

Case-Study- VPC-And-Peering

Problem Statement:

You work for XYZ Corporation and based on the expansion requirements of your corporation you have been asked to create and set up a distinct Amazon VPC for the production and development team. You are expected to perform the following tasks for the respective VPCs.

Production Network:

1. Design and build a 4-tier architecture.
2. Create 5 subnets out of which 4 should be private named app1, app2, dbcache and db and one should be public, named web.
3. Launch instances in all subnets and name them as per the subnet that they have been launched in.
4. Allow dbcache instance and app1 subnet to send internet requests.
5. Manage security groups and NACLs.

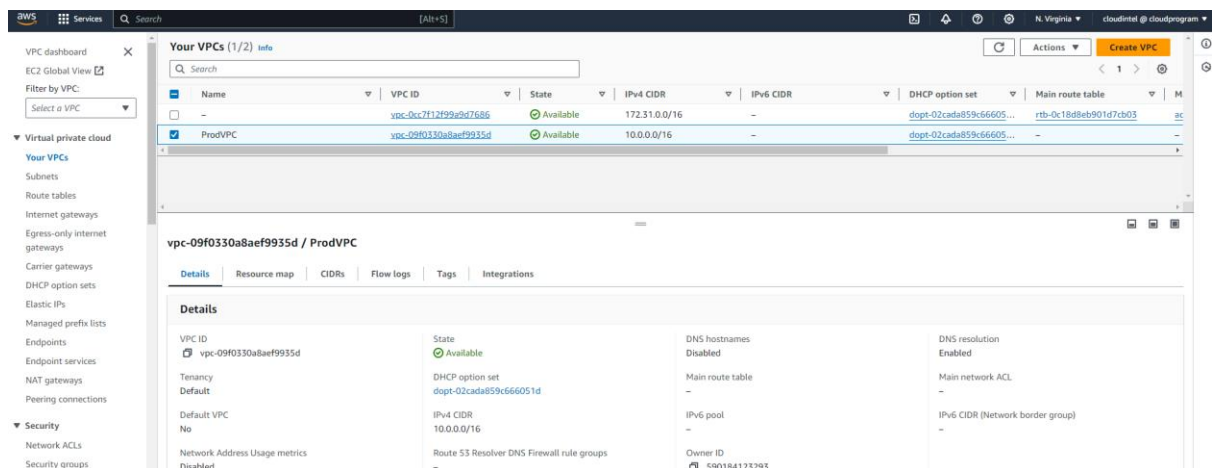
Development Network:

1. Design and build 2-tier architecture with two subnets named web and db and launch instances in both subnets and name them as per the subnet names.
2. Make sure only the web subnet can send internet requests.
3. Create peering connection between production network and development network.
4. Setup connection between db subnets of both production network and development network respectively.

SOLUTION:

PRODUCTION NETWORK

1. ProdVPC created



Create Internet Gateway & Attach to ProdVPC

Internet gateway igw-0a50f80af637c3389 successfully attached to vpc-09f0330a8aef9935d

VPC > Internet gateways > igw-0a50f80af637c3389

igw-0a50f80af637c3389 / IGWcasestudy

Actions

Details Info

Internet gateway ID igw-0a50f80af637c3389	State Attached	VPC ID vpc-09f0330a8aef9935d ProdVPC	Owner 590184123293
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Tags

Search tags

Key	Value
Name	IGWcasestudy

Manage tags

< 1 > ⚙

VPC > Internet gateways > Attach to VPC (igw-0a50f80af637c3389)

Attach to VPC (igw-0a50f80af637c3389) 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.

Q vpc-09f0330a8aef9935d X

► AWS Command Line Interface command

Cancel Attach internet gateway

Your VPCs (1/2) Info

Search

Name	VPC ID	State	IPv4 CIDR	IPv6 CIDR	DHCP option set	Main route table	M
-	vpc-0cc7f12f99a9d7686	Available	172.31.0.0/16	-	dopt-02cada859c66605...	rtb-0c18d8eb901d7cb03	ac
ProdVPC	vpc-09f0330a8aef9935d	Available	10.0.0.0/16	-	dopt-02cada859c66605...	rtb-0dc873706ff1e798	ac

vpc-09f0330a8aef9935d / ProdVPC

Details Resource map CIDRs Flow logs Tags Integrations

Resource map Info

VPC Show details
Your AWS virtual network
ProdVPC

Subnets (5)
Subnets within this VPC
us-east-1f
web
app2
dbcache
db
app1

Route tables (3)
Route network traffic to resources
ProdRTprivate
rtb-0dc873706ff1e798
ProdRTpublic

Network connections (2)
Connections to other networks
IGWcasestudy
myNATGW

Public Route Table

VPC > Route tables > rtb-0f17aaf6c99eef12f

rtb-0f17aaf6c99eef12f / ProdRTpublic

Actions

Details Info

Route table ID
rtb-0f17aaf6c99eef12f

VPC
vpc-09f0330a8aef9935d | ProdVPC

Main
No

Owner ID
590184123293

Explicit subnet associations
-

Edge associations
-

Routes Subnet associations Edge associations Route propagation Tags

Routes (2)

Filter routes

Both Edit routes

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Destination	Target	Status	Propagated
0.0.0.0/0	igw-0a50f80af637c3389	Active	No
10.0.0.0/16	local	Active	No

VPC > Route tables > rtb-0f17aaf6c99eef12f

rtb-0f17aaf6c99eef12f / ProdRTpublic

Actions

Details Info

Route table ID
rtb-0f17aaf6c99eef12f

VPC
vpc-09f0330a8aef9935d | ProdVPC

Main
No

Owner ID
590184123293

Explicit subnet associations
-

Edge associations
-

Routes Subnet associations Edge associations Route propagation Tags

Explicit subnet associations (0)

Find subnet association

Edit subnet associations

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Name	Subnet ID	IPv4 CIDR	IPv6 CIDR
No subnet associations You do not have any subnet associations.			

Subnets without explicit associations (1)

The following subnets have not been explicitly associated with any route tables and are therefore associated with the main route table:

Find subnet association

Edit subnet associations

< 1 > ⌕

Name	Subnet ID	IPv4 CIDR	IPv6 CIDR
web	subnet-0ad33aae12ca50adf	10.0.224.0/19	-

Private Route Table

VPC > Route tables > rtb-0bba2b25a5f589310

rtb-0bba2b25a5f589310 / ProdRTprivate

Actions

Details Info

Route table ID
rtb-0bba2b25a5f589310

VPC
vpc-09f0330a8aef9935d | ProdVPC

Main
No

Owner ID
590184123293

Explicit subnet associations
[4 subnets](#)

Edge associations
-

Routes Subnet associations Edge associations Route propagation Tags

Routes (2)

Filter routes

Both Edit routes

< 1 > ⌕

Destination	Target	Status	Propagated
0.0.0.0/0	nat-0f11caed550c9d5f7	Active	No
10.0.0.0/16	local	Active	No

VPC > Route tables > rtb-0bba2b25a5f589310

rtb-0bba2b25a5f589310 / ProdRTprivate

Actions

Details Info

Route table ID rtb-0bba2b25a5f589310	Main No	Explicit subnet associations 4 subnets	Edge associations -
VPC vpc-09f0330a8aef9935d ProdVPC	Owner ID 590184123293		

Routes Subnet associations Edge associations Route propagation Tags

Explicit subnet associations (4)
Edit subnet associations

Find subnet association

Name	Subnet ID	IPv4 CIDR	IPv6 CIDR
app2	subnet-0ddb9dd90e3caa5a5	10.0.64.0/18	-
dbcache	subnet-0efa2e40f6c49341b	10.0.128.0/18	-
db	subnet-0de82b6a840c207bf	10.0.192.0/19	-
app1	subnet-0ae6a27c80fe012ce	10.0.0.0/18	-

Subnets without explicit associations (1)
Edit subnet associations

The following subnets have not been explicitly associated with any route tables and are therefore associated with the main route table:

Find subnet association

Name	Subnet ID	IPv4 CIDR	IPv6 CIDR
web	subnet-0ad33aae12ca50adf	10.0.224.0/19	-

2. Subnets created

BWS Services Search [Alt+S]

VPC dashboard EC2 Global View Filter by VPC: Select a VPC

Virtual private cloud Your VPCs Subnets Route tables Internet gateways Egress-only internet gateways Carrier gateways

You have successfully created 5 subnets: subnet-0ae6a27c80fe012ce, subnet-0ddb9dd90e3caa5a5, subnet-0efa2e40f6c49341b, subnet-0de82b6a840c207bf, subnet-0ad33aae12ca50adf

Subnets (5) Info

Find resources by attribute or tag

Subnet ID : subnet-0ae6a27c80fe012ce Subnet ID : subnet-0ddb9dd90e3caa5a5 Subnet ID : subnet-0efa2e40f6c49341b Show more (+2) Clear filters

	Name	Subnet ID	State	VPC	IPv4 CIDR	IPv6 CIDR	Available IPv4 addresses
<input type="checkbox"/>	web	subnet-0ad33aae12ca50adf	Available	vpc-09f0330a8aef9935d Prod...	10.0.224.0/19	-	8187
<input type="checkbox"/>	app2	subnet-0ddb9dd90e3caa5a5	Available	vpc-09f0330a8aef9935d Prod...	10.0.64.0/18	-	16379
<input type="checkbox"/>	dbcache	subnet-0efa2e40f6c49341b	Available	vpc-09f0330a8aef9935d Prod...	10.0.128.0/18	-	16379
<input type="checkbox"/>	db	subnet-0de82b6a840c207bf	Available	vpc-09f0330a8aef9935d Prod...	10.0.192.0/19	-	8187
<input type="checkbox"/>	app1	subnet-0ae6a27c80fe012ce	Available	vpc-09f0330a8aef9935d Prod...	10.0.0.0/18	-	16379

ENABLE PUBLIC IP for the public subnet "web"

BWS Services Search [Alt+S]

VPC > Subnets > subnet-0ad33aae12ca50adf > Edit subnet settings

Edit subnet settings

Subnet

Subnet ID: subnet-0ad33aae12ca50adf Name: web

Auto-assign IP settings

Enable AWS to automatically assign a public IPv4 or IPv6 address to a new primary network interface for an instance in this subnet.

☒ Enable auto-assign public IPv4 address

Enable auto-assign customer-owned IPv4 address Option disabled because no customer owned pools found.

Resource-based name (RBN) settings

Specify the hostname type for EC2 instances in this subnet and optional RBN DNS query settings.

☐ Enable resource name DNS A record on launch

☒ Enable resource name DNS AAAA record on launch

Hostname type

☐ Resource name

☒ IP name

3. Setup NAT for instances in dbcache & app1 to send internet requests

NAT gateway nat-0f11caed550c9d5f7 | myNATGW was created successfully.

VPC > NAT gateways > nat-0f11caed550c9d5f7

nat-0f11caed550c9d5f7 / myNATGW

Actions

Details

NAT gateway ID
nat-0f11caed550c9d5f7

NAT gateway ARN
arn:aws:ec2:us-east-1:590184123293:natgateway/nat-0f11caed550c9d5f7

VPC
vpc-09f0330a8aef9935d / ProdVPC

Connectivity type
Public

Primary public IPv4 address
-

Subnet
subnet-0ad33aae12ca50adf / web

State
Pending

Primary private IPv4 address
-

Created
Wednesday, March 13, 2024 at 11:46:00 GMT+5:30

State message
-

Primary network interface ID
-

Deleted
-

Secondary IPv4 addresses

Monitoring

Tags

Secondary IPv4 addresses

Search

Edit secondary IPv4 address associations

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Private IPv4 address

Network interface ID

Status

Failure message

Secondary IPv4 addresses are not available for this nat gateway.

4. Launch EC2 instances in each subnet respectively

dbcache

Instances (1/5) Info

Find Instance by attribute or tag (case-sensitive)

Any state

Refresh

Connect

Instance state

Actions

Launch instances

	Name	Instance ID	Instance state	Instance type	Status check	Alarm status	Availability Zone	Public IPv4 DNS	Public IPv4 ...	Elastic IP
<input checked="" type="checkbox"/>	dbcache	i-0ba7b7637da53136f	Running	t2.micro	2/2 checks passed	View alarms +	us-east-1f	-	-	-
<input type="checkbox"/>	app1	i-02fb7221356857e89	Running	t2.micro	2/2 checks passed	View alarms +	us-east-1f	-	-	-
<input type="checkbox"/>	app2	i-03ea7604a8dbd1179	Running	t2.micro	2/2 checks passed	View alarms +	us-east-1f	-	-	-
<input type="checkbox"/>	web	i-065779b96b9f64737	Running	t2.micro	-	View alarms +	us-east-1f	-	34.239.176.51	-
<input type="checkbox"/>	db	i-043edec1229f7ee85	Running	t2.micro	Initializing	View alarms +	us-east-1f	-	-	-

Instance: i-0ba7b7637da53136f (dbcache)

Instance summary Info

Instance ID
i-0ba7b7637da53136f (dbcache)

IPv6 address
-

Hostname type
IP name: ip-10-0-156-244.ec2.internal

Answer private resource DNS name
-

Auto-assigned IP address
-

IAM Role
-

Public IPv4 address
-

Instance state
Running

Private IP DNS name (IPv4 only)
ip-10-0-156-244.ec2.internal

Instance type
t2.micro

VPC ID
vpc-09f0330a8aef9935d (ProdVPC)

Subnet ID
subnet-0efa2e40f6c49341b (dbcache)

Private IPv4 addresses
10.0.156.244

Public IPv4 DNS
-

Elastic IP addresses
-

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

Auto Scaling Group name
-

App1

Instances (1/5) Info

Find Instance by attribute or tag (case-sensitive)

Any state

Refresh

Connect

Instance state

Actions

Launch instances

	Name	Instance ID	Instance state	Instance type	Status check	Alarm status	Availability Zone	Public IPv4 DNS	Public IPv4 ...	Elastic IP
<input type="checkbox"/>	dbcache	i-0ba7b7637da53136f	Running	t2.micro	2/2 checks passed	View alarms +	us-east-1f	-	-	-
<input checked="" type="checkbox"/>	app1	i-02fb7221356857e89	Running	t2.micro	2/2 checks passed	View alarms +	us-east-1f	-	-	-
<input type="checkbox"/>	app2	i-03ea7604a8dbd1179	Running	t2.micro	2/2 checks passed	View alarms +	us-east-1f	-	-	-
<input type="checkbox"/>	web	i-065779b96b9f64737	Running	t2.micro	-	View alarms +	us-east-1f	-	34.239.176.51	-
<input type="checkbox"/>	db	i-043edec1229f7ee85	Running	t2.micro	Initializing	View alarms +	us-east-1f	-	-	-

Instance: i-02fb7221356857e89 (app1)

Instance ID
i-02fb7221356857e89 (app1)

IPv6 address
-

Hostname type
IP name: ip-10-0-10-147.ec2.internal

Answer private resource DNS name
-

Auto-assigned IP address
-

IAM Role
-

IMDSv2
Required

Public IPv4 address
-

Instance state
Running

Private IP DNS name (IPv4 only)
ip-10-0-10-147.ec2.internal

Instance type
t2.micro

VPC ID
vpc-09f0330a8aef9935d (ProdVPC)

Subnet ID
subnet-0ae6a27c80fe012ce (app1)

Private IPv4 addresses
10.0.10.147

Public IPv4 DNS
-

Elastic IP addresses
-

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

Auto Scaling Group name
-

App2

Instances (1/5) info

Find Instance by attribute or tag (case-sensitive)

Any state

Connect

Instance state

Actions

Launch instances

<

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	Name	Instance ID	Instance state	Instance type	Status check	Alarm status	Availability Zone	Public IPv4 DNS	Public IPv4 ...	Elastic IP
<input type="checkbox"/>	dbcache	i-0ba7b7637da53136f	Running	t2.micro	2/2 checks passed	View alarms +	us-east-1f	-	-	-
<input type="checkbox"/>	app1	i-02fb7221356857e89	Running	t2.micro	2/2 checks passed	View alarms +	us-east-1f	-	-	-
<input checked="" type="checkbox"/>	app2	i-03ea7604a8dbd1179	Running	t2.micro	2/2 checks passed	View alarms +	us-east-1f	-	-	-
<input type="checkbox"/>	web	i-065779b96b9f64737	Running	t2.micro	-	View alarms +	us-east-1f	-	34.239.176.51	-
<input type="checkbox"/>	db	i-043edec1229f7ee85	Running	t2.micro	Initializing	View alarms +	us-east-1f	-	-	-

Instance: i-03ea7604a8dbd1179 (app2)

Instance ID
i-03ea7604a8dbd1179 (app2)

IPv6 address
-

Hostname type
IP name: ip-10-0-85-63.ec2.internal

Answer private resource DNS name
-

Auto-assigned IP address
-

IAM Role
-

IMDSv2
Required

Public IPv4 address
-

Instance state
Running

Private IP DNS name (IPv4 only)
ip-10-0-85-63.ec2.internal

Instance type
t2.micro

VPC ID
vpc-09f0330a8aef9935d (ProdVPC)

Subnet ID
subnet-0ddb9dd90e3caa5a5 (app2)

Private IPv4 addresses
10.0.85.63

Public IPv4 DNS
-

Elastic IP addresses
-

AWS Compute Optimizer finding
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Auto Scaling Group name
-

web

Instances (1/5) info

Find Instance by attribute or tag (case-sensitive)

Any state

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 ...	Elastic IP
<input type="checkbox"/>	dbcache	i-0ba7b7637da53136f	Running	t2.micro	2/2 checks passed	View alarms +	us-east-1f	-	-	-
<input type="checkbox"/>	app1	i-02fb7221356857e89	Running	t2.micro	2/2 checks passed	View alarms +	us-east-1f	-	-	-
<input type="checkbox"/>	app2	i-03ea7604a8dbd1179	Running	t2.micro	2/2 checks passed	View alarms +	us-east-1f	-	-	-
<input checked="" type="checkbox"/>	web	i-065779b96b9f64737	Running	t2.micro	-	View alarms +	us-east-1f	-	34.239.176.51	-
<input type="checkbox"/>	db	i-043edec1229f7ee85	Running	t2.micro	Initializing	View alarms +	us-east-1f	-	-	-

Instance: i-065779b96b9f64737 (web)

Instance ID
i-065779b96b9f64737 (web)

IPv6 address
-

Hostname type
IP name: ip-10-0-228-187.ec2.internal

Answer private resource DNS name
-

Auto-assigned IP address
34.239.176.51 [Public IP]

IAM Role
-

IMDSv2
Required

Public IPv4 address
34.239.176.51 [open address]

Instance state
Running

Private IP DNS name (IPv4 only)
ip-10-0-228-187.ec2.internal

Instance type
t2.micro

VPC ID
vpc-09f0330a8aef9935d (ProdVPC)

Subnet ID
subnet-0ad33aae12ca50adff (web)

Private IPv4 addresses
10.0.228.187

Public IPv4 DNS
-

Elastic IP addresses
-

AWS Compute Optimizer finding
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Auto Scaling Group name
-

db

Instances (1/5) Info

Find Instance by attribute or tag (case-sensitive) Any state

	Name	Instance ID	Instance state	Instance type	Status check	Alarm status	Availability Zone	Public IPv4 DNS	Public IPv4 ...	Elastic IP
<input type="checkbox"/>	dbcache	i-0ba7b7637da53136f	Running	t2.micro	2/2 checks passed	View alarms +	us-east-1f	-	-	-
<input type="checkbox"/>	app1	i-02fb7221356857e89	Running	t2.micro	2/2 checks passed	View alarms +	us-east-1f	-	-	-
<input type="checkbox"/>	app2	i-03ea7604a8dbd1179	Running	t2.micro	2/2 checks passed	View alarms +	us-east-1f	-	-	-
<input type="checkbox"/>	web	i-065779b96b9f64737	Running	t2.micro	-	View alarms +	us-east-1f	-	34.239.176.51	-
<input checked="" type="checkbox"/>	db	i-043edec1229f7ee85	Running	t2.micro	Initializing	View alarms +	us-east-1f	-	-	-

Instance: i-043edec1229f7ee85 (db)

Instance ID i-043edec1229f7ee85 (db)	Public IPv4 address -	Private IPv4 addresses 10.0.193.109
IPv6 address -	Instance state Running	Public IPv4 DNS -
Hostname type IP name: ip-10-0-193-109.ec2.internal	Private IP DNS name (IPv4 only) ip-10-0-193-109.ec2.internal	Elastic IP addresses -
Answer private resource DNS name -	Instance type t2.micro	AWS Compute Optimizer finding Opt-in to AWS Compute Optimizer for recommendations Learn more
Auto-assigned IP address -	VPC ID vpc-09f0330a8aef9935d (ProdVPC)	Auto Scaling Group name -
IAM Role -	Subnet ID subnet-0de82b6a840c207bf (db)	
IMDSv2 Required		

NACL created for db & app2 subnet that does not require internet access

Network ACLs (1/5) Info

Find resources by attribute or tag

	Name	Network ACL ID	Associated with	Default	VPC ID	Inbound rules count	Outbound rules count
<input type="checkbox"/>	-	acl-047a8d6a7da195589	6 Subnets	Yes	vpc-0cc7f12f99a9d7686	2 Inbound rules	2 Outbound rules
<input type="checkbox"/>	-	acl-0c9bc34329a1b884e8	3 Subnets	Yes	vpc-039a4303282dc29a0 / ProdVPC	2 Inbound rules	2 Outbound rules
<input checked="" type="checkbox"/>	securepvt	acl-011241b799d3d89aa	2 Subnets	No	vpc-039a4303282dc29a0 / ProdVPC	2 Inbound rules	2 Outbound rules

acl-011241b799d3d89aa / securepvt

Details | Inbound rules | Outbound rules | Subnet associations | Tags

Details

Network ACL ID acl-011241b799d3d89aa	Associated with 2 Subnets	Default No	VPC ID vpc-039a4303282dc29a0 / ProdVPC
Owner 590184123293			

securepvt

<input checked="" type="checkbox"/>	securepvt	acl-011241b799d3d89aa	2 Subnets	No	vpc-039a4303282dc29a0 / ProdVPC	2 Inbound rules	2 Outbound rules
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acl-011241b799d3d89aa / securepvt

Details | Inbound rules | Outbound rules | **Subnet associations** | Tags

Subnet associations (2)

Filter subnet associations

Name	Subnet ID	Associated with	Availability Zone	IPv4 CIDR	IPv6 CIDR
db	subnet-01ff0d7de7fee659f	acl-011241b799d3d89aa / securepvt	us-east-1f	10.0.192.0/19	-
app2	subnet-0f3915b27fa4c2b7f	acl-011241b799d3d89aa / securepvt	us-east-1f	10.0.64.0/18	-

INBOUND – SSH allowed within VPC

securepvt

acl-011241b799d3d89aa

2 Subnets

No

vpc-039a4303282dc29a0 / ProdVPC

2 Inbound rules

2 Outbound rules

-

acl-0c9c34329a1b884e8

3 Subnets

Yes

vpc-039a4303282dc29a0 / ProdVPC

2 Inbound rules

2 Outbound rules

acl-011241b799d3d89aa / securepvt

Details

Inbound rules

Outbound rules

Subnet associations

Tags

Inbound rules (2)

Filter inbound rules

< 1 > ⚙

Rule number	Type	Protocol	Port range	Source	Allow/Deny
100	All traffic	All	All	10.0.224.0/19	Allow
*	All traffic	All	All	0.0.0.0/0	Deny

Outbound

securepvt

acl-011241b799d3d89aa

2 Subnets

No

vpc-039a4303282dc29a0 / ProdVPC

2 Inbound rules

2 Outbound rules

-

acl-0c9c34329a1b884e8

3 Subnets

Yes

vpc-039a4303282dc29a0 / ProdVPC

2 Inbound rules

2 Outbound rules

acl-011241b799d3d89aa / securepvt

Details

Inbound rules

Outbound rules

Subnet associations

Tags

Outbound rules (2)

Filter outbound rules

< 1 > ⚙

Rule number	Type	Protocol	Port range	Destination	Allow/Deny
100	All traffic	All	All	10.0.224.0/19	Allow
*	All traffic	All	All	0.0.0.0/0	Deny

VERIFICATION

Web Instance internet connectivity

Amazon Linux 2023

https://aws.amazon.com/linux/amazon-linux-2023

```
ec2-user@ip-10-0-228-187 ~]$ ping google.com
PING google.com (172.253.62.102) 56(84) bytes of data:
64 bytes from bc-in-f102.1e100.net (172.253.62.102): icmp_seq=1 ttl=109 time=2.51 ms
64 bytes from bc-in-f102.1e100.net (172.253.62.102): icmp_seq=2 ttl=109 time=2.55 ms
64 bytes from bc-in-f102.1e100.net (172.253.62.102): icmp_seq=3 ttl=109 time=2.61 ms
64 bytes from bc-in-f102.1e100.net (172.253.62.102): icmp_seq=4 ttl=109 time=2.57 ms
64 bytes from bc-in-f102.1e100.net (172.253.62.102): icmp_seq=5 ttl=109 time=2.56 ms
64 bytes from bc-in-f102.1e100.net (172.253.62.102): icmp_seq=6 ttl=109 time=2.52 ms
64 bytes from bc-in-f102.1e100.net (172.253.62.102): icmp_seq=7 ttl=109 time=2.59 ms
^C
--- google.com ping statistics ---
7 packets transmitted, 7 received, 0% packet loss, time 6010ms
rtt min/avg/max/mdev = 2.513/2.559/2.600/0.032 ms
ec2-user@ip-10-0-228-187 ~]$
```

i-065779b96b9f64737 (web)

PublicIPs: 34.239.176.51 PrivateIPs: 10.0.228.187

Dbcache private instance connected via web instance (SSH) and internet verified

The screenshot shows a terminal window with the following content:

```
[ec2-user@ip-10-0-228-187 ~]$ sudo mah -i "key.pem" ec2-user@10.0.156.244
The authenticity of host '10.0.156.244 (10.0.156.244)' can't be established.
ED25519 key fingerprint is SHA256:k2Yrht6H+MHGwt75e6cXU8naN8Pj4resNIHeftlLkO.
This key is not known by any other names
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes
Warning: Permanently added '10.0.156.244' (ED25519) to the list of known hosts.
```

A diagram illustrates the network connection between the local machine and the remote instance:

```
graph LR
    Local[Local Machine] --> VPC[VPC]
    VPC --> Instance[Amazon Linux 2023]
    Instance --- URL[https://aws.amazon.com/linux/amazon-linux-2023]
```

```
[ec2-user@ip-10-0-156-244 ~]$ ping google.com
PING google.com (172.253.122.138) 56(84) bytes of data:
64 bytes from bh-in-f138-1e100.net (172.253.122.138): icmp_seq=1 ttl=54 time=3.15 ms
64 bytes from bh-in-f138-1e100.net (172.253.122.138): icmp_seq=2 ttl=54 time=2.64 ms
64 bytes from bh-in-f138-1e100.net (172.253.122.138): icmp_seq=3 ttl=54 time=2.68 ms
64 bytes from bh-in-f138-1e100.net (172.253.122.138): icmp_seq=4 ttl=54 time=2.67 ms
^C
--- google.com ping statistics ---
4 packets transmitted, 4 received, 0% packet loss, time 3003ms
rt min/avg/max/mdev = 2.639/2.782/3.147/0.210 ms
[ec2-user@ip-10-0-156-244 ~]$
```

At the bottom of the terminal window, there is a status bar with the following information:

I-065779b9b6bf64737 (web)
PublicIP: 34.239.176.51 PrivateIP: 10.0.228.187

App1 private instance connected via web instance (SSH) and internet verified

```
[ec2-user@ip-10-0-228-167 ~]$ ls  
key.pem  
[ec2-user@ip-10-0-228-167 ~]$ sudo ssh -i "key.pem" ec2-user@10.0.10.147  
The authenticity of host '10.0.10.147 (10.0.10.147)' can't be established.  
EU23S19 key fingerprint is SHA256:00R4tgarVQbc9Dmku/iSoIjFot6cCankMz295Slg17o.  
This key is not known by any other names  
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes  
Warning: Permanently added '10.0.10.147' (EU23S19) to the list of Known hosts.
```

```
--  
#      Amazon Linux 2023  
-- ##  
--- ###A  
    ####  
   https://aws.amazon.com/linux/amazon-linux-2023  
  V/  
 V< "  
 -->  
--
```

```
[ec2-user@ip-10-0-10-147 ~]$ ping google.com  
PING google.com (142.251.163.139) 56(84) bytes of data:  
64 bytes from wr-in-f139.la100.net (142.251.163.139): icmp_seq=1 ttl=105 time=3.28 ms  
64 bytes from wr-in-f139.la100.net (142.251.163.139): icmp_seq=2 ttl=105 time=2.86 ms  
64 bytes from wr-in-f139.la100.net (142.251.163.139): icmp_seq=3 ttl=105 time=2.83 ms  
64 bytes from wr-in-f139.la100.net (142.251.163.139): icmp_seq=4 ttl=105 time=2.82 ms  
^C  
--- google.com ping statistics ---  
4 packets transmitted, 4 received, 0% packet loss, time 300ms  
rtt min/avg/max/mdev = 2.815/2.947/3.284/0.194 ms  
[ec2-user@ip-10-0-10-147 ~]$
```

db private instance connected via web instance (SSH) and internet connection failed as expected

```
[ec2-user@ip-10-0-240-200 ~]$ sudo ssh -i "caseastudy.pem" ec2-user@10.0.205.214
The authenticity of host '10.0.205.214 (10.0.205.214)' can't be established.
ec2:5519 key fingerprint is 5aa296:026f020c19708ab4a5b7afq15qeq0rKwmb1sW0.
This key is not known by any other names
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes
Warning: Permanently added '10.0.205.214' (EC2:5519) to the list of known hosts.

. . .
  ~ \      ###
  ~  \    ###\
  ~   \  ###\
  ~    \V/   \
  ~     \     \--> https://aws.amazon.com/linux/amazon-linux-2023
  ~      \     /
  ~       \   /
  ~        \ /
  ~         V

[ec2-user@ip-10-0-205-214 ~]$ ping google.com
PING google.com (142.251.16.101) 56(84) bytes of data.
64
--- google.com ping statistics ---
13 packets transmitted, 0 received, 100% packet loss, time 12499ms

[ec2-user@ip-10-0-205-214 ~]$
```

DEVELOPMENT NETWORK

1. DevVPC created

Your VPCs (1/3) [Info](#)

Name	VPC ID	State	IPv4 CIDR	IPv6 CIDR	DHCP option set	Main route table	M
-	vpc-0cc7f12f99a9d7686	Available	172.31.0.0/16	-	dopt-02cada859c66605...	rtb-0c1848eb901d7cb03	ac
<input checked="" type="checkbox"/> DevVPC	vpc-020ccc9fd5a948fe	Available	120.0.0.0/16	-	dopt-02cada859c66605...	rtb-05020b2e11d6d9a32	ac
<input type="checkbox"/> ProdVPC	vpc-039a4303282dc29a0	Available	10.0.0.0/16	-	dopt-02cada859c66605...	rtb-0bd95e2eb3f4177a3	ac

vpc-020ccc9fd5a948fe / DevVPC

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

Details

VPC ID vpc-020ccc9fd5a948fe	State ✔ Available	DNS hostnames Disabled	DNS resolution Enabled
Tenancy Default	DHCP option set dopt-02cada859c666051d	Main route table rtb-05020b2e11d6d9a32	Main network ACL acl-0eeb352d54b5b57e0
Default VPC No	IPv4 CIDR 120.0.0.0/16	IPv6 pool -	IPv6 CIDR (Network border group) -
Network Address Usage metrics Disabled	Route 53 Resolver DNS Firewall rule groups -	Owner ID 590184123293	

<input checked="" type="checkbox"/>	DevVPC	vpc-020ccce9fd5a948fe	Available	120.0.0.0/16	-	dopt-02cada859c66605...	rtb-05020b2e11d6d9a32	ac
<input type="checkbox"/>	ProdVPC	vpc-039a4303282dc29a0	Available	10.0.0.0/16	-	dopt-02cada859c66605...	rtb-08d95e2eb3f4177a3	ac

Internet Gateway

✔

IGWDev

igw-02109cabbffb8d1eb

✔ Attached

vpc-020cce9fd5a948fe | DevVPC

590184123293

igw-02109cabbffb8d1eb / IGWDev

Details

Tags

Details

<div>Internet gateway ID</div> <div>igw-02109cabbffb8d1eb</div>	<div>State</div> <div>✔ Attached</div>	<div>VPC ID</div> <div>vpc-020cce9fd5a948fe DevVPC</div>	<div>Owner</div> <div>590184123293</div>
---	--	--	--

2. Subnets created

webdev

Subnets (1/2) Info

Find resources by attribute or tag

VPC: vpc-020ccce9fd5a948fe X Clear filters

Name	Subnet ID	State	VPC	IPv4 CIDR	IPv6 CIDR	Available IPv4 addresses
<input checked="" type="checkbox"/> webdev	subnet-032587eb1b12e26da	Available	vpc-020ccce9fd5a948fe DevVPC	120.0.0.0/17	-	32763
<input type="checkbox"/> dbdev	subnet-064261c2e318018c3	Available	vpc-020ccce9fd5a948fe DevVPC	120.0.128.0/17	-	32763

subnet-032587eb1b12e26da / webdev

Details Flow logs Route table Network ACL CIDR reservations Sharing Tags

Details

Subnet ID subnet-032587eb1b12e26da	Subnet ARN arn:aws:ec2:us-east-1:590184123293:subnet/subnet-032587eb1b12e26da	State Available	IPv4 CIDR 120.0.0.0/17
Available IPv4 addresses 32763	IPv6 CIDR -	Availability Zone us-east-1f	Availability Zone ID use1-az5
Network border group -	VPC vpc-020ccce9fd5a948fe DevVPC	Route table rtb-09d756bc77f61ae34 DevRTpublic	Network ACL acl-0eeb352d54b5b57e0
Default subnet No	Auto-assign public IPv4 address Yes	Auto-assign IPv6 address No	Auto-assign customer-owned IPv4 address No
Customer-owned IPv4 pool -	Outpost ID -	IPv4 CIDR reservations -	IPv6 CIDR reservations -
IPv6-only No	Hostname type IP name	Resource name DNS A record Disabled	Resource name DNS AAAA record Disabled
DNS64			

dbdev

Subnets (1/2) Info

Find resources by attribute or tag

VPC: vpc-020ccce9fd5a948fe X Clear filters

Name	Subnet ID	State	VPC	IPv4 CIDR	IPv6 CIDR	Available IPv4 addresses
<input type="checkbox"/> webdev	subnet-032587eb1b12e26da	Available	vpc-020ccce9fd5a948fe DevVPC	120.0.0.0/17	-	32763
<input checked="" type="checkbox"/> dbdev	subnet-064261c2e318018c3	Available	vpc-020ccce9fd5a948fe DevVPC	120.0.128.0/17	-	32763

subnet-064261c2e318018c3 / dbdev

Details Flow logs Route table Network ACL CIDR reservations Sharing Tags

Details

Subnet ID subnet-064261c2e318018c3	Subnet ARN arn:aws:ec2:us-east-1:590184123293:subnet/subnet-064261c2e318018c3	State Available	IPv4 CIDR 120.0.128.0/17
Available IPv4 addresses 32763	IPv6 CIDR -	Availability Zone us-east-1f	Availability Zone ID use1-az5
Network border group -	VPC vpc-020ccce9fd5a948fe DevVPC	Route table rtb-086fcd986ebe4e9d5 DevRTprivate	Network ACL acl-0eeb352d54b5b57e0
Default subnet No	Auto-assign public IPv4 address No	Auto-assign IPv6 address No	Auto-assign customer-owned IPv4 address No
Customer-owned IPv4 pool -	Outpost ID -	IPv4 CIDR reservations -	IPv6 CIDR reservations -
IPv6-only No	Hostname type IP name	Resource name DNS A record Disabled	Resource name DNS AAAA record Disabled
DNS64			

3. Setup peering connection

A VPC peering connection `pcx-0060b1c917e74c7a9` / `prod-to-dev-pcx` has been requested.

VPC > Peering connections > `pcx-0060b1c917e74c7a9`

`pcx-0060b1c917e74c7a9` / `prod-to-dev-pcx` Actions

Pending acceptance
You can accept or reject this peering connection request using the 'Actions' menu. You have until Thursday, March 21, 2024 at 15:30:39 GMT+5:30 to accept or reject the request, otherwise it expires.

Details [Info](#)

Requester owner ID
590184123293

Peering connection ID
pcx-0060b1c917e74c7a9

Status
Pending Acceptance by 590184123293

Expiration time
Thursday, March 21, 2024 at 15:30:39 GMT+5:30

[ClassicLink](#) | [DNS](#) | [Route tables](#) | [Tags](#)

Accept VPC peering connection request [Info](#)

Are you sure you want to accept this VPC peering connection request? (`pcx-0060b1c917e74c7a9` / `prod-to-dev-pcx`)

Requester VPC <code>vpc-039a4303282dc29a0</code> / <code>ProdVPC</code>	Accepter VPC <code>vpc-020ccce9fd5a948fe</code> / <code>DevVPC</code>	Requester CIDRs 10.0.0.0/16
Accepter CIDRs -	Requester Region N. Virginia (us-east-1)	Accepter Region N. Virginia (us-east-1)
Requester owner ID 590184123293 (This account)	Accepter owner ID 590184123293 (This account)	

Cancel Accept request

ClassicLink settings Edit ClassicLink settings

Requester VPC (`vpc-039a4303282dc29a0` / `ProdVPC`) [Info](#)

Allow outbound communication from ClassicLink instances in requester VPC to acceptor VPC
☐ Disabled

Allow outbound communication from requester VPC to ClassicLink instances in acceptor VPC
☐ Disabled

Accepter VPC (`vpc-020ccce9fd5a948fe` / `DevVPC`) [Info](#)

[Alt+S]

Your VPC peering connection (`pcx-0060b1c917e74c7a9` / `prod-to-dev-pcx`) has been established.
To send and receive traffic across this VPC peering connection, you must add a route to the peered VPC in one or more of your VPC route tables. [Info](#)

Modify my route tables now ✕

VPC > Peering connections > `pcx-0060b1c917e74c7a9`

`pcx-0060b1c917e74c7a9` / `prod-to-dev-pcx` Actions

Details [Info](#)

Requester owner ID 590184123293	Accepter owner ID 590184123293	VPC Peering connection ARN <code>arn:aws:ec2:us-east-1:590184123293:vpc-peering-connection/pcx-0060b1c917e74c7a9</code>
Peering connection ID pcx-0060b1c917e74c7a9	Requester VPC <code>vpc-039a4303282dc29a0</code> / <code>ProdVPC</code>	Accepter VPC <code>vpc-020ccce9fd5a948fe</code> / <code>DevVPC</code>
Status Active	Requester CIDRs 10.0.0.0/16	Accepter CIDRs 120.0.0.0/16
Expiration time -	Requester Region N. Virginia (us-east-1)	Accepter Region N. Virginia (us-east-1)

[ClassicLink](#) | [DNS](#) | [Route tables](#) | [Tags](#)

ClassicLink settings Edit ClassicLink settings

Requester VPC (`vpc-039a4303282dc29a0` / `ProdVPC`) [Info](#)

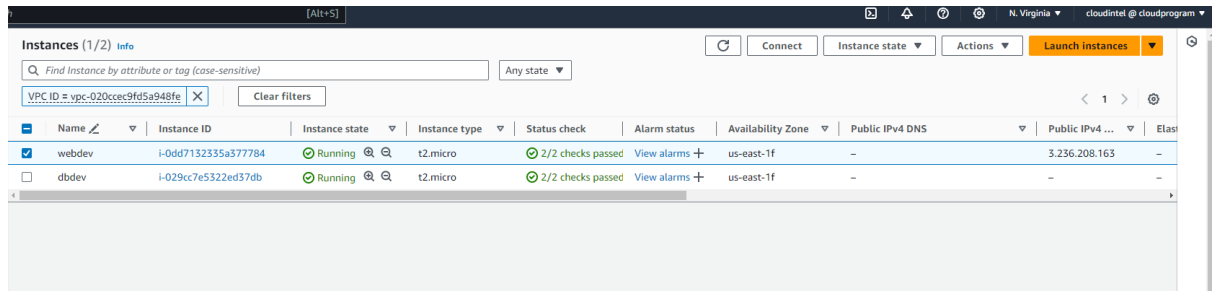
Allow outbound communication from ClassicLink instances in requester VPC to acceptor VPC
☐ Disabled

Allow outbound communication from requester VPC to ClassicLink instances in acceptor VPC
☐ Disabled

Accepter VPC (`vpc-020ccce9fd5a948fe` / `DevVPC`) [Info](#)

Allow outbound communication from ClassicLink instances in acceptor VPC to requester VPC
☐ Disabled

4. Create EC2 instances webdev & dbdev



Name	Instance ID	Instance state	Instance type	Status check	Alarm status	Availability Zone	Public IPv4 DNS	Public IPv4 ...	Elast
webdev	i-0dd7132335a377784	Running	t2.micro	2/2 checks passed	View alarms +	us-east-1f	-	3.236.208.163	-
dbdev	i-029cc7e5322ed37db	Running	t2.micro	2/2 checks passed	View alarms +	us-east-1f	-	-	-

Instance: i-0dd7132335a377784 (webdev)

Details | Status and alarms New | Monitoring | Security | Networking | Storage | Tags

▼ Instance summary info

Instance ID
i-0dd7132335a377784 (webdev)

IPv6 address
-

Hostname type
IP name: ip-120-0-44-53.ec2.internal

Answer private resource DNS name
-

Auto-assigned IP address
3.236.208.163 [Public IP]

IAM Role

Public IPv4 address
3.236.208.163 [open address]

Instance state
Running

Private IP DNS name (IPv4 only)
ip-120-0-44-53.ec2.internal

Instance type
t2.micro

VPC ID
vpc-020ccce9fd5a948fe (DevVPC)

Subnet ID

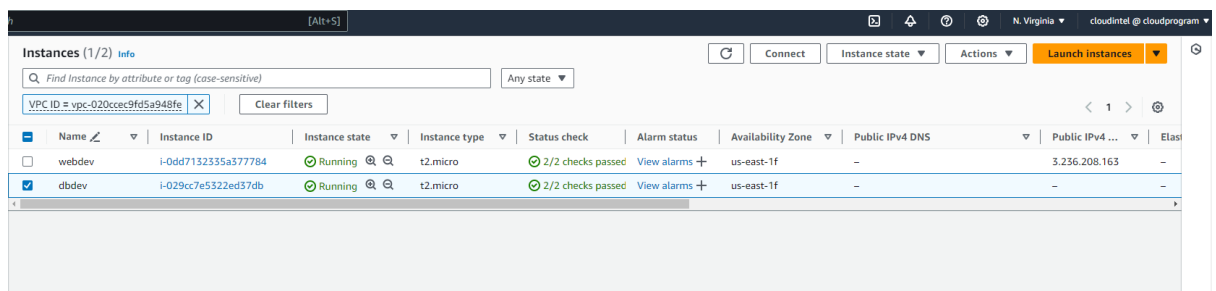
Private IPv4 addresses
120.0.44.53

Public IPv4 DNS
-

Elastic IP addresses
-

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

Auto Scaling Group name



Name	Instance ID	Instance state	Instance type	Status check	Alarm status	Availability Zone	Public IPv4 DNS	Public IPv4 ...	Elast
webdev	i-0dd7132335a377784	Running	t2.micro	2/2 checks passed	View alarms +	us-east-1f	-	3.236.208.163	-
dbdev	i-029cc7e5322ed37db	Running	t2.micro	2/2 checks passed	View alarms +	us-east-1f	-	-	-

Instance: i-029cc7e5322ed37db (dbdev)

Details | Status and alarms New | Monitoring | Security | Networking | Storage | Tags

▼ Instance summary info

Instance ID
i-029cc7e5322ed37db (dbdev)

IPv6 address
-

Hostname type
IP name: ip-120-0-211-194.ec2.internal

Answer private resource DNS name
-

Auto-assigned IP address
-

Public IPv4 address
-

Instance state
Running

Private IP DNS name (IPv4 only)
ip-120-0-211-194.ec2.internal

Instance type
t2.micro

VPC ID
vpc-020ccce9fd5a948fe (DevVPC)

Subnet ID

Private IPv4 addresses
120.0.211.194

Public IPv4 DNS
-

Elastic IP addresses
-

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

Auto Scaling Group name

Internet connectivity setup in webdev instance

```
Amazon Linux 2023
https://aws.amazon.com/linux/amazon-linux-2023

[ec2-user@ip-120-0-44-53 ~]$ ping google.com
PING google.com (172.253.63.100) 56(84) bytes of data:
64 bytes from bi-in-f100.1e100.net (172.253.63.100): icmp_seq=1 ttl=105 time=2.74 ms
64 bytes from bi-in-f100.1e100.net (172.253.63.100): icmp_seq=2 ttl=105 time=1.55 ms
64 bytes from bi-in-f100.1e100.net (172.253.63.100): icmp_seq=3 ttl=105 time=1.53 ms
64 bytes from bi-in-f100.1e100.net (172.253.63.100): icmp_seq=4 ttl=105 time=1.55 ms
^C
--- google.com ping statistics ---
4 packets transmitted, 4 received, 0% packet loss, time 3005ms
rtt min/avg/max/mdev = 1.534/1.843/2.743/0.519 ms
[ec2-user@ip-120-0-44-53 ~]$
```

i-Odd7132335a377784 (webdev)
PublicIPs: 3.236.208.163 PrivateIPs: 120.0.44.53

No Internet connectivity setup in dbdev instance

```
[ec2-user@ip-120-0-44-53 ~]$ sudo ssh -i "casestudy.pem" ec2-user@120.0.211.194
The authenticity of host '120.0.211.194 (120.0.211.194)' can't be established.
ED25519 key fingerprint is SHA256:BLMR5uDECnzYoi0IAko6hUjxumK2od8Oy4Ge5vRsfU.
This key is not known by any other names
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes
Warning: Permanently added '120.0.211.194' (ED25519) to the list of known hosts.

#
Amazon Linux 2023
https://aws.amazon.com/linux/amazon-linux-2023

[ec2-user@ip-120-0-211-194 ~]$ ping google.com
PING google.com (142.251.111.138) 56(84) bytes of data.
^C
--- google.com ping statistics ---
11 packets transmitted, 0 received, 100% packet loss, time 10388ms

[ec2-user@ip-120-0-211-194 ~]$
```

i-Odd7132335a377784 (webdev)
PublicIPs: 3.236.208.163 PrivateIPs: 120.0.44.53

5. Setup connection between db subnets of PROD and DEV network

Updated NACL in PROD VPC to allow connectivity

You have successfully updated outbound rules for acl-011241b799d3d89aa / securepvt

Network ACLs (1/4) Info

Find resources by attribute or tag

Name	Network ACL ID	Associated with	Default	VPC ID	Inbound rules count	Outbound rules count
-	acl-0eeb352d54b5b57e0	2 Subnets	Yes	vpc-020cc9d5a948fe / DevVPC	2 Inbound rules	2 Outbound rules
-	acl-047a8d6a7da195589	6 Subnets	Yes	vpc-0cc7f12f99a9d7686	2 Inbound rules	2 Outbound rules
securepvt	acl-011241b799d3d89aa	2 Subnets	No	vpc-039a4303282dc29a0 / ProdVPC	3 Inbound rules	3 Outbound rules
-	acl-0c9c34329a1b884e8	3 Subnets	Yes	vpc-039a4303282dc29a0 / ProdVPC	2 Inbound rules	2 Outbound rules

acl-011241b799d3d89aa / securepvt

Details Inbound rules Outbound rules Subnet associations Tags

Inbound rules (3)

Filter inbound rules

Rule number	Type	Protocol	Port range	Source	Allow/Deny
100	All traffic	All	All	10.0.224.0/19	Allow
102	All traffic	All	All	120.0.128.0/17	Allow
*	All traffic	All	All	0.0.0.0/0	Deny

acl-011241b799d3d89aa / securepvt

Details Inbound rules Outbound rules Subnet associations Tags

Outbound rules (3)

Filter outbound rules

Rule number	Type	Protocol	Port range	Destination	Allow/Deny
100	All traffic	All	All	10.0.224.0/19	Allow
102	All traffic	All	All	120.0.128.0/17	Allow
*	All traffic	All	All	0.0.0.0/0	Deny

Connection verified from ProdVPC -db instance TO DevVPC -dbdev instance

Web -> (ssh) db -> dbdev

```
aws
Services
Search
[Alt+S]
N. Virginia
cloudintel @ cloudprogram

https://aws.amazon.com/linux/amazon-linux-2023

Last login: Thu Mar 14 09:49:31 2024 from 18.206.107.27
[ec2-user@ip-10-0-240-200 ~]$ ls
casestudy.pem
[ec2-user@ip-10-0-240-200 ~]$ sudo ssh -i "casestudy.pem" ec2-user@10.0.205.214
Amazon Linux 2023
https://aws.amazon.com/linux/amazon-linux-2023

Last login: Thu Mar 14 11:02:23 2024 from 10.0.240.200
[ec2-user@ip-10-0-205-214 ~]$ ping 120.0.211.194
PING 120.0.211.194 (120.0.211.194) 56(84) bytes of data.
^C
--- 120.0.211.194 ping statistics ---
6 packets transmitted, 0 received, 100% packet loss, time 3212ms

[ec2-user@ip-10-0-205-214 ~]$ ping 120.0.211.194
PING 120.0.211.194 (120.0.211.194) 56(84) bytes of data.
64 bytes from 120.0.211.194: icmp_seq=1 ttl=127 time=0.512 ms
64 bytes from 120.0.211.194: icmp_seq=2 ttl=127 time=0.596 ms
64 bytes from 120.0.211.194: icmp_seq=3 ttl=127 time=0.535 ms
64 bytes from 120.0.211.194: icmp_seq=4 ttl=127 time=0.615 ms
64 bytes from 120.0.211.194: icmp_seq=5 ttl=127 time=0.570 ms
^C
--- 120.0.211.194 ping statistics ---
5 packets transmitted, 5 received, 0% packet loss, time 4182ms
rtt min/avg/max/mdev = 0.512/0.565/0.615/0.037 ms
[ec2-user@ip-10-0-205-214 ~]$
```

i-0664f03c6a5981f8a (web)
PublicIPs: 3.236.105.20 PrivateIPs: 10.0.240.200

Webdev -> (ssh) dbdev -> db

The screenshot shows a terminal window with the following content:

```
[Alt+S]
Last login: Thu Mar 14 10:23:03 2024 from 18.206.107.29
[ec2-user@ip-120-0-44-53 ~]$ ls
casestudy.pem
[ec2-user@ip-120-0-44-53 ~]$ sudo ssh -i "casestudy.pem" ec2-user@120.0.211.194
#
#####
#####
#####
#####
      |
      V
https://aws.amazon.com/linux/amazon-linux-2023

Last login: Thu Mar 14 10:25:44 2024 from 120.0.44.53
[ec2-user@ip-120-0-211-194 ~]$ ping 10.0.205.214
PING 10.0.205.214 (10.0.205.214) 56(84) bytes of data.
^C
--- 10.0.205.214 ping statistics ---
10 packets transmitted, 0 received, 100% packet loss, time 17677ms

[ec2-user@ip-120-0-211-194 ~]$ ping 10.0.205.214
PING 10.0.205.214 (10.0.205.214) 56(84) bytes of data.
64 bytes from 10.0.205.214: icmp_seq=1 ttl=127 time=0.437 ms
64 bytes from 10.0.205.214: icmp_seq=2 ttl=127 time=0.635 ms
64 bytes from 10.0.205.214: icmp_seq=3 ttl=127 time=0.595 ms
64 bytes from 10.0.205.214: icmp_seq=4 ttl=127 time=0.498 ms
64 bytes from 10.0.205.214: icmp_seq=5 ttl=127 time=0.516 ms
64 bytes from 10.0.205.214: icmp_seq=6 ttl=127 time=0.563 ms
^CC64 bytes from 10.0.205.214: icmp_seq=7 ttl=127 time=0.494 ms
64 bytes from 10.0.205.214: icmp_seq=8 ttl=127 time=0.566 ms
64 bytes from 10.0.205.214: icmp_seq=9 ttl=127 time=0.608 ms
^C
--- 10.0.205.214 ping statistics ---
9 packets transmitted, 9 received, 0% packet loss, time 8297ms
rtt min/avg/max/mdev = 0.437/0.546/0.635/0.061 ms

[ec2-user@ip-120-0-211-194 ~]$
```

I-Odd7152335a377784 (webdev)

PublicIPs: 3.236.208.163 PrivateIPs: 120.0.44.53