

ARTIFICIAL INTELLIGENCE (AI) IN SYSTEM ADMINISTRATION

Name: Mohamed Mostafa Mostafa Esmael

Track: System Administration

Branch: Aswan



VPC
(10.0.0.0/16)



Public subnet
(10.0.0.0/24)

Security group



Apache ec2

Destination	Target
0.0.0.0/0	<i>igw-id</i>
::/0	<i>igw-id</i>



Internet gateway



INTERNET

Home

serverb_GUI

ActivitiesVisual Studio Code

Mar 20 16:16

FileEditSelectionViewGoRunTerminalHelp

Untitled (Workspace)

00[][]-[]

...

EXPLORER

UNTITLED (WORKSPACE)

aws

terraform

.terraform

.terraform.lock.hcl

main.tf

provider.tf

terraform.tfstate

terraform.tfstate.backup

terraform > main.tf

1 resource "aws_vpc" "main" {

2 cidr_block = "10.0.0.0/16"

3

4 tags = {

5 Name = "Esmael_VPC"

6 }

7 }

8

9 resource "aws_subnet" "public_subnet" {

10 vpc_id = aws_vpc.main.id

11 cidr_block = "10.0.1.0/24"

12 map_public_ip_on_launch = true

13

14 tags = {

15 Name = "Esmael_PublicSubnet"

16 }

17 }

18

19 resource "aws_internet_gateway" "igw" {

20 vpc_id = aws_vpc.main.id

21

22 tags = {

23 Name = "Esmael_IGW"

24 }

25 }

26

27 resource "aws_route_table" "rt" {

28 vpc_id = aws_vpc.main.id

29

30 route {

31 cidr_block = "0.0.0.0/0"

32 gateway_id = aws_internet_gateway.igw.id

33 }

34

35 route {

36 ipv6_cidr_block = ":::/0"

37 gateway_id = aws_internet_gateway.igw.id

38 }

39

40 tags = {

41 Name = "Esmael_PublicRouteTable"

OUTLINE

Home

serverb_GUI

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FileEditSelectionViewGoRunTerminalHelp

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EXPLORER

UNTITLED (WORKSPACE)

aws

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terraform > main.tf

45 resource "aws_route_table_association" "public_assoc" {

47 route_table_id = aws_route_table.rt.id

48 }

49

50 resource "aws_security_group" "apache_sg" {

51 vpc_id = aws_vpc.main.id

52

53 ingress {

54 from_port = 22

55 to_port = 22

56 protocol = "tcp"

57 cidr_blocks = ["0.0.0.0/0"]

58 }

59

60 ingress {

61 from_port = 80

62 to_port = 80

63 protocol = "tcp"

64 cidr_blocks = ["0.0.0.0/0"]

65 }

66

67 ingress {

68 from_port = 443

69 to_port = 443

70 protocol = "tcp"

71 cidr_blocks = ["0.0.0.0/0"]

72 }

73

74 egress {

75 from_port = 0

76 to_port = 0

77 protocol = "-1"

78 cidr_blocks = ["0.0.0.0/0"]

79 }

80

81 tags = {

82 Name = "Esmael_ApacheSG"

83 }

84 }

85

86 resource "aws_instance" "apache_ec2" {

Home

serverb_GUI

ActivitiesVisual Studio CodeMar 20 16:16

FileEditSelectionViewGoRunTerminalHelp

Untitled (Workspace)

EXPLORER

UNTITLED (WORKSPACE)

aws

terraform

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terraform.tfstate.backup

Welcome

provider.tf

main.tf

terraform.tfstate

terraform > main.tf

50 resource "aws_security_group" "apache_sg" {

66

67 ingress {

68 from_port = 443

69 to_port = 443

70 protocol = "tcp"

71 cidr_blocks = ["0.0.0.0/0"]

72 }

73

74 egress {

75 from_port = 0

76 to_port = 0

77 protocol = "-1"

78 cidr_blocks = ["0.0.0.0/0"]

79 }

80

81 tags = {

82 Name = "Esmael_ApacheSG"

83 }

84 }

85

86 resource "aws_instance" "apache_ec2" {

87 ami = "ami-04b4f1a9cf54c11d0"

88 instance_type = "t2.micro"

89 subnet_id = aws_subnet.public_subnet.id

90 vpc_security_group_ids = [aws_security_group.apache_sg.id]

91

92 user_data = <<-EOF

93

94 #!/bin/bash

95 sudo apt update -y

96 sudo apt install -y apache2

97 echo "Welcome to Esmael's instances" > /var/www/html/index.html

98 sudo systemctl start apache2

99 sudo systemctl enable apache2

100 sudo systemctl restart apache2

101 EOF

102

103 tags = {

104 Name = "Esmael_ApacheEC2"

105 }

Home

serverb_GUI

ActivitiesVisual Studio Code

Mar 20 16:20

FileEditSelectionViewGoRunTerminalHelp

Untitled (Workspace)

EXPLORER

UNTITLED (WORKSPACE)

aws

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terraform.tfstate.backup

Welcome

provider.tf

main.tf

terraform.tfstate

terraform > provider.tf

1 provider "aws" {

2 | region = "us-east-1"

3 }

4

OUTLINE

Home

serverb_GUI

ActivitiesVisual Studio Code

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FileEditSelectionViewGoRunTerminalHelp

Untitled (Workspace)

EXPLORER

UNTITLED (WORKSPACE)

aws

terraform

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main.tf

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terraform.tfstate.backup

Welcome

provider.tf

main.tf

terraform > main.tf

50 resource "aws_security_group" "apache_sg" {

80

81 tags = {

82 Name = "Esmael_ApacheSG"

83 }

84 }

85

86 resource "aws_instance" "apache_ec2" {

87 ami = "ami-08b5b3a93ed654d19"

88 instance_type = "t2.micro"

89 subnet_id = aws_subnet.public_subnet.id

90 vpc_security_group_ids = [aws_security_group.apache_sg.id]

91

92 tags = {

93 Name = "ApacheEC2"

94 }

95 }

96

97

PROBLEMS

OUTPUT

DEBUG CONSOLE

TERMINAL

PORTS

+ ephemeral_block_device (known after apply)

+ instance_market_options (known after apply)

+ maintenance_options (known after apply)

+ metadata_options (known after apply)

+ network_interface (known after apply)

+ private_dns_name_options (known after apply)

+ root_block_device (known after apply)

}

Plan: 1 to add, 0 to change, 0 to destroy.

aws_instance.apache_ec2: Creating...

aws_instance.apache_ec2: Still creating... [10s elapsed]

aws_instance.apache_ec2: Creation complete after 17s [id=i-0c7691fe204658dae]

Apply complete! Resources: 1 added, 0 changed, 0 destroyed.

bash terraf...

bash terraf...

EC2 Global View


▼ Virtual private cloud

Your VPCs

- Subnets
- Route tables
- Internet gateways
- Egress-only internet gateways
- Carrier gateways
- DHCP option sets
- Elastic IPs
- Managed prefix lists
- NAT gateways
- Peering connections

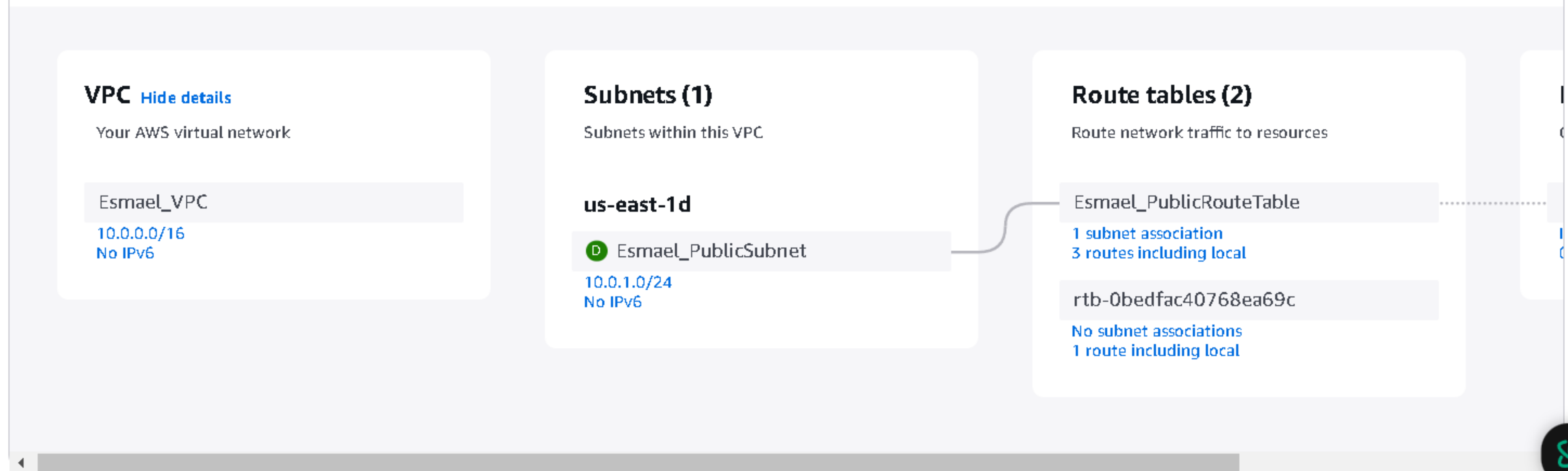
▼ Security

- Network ACLs
- Security groups

ac-0181218176b1638b2	NO	10.0.0.0/16	-
IPv6 CIDR (Network border group) -	Network Address Usage metrics Disabled	Route 53 Resolver DNS Firewall rule groups -	Owner ID  025066251600

[Resource map](#) | [CIDRs](#) | [Flow logs](#) | [Tags](#) | [Integrations](#)

Resource map [Info](#)



VPC dashboard

EC2 Global View

Filter by VPC

Virtual private cloud

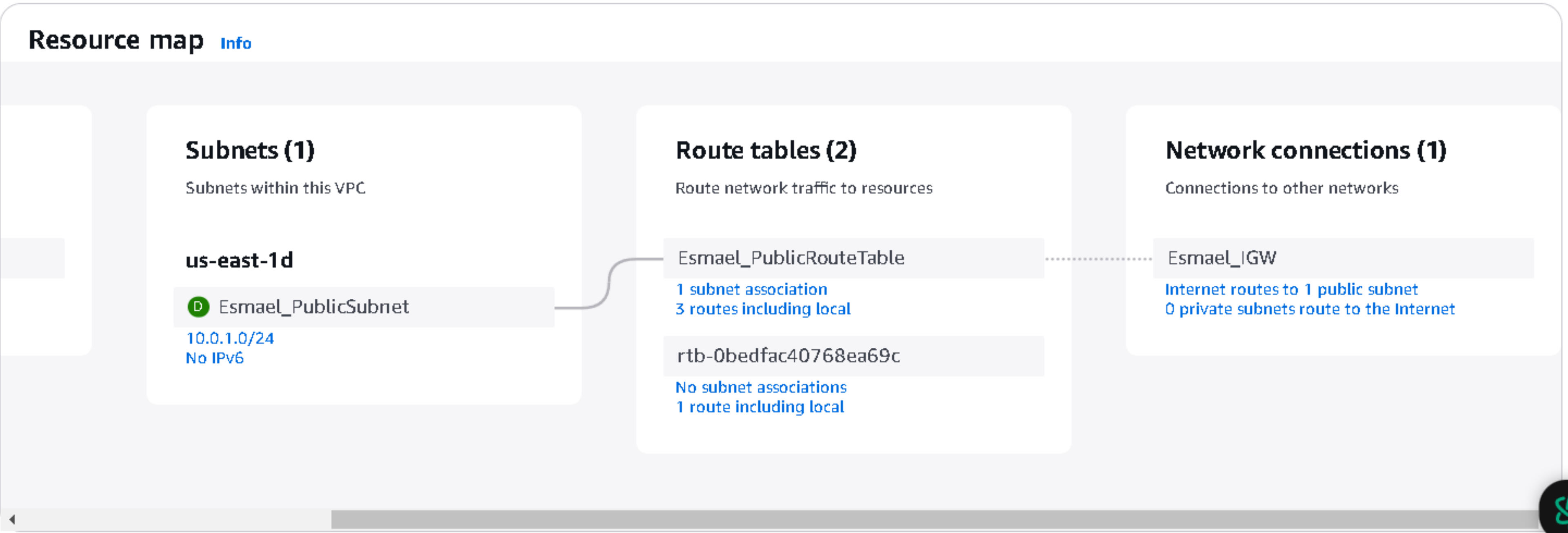
- Your VPCs
- Subnets
- Route tables
- Internet gateways
- Egress-only internet gateways
- Carrier gateways
- DHCP option sets
- Elastic IPs
- Managed prefix lists
- NAT gateways
- Peering connections

Security

- Network ACLs
- Security groups

IPv6 CIDR (Network border group) -	Network Address Usage metrics Disabled	Route 53 Resolver DNS Firewall rule groups -	Owner ID 025066251600
---------------------------------------	---	---	--------------------------

- Resource map
- CIDRs
- Flow logs
- Tags
- Integrations



VPC

>

Route tables

>

rtb-032787a2a4aa00ec6

rtb-032787a2a4aa00ec6 / Esmael_PublicRouteTable

Actions

VPC dashboard

EC2 Global View

Filter by 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

NAT gateways

Peering connections

Security

Network ACLs

Security groups

Details

Route table ID

rtb-032787a2a4aa00ec6

VPC

vpc-0e49e0feb64b937e6 | Esmael_VPC

Main

No

Owner ID

025066251600

Explicit subnet associations

subnet-07ee7637720cb311f / Esmael_PublicSubnet

Edge associations

-

Routes

Subnet associations

Edge associations

Route propagation

Tags

Routes (3)

Both

Edit routes

1

Destination	Target	Status	Propagated
::/0	igw-01f1260d289778f34	Active	No
0.0.0.0/0	igw-01f1260d289778f34	Active	No
10.0.0.0/16	local	Active	No

aws

Search

[Alt+S]

S3

IAM

VPC

EC2

United States (N. Virginia)

Mohamed_Esmael

EC2

Instances

Instances (1) Info

Last updated less than a minute ago

Connect

Instance state

Actions

Launch instances

Find Instance by attribute or tag (case-sensitive)

All states

< 1 >

	Name	Instance ID	Instance state	Instance type	Status check	Alarm status	Availability Zone	Public IP
<input type="checkbox"/>	ApacheEC2	i-0c7691fe204658dae	Running	t2.micro	2/2 checks passed	View alarms	us-east-1d	-

Select an instance

EC2

Dashboard

EC2 Global View

Events

Instances

Instances

Instance Types

Launch Templates

Spot Requests

Savings Plans

Reserved Instances

Dedicated Hosts

Capacity Reservations

Images

AMIs

AMI Catalog

Elastic Block Store

Volumes

Snapshots

←→↺🔒

us-east-1.console.aws.amazon.com/vpcconsole/home

📄🔖👤

aws

📱

🔍 Search

[Alt+S]

📺🔔🔗⚙️

United States (N. Virginia) ▼

Mohamed_Esmael ▼

📁 S3

🔑 IAM

🏠 VPC

🖨️ EC2

☰

VPC > Security Groups > sg-065ddfe0f31cae73a - terraform-20250320121137757300000001

🔒💬

gateways

Carrier gateways

DHCP option sets

Elastic IPs

Managed prefix lists

NAT gateways

Peering connections

▼ Security

Network ACLs

Security groups

▼ PrivateLink and Lattice

Getting started Updated

Endpoints Updated

Endpoint services

Service networks Updated

Lattice services

Resource configurations New

Resource gateways New

Target groups

sg-065ddfe0f31cae73a - terraform-20250320121137757300000001

Actions ▼

Details

Security group name

📁 terraform-20250320121137757300000001

Security group ID

📁 sg-065ddfe0f31cae73a

Description

📁 Managed by Terraform

VPC ID

📁 vpc-0e49e0feb64b937e6

Owner

📁 025066251600

Inbound rules count

3 Permission entries

Outbound rules count

1 Permission entry

Inbound rules

Outbound rules

Sharing - new

VPC associations - new

Tags

Inbound rules (3)

🔄Manage tagsEdit inbound rules

🔍 Search

☐

Name

▼

☐

Security group rule...

▼

☐

IP version

▼

☐

Type

▼

☐

Protocol

▼

☐

Port range

▼

☐

-

sgr-0c7848cd0cf11f9aa

IPv4

SSH

TCP

22

☐

-

sgr-09b9842f67ae1a83e

IPv4

HTTP

TCP

80

☐

-

sgr-0c97f169ba7435dd7

IPv4

HTTPS

TCP


443

Auto-assigned IP address

 44.211.64.120 [Public IP]

Copy auto-assigned IP address to clipboard



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Vivaldi Comm...



AccuWeather



Vivaldia Games



Vivaldi Browser

+ Add a Speed Dial

Welcome to Esmael's instances



