



School of Computer Science, Engineering and Applications(SCSEA)

B.C.A. TY (SCSEA)

Subject: Advance Cloud Computing(ACC)

Name of the Student: Shrushti Krishna Shrivastav

PRN: 20220801024

Title of Practicle : Configuring Layered Security in an AWS VPC(NACL)

STEP1: CREATE VPC

VPC > Your VPCs > Create VPC

Create VPC [Info](#)

A VPC is an isolated portion of the AWS Cloud populated by AWS objects, such as Amazon EC2 instances.

VPC settings

Resources to create [Info](#)
Create only the VPC resource or the VPC and other networking resources.

☒ VPC only ☐ VPC and more

Name tag - optional
Creates a tag with a key of 'Name' and a value that you specify.

nacl-demo-1024-vpc

IPv4 CIDR block [Info](#)
☒ IPv4 CIDR manual input
☐ IPAM-allocated IPv4 CIDR block

IPv4 CIDR
10.0.0.0/16
CIDR block size must be between /16 and /28.

IPv6 CIDR block [Info](#)
☒ No IPv6 CIDR block
☐ IPAM-allocated IPv6 CIDR block
☐ Amazon-provided IPv6 CIDR block
☐ IPv6 CIDR owned by me

✓ You successfully created vpc-005ec44057aaa8be2 / nacl-demo-1024-vpc

VPC > Your VPCs > vpc-005ec44057aaa8be2

vpc-005ec44057aaa8be2 / nacl-demo-1024-vpc [Actions](#)

Details [Info](#)

VPC ID vpc-005ec44057aaa8be2	State Available	Block Public Access Off	DNS hostnames Disabled
DNS resolution Enabled	Tenancy Default	DHCP option set dopt-033c3fc5d65745131	Main route table rtb-0ab2d868bb2f8b764
Main network ACL acl-028678d187a7f5e77	Default VPC No	IPv4 CIDR 10.0.0.0/16	IPv6 pool -
IPv6 CIDR (Network border group) -	Network Address Usage metrics Disabled	Route 53 Resolver DNS Firewall rule groups -	Owner ID 339712766612



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STEP2: CREATE SUBNET

VPC > Subnets > Create subnet

Create subnet [Info](#)

VPC

VPC ID
Create subnets in this VPC.

vpc-005ec44057aaa8be2 (nacl-demo-1024-vpc) ▼

Associated VPC CIDRs

IPv4 CIDRs
10.0.0.0/16

Subnet settings
Specify the CIDR blocks and Availability Zone for the subnet.

Subnet 1 of 1

Subnet name
Create a tag with a key of 'Name' and a value that you specify.

NACL-subnet-1024

The name can be up to 256 characters long.

Availability Zone [Info](#)
Choose the zone in which your subnet will reside, or let Amazon choose one for you.

Asia Pacific (Mumbai) / ap-south-1a ▼

IPv4 VPC CIDR block [Info](#)
Choose the VPC's IPv4 CIDR block for the subnet. The subnet's IPv4 CIDR must lie within this block.

10.0.0.0/16 ▼

IPv4 subnet CIDR block

10.0.0.0/24 256 IPs

< > ^ v

▼ **Tags - optional**

Key	Value - optional	
Q Name X	Q NACL-subnet-1024 X	Remove
Add new tag		
You can add 49 more tags.		
Remove		
Add new subnet		

Cancel [Create subnet](#)

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✓ You have successfully created 1 subnet: subnet-099a3f96b431fa1d5

Subnets (1) [Info](#)

Find resources by attribute or tag

Subnet ID : subnet-099a3f96b431fa1d5 X Clear filters

<input type="checkbox"/>	Name	Subnet ID	State
<input type="checkbox"/>	NACL-subnet-1024	subnet-099a3f96b431fa1d5	✓ Available

STEP3: CREATE INTERNET GATEWAY

VPC > [Internet gateways](#) > Create internet gateway

Create internet gateway [Info](#)

An internet gateway is a virtual router that connects a VPC to the internet. To create a new internet gateway specify the name for the gateway below.

Internet gateway settings

Name tag
Creates a tag with a key of 'Name' and a value that you specify.

IG-NACL-1024

Tags - optional
A tag is a label that you assign to an AWS resource. Each tag consists of a key and an optional value. You can use tags to search and filter your resources or track your AWS costs.

Key Value - optional

Q Name X Q IG-NACL-1024 X Remove

Add new tag

You can add 49 more tags.

Cancel Create internet gateway

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✓ The following internet gateway was created: igw-068c3b97c5767219c - IG-NACL-1024. You can now attach to a VPC to enable the VPC to communicate with the internet. [Attach to a VPC](#) ✕

[VPC](#) > [Internet gateways](#) > igw-068c3b97c5767219c

igw-068c3b97c5767219c / IG-NACL-1024

Actions ▾

Details Info

Internet gateway ID	State	VPC ID	Owner
igw-068c3b97c5767219c	Detached	-	339712766612

Tags [Manage tags](#)

Search tags

Key	Value
Name	IG-NACL-1024

ATTACH--

✓ The following internet gateway was created: igw-068c3b97c5767219c - IG-NACL-1024. You can now attach to a VPC to enable the VPC

[VPC](#) > [Internet gateways](#) > [Attach to VPC \(igw-068c3b97c5767219c\)](#)

Attach to VPC (igw-068c3b97c5767219c) Info

VPC
Attach an internet gateway to a VPC to enable the VPC to communicate with the internet. Specify the VPC to attach below.

Available VPCs
Attach the internet gateway to this VPC.

Search vpc-005ec44057aaa8be2 ✕

► AWS Command Line Interface command

Cancel [Attach internet gateway](#)

✓ Internet gateway igw-068c3b97c5767219c successfully attached to vpc-005ec44057aaa8be2

Notifications 0 0 2 0 0 ▾

[VPC](#) > [Internet gateways](#) > igw-068c3b97c5767219c

igw-068c3b97c5767219c / IG-NACL-1024

Actions ▾

Details Info

Internet gateway ID	State	VPC ID	Owner
igw-068c3b97c5767219c	Attached	vpc-005ec44057aaa8be2 nacl-demo-1024-vpc	339712766612

Tags [Manage tags](#)

Search tags

Key	Value
Name	IG-NACL-1024



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STEP4: CREATE ROUTE TABLE

VPC > Route tables > Create route table

Create route table [Info](#)

A route table specifies how packets are forwarded between the subnets within your VPC, the internet, and your VPN connection.

Route table settings

Name - *optional*
Create a tag with a key of 'Name' and a value that you specify.

VPC
The VPC to use for this route table.

Tags

A tag is a label that you assign to an AWS resource. Each tag consists of a key and an optional value. You can use tags to search and filter your resources or track your AWS costs.

Key	Value - <i>optional</i>	
<input type="text" value="Name"/>	<input type="text" value="NACL-routeTable-1024"/>	<input type="button" value="Remove"/>

You can add 49 more tags.

Edit subnet association

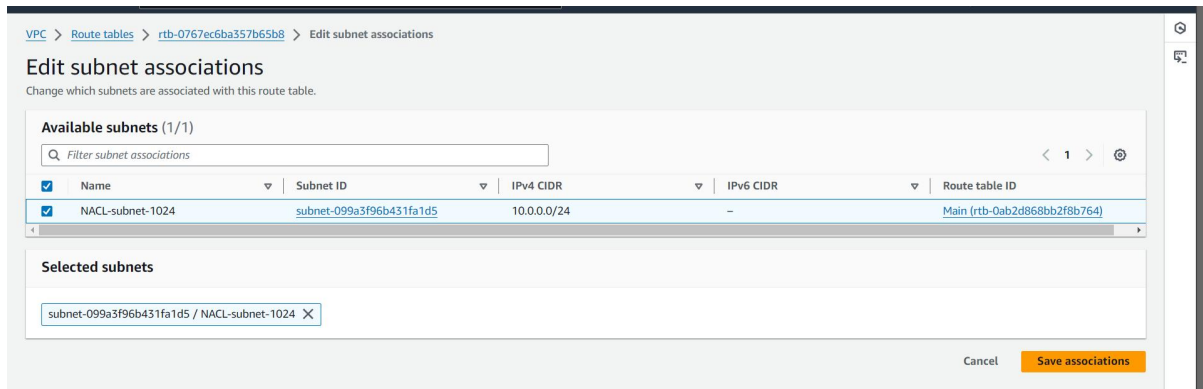
Route tables (1/3) Info					Last updated less than a minute ago	Actions	Create route table
<input type="text" value="Find resources by attribute or tag"/>							
<input type="checkbox"/>	Name	Route table ID	Explicit subnet associ...	Edge associations			
<input type="checkbox"/>	-	rtb-0160e351798ba4d21	-	-			
<input type="checkbox"/>	-	rtb-0ab2d868bb2f8b764	-	-			
<input checked="" type="checkbox"/>	NACL-routeTable-1024	rtb-0767ec6ba357b65b8	-	-		<div>View details Set main route table Edit subnet associations Edit edge associations Edit route propagation Edit routes Manage tags Delete route table</div>	<div>9456cd34d0e 4057aaa8be2 4057aaa8be2</div>

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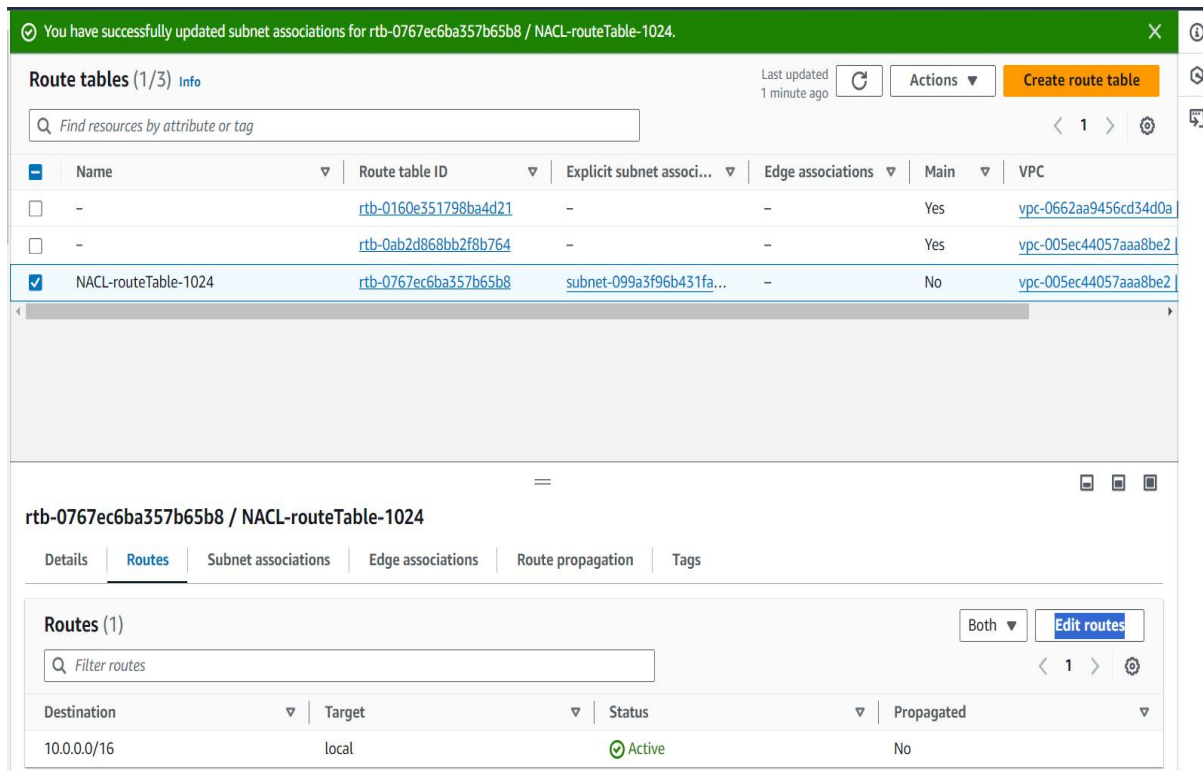
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select the subnet and save changes--



The screenshot shows the 'Edit subnet associations' page in the AWS console. The breadcrumb trail is 'VPC > Route tables > rtb-0767ec6ba357b65b8 > Edit subnet associations'. The page title is 'Edit subnet associations' with a subtitle 'Change which subnets are associated with this route table.' There are two sections: 'Available subnets (1/1)' and 'Selected subnets'. The 'Available subnets' section has a search bar and a table with one row: 'NACL-subnet-1024' with Subnet ID 'subnet-099a3f96b431fa1d5', IPv4 CIDR '10.0.0.0/24', and Route table ID 'Main (rtb-0ab2d868bb2f8b764)'. The 'Selected subnets' section shows 'subnet-099a3f96b431fa1d5 / NACL-subnet-1024' with a close button. At the bottom right are 'Cancel' and 'Save associations' buttons.

Now go to 'ROUTES'--> edit routes-->



The screenshot shows two parts of the AWS console. The top part is the 'Route tables' page, showing a table with three route tables. The third row is selected: 'NACL-routeTable-1024' with Route table ID 'rtb-0767ec6ba357b65b8' and VPC 'vpc-005ec44057aaa8be2'. The bottom part is the 'Routes' page for 'rtb-0767ec6ba357b65b8 / NACL-routeTable-1024'. It shows a table with one route: Destination '10.0.0.0/16', Target 'local', Status 'Active', and Propagated 'No'.



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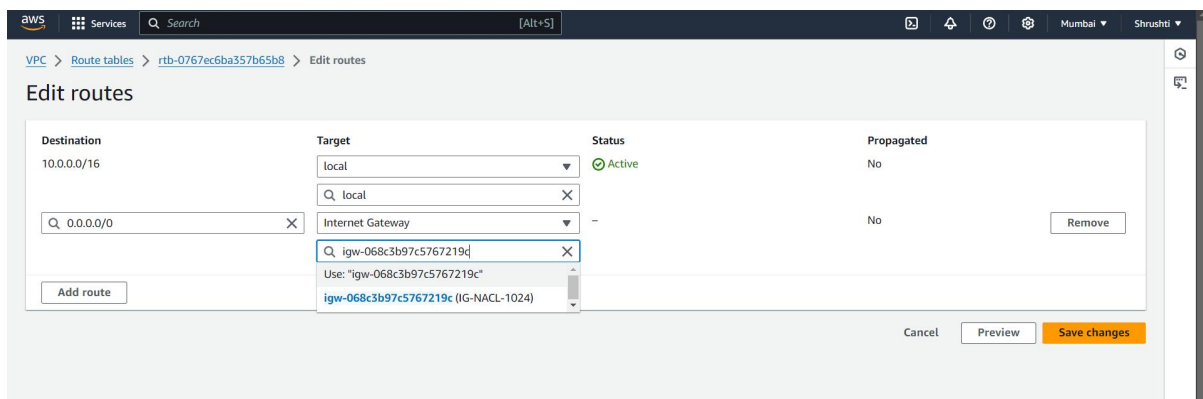
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Click on add route -> select – 0.0.0.0/0 and the ig that you created.



STEP5: Launch an instance

EC2 > Instances > Launch an instance

Launch an instance [Info](#)

Amazon EC2 allows you to create virtual machines, or instances, that run on the AWS Cloud. Quickly get started with the simple steps below.

Name and tags [Info](#)

Name

NACL-vpcdemo-1024

[Add additional tag](#)



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▼ **Application and OS Images (Amazon Machine Image)** [Info](#)

An AMI is a template that contains the software configuration (operating system, application server, and applications) required to launch your instance. Search or Browse for AMIs if you don't see what you are looking for below

🔍 Search our full catalog including 1000s of application and OS images

Recents

Quick Start

aws	Mac	ubuntu	Microsoft	Red Hat	SUSE	Browse more AMIs

Including AMIs from AWS, Marketplace and the Community

Amazon Machine Image (AMI)

Microsoft Windows Server 2022 Base

ami-036896dc7dd257166 (64-bit (x86))

Virtualization: hvm ENA enabled: true Root device type: ebs

Free tier eligible ▼

Description

Microsoft Windows 2022 Datacenter edition. [English]

Microsoft Windows Server 2022 Full Locale English AMI provided by Amazon

▼ **Key pair (login)** [Info](#)

You can use a key pair to securely connect to your instance. Ensure you launch the instance.

Key pair name - required

CLOUDWATCH

For Windows instances, you use a key pair to decrypt the administrator password. For Linux instances, you use a key pair to log in to the instance.



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Edit network setting(attach your vpc)

▼ **Network settings** [Info](#)

Edit

Network [Info](#)

vpc-0662aa9456cd34d0a | -defaultVPC-

▼ **Network settings** [Info](#)

VPC - *required* [Info](#)

vpc-005ec44057aaa8be2 (nACL-demo-1024-vpc)
10.0.0.0/16



Subnet [Info](#)

subnet-099a3f96b431fa1d5
VPC: vpc-005ec44057aaa8be2 Owner: 339712766612
Availability Zone: ap-south-1a Zone type: Availability Zone
IP addresses available: 251 CIDR: 10.0.0.0/24)

NACL-subnet-1024



Auto-assign public IP [Info](#)

Enable

[Additional charges apply](#) when outside of [free tier allowance](#)

Firewall (security groups) [Info](#)

A security group is a set of firewall rules that control the traffic for your instance. Add rules to allow specific traf

☒ Create security group

☐ Select existing security group

Security group name - *required*

NacVPC-SG-1024

This security group will be added to all network interfaces. The name can't be edited after the security group is
characters. Valid characters: a-z, A-Z, 0-9, spaces, and . _ - / () # , @ [] + = & ; { } ! \$ *

Description - *required* [Info](#)

launch-wizard-3 created 2024-11-24T18:25:01.318Z



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Rdp rule will be attached automatically if not ensure you add rdp rule also.

Inbound Security Group Rules

▼ Security group rule 1 (TCP, 3389, 0.0.0.0/0) [Remove](#)

Type Info	Protocol Info	Port range Info
rdp	TCP	3389
Source type Info	Source Info	Description - optional Info
Anywhere	<input type="text" value="0.0.0.0/0"/>	<input type="text" value="e.g. SSH for admin desktop"/>

▼ Security group rule 2 (All, All, 0.0.0.0/0) [Remove](#)

Type Info	Protocol Info	Port range Info
All traffic	All	All
Source type Info	Source Info	Description - optional Info
Anywhere	<input type="text" value="0.0.0.0/0"/>	<input type="text" value="e.g. SSH for admin desktop"/>

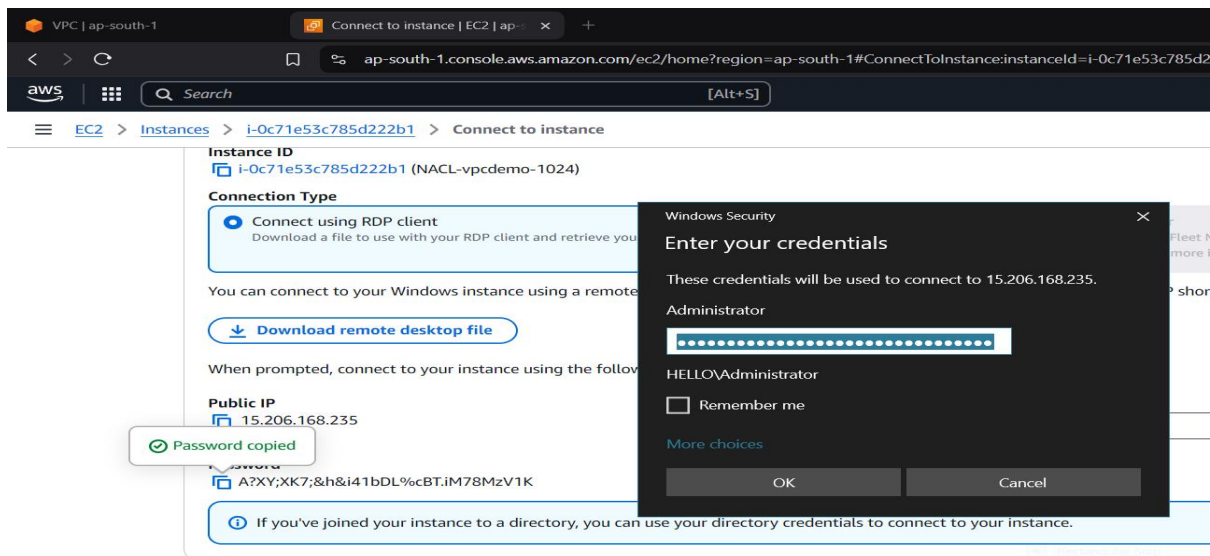
Launch instance

Once instance state is running -- connect your instance via RDP --Download the remote desktop file; and connect to it using the password (Make sure you decrypt the password using the key pair that you used in your instance).

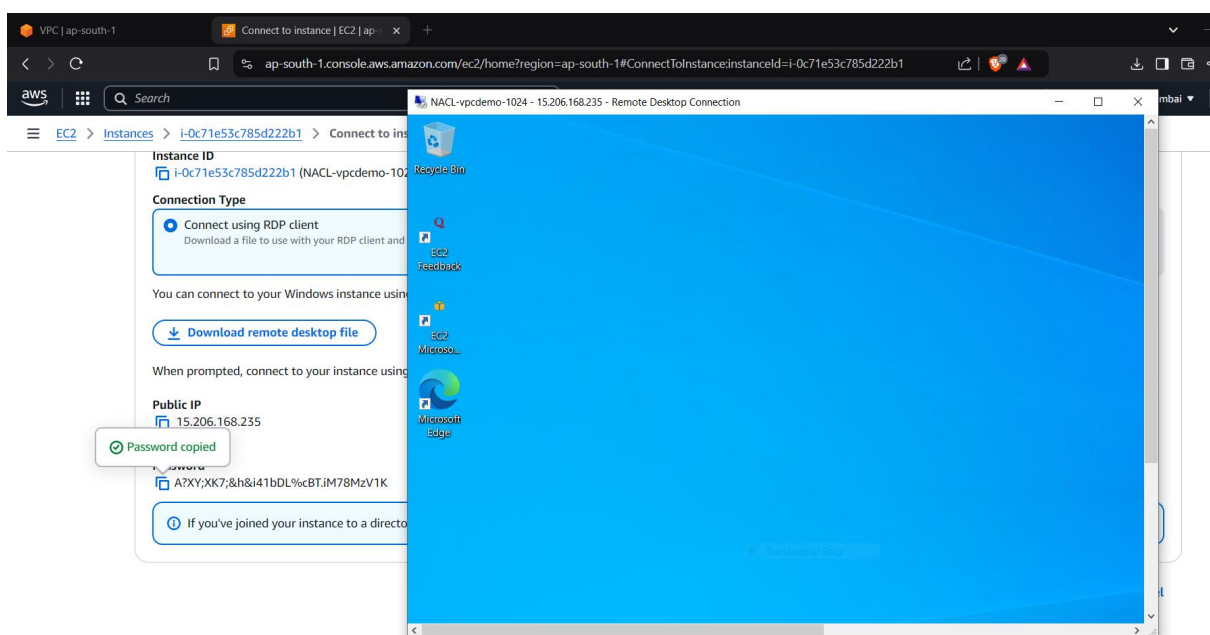
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Remote desktop connection(e able to connect to your Windows machine)



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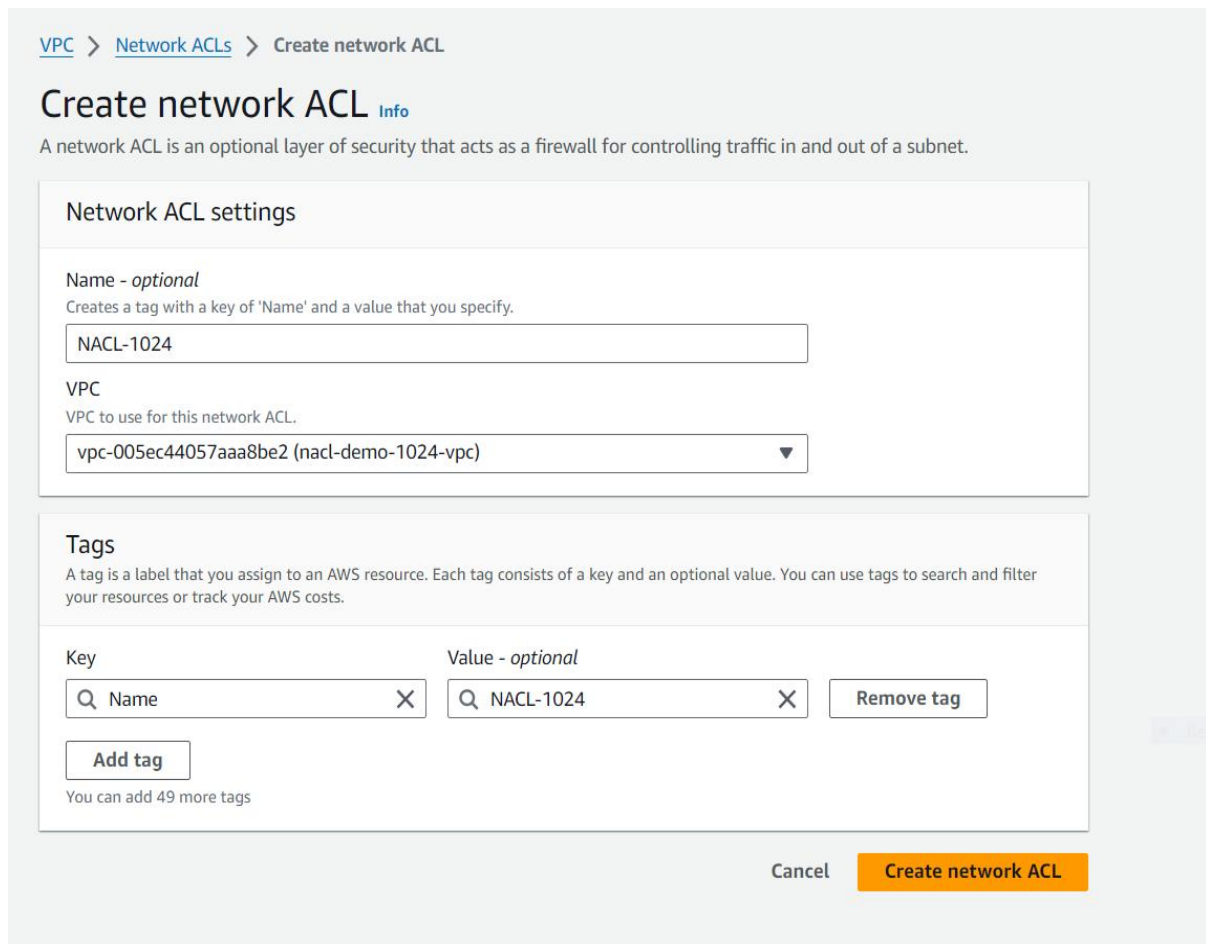
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STEP6:– Create an NACL and edit the subnet association. After creating NACL you won't be able to connect to your windows machine since traffic inbound and outbound will be denied.



[VPC](#) > [Network ACLs](#) > Create network ACL

Create network ACL [Info](#)

A network ACL is an optional layer of security that acts as a firewall for controlling traffic in and out of a subnet.

Network ACL settings

Name - optional
Creates a tag with a key of 'Name' and a value that you specify.

VPC
VPC to use for this network ACL.

vpc-005ec44057aaa8be2 (nACL-demo-1024-vpc) ▼

Tags

A tag is a label that you assign to an AWS resource. Each tag consists of a key and an optional value. You can use tags to search and filter your resources or track your AWS costs.

Key	Value - optional	
<input type="text" value="Name"/>	<input type="text" value="NACL-1024"/>	<input type="button" value="Remove tag"/>

You can add 49 more tags

Add the following in outbound and inbound rules and save them.

--Rdp and custom tcp

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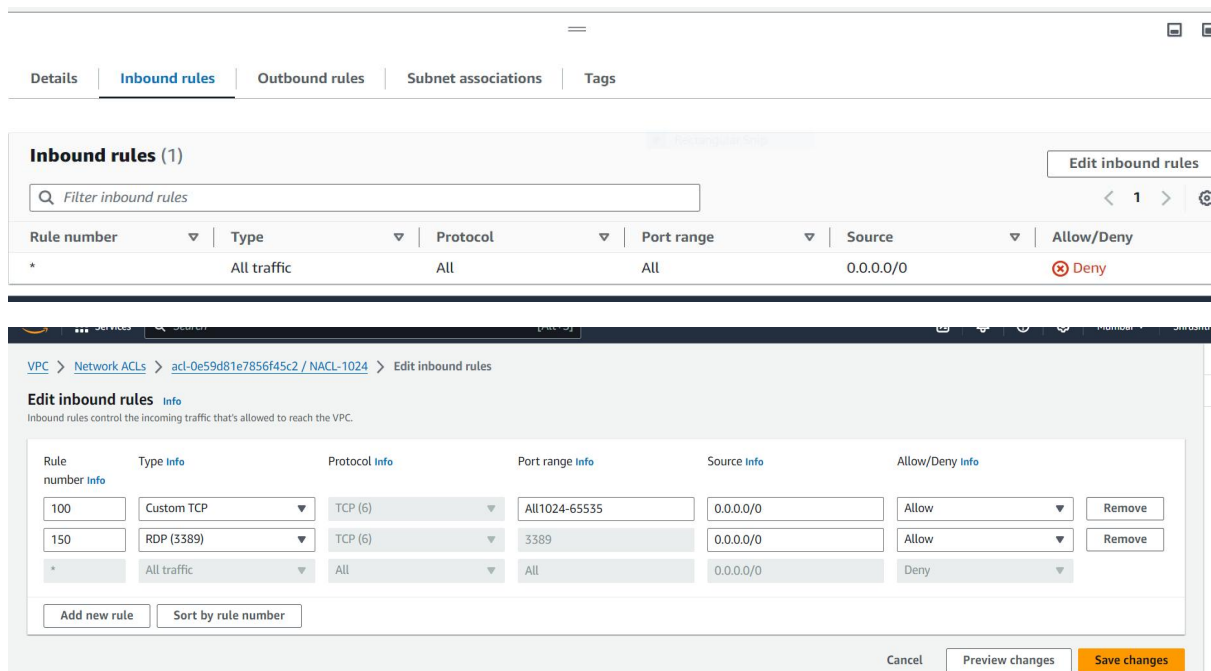
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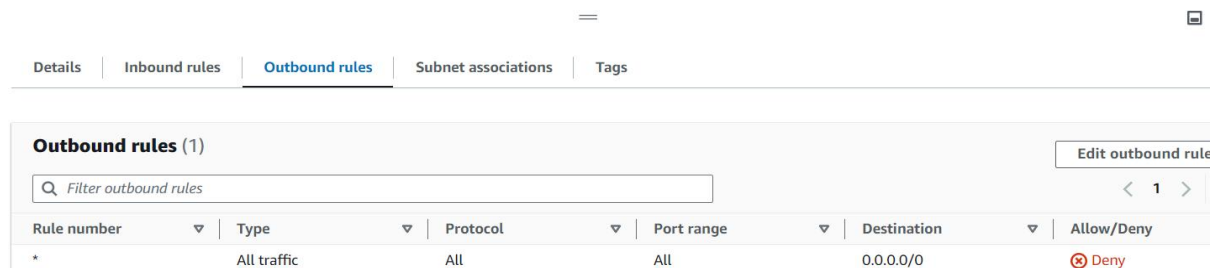
Inbound rule--



The screenshot shows the AWS VPC console interface for editing inbound rules. The top navigation bar includes tabs for Details, Inbound rules (selected), Outbound rules, Subnet associations, and Tags. Below the tabs, there's a section titled "Inbound rules (1)" with a search bar and a table of rules. The table has columns for Rule number, Type, Protocol, Port range, Source, and Allow/Deny. A single rule is listed with Rule number 100, Type Custom TCP, Protocol TCP (6), Port range All1024-65535, Source 0.0.0.0/0, and Allow/Deny Allow. Below the table, there are buttons for "Add new rule" and "Sort by rule number". At the bottom right, there are buttons for "Cancel", "Preview changes", and "Save changes".

Rule number	Type	Protocol	Port range	Source	Allow/Deny
100	Custom TCP	TCP (6)	All1024-65535	0.0.0.0/0	Allow

Outbound--



The screenshot shows the AWS VPC console interface for editing outbound rules. The top navigation bar includes tabs for Details, Inbound rules, Outbound rules (selected), Subnet associations, and Tags. Below the tabs, there's a section titled "Outbound rules (1)" with a search bar and a table of rules. The table has columns for Rule number, Type, Protocol, Port range, Destination, and Allow/Deny. A single rule is listed with Rule number 100, Type Custom TCP, Protocol TCP (6), Port range All1024-65535, Destination 0.0.0.0/0, and Allow/Deny Allow. Below the table, there are buttons for "Add new rule" and "Sort by rule number". At the bottom right, there are buttons for "Cancel", "Preview changes", and "Save changes".

Rule number	Type	Protocol	Port range	Destination	Allow/Deny
100	Custom TCP	TCP (6)	All1024-65535	0.0.0.0/0	Allow

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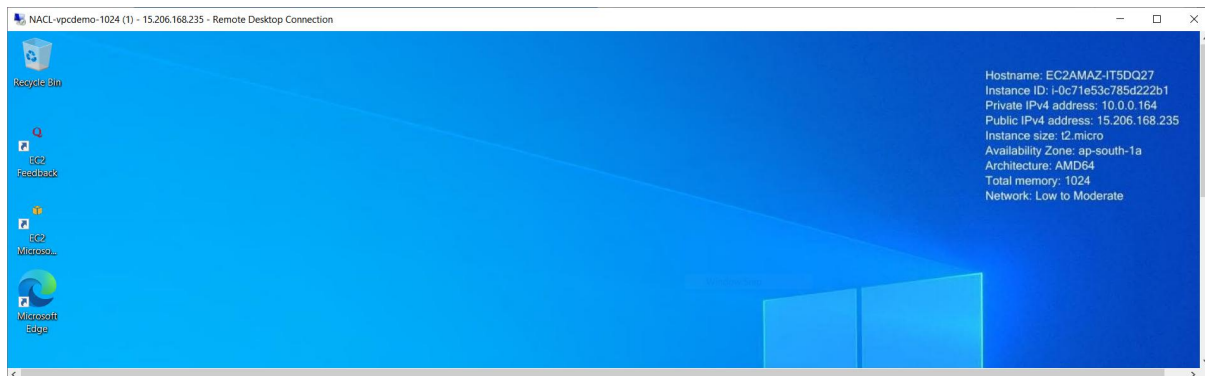
Title of Practicle : Configuring Layered Security in an AWS VPC(NACL)

VPC > Network ACLs > acl-0e59d81e7856f45c2 / NACL-1024 > Edit outbound rules

Edit outbound rules Info
Outbound rules control the outgoing traffic that's allowed to leave the VPC.

Rule number Info	Type Info	Protocol Info	Port range Info	Destination info	Allow/Deny info	
100	RDP (3389)	TCP (6)	3389	0.0.0.0/0	Allow	Remove
150	Custom TCP	TCP (6)	1024-65535	0.0.0.0/0	Allow	Remove
+	All traffic	All	All	0.0.0.0/0	Deny	

After that download the rdp file again and try connecting to your windows machine. Now you will be connected to your machine successfully.





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Delete VPC

✔ Will be deleted

This VPC will be deleted permanently and cannot be recovered later:

Name	VPC ID	State
nacl-demo-1024-vpc	vpc-005ec44057aaa8be2	✔ Available

✔ Will also be deleted

The following 5 resources will also be deleted permanently and cannot be recovered later:

Name	Resource ID	State
IG-NACL-1024	igw-068c3b97c5767219c	✔ Available
NACL-1024	acl-0e59d81e7856f45c2	-
NACL-routeTable-1024	rtb-0767ec6ba357b65b8	-
-	sg-0aa9780bfbf1d8670	-
NACL-subnet-1024	subnet-099a3f96b431fa1d5	✔ Available

To confirm deletion, type *delete* in the field:

delete

Cancel

Delete

Done.