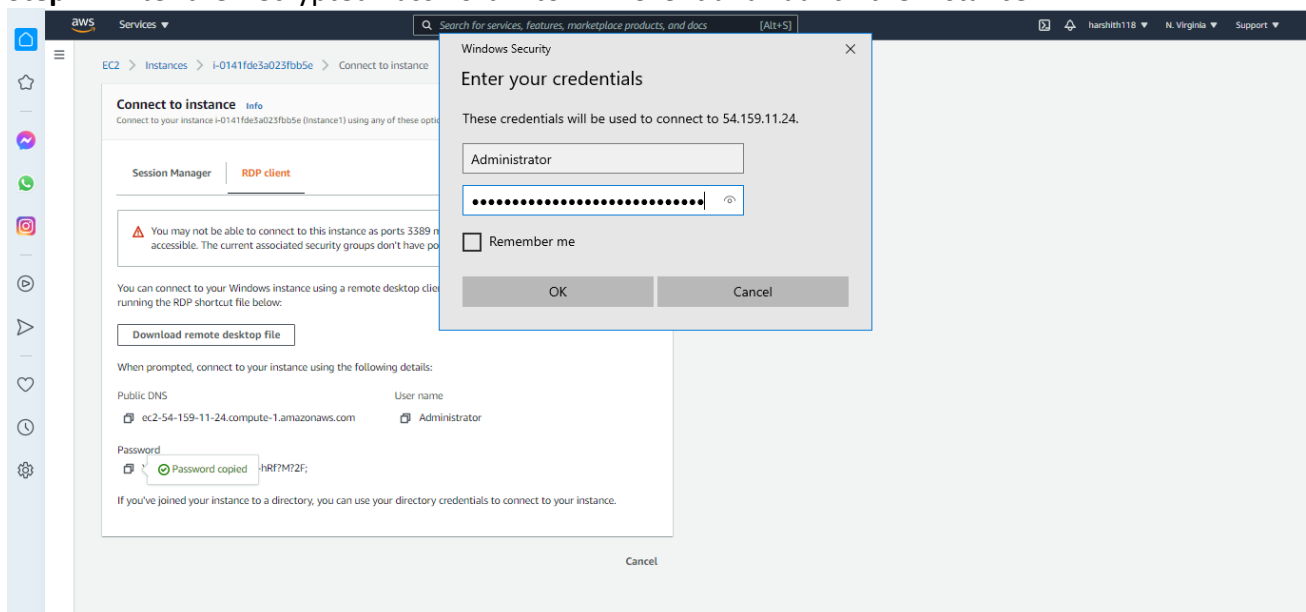
 CCLAB3 (1).pem
1.7KB

Or copy and paste the contents of the key pair below:

```
-----BEGIN RSA PRIVATE KEY-----
MIIEogIBAAKCAQEAqvESo8ylHBK5b+HTH2AHnidTOp4l5hPZR6e4+OsbdqWzVIT2
AhzAixBKHJgm+O+xWaUOYs77nRMsZ2l5ylho0g8nRT2GnbNJUKczvm18gOAlG4JC
GEmar8VQdkDqmW+Gr1GrIQNW/94TSMYekVbJ9cLkA3kkYkUBWK3/TBGFcJkkgNIP
gwavb2MtnFFsomk33Z2wHNuG+j/G52tXjfxi72L3jJh28VXIqSXS4NOdYZs5DT35
Hxa7jbBFgSDaPRloK3GBNh8i5d17nHsh/EVgPI/ao49k5laos6dNr87ox4Khqfz7
kL1VKQmbsng1frZnxCSi7wK2PbrA/SFCUtmTlwlDAQABaolBAHOJzZd40oBPB5df
g1LhNyYp+CO0/7Wm52a96MHBEDzlsDUGPNGzbjI7SAApdvKuf0b+zJCbF5Jalf
-----
```

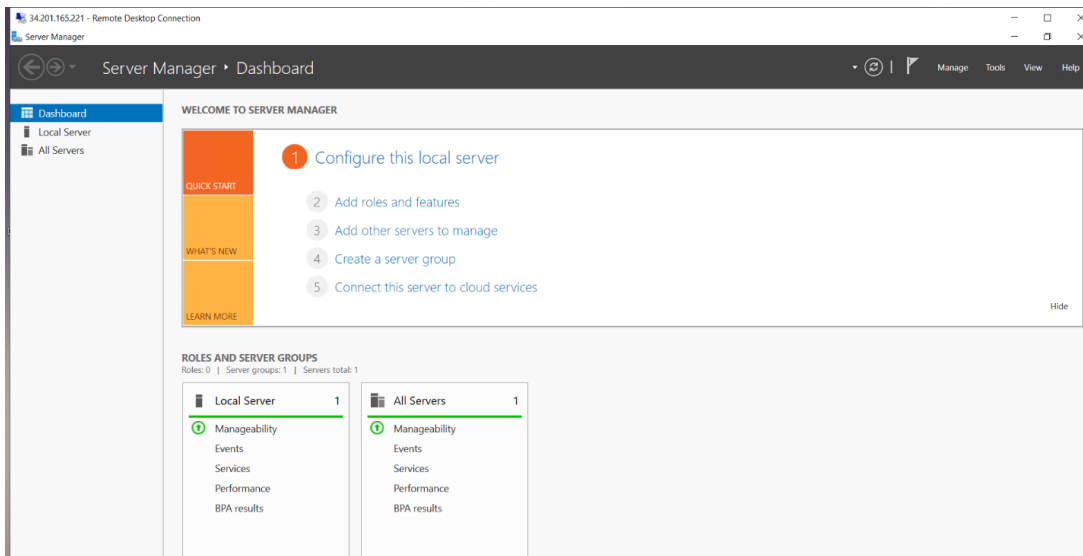
Cancel
Decrypt Password

Step11:Enter the Decrypted Password into RDP Client and Launch the Instance.

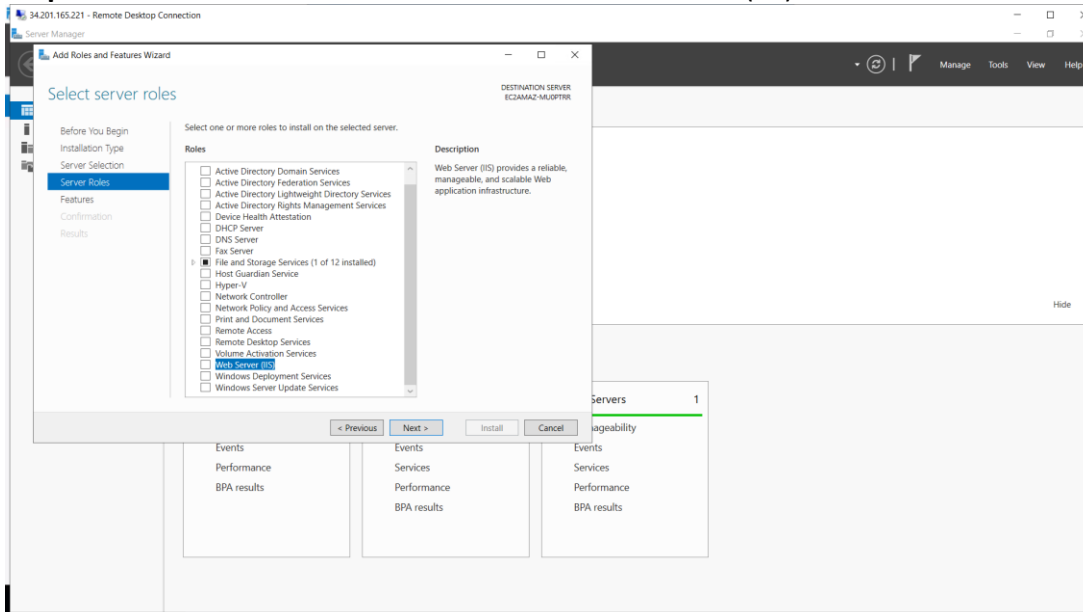


The screenshot shows the AWS Management Console interface. In the background, the 'Connect to instance' page is visible, showing the instance ID 'i-0141fde3a023fbb5e' and the 'RDP client' tab selected. A 'Windows Security' dialog box is overlaid on top, titled 'Enter your credentials'. It states: 'These credentials will be used to connect to 54.159.11.24.' The 'Administrator' user is selected, and the password field is filled with dots. There is a 'Remember me' checkbox which is unchecked. At the bottom of the dialog are 'OK' and 'Cancel' buttons. The background page also shows a warning about port 3389 and a 'Download remote desktop file' button.

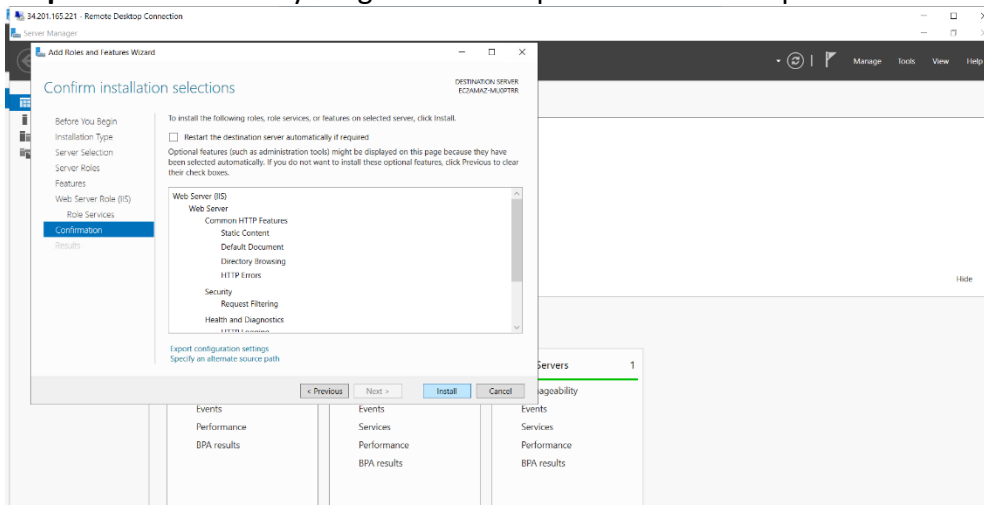
Step 12: Once windows instance launched got to server manager and the click on manage option.



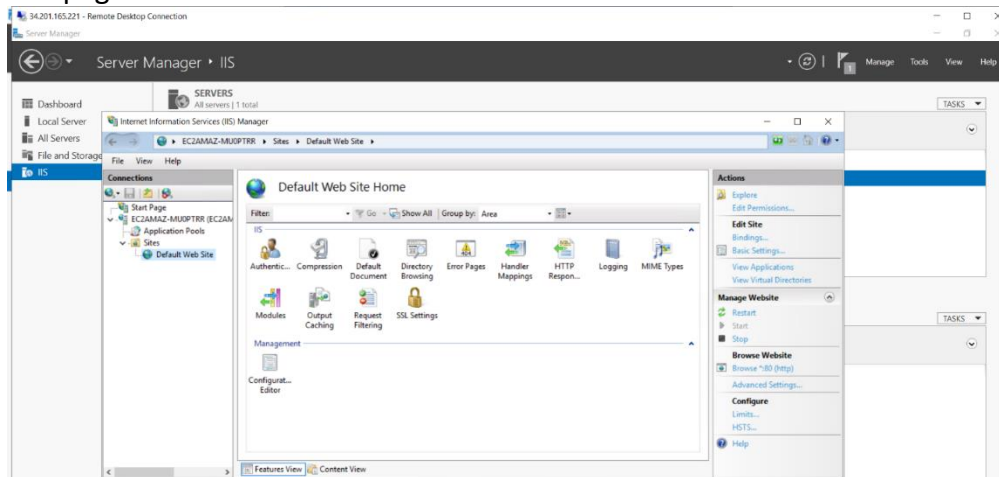
Step 13: Now click on Server Roles and select WebServer(IIS).



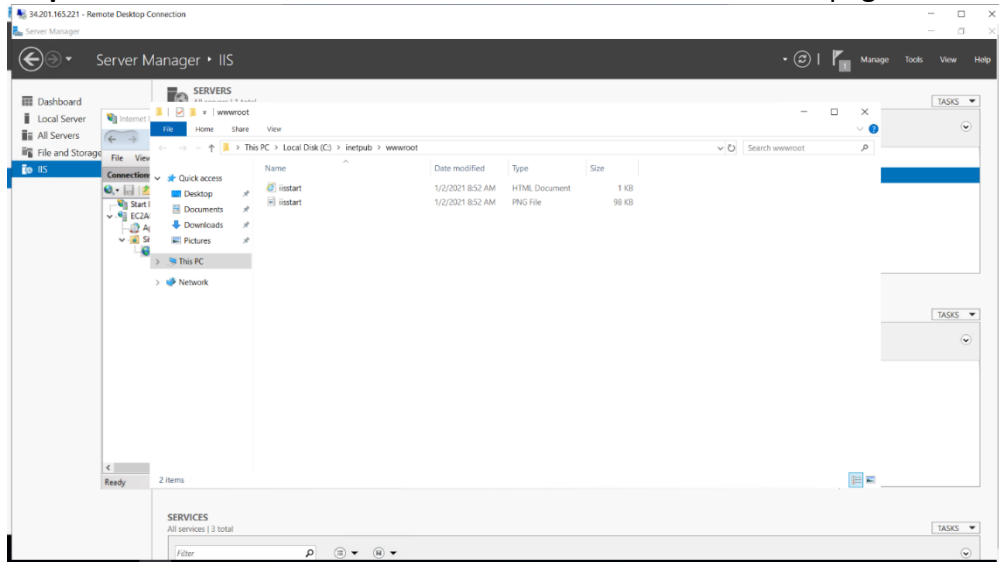
Step 14: Then let everything be default option. Click install option.



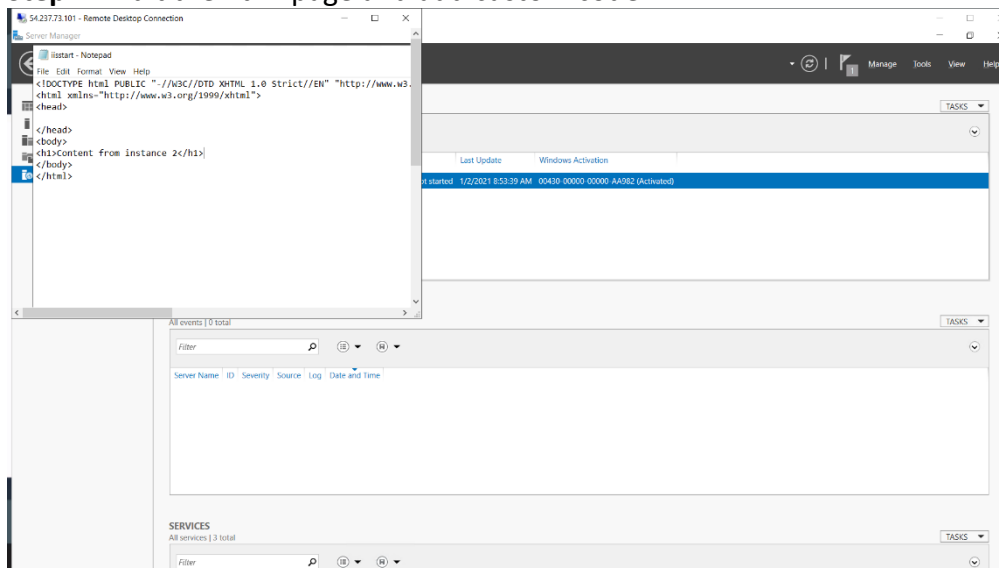
Step 15: Once the installation is completed Right Click on IIS and got to Sites and got to Default site webpage location.



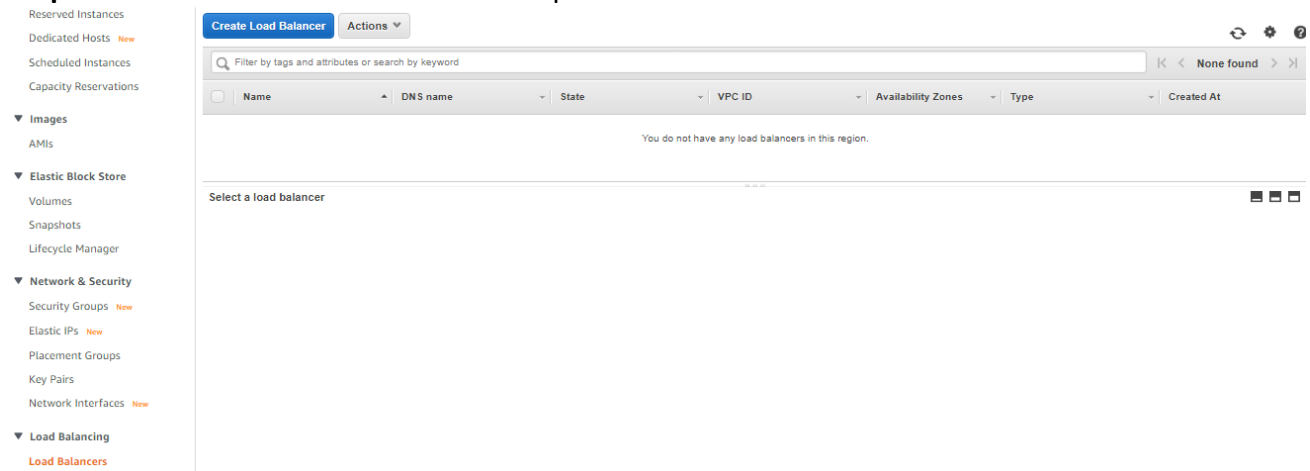
Step 16: There will be Two static files.edit the contents of html page.



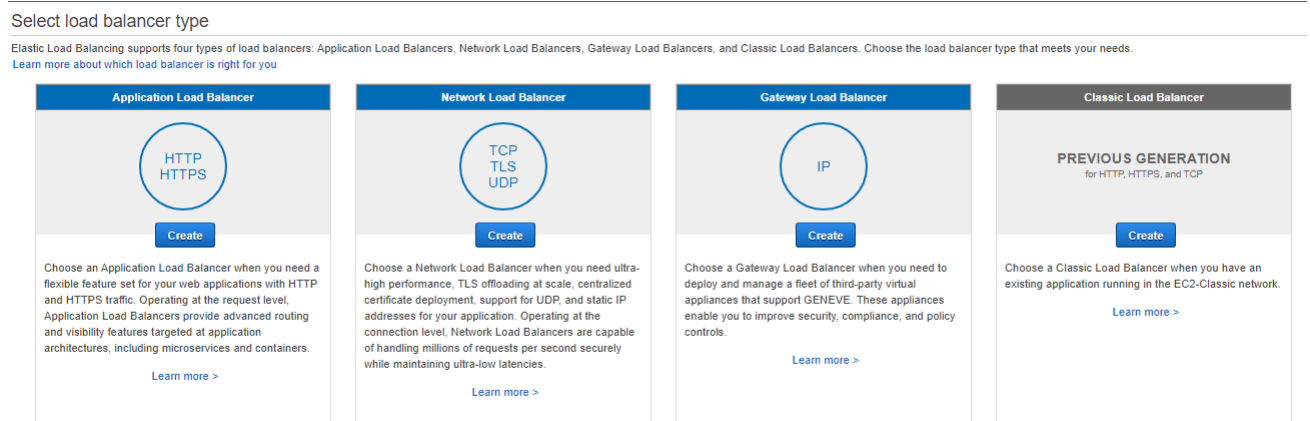
Step 17:Edit the html page and add custom code.



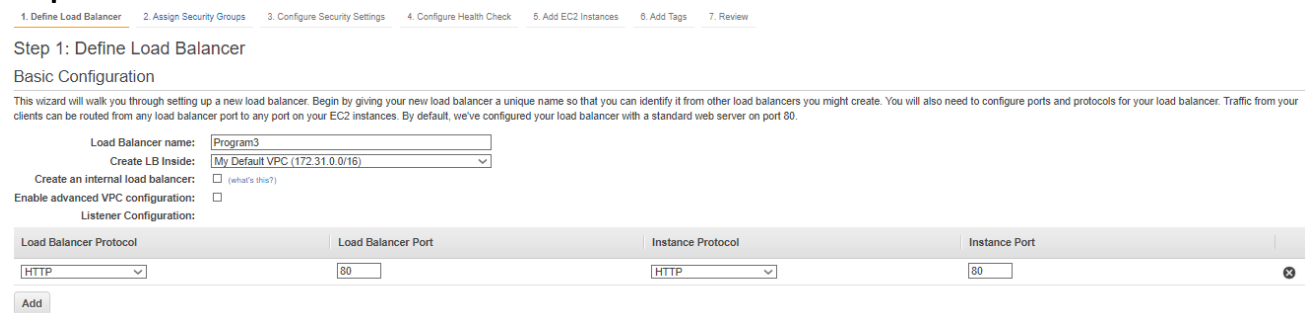
Step 19: Select the Create Load Balancer option.



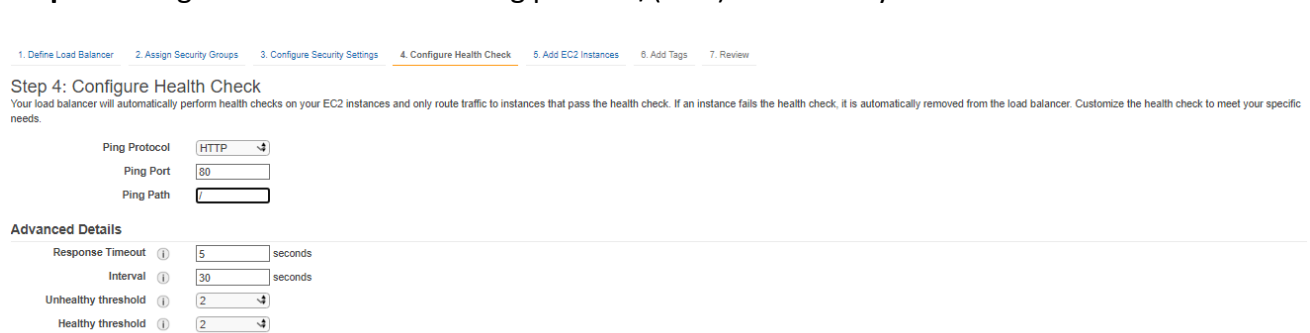
Step 20: Select which type of load balancer need to be created.



Step 21: Define the Load Balancer.



Step 22: Configure Health Check. Let Ping path be /(root) and Healthy threshold be 2.



Step23: Add EC2 instances to the Load balancer.

1. Define Load Balancer 2. Assign Security Groups 3. Configure Security Settings 4. Configure Health Check 5. Add EC2 Instances 6. Add Tags 7. Review

Step 5: Add EC2 Instances

The table below lists all your running EC2 Instances. Check the boxes in the Select column to add those instances to this load balancer.

VPC vpc-0dd20270 (172.31.0.0/16)

<input type="checkbox"/>	Instance	Name	State	Security groups	Zone	Subnet ID	Subnet CIDR
<input checked="" type="checkbox"/>	i-0141fde3a023fb5e	Instance1	running	launch-wizard-1	us-east-1c	subnet-c21e9de3	172.31.80.0/20
<input checked="" type="checkbox"/>	i-0107cf0e5b80a295d	Instance2	running	launch-wizard-1	us-east-1c	subnet-c21e9de3	172.31.80.0/20

Availability Zone Distribution

2 instances in us-east-1c

☒ Enable Cross-Zone Load Balancing ⓘ

☒ Enable Connection Draining ⓘ 300 seconds

Step24: Review the Load balancer and launch it.

Create Load BalancerActions

Filter by tags and attributes or search by keyword

<<1 to 1 of 1>>

<input type="checkbox"/>	Name	DNS name	State	VPC ID	Availability Zones	Type	Created At	Monitoring
<input checked="" type="checkbox"/>	Lab3	Lab3-055395974.us-east-1.e...		vpc-0dd20270	us-east-1f, us-east-1e, ...	classic	January 2, 2021 at 10:11:45 ...	

Load balancer: Lab3

Description Instances Health check Listeners Monitoring Tags Migration

Connection Draining: Enabled, 300 seconds (Edit)

Edit Instances

Instance ID	Name	Availability Zone	Status	Actions
i-0141fde3a023fb5e	Instance1	us-east-1c	InService ⓘ	Remove from Load Balancer
i-0107cf0e5b80a295d	Instance2	us-east-1c	InService ⓘ	Remove from Load Balancer

Edit Availability Zones

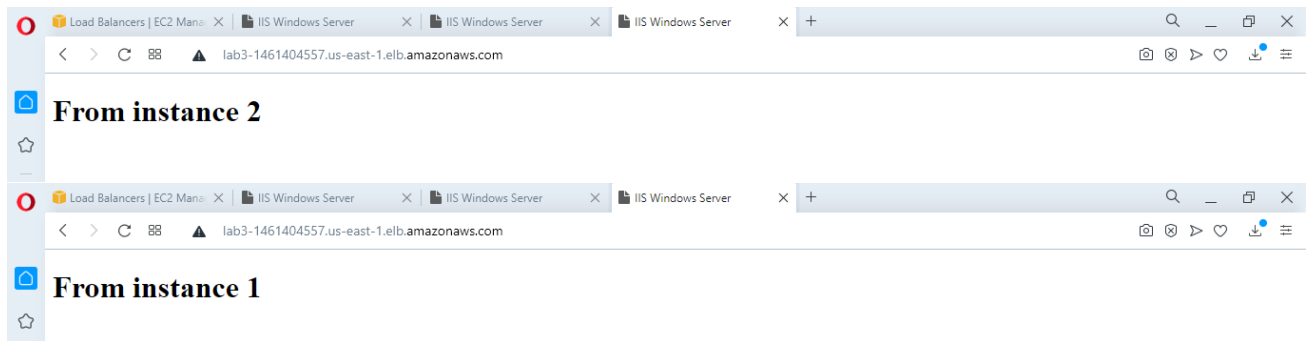
Availability Zone	Subnet ID	Subnet CIDR	Instance Count	Healthy?	Actions
us-east-1f	subnet-529fe15c	172.31.64.0/20	0	No (Availability Zone contains no healthy targets)	Remove from Load Balancer
us-east-1e	subnet-237cb412	172.31.48.0/20	0	No (Availability Zone contains no healthy targets)	Remove from Load Balancer
us-east-1d	subnet-5caefa11	172.31.16.0/20	0	No (Availability Zone contains no healthy targets)	Remove from Load Balancer
us-east-1c	subnet-c21e9de3	172.31.80.0/20	2	Yes	Remove from Load Balancer
us-east-1b	subnet-b5a822d3	172.31.0.0/20	0	No (Availability Zone contains no healthy targets)	Remove from Load Balancer
us-east-1a	subnet-9b88e9c4	172.31.32.0/20	0	No (Availability Zone contains no healthy targets)	Remove from Load Balancer

Load Balancer Creation Status

✓ Successfully created load balancer
Load balancer Program3 was successfully created.
Note: It may take a few minutes for your instances to become active in the new load balancer.

Close

Step25: Now if we enter IP address into browser we can see that Load Balancer transferring the request among multiple windows instance



Step26: To create an Elastic IP select Elastic IP option from AWS and select Create Elastic IP Address. And Select the Network Border Group and Select Public IPv4 address From amazon pool. Also select the Instance.

EC2 > Elastic IP addresses > Associate Elastic IP address

Associate Elastic IP address

Choose the instance or network interface to associate to this Elastic IP address (18.204.108.39)

Elastic IP address: 18.204.108.39

Resource type
Choose the type of resource with which to associate the Elastic IP address.

☒ Instance
☐ Network interface

Instance
i-0141fde3a023fbb5e

Private IP address
The private IP address with which to associate the Elastic IP address.
172.31.80.140

Reassociation
Specify whether the Elastic IP address can be reassociated with a different resource if it already associated with a resource.
☒ Allow this Elastic IP address to be reassociated

Cancel Associate

Step 27: Once the Elastic IP created copy the IP address and Paste it into browser.

Elastic IP address associated successfully.

Elastic IP address 18.204.108.39 has been associated with instance i-0141fde3a023fbb5e

Elastic IP addresses (1/1)

Filter Elastic IP addresses

Public IPv4 address: 18.204.108.39

Clear filters

Name

Allocated IPv4 add...

Type

Allocation ID

Associated instance ID

Private IP address

As

Lab3

18.204.108.39

Public IP

eipalloc-01a5dcdf4cfa4c85e

i-0141fde3a023fbb5e

172.31.80.140

eip

18.204.108.39

Summary

Tags

Summary

Allocated IPv4 address

18.204.108.39

Scope

VPC

Network interface owner account ID

165068001243

Network Border Group

Type

Public IP

Associated instance ID

i-0141fde3a023fbb5e

Public DNS

ec2-18-204-108-39.compute-1.amazonaws.com

Allocation ID

eipalloc-01a5dcdf4cfa4c85e

Private IP address

172.31.80.140

NAT Gateway ID

-

Association ID

eipassoc-09506e2bcff7f0e03

Network interface ID

eni-04b8042741016b064

Address pool

Amazon

EC2 Management Console

IIS Windows Server

IIS Windows Server

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⚠️

18.204.108.39

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From instance 1