

AWS Networking, VPC, VPC Peering and Transit Gateway

By Vikram Hem Chandar

Building the Core Multi-VPC environment

Phase 1: Create all VPCs (A, B, C) using AWS Console with unique CIDR blocks

Go to AWS Console → VPC.
Click Create VPC → VPC Only.
Create the following:

VPC-A-Application
CIDR: 10.0.0.0/16
VPC-B-Analytics
CIDR: 10.1.0.0/16

VPC-C-SharedServices
CIDR: 10.2.0.0/16

Explanation:
CIDR blocks must not overlap. Routing conflicts occur if multiple VPCs share the same IP space.

Phase 2: Create Subnets (Public & Private)

Create two subnets (public and private) in each VPC.

Example for VPC-A:

Public subnet A1: 10.0.1.0/24
Private subnet A2: 10.0.2.0/24

Repeat for VPC-B and VPC-C with their respective IP ranges.

Why do we create both public and private?
Public subnets allow internet access for testing or pulling updates.
Private subnets simulate actual production workloads.

Important Setting: For each public subnet → Actions → Edit subnet settings → Enable auto-assign public IPv4 address.

Phase 3: Configure Route Tables

AWS automatically creates a main route table for each VPC.

We will:

- A. Associate public subnets with a public route table
- B. Associate private subnets with the main route table

C. Add internet routes (0.0.0.0/0) only for public route tables

Steps:

For each VPC:

Go to Route Tables → Create Route Table.

Name:

rt-public-vpc-a

rt-public-vpc-b

rt-public-vpc-c

Select VPC accordingly.

After creation → Subnet Associations → Associate the public subnet.

Click Routes → Edit routes → Add route:

Destination: 0.0.0.0/0

Target: Internet Gateway (will attach in next phase, then return here if needed).

Explanation:

Public route tables allow subnets to reach the internet.

Private route tables do not expose workloads—important for sensitive workloads like databases.

Phase 4: Configure Internet Gateways and Attach

Steps:

Go to Internet Gateways → Create IGW.

Name them:

igw-a

igw-b

igw-c

Attach each IGW to its respective VPC.

Go back to the public route tables → Add route:

0.0.0.0/0 → Internet Gateway

Explanation:

This provides internet connectivity for EC2 instances in public subnets, useful for package installation and SSH access.

Phase 5: Launch EC2 Instances for Internal Testing

We will launch three small EC2 instances—one in each VPC's public subnet.

These instances act as test endpoints to validate routing and VPC connectivity later.

Steps:

Go to EC2 → Launch Instance.

Name the instance based on VPC:

- app-test-instance (VPC-A)
- analytics-test-instance (VPC-B)
- shared-test-instance (VPC-C)

Select AMI: Amazon Linux 2.

Instance type: t2.micro or t3.micro.

Network settings:

Choose each VPC

Choose the public subnet

Enable Auto-assign Public IP

Create or select a security group:

Allow SSH (22) from your own IP

Allow ICMP (ping) from the VPC CIDR ranges (which we will update in the next phase cross-vpc tests)

Why do we place them in public subnets now?

- Because we want to easily access them to later test peering and Transit Gateway routing.

Phase 6: Validate internal communication inside each VPC

You must confirm that each EC2 instance can communicate within its own VPC first.

Steps:

SSH into the instance (only public IP).

Use ping to ping another private IP inside the same VPC.

Example for VPC-A:

Inside app-test-instance:

ping 10.0.1.100

(where 10.0.1.100 is an example of another instance or internal test IP, do check this with your own instance ip address)

If you only have one instance per VPC right now, this is fine.

Create 3 VPCs instances with different CIDR range

Note – when VPC is create, a route table (aka main route table) is automatically created

VPC-A-Application (CIDR – 10.0.0.0/16)

vpc-074fd47e9de711830 / VPC-A-Application

[Actions ▾](#)

Details Info		Resource map Info	
VPC ID vpc-074fd47e9de711830	State Available	Subnets (2) Subnets within this VPC ap-south-1a vpc-a-public vpc-a-private	Route tables (2) Route network traffic to resources VPC-A-private-RouteTable rt-public-vpc-a
DNS resolution Enabled	Tenancy default	Default VPC No	Route 53 Resolver DNS Firewall rule groups –
Main network ACL acl-026ee6700cf3793ad	Network Address Usage metrics Disabled	DHCP option set dopt-0dc502c6ef030b8ff	IPv4 CIDR 10.0.0.0/16
IPv6 CIDR (Network border group) –	Encryption control mode –	Block Public Access <input type="radio"/> Off	Route 53 Resolver DNS Firewall rule groups –
Encryption control ID –		DNS hostnames Disabled	IPv6 pool –
		Main route table rtb-03565c8da29276896 / VPC-A-private-RouteTable	Owner ID 447657623308

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

[Show all details](#)

```

graph LR
    VPC[VPC] --- Subnets[Subnets]
    Subnets --- RT1[Route tables]
    Subnets --- NC[Network Connections]
    RT1 --- RTB[VPC-A-private-RouteTable]
    RT1 --- RTA[rt-public-vpc-a]
    NC --- IGW[igw-vpc-a]
  
```

VPC-B-Analytics (CIDR – 10.1.0.0/16)

vpc-0b340ad5c058f85a3 / VPC-B-Analytics

[Actions ▾](#)

Details Info		Resource map Info	
VPC ID vpc-0b340ad5c058f85a3	State Available	Subnets (2) Subnets within this VPC ap-south-1b vpc-b-public vpc-b-private	Route tables (2) Route network traffic to resources rt-public-vpc-b VPC-B-private-RouteTable
DNS resolution Enabled	Tenancy default	Default VPC No	Route 53 Resolver DNS Firewall rule groups –
Main network ACL acl-0d1286fa76fc68487	Network Address Usage metrics Disabled	DHCP option set dopt-0dc502c6ef030b8ff	IPv4 CIDR 10.1.0.0/16
IPv6 CIDR (Network border group) –	Encryption control mode –	Block Public Access <input type="radio"/> Off	Route 53 Resolver DNS Firewall rule groups –
Encryption control ID –		DNS hostnames Disabled	IPv6 pool –
		Main route table rtb-0e89cd537429f3a3b / VPC-B-private-RouteTable	Owner ID 447657623308

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

[Show all details](#)

```

graph LR
    VPC[VPC] --- Subnets[Subnets]
    Subnets --- RT1[Route tables]
    Subnets --- NC[Network Connections]
    RT1 --- RTB[VPC-B-private-RouteTable]
    RT1 --- RTA[rt-public-vpc-b]
    NC --- IGW[igw-vpc-b]
  
```

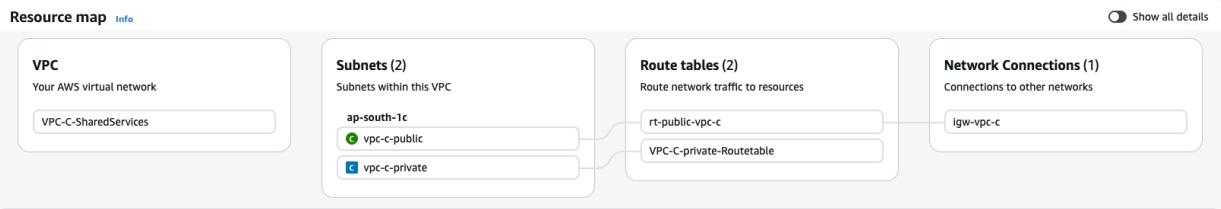
VPC-C-SharedServices (CIDR – 10.2.0.0/16)

vpc-04563ee4223a8aeb3 / VPC-C-SharedServices

Actions ▾

Details Info			
VPC ID	vpc-04563ee4223a8aeb3	State	Available
DNS resolution	Enabled	Tenancy	default
Main network ACL	acl-0ffa2abee4d362e1	Default VPC	No
IPv6 CIDR (Network border group)	–	Network Address Usage metrics	Disabled
Encryption control ID	–	Encryption control mode	–
		Block Public Access	<input type="radio"/> Off
		DHCP option set	dopt-0dc502c6ef030b8ff
		IPv4 CIDR	10.2.0.0/16
		Route 53 Resolver DNS Firewall rule groups	–
		DNS hostnames	Disabled
		Main route table	rtb-0b387a96498dadf6b / VPC-C-private-Routetable
		IPv6 pool	–
		Owner ID	447657623308

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



Create 6 subnets of two subnets (public and private) of each VPC (VPC-A-Application, VPC-B-Analytics and VPC-C-SharedServices)

Make sure to enable **Auto-Assign public IPv4 Address** enabled ONLY for **public subnets**

vpc-a-public (CIDR – 10.0.1.0/24)

subnet-08fd2b11a1ea3f39a / vpc-a-public

[Actions ▾](#)

Details

Subnet ID subnet-08fd2b11a1ea3f39a	Subnet ARN arn:aws:ec2:ap-south-1:1447657623308:subnet/subnet-08fd2b11a1ea3f39a	State Available	Block Public Access <input type="radio"/> Off
IPv4 CIDR 10.0.1.0/24	Available IPv4 addresses 250	IPv6 CIDR –	IPv6 CIDR association ID –
Availability Zone aps1-az1 (ap-south-1a)	Network border group ap-south-1	VPC vpc-074fd47e9de711830 VPC-A-Application	Route table rtb-067a3584a07286e2e rt-public-vpc-a
Network ACL acl-026ee6700cf3793ad	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 Disabled	Owner 447657623308	

[Flow logs](#) | [Route table](#) | [Network ACL](#) | [CIDR reservations](#) | [Sharing](#) | [Tags](#)

Flow logs

No flow logs found

[Actions ▾](#) | [Create flow log](#)

vpc-a-private (CIDR – 10.0.2.0/24)

subnet-02be0b9f37ace4ffb / vpc-a-private

[Actions ▾](#)

Details

Subnet ID subnet-02be0b9f37ace4ffb	Subnet ARN arn:aws:ec2:ap-south-1:1447657623308:subnet/subnet-02be0b9f37ace4ffb	State Available	Block Public Access <input type="radio"/> Off
IPv4 CIDR 10.0.2.0/24	Available IPv4 addresses 251	IPv6 CIDR –	IPv6 CIDR association ID –
Availability Zone aps1-az1 (ap-south-1a)	Network border group ap-south-1	VPC vpc-074fd47e9de711830 VPC-A-Application	Route table rtb-03565c8da29276896 VPC-A-private-RouteTable
Network ACL acl-026ee6700cf3793ad	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 Disabled	Owner 447657623308	

[Flow logs](#) | [Route table](#) | [Network ACL](#) | [CIDR reservations](#) | [Sharing](#) | [Tags](#)

Flow logs

No flow logs found

[Actions ▾](#) | [Create flow log](#)

vpc-b-public (CIDR – 10.1.1.0/24)

subnet-0728cf182039ee934 / vpc-b-public

Actions ▾

Details

Subnet ID
[subnet-0728cf182039ee934](#)

IPv4 CIDR
[10.1.1.0/24](#)

Availability Zone
[aps1-az3 \(ap-south-1b\)](#)

Network ACL
[acl-0d1286fa76fc68487](#)

Auto-assign customer-owned IPv4 address
No

IPv6 CIDR reservations
–

Resource name DNS AAAA record
Disabled

Subnet ARN
[arn:aws:ec2:ap-south-1:447657623308:subnet/subnet-0728cf182039ee934](#)

Available IPv4 addresses
[250](#)

Network border group
[ap-south-1](#)

Default subnet
No

Customer-owned IPv4 pool
–

IPv6-only
No

DNS64
Disabled

State
[Available](#)

IPv6 CIDR
–

VPC
[vpc-0b340ad5c058f85a3 | VPC-B-Analytics](#)

Auto-assign public IPv4 address
Yes

Outpost ID
–

Hostname type
IP name

Owner
[447657623308](#)

Block Public Access
[Off](#)

IPv6 CIDR association ID
–

Route table
[rtb-0415ebe041915ffb | rt-public-vpc-b](#)

Auto-assign IPv6 address
No

IPv4 CIDR reservations
–

Resource name DNS A record
Disabled

Flow logs | Route table | Network ACL | CIDR reservations | Sharing | Tags

Flow logs

Search

Name | Flow log ID | Traffic type | Destination type | Destination name | IAM ro

No flow logs found

[Actions ▾](#) [Create flow log](#)

< 1 > ⏪ ⏩

vpc-b-private (CIDR – 10.1.2.0/24)

subnet-0306c3eb6df797fd5 / vpc-b-private

Actions ▾

Details

Subnet ID
[subnet-0306c3eb6df797fd5](#)

IPv4 CIDR
[10.1.2.0/24](#)

Availability Zone
[aps1-az3 \(ap-south-1b\)](#)

Network ACL
[acl-0d1286fa76fc68487](#)

Auto-assign customer-owned IPv4 address
No

IPv6 CIDR reservations
–

Resource name DNS AAAA record
Disabled

Subnet ARN
[arn:aws:ec2:ap-south-1:447657623308:subnet/subnet-0306c3eb6df797fd5](#)

Available IPv4 addresses
[251](#)

Network border group
[ap-south-1](#)

Default subnet
No

Customer-owned IPv4 pool
–

IPv6-only
No

DNS64
Disabled

State
[Available](#)

IPv6 CIDR
–

VPC
[vpc-0b340ad5c058f85a3 | VPC-B-Analytics](#)

Auto-assign public IPv4 address
No

Outpost ID
–

Hostname type
IP name

Owner
[447657623308](#)

Block Public Access
[Off](#)

IPv6 CIDR association ID
–

Route table
[rtb-0e89cd537429f3a3b | VPC-B-private-RouteTable](#)

Auto-assign IPv6 address
No

IPv4 CIDR reservations
–

Resource name DNS A record
Disabled

Flow logs | Route table | Network ACL | CIDR reservations | Sharing | Tags

Flow logs

Search

Name | Flow log ID | Traffic type | Destination type | Destination name | IAM ro

No flow logs found

[Actions ▾](#) [Create flow log](#)

< 1 > ⏪ ⏩

vpc-c-public (CIDR – 10.2.1.0/24)

subnet-0dd4f5686bb3e50b4 / vpc-c-public

Actions ▾

Details

Subnet ID
[Copy](#) subnet-0dd4f5686bb3e50b4

IPv4 CIDR
[Copy](#) 10.2.1.0/24

Availability Zone
[Copy](#) aps1-az2 (ap-south-1c)

Network ACL
[Copy](#) acl-00fa2cbbee4d362e1

Auto-assign customer-owned IPv4 address
No

IPv6 CIDR reservations
–

Resource name DNS AAAA record
Disabled

Subnet ARN
[Copy](#) arn:aws:ec2:ap-south-1:447657623308:subnet/subnet-0dd4f5686bb3e50b4

Available IPv4 addresses
[Copy](#) 250

Network border group
[Copy](#) ap-south-1

Default subnet
No

Customer-owned IPv4 pool
–

IPv6-only
No

DNS64
Disabled

State
[Copy](#) Available

IPv6 CIDR
–

VPC
[Copy](#) vpc-04563ee4223a8aeb3 | VPC-C-SharedServices

Auto-assign public IPv4 address
Yes

Outpost ID
–

Hostname type
IP name

Owner
[Copy](#) 447657623308

Block Public Access
[Copy](#) Off

IPv6 CIDR association ID
–

Route table
[Copy](#) rtb-0f12bbae6025952a9 | rt-public-vpc-c

Auto-assign IPv6 address
No

IPv4 CIDR reservations
–

Resource name DNS A record
Disabled

Flow logs | Route table | Network ACL | CIDR reservations | Sharing | Tags

Flow logs

Search
 Name | Flow log ID | Traffic type

No flow logs found

Actions ▾ | Create flow log

< 1 > |

vpc-c-private (CIDR – 10.2.2.0/24)

subnet-03e7151bccf911d58 / vpc-c-private

Actions ▾

Details

Subnet ID
[Copy](#) subnet-03e7151bccf911d58

IPv4 CIDR
[Copy](#) 10.2.2.0/24

Availability Zone
[Copy](#) aps1-az2 (ap-south-1c)

Network ACL
[Copy](#) acl-00fa2cbbee4d362e1

Auto-assign customer-owned IPv4 address
No

IPv6 CIDR reservations
–

Resource name DNS AAAA record
Disabled

Subnet ARN
[Copy](#) arn:aws:ec2:ap-south-1:447657623308:subnet/subnet-03e7151bccf911d58

Available IPv4 addresses
[Copy](#) 251

Network border group
[Copy](#) ap-south-1

Default subnet
No

Customer-owned IPv4 pool
–

IPv6-only
No

DNS64
Disabled

State
[Copy](#) Available

IPv6 CIDR
–

VPC
[Copy](#) vpc-04563ee4223a8aeb3 | VPC-C-Private-Routetable

Auto-assign public IPv4 address
No

Outpost ID
–

Hostname type
IP name

Owner
[Copy](#) 447657623308

Block Public Access
[Copy](#) Off

IPv6 CIDR association ID
–

Route table
[Copy](#) rtb-0b387a96498dadf6b | VPC-C-Private-Routetable

Auto-assign IPv6 address
No

IPv4 CIDR reservations
–

Resource name DNS A record
Disabled

Flow logs | Route table | Network ACL | CIDR reservations | Sharing | Tags

Flow logs

Search
 Name | Flow log ID | Traffic type

No flow logs found

Actions ▾ | Create flow log

< 1 > |

Create 3 route tables to attach the public subnets to allow subnets reach the internet. We will add the internet (0.0.0.0/0) for public subnets through Internet Gateway (which will be done in the next step)

Note – AWS automatically creates a main route table for each VPC created.

rt-public-vpc-a

rtb-067a3584a07286e2e / rt-public-vpc-a

Actions ▾

Details Info	Main No	Explicit subnet associations subnet-08fd2b11a1ea3f39a / subnet-a-public	Edge associations –
Route table ID rtb-067a3584a07286e2e	Owner ID 447657623308		
VPC vpc-074fd47e9de711830 VPC-A-Application			

Routes | Subnet associations | Edge associations | Route propagation | Tags

Routes (3)

Destination	Target	Status	Propagated
0.0.0.0/0	igw-01a3cdd9220e11f6c	Active	No
10.0.0.0/16	local	Active	No
10.1.0.0/16	pxc-066375a7b0397df2e	Active	No

rt-public-vpc-b

rtb-0415ebde041915ffb / rt-public-vpc-b

Actions ▾

Details Info	Main No	Explicit subnet associations subnet-0728cf182039ee934 / subnet-b-public	Edge associations –
Route table ID rtb-0415ebde041915ffb	Owner ID 447657623308		
VPC vpc-0b340ad5c058f85a3 VPC-B-Analytics			

Routes | Subnet associations | Edge associations | Route propagation | Tags

Routes (4)

Destination	Target	Status	Propagated
0.0.0.0/0	igw-00d91208d1f5eb4ca	Active	No
10.0.0.0/16	pxc-066375a7b0397df2e	Active	No
10.1.0.0/16	local	Active	No
10.2.0.0/16	pxc-0f64cc86ba058321f	Active	No

rt-public-vpc-c

rtb-0f12bbae6025952a9 / rt-public-vpc-c

Actions ▾

Details Info	Main No	Explicit subnet associations subnet-0dd4f5686bb3e50b4 / subnet-c-public	Edge associations –
Route table ID rtb-0f12bbae6025952a9	Owner ID 447657623308		
VPC vpc-04563ee4223a8ae63 VPC-C-SharedServices			

Routes | Subnet associations | Edge associations | Route propagation | Tags

Routes (3)

Destination	Target	Status	Propagated
0.0.0.0/0	igw-0b0d915613048b198	Active	No
10.1.0.0/16	pxc-0f64cc86ba058321f	Active	No
10.2.0.0/16	local	Active	No

Create 3 Internet Gateways:

- Attach each Internet Gateways to the VPCs respectively
- Go to public route tables (rt-public-vpc-a,b,c)
- For each public route tables –
 - Edit routes -> Add Route -> Destination - 0.0.0.0/0 & Target – Internet Gateway and the respective Internet Gateway

Explanation - This provides internet connectivity for EC2 instances in public subnets, useful for package installation and SSH access.

igw-vpc-a

igw-00d91208d1f5eb4ca / igw-vpc-b				Actions ▾
Details Info				
Internet gateway ID igw-00d91208d1f5eb4ca				
State	Attached	VPC ID	vpc-0b340ad5c058f85a3 VPC-B-Analytics	Owner 447657623308
Tags (1) Manage tags <input type="text"/> Search tags				
Key	Value			
Name	igw-vpc-b			

igw-vpc-b

igw-00d91208d1f5eb4ca / igw-vpc-b				Actions ▾
Details Info				
Internet gateway ID igw-00d91208d1f5eb4ca				
State	Attached	VPC ID	vpc-0b340ad5c058f85a3 VPC-B-Analytics	Owner 447657623308
Tags (1) Manage tags <input type="text"/> Search tags				
Key	Value			
Name	igw-vpc-b			

igw-vpc-c

igw-0b0d915613048b198 / igw-vpc-c				Actions ▾
Details Info				
Internet gateway ID igw-0b0d915613048b198				
State	Attached	VPC ID	vpc-04563ee4223a8ae3 VPC-C-SharedServices	Owner 447657623308
Tags (1) Manage tags <input type="text"/> Search tags				
Key	Value			
Name	igw-vpc-c			

Launch EC2 instances for Testing

Choose:

- Choose each VPC
- Choose the public subnet
- Enable auto-assign public IP

Create or select a security group :

- Allow SSH (22) from our own IP
- Allow ICMP for ping from VPC CIDR range (which we will update later)

EC2-a-application-test-instance

Instance summary for i-0c3af070e2adcaad7 (ec2-a-application-test-instance) Info		Actions	
Updated less than a minute ago		Connect Instance state ▾ Actions ▾	
Instance ID	i-0c3af070e2adcaad7	Public IPv4 address	3.109.132.162 open address
IPv6 address	-	Instance state	Running
Hostname type	IP name: ip-10-0-1-18.ap-south-1.compute.internal	Private IP DNS name (IPv4 only)	ip-10-0-1-18.ap-south-1.compute.internal
Answer private resource DNS name	-	Instance type	t3.micro
Auto-assigned IP address	3.109.132.162 [Public IP]	VPC ID	vpc-074fd47e9de711830 (VPC-A-Application) 🔗
IAM Role	-	Subnet ID	subnet-08fd2b11a1ea3f39a (subnet-a-public) 🔗
IMDSv2	Required	Instance ARN	arn:aws:ec2:ap-south-1:447657623308:instance/i-0c3af070e2adcaad7
Operator	-	AWS Compute Optimizer finding	Opt-in to AWS Compute Optimizer for recommendations. Learn more
		Auto Scaling Group name	-
		Managed	false

EC2-b-analytics-test-instance

Instance summary for i-02e6f89f7ab041ddc (ec2-b-analytics-test-instance) Info		Actions	
Updated less than a minute ago		Connect Instance state ▾ Actions ▾	
Instance ID	i-02e6f89f7ab041ddc	Private IPv4 addresses	10.1.1.138
IPv6 address	-	Public DNS	-
Hostname type	IP name: ip-10-1-1-138.ap-south-1.compute.internal	Private IP DNS name (IPv4 only)	ip-10-1-1-138.ap-south-1.compute.internal
Answer private resource DNS name	-	Instance type	t3.micro
Auto-assigned IP address	15.207.115.37 [Public IP]	VPC ID	vpc-0b340ad5c058f85a3 (VPC-B-Analytics) 🔗
IAM Role	-	Subnet ID	subnet-0728cf182039ee934 (subnet-b-public) 🔗
IMDSv2	Required	Instance ARN	arn:aws:ec2:ap-south-1:447657623308:instance/i-02e6f89f7ab041ddc
Operator	-	AWS Compute Optimizer finding	Opt-in to AWS Compute Optimizer for recommendations. Learn more
		Auto Scaling Group name	-
		Managed	false

EC2-c-sharedservices-test-instances

Instance summary for i-0def255501a7b0ecc (ec2-c-sharedservices-test-instance) Info		Updated less than a minute ago	Actions
Instance ID	i-0def255501a7b0ecc	Public IPv4 address	Private IPv4 addresses
IPv6 address	—	65.2.136.177 open address	10.2.1.105
Hostname type	IP name: ip-10-2-1-105.ap-south-1.compute.internal	Instance state	Public DNS
Answer private resource DNS name	—	Running	—
Auto-assigned IP address	65.2.136.177 [Public IP]	Private IP DNS name (IPv4 only)	Elastic IP addresses
IAM Role	—	ip-10-2-1-105.ap-south-1.compute.internal	AWS Compute Optimizer finding
IMDSv2	Required	Instance type	Opt-in to AWS Compute Optimizer for recommendations. Learn more
Operator	—	t3.micro	Auto Scaling Group name
		VPC ID	—
		subnet-0dd4f5686bb3e50b4 (subnet-c-public)	Managed
		Subnet ID	false
		Instance ARN	
		arn:aws:ec2:ap-south-1:447657623308:instance/i-0def255501a7b0ecc	

Testing Internal Connectivity

Testing if each EC2 instance can communicate within its own VPC first.

Steps:

- SSH into the instance (only Public IP)
- Use ping to the private IP inside the same VPC (private IP of same EC2 instance). Here EC2-A-Application IP is 10.0.1.18

Ping test:

```
Code — ubuntu@ip-10-0-1-18: ~ — ssh -i vikramhemchandar_ubuntu.pem ubuntu@3.109.132.162 — 138x35

[ubuntu@ip-10-0-1-18:~]$ ip a
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UNKNOWN group default qlen 1000
    link/loopback 00:00:00:00:00:00 brd 00:00:00:00:00:00
        inet 127.0.0.1/8 scope host lo
            valid_lft forever preferred_lft forever
            inet6 ::1/128 scope host noprefixroute
                valid_lft forever preferred_lft forever
2: ens5: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 9001 qdisc mq state UP group default qlen 1000
    link/ether 02:45:69:83:71:dd brd ff:ff:ff:ff:ff:ff
        inet 10.0.1.18/24 metric 100 brd 10.0.1.255 scope global dynamic ens5
            valid_lft 3111sec preferred_lft 3111sec
            inet6 fe80::45:69ff:fe83:71dd/64 scope link
                valid_lft forever preferred_lft forever
[ubuntu@ip-10-0-1-18:~]$ ping 10.0.1.18
PING 10.0.1.18 (10.0.1.18) 56(84) bytes of data.
64 bytes from 10.0.1.18: icmp_seq=1 ttl=64 time=0.016 ms
64 bytes from 10.0.1.18: icmp_seq=2 ttl=64 time=0.029 ms
64 bytes from 10.0.1.18: icmp_seq=3 ttl=64 time=0.020 ms
64 bytes from 10.0.1.18: icmp_seq=4 ttl=64 time=0.028 ms
64 bytes from 10.0.1.18: icmp_seq=5 ttl=64 time=0.029 ms
64 bytes from 10.0.1.18: icmp_seq=6 ttl=64 time=0.028 ms
64 bytes from 10.0.1.18: icmp_seq=7 ttl=64 time=0.033 ms
64 bytes from 10.0.1.18: icmp_seq=8 ttl=64 time=0.028 ms
64 bytes from 10.0.1.18: icmp_seq=9 ttl=64 time=0.029 ms
64 bytes from 10.0.1.18: icmp_seq=10 ttl=64 time=0.030 ms
64 bytes from 10.0.1.18: icmp_seq=11 ttl=64 time=0.035 ms
64 bytes from 10.0.1.18: icmp_seq=12 ttl=64 time=0.036 ms
64 bytes from 10.0.1.18: icmp_seq=13 ttl=64 time=0.027 ms
```

Implementing VPC Peering between Multi-VPC environment

We will build direct connectivity between the VPCs using **VPC Peering**, update routing tables, manage security groups, and test cross-VPC communication.

We will see VPC-A will communicate with VPC-B, and VPC-B will communicate with VPC-C.

We will also observe the limitation: **VPC-A cannot communicate with VPC-C**, proving non-transitive routing.

Phase 1: Understanding why VPC Peering is needed

PayWave Systems needs controlled traffic flow between environments:

- The Application VPC (VPC-A) sends transaction logs to the Analytics VPC (VPC-B).
- The Analytics VPC (VPC-B) accesses Shared Services in VPC-C for authentication, reporting, and monitoring.

This creates two required direct connections:

- VPC-A → VPC-B
- VPC-B → VPC-C

VPC Peering is ideal for small numbers of connections where low latency and simple one-to-one communication is needed.

Phase 2: Create Peering Connections (A-B and B-C)

You will build two peering connections:

- pcx-a-b (VPC-A  VPC-B)
- pcx-b-c (VPC-B  VPC-C)

Steps to Create VPC Peering

For VPC-A  VPC-B:

- Go to AWS Console → VPC → Peering Connections.
- Click Create Peering Connection.
- Name: pcx-a-b
- Requester VPC: VPC-A-Application (10.0.0.0/16)
- Acceptor VPC: VPC-B-Analytics (10.1.0.0/16)
- Create.

Accept the connection:

- Select pcx-a-b
- Click Actions → Accept Request.

Repeat the process for VPC-B  VPC-C:

- Name: pcx-b-c
- Requester: VPC-B-Analytics
- Acceptor: VPC-C-SharedServices
- Accept the request from the accepter side.

At this point, the peering links exist, but traffic will not yet flow.

You must modify routing tables next

Phase 3: Modify Route Tables for Cross-VPC Traffic

For each peering connection, both VPCs must have routes pointing to each other.

ROUTES FOR pcx-a-b

In VPC-A route table (public and private route tables):

- Destination: 10.1.0.0/16 → Target: pcx-a-b

In VPC-B route table:

- Destination: 10.0.0.0/16 → Target: pcx-a-b

ROUTES FOR pcx-b-c

In VPC-B route table:

- Destination: 10.2.0.0/16 → Target: pcx-b-c

In VPC-C route table:

- Destination: 10.1.0.0/16 → Target: pcx-b-c

Route Table Guidance:

Apply these routes to private route tables and to public route tables where the EC2 test instances reside.

Routing mistakes are the number one cause of failed connectivity.

Phase 4: Configure Security Groups for Cross-VPC Access

Your EC2 test instances must be reachable across VPCs.

For each instance security group:

1. Open: EC2 → Security Groups.
2. Select your EC2 instance security group (e.g., sg-app-test).
3. Edit Inbound rules.
4. Add rule:
5. Type: ICMP (Echo Request)
6. Source: CIDR block of the other VPC

Examples:

For VPC-A instance:

Allow ICMP from 10.1.0.0/16 (VPC-B)

For VPC-B instance:

Allow ICMP from 10.0.0.0/16 (A)

Allow ICMP from 10.2.0.0/16 (C)

For VPC-C instance:

Allow ICMP from 10.1.0.0/16 (B)

Why ICMP?

Ping is the simplest network testing tool to validate routing and connectivity.

Phase 5: Testing Connectivity Between VPCs

SSH into app-test-instance (VPC-A) using its public IP.

Ping the private IP of the analytics-test-instance (VPC-B).

Example:

ping 10.1.1.10

Expected result:

Ping should succeed.

Test 2: VPC-B → VPC-C

SSH into analytics-test-instance (VPC-B).

Ping the private IP of shared-test-instance (VPC-C).

Example:

ping 10.2.1.10

Expected result:

Ping should succeed.

If tests fail, check:

- Route tables (most common issue)
- Security group rules (second common issue)
- Peering status (must be active)

Phase 6: Discovering Peering Limitations (Non-transitive Routing)

Now try this:

Test 3: VPC-A → VPC-C

SSH into app-test-instance (VPC-A).

Ping the private IP of shared-test-instance (VPC-C).

Expected result:

Ping fails.

Why?

VPC Peering is **not transitive**.

This means:

Even though A ↔ B and B ↔ C are connected, A cannot reach C unless you create a direct peering connection pcx-a-c and add routes.

Industries face this problem when they scale from a few VPCs to dozens.

This naturally leads to the next lesson: Transit Gateway.

Create VPC Peering Connection:

VPC-A to and fro VPC-B

pcx-066375a7b0397df2e / pcx-a-b

Actions ▾

Details Info		VPC Peering connection ARN	
Requester owner ID	447657623308	Acceptor owner ID	447657623308
Peering connection ID	pcx-066375a7b0397df2e	Requester VPC	vpc-074fd47e9de711830 / VPC-A-Application
Status	Active	Requester CIDRs	10.0.0.0/16
Expiration time	-	Requester Region	Mumbai (ap-south-1)
		Acceptor VPC	vpc-0b340ad5c058f85a3 / VPC-B-Analytics
		Acceptor CIDRs	10.1.0.0/16
		Acceptor Region	Mumbai (ap-south-1)

DNS | Route tables | Tags

DNS settings

Edit DNS settings

Requester VPC ([vpc-074fd47e9de711830 / VPC-A-Application](#)) [Info](#)

Allow accepter VPC to resolve DNS of hosts in requester VPC to private IP addresses
 Disabled

Acceptor VPC ([vpc-0b340ad5c058f85a3 / VPC-B-Analytics](#)) [Info](#)

Allow requester VPC to resolve DNS of hosts in accepter VPC to private IP addresses
 Disabled

Route tables for the same

pcx-066375a7b0397df2e / pcx-a-b

Actions ▾

Details Info		VPC Peering connection ARN	
Requester owner ID	447657623308	Acceptor owner ID	447657623308
Peering connection ID	pcx-066375a7b0397df2e	Requester VPC	vpc-074fd47e9de711830 / VPC-A-Application
Status	Active	Requester CIDRs	10.0.0.0/16
Expiration time	-	Requester Region	Mumbai (ap-south-1)
		Acceptor VPC	vpc-0b340ad5c058f85a3 / VPC-B-Analytics
		Acceptor CIDRs	10.1.0.0/16
		Acceptor Region	Mumbai (ap-south-1)

DNS | **Route tables** | Tags

Route tables [Info](#)

This VPC peering connection is referenced in a route in the following route tables.

Route table ID	VPC ID	Main	Associated with
rtb-0415ebde041915fb / rt-public-vpc-b	vpc-0b340ad5c058f85a3 / VPC-B-Analytics	No	subnet-0728cf182039ee934
rtb-0e89cd537429f3a3b / VPC-B-private-Rou...	vpc-0b340ad5c058f85a3 / VPC-B-Analytics	Yes	0 subnets
rtb-03565c8da29276896 / VPC-A-private-Rou...	vpc-074fd47e9de711830 / VPC-A-Application	Yes	0 subnets
rtb-067a3584a07286e2e / rt-public-vpc-a	vpc-074fd47e9de711830 / VPC-A-Application	No	subnet-08fd2b11a1ea3f39a

VPC-B to and fro VPC-C

[pcx-0f64cc86ba058321f / pcx-b-c](#) Actions ▾

Details Info			
Requester owner ID 447657623308	Acceptor owner ID 447657623308	VPC Peering connection ARN arn:aws:ec2:ap-south-1:447657623308:vpc-peering-connection/pcx-0f64cc86ba058321f	
Peering connection ID pcx-0f64cc86ba058321f	Requester VPC vpc-0b340ad5c058f85a3 / VPC-B-Analytics	Acceptor VPC vpc-04563ee4223a8aeb3 / VPC-C-SharedServices	
Status Active	Requester CIDRs 10.1.0.0/16	Acceptor CIDRs 10.2.0.0/16	
Expiration time —	Requester Region Mumbai (ap-south-1)	Acceptor Region Mumbai (ap-south-1)	

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

DNS settings [Edit DNS settings](#)

Requester VPC ([vpc-0b340ad5c058f85a3 / VPC-B-Analytics](#)) [Info](#)

Allow accepter VPC to resolve DNS of hosts in requester VPC to private IP addresses
 Enabled

Acceptor VPC ([vpc-04563ee4223a8aeb3 / VPC-C-SharedServices](#)) [Info](#)

Allow requester VPC to resolve DNS of hosts in accepter VPC to private IP addresses
 Enabled

Route tables for the same

[pcx-0f64cc86ba058321f / pcx-b-c](#) Actions ▾

Details Info			
Requester owner ID 447657623308	Acceptor owner ID 447657623308	VPC Peering connection ARN arn:aws:ec2:ap-south-1:447657623308:vpc-peering-connection/pcx-0f64cc86ba058321f	
Peering connection ID pcx-0f64cc86ba058321f	Requester VPC vpc-0b340ad5c058f85a3 / VPC-B-Analytics	Acceptor VPC vpc-04563ee4223a8aeb3 / VPC-C-SharedServices	
Status Active	Requester CIDRs 10.1.0.0/16	Acceptor CIDRs 10.2.0.0/16	
Expiration time —	Requester Region Mumbai (ap-south-1)	Acceptor Region Mumbai (ap-south-1)	

DNS Route tables [Tags](#)

Route tables [Info](#)

This VPC peering connection is referenced in a route in the following route tables.

Route table ID	VPC ID	Main	Associated with
rtb-0415ebde041915ffb / rt-public-vpc-b	vpc-0b340ad5c058f85a3 / VPC-B-Analytics	No	subnet-0728cf182039ee934
rtb-0e89cd537429f5a3b / VPC-B-private-Rou...	vpc-0b340ad5c058f85a3 / VPC-B-Analytics	Yes	0 subnets
rtb-0f12bbae6025952a9 / rt-public-vpc-c	vpc-04563ee4223a8aeb3 / VPC-C-SharedSe...	No	subnet-0dd4f5686bb3e50b4
rtb-0b387a96498dadff6b / VPC-C-private-Rou...	vpc-04563ee4223a8aeb3 / VPC-C-SharedSe...	Yes	0 subnets

Modify Route Tables for VPC peering:

Routes for pcx-a-b

rt-public-vpc-a (destination – 10.1.0.0/16 and target: pcx-a-b)

rtb-067a3584a07286e2e / rt-public-vpc-a

Actions ▾

Details [Info](#)

Route table ID rtb-067a3584a07286e2e	Main <input type="checkbox"/> No	Explicit subnet associations subnet-08fd2b11a1ea3f39a / subnet-a-public	Edge associations –
VPC vpc-074fd47e9de711830 VPC-A-Application	Owner ID 447657623308		

[Routes](#) [Subnet associations](#) [Edge associations](#) [Route propagation](#) [Tags](#)

Routes (3)

Filter routes		Destination	Target	Status	Propagated	Route Origin
Both	▼	0.0.0.0/0	igw-01a3cd9220e11f6c	Active	No	Create Route
<	1	10.0.0.0/16	local	Active	No	Create Route Table
>		10.1.0.0/16	pcx-066375a7b0397df2e	Active	No	Create Route

VPC-A-private-RouteTable (destination – 10.1.0.0/16 and target: pcx-a-b)

rtb-03565c8da29276896 / VPC-A-private-RouteTable

Actions ▾

Details [Info](#)

Route table ID rtb-03565c8da29276896	Main <input checked="" type="checkbox"/> Yes	Explicit subnet associations –	Edge associations –
VPC vpc-074fd47e9de711830 VPC-A-Application	Owner ID 447657623308		

[Routes](#) [Subnet associations](#) [Edge associations](#) [Route propagation](#) [Tags](#)

Routes (2)

Filter routes		Destination	Target	Status	Propagated	Route Origin
Both	▼	10.0.0.0/16	local	Active	No	Create Route Table
<	1	10.1.0.0/16	pcx-066375a7b0397df2e	Active	No	Create Route
>						

rt-public-vpc-b (destination: 10.0.0.0/16, target: pcx-a-b)

rtb-0415ebde041915ffb / rt-public-vpc-b

Actions ▾

Details [Info](#)

Route table ID rtb-0415ebde041915ffb	Main <input checked="" type="checkbox"/> No	Explicit subnet associations subnet-0728cf182039ee934 / subnet-b-public	Edge associations -
VPC vpc-0b340ad5c058f85a3 VPC-B-Analytics	Owner ID 447657623308		

Routes [Subnet associations](#) [Edge associations](#) [Route propagation](#) [Tags](#)

Routes (4)					
Destination	Target	Status	Propagated	Route Origin	
0.0.0.0/0	igw-00d91208d1f5eb4ca	Active	No	Create Route	Edit route
10.0.0.0/16	pcx-066375a7b0397df2e	Active	No	Create Route	Edit route
10.1.0.0/16	local	Active	No	Create Route Table	Edit route
10.2.0.0/16	pcx-0f64cc86ba058321f	Active	No	Create Route	Edit route

VPC-B-private-RouteTable (destination: 10.0.0.0/16, target: pcx-a-b)

rtb-0e89cd537429f3a3b / VPC-B-private-RouteTable

Actions ▾

Details [Info](#)

Route table ID rtb-0e89cd537429f3a3b	Main <input checked="" type="checkbox"/> Yes	Explicit subnet associations -	Edge associations -
VPC vpc-0b340ad5c058f85a3 VPC-B-Analytics	Owner ID 447657623308		

Routes [Subnet associations](#) [Edge associations](#) [Route propagation](#) [Tags](#)

Routes (3)					
Destination	Target	Status	Propagated	Route Origin	
10.0.0.0/16	pcx-066375a7b0397df2e	Active	No	Create Route	Edit route
10.1.0.0/16	local	Active	No	Create Route Table	Edit route
10.2.0.0/16	pcx-0f64cc86ba058321f	Active	No	Create Route	Edit route

Routes for pcx-b-c

rt-public-vpc-b (destination: 10.2.0.0/16, target: pcx-b-c)

rtb-0415ebde041915ffb / rt-public-vpc-b

Actions ▾

Details [Info](#)

Route table ID rtb-0415ebde041915ffb	Main <input checked="" type="checkbox"/> No	Explicit subnet associations subnet-0728cf182039ee934 / subnet-b-public	Edge associations -
VPC vpc-0b340ad5c058f85a3 VPC-B-Analytics	Owner ID 447657623308		

[Routes](#) | [Subnet associations](#) | [Edge associations](#) | [Route propagation](#) | [Tags](#)

Routes (4)				
Filter routes				
Destination	Target	Status	Propagated	Route Origin
0.0.0.0/0	igw-00d91208d1f5eb4ca	Active	No	Create Route
10.0.0.0/16	pxc-066375a7b0397df2e	Active	No	Create Route
10.1.0.0/16	local	Active	No	Create Route Table
10.2.0.0/16	pxc-0f64cc86ba058321f	Active	No	Create Route

VPC-B-private-RouteTable (destination: 10.2.0.0/16, target: pcx-b-c)

rtb-0e89cd537429f3a3b / VPC-B-private-RouteTable

Actions ▾

Details [Info](#)

Route table ID rtb-0e89cd537429f3a3b	Main <input checked="" type="checkbox"/> Yes	Explicit subnet associations -	Edge associations -
VPC vpc-0b340ad5c058f85a3 VPC-B-Analytics	Owner ID 447657623308		

[Routes](#) | [Subnet associations](#) | [Edge associations](#) | [Route propagation](#) | [Tags](#)

Routes (3)				
Filter routes				
Destination	Target	Status	Propagated	Route Origin
10.0.0.0/16	pxc-066375a7b0397df2e	Active	No	Create Route
10.1.0.0/16	local	Active	No	Create Route Table
10.2.0.0/16	pxc-0f64cc86ba058321f	Active	No	Create Route

rt-public-vpc-c (destination: 10.1.0.0/16, target: pcx-b-c) rtb-0f12bbae6025952a9 / rt-public-vpc-c

Actions ▾

Details [Info](#)

Route table ID rtb-0f12bbae6025952a9	Main No	Explicit subnet associations subnet-0dd4f5686bb3e50b4 / subnet-c-public	Edge associations -
VPC vpc-04563ee4223a8aeb3 VPC-C- SharedServices	Owner ID 447657623308		

[Routes](#) | [Subnet associations](#) | [Edge associations](#) | [Route propagation](#) | [Tags](#)

Routes (3)					Both ▾	Edit routes
Destination	Target	Status	Propagated	Route Origin		
0.0.0.0/0	igw-0b0d915613048b198	Active	No	Create Route		
10.1.0.0/16	pcx-0f64cc86ba058321f	Active	No	Create Route		
10.2.0.0/16	local	Active	No	Create Route Table		

VPC-C-Private-RouteTable (destination: 10.1.0.0/16, target: pcx-b-c) rtb-0b387a96498dadf6b / VPC-C-private-Routetable

Actions ▾

Details [Info](#)

Route table ID rtb-0b387a96498dadf6b	Main Yes	Explicit subnet associations -	Edge associations -
VPC vpc-04563ee4223a8aeb3 VPC-C- SharedServices	Owner ID 447657623308		

[Routes](#) | [Subnet associations](#) | [Edge associations](#) | [Route propagation](#) | [Tags](#)

Routes (2)					Both ▾	Edit routes
Destination	Target	Status	Propagated	Route Origin		
10.1.0.0/16	pcx-0f64cc86ba058321f	Active	No	Create Route		
10.2.0.0/16	local	Active	No	Create Route Table		

Update Security Groups for EC2 instances:

Open EC2 instance -> Select instance Security Group -> Edit Inbound Rules
-> Add rule : Type – IMCP (for ping); Source : CIDR block of the other VPC

SG of EC2-A-Application-Test-Instance

sg-02129bfe33a06bf3a - launch-wizard-1

Actions ▾

Details

Security group name launch-wizard-1	Security group ID sg-02129bfe33a06bf3a	Description launch-wizard-1 created 2025-11-27T21:07:41.139Z	VPC ID vpc-074fd47e9de711830
Owner 447657623308	Inbound rules count 2 Permission entries	Outbound rules count 1 Permission entry	

Inbound rules | Outbound rules | Sharing - new | VPC associations - new | Tags

Inbound rules (2)

Inbound rules (2)						
Manage tags Edit inbound rules						
<input type="checkbox"/> Name	Security group rule ID	IP version	Type	Protocol	Port range	Source
<input type="checkbox"/> -	sgr-01cb7d18f458e0ba9	IPv4	SSH	TCP	22	0.0.0.0/0
<input type="checkbox"/> -	sgr-0fe3c6fba90b72cb1	IPv4	All ICMP - IPv4	ICMP	All	10.1.0.0/16

SG of EC2-B-Analytics-Test-Instance

sg-01000c833b8f6792c - launch-wizard-2

Actions ▾

Details

Security group name launch-wizard-2	Security group ID sg-01000c833b8f6792c	Description launch-wizard-2 created 2025-11-27T21:09:42.861Z	VPC ID vpc-0b340ad5c058f85a3
Owner 447657623308	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)

Inbound rules (3)						
Manage tags Edit inbound rules						
<input type="checkbox"/> Name	Security group rule ID	IP version	Type	Protocol	Port range	Source
<input type="checkbox"/> -	sgr-0d3624df9ec1e61ee	IPv4	SSH	TCP	22	0.0.0.0/0
<input type="checkbox"/> -	sgr-098c31755724f3d5	IPv4	All ICMP - IPv4	ICMP	All	10.2.0.0/16
<input type="checkbox"/> -	sgr-0f7bab632eeb48d67	IPv4	All ICMP - IPv4	ICMP	All	10.0.0.0/16

SG of EC3-C-SharedServices-Test-Instance

sg-0182ead23a2d24f17 - launch-wizard-3

Actions ▾

Details

Security group name launch-wizard-3	Security group ID sg-0182ead23a2d24f17	Description launch-wizard-3 created 2025-11-27T21:10:09.773Z	VPC ID vpc-04563ee4223a8aeb3
Owner 447657623308	Inbound rules count 2 Permission entries	Outbound rules count 1 Permission entry	

Inbound rules | Outbound rules | Sharing - new | VPC associations - new | Tags

Inbound rules (2)

Inbound rules (2)						
Manage tags Edit inbound rules						
<input type="checkbox"/> Name	Security group rule ID	IP version	Type	Protocol	Port range	Source
<input type="checkbox"/> -	sgr-099f1518cdeb5d20c	IPv4	All ICMP - IPv4	ICMP	All	10.1.0.0/16
<input type="checkbox"/> -	sgr-0d7a07be2b7a5ecb4	IPv4	SSH	TCP	22	0.0.0.0/0

Test Connectivity using EC2 instances:

SSH into EC2 instances using its public IP address and ping the private IP address other instance (Example from VPC-A EC2 instance to VPC-B EC2 instance)

Public and Private IP addresses of EC2 instances:

EC2-A-Application-Test-Instance – Public: 3.109.132.162; Private: 10.0.1.18

EC2-B-Analytics-Test-Instance – Public: 15.207.115.37; Private: 10.1.1.138

EC2-C-SharedServices-Test-Instance – Public: 65.2.136.177; Private: 10.2.1.105

Ping test from EC2-A to EC2-B (ping successful)

```
Code — ubuntu@ip-10-0-1-18: ~ — ssh -i vikramhemchandar.pem ubuntu@3.109.132.162 — 138x35

[ubuntu@ip-10-0-1-18:~]$ #This is EC2-A and from here, ping test to EC2-B to private IP : 10.1.1.138
[ubuntu@ip-10-0-1-18:~]$ ping 10.1.1.138
PING 10.1.1.138 (10.1.1.138) 56(84) bytes of data.
64 bytes from 10.1.1.138: icmp_seq=1 ttl=64 time=0.515 ms
64 bytes from 10.1.1.138: icmp_seq=2 ttl=64 time=0.600 ms
64 bytes from 10.1.1.138: icmp_seq=3 ttl=64 time=0.523 ms
64 bytes from 10.1.1.138: icmp_seq=4 ttl=64 time=0.523 ms
64 bytes from 10.1.1.138: icmp_seq=5 ttl=64 time=0.584 ms
64 bytes from 10.1.1.138: icmp_seq=6 ttl=64 time=0.535 ms
64 bytes from 10.1.1.138: icmp_seq=7 ttl=64 time=0.538 ms
^C
--- 10.1.1.138 ping statistics ---
7 packets transmitted, 7 received, 0% packet loss, time 6126ms
rtt min/avg/max/mdev = 0.515/0.545/0.600/0.030 ms
[ubuntu@ip-10-0-1-18:~]$ echo "Ping Successful"
Ping Successful
ubuntu@ip-10-0-1-18:~$
```

Ping test from EC2-B to EC2-A (Ping successful)

```
Code — ubuntu@ip-10-1-1-138: ~ — ssh -i vikramhemchandar.pem ubuntu@15.207.115.37 — 138x37

[ubuntu@ip-10-1-1-138:~]$ echo "This is EC2-B and from here, ping test to EC2-A to private IP : 10.0.1.18"
This is EC2-B and from here, ping test to EC2-A to private IP : 10.0.1.18
[ubuntu@ip-10-1-1-138:~]$ ping 10.0.1.18
PING 10.0.1.18 (10.0.1.18) 56(84) bytes of data.
64 bytes from 10.0.1.18: icmp_seq=1 ttl=64 time=0.539 ms
64 bytes from 10.0.1.18: icmp_seq=2 ttl=64 time=0.532 ms
64 bytes from 10.0.1.18: icmp_seq=3 ttl=64 time=0.526 ms
64 bytes from 10.0.1.18: icmp_seq=4 ttl=64 time=0.541 ms
64 bytes from 10.0.1.18: icmp_seq=5 ttl=64 time=1.94 ms
^C
--- 10.0.1.18 ping statistics ---
5 packets transmitted, 5 received, 0% packet loss, time 4111ms
rtt min/avg/max/mdev = 0.526/0.816/1.943/0.563 ms
[ubuntu@ip-10-1-1-138:~]$ echo "Ping Successful"
Ping Successful
ubuntu@ip-10-1-1-138:~$
```

Ping Test from EC2-B to EC2-C (Ping Successful)

```
Code — ubuntu@ip-10-1-1-138: ~ — ssh -i vikramhemchandar_ubuntu.pem ubuntu@15.207.115.37 — 138x37

[ubuntu@ip-10-1-1-138:~$ echo "This is EC2-B and from here, ping test to EC2-C to private IP : 10.2.1.105"
This is EC2-B and from here, ping test to EC2-C to private IP : 10.2.1.105
[ubuntu@ip-10-1-1-138:~$ ping 10.2.1.105
PING 10.2.1.105 (10.2.1.105) 56(84) bytes of data.
64 bytes from 10.2.1.105: icmp_seq=1 ttl=64 time=1.12 ms
64 bytes from 10.2.1.105: icmp_seq=2 ttl=64 time=0.805 ms
64 bytes from 10.2.1.105: icmp_seq=3 ttl=64 time=0.782 ms
64 bytes from 10.2.1.105: icmp_seq=4 ttl=64 time=0.789 ms
64 bytes from 10.2.1.105: icmp_seq=5 ttl=64 time=0.794 ms
^C
--- 10.2.1.105 ping statistics ---
5 packets transmitted, 5 received, 0% packet loss, time 4101ms
rtt min/avg/max/mdev = 0.782/0.857/1.116/0.129 ms
[ubuntu@ip-10-1-1-138:~$ echo "Ping Successful"
Ping Successful
ubuntu@ip-10-1-1-138:~$ ]
```

Ping test from EC2-C to EC2-B (Ping Successful)

```
Code — ubuntu@ip-10-2-1-105: ~ — ssh -i vikramhemchandar_ubuntu.pem ubuntu@65.2.136.177 — 138x37

[ubuntu@ip-10-2-1-105:~$ echo "This is EC2-C and from here, ping test to EC2-B to private IP : 10.1.1.138"
This is EC2-C and from here, ping test to EC2-B to private IP : 10.1.1.138
[ubuntu@ip-10-2-1-105:~$ ping 10.1.1.138
PING 10.1.1.138 (10.1.1.138) 56(84) bytes of data.
64 bytes from 10.1.1.138: icmp_seq=1 ttl=64 time=0.794 ms
64 bytes from 10.1.1.138: icmp_seq=2 ttl=64 time=0.870 ms
64 bytes from 10.1.1.138: icmp_seq=3 ttl=64 time=0.834 ms
64 bytes from 10.1.1.138: icmp_seq=4 ttl=64 time=0.796 ms
64 bytes from 10.1.1.138: icmp_seq=5 ttl=64 time=0.806 ms
^C
--- 10.1.1.138 ping statistics ---
5 packets transmitted, 5 received, 0% packet loss, time 4105ms
rtt min/avg/max/mdev = 0.794/0.820/0.870/0.028 ms
[ubuntu@ip-10-2-1-105:~$ echo "Ping Successful"
Ping Successful
ubuntu@ip-10-2-1-105:~$ ]
```

Ping from EC2-A to EC2-C (Ping unsuccessful because of non transitive)

```
Code — ubuntu@ip-10-0-1-18: ~ — ssh -i vikramhemchandar_ubuntu.pem ubuntu@3.109.132.162 — 138x37

[ubuntu@ip-10-0-1-18:~$ echo "This is EC2-A and from here, ping test to EC2-C to private IP : 10.2.1.105"
This is EC2-A and from here, ping test to EC2-C to private IP : 10.2.1.105
[ubuntu@ip-10-0-1-18:~$ ping 10.2.1.105
PING 10.2.1.105 (10.2.1.105) 56(84) bytes of data.
^C
--- 10.2.1.105 ping statistics ---
17 packets transmitted, 0 received, 100% packet loss, time 16415ms

[ubuntu@ip-10-0-1-18:~$ echo "As expected, ping unsuccesful because of NON TRANSITIVE"
As expected, ping unsuccesful because of NON TRANSITIVE
ubuntu@ip-10-0-1-18:~$ ]
```

Implementing AWS Transit Gateway and Migrating to a Scalable Multi-VPC architecture

In this final lesson, you will eliminate the non-transitive routing limitation seen in Lesson 4 by introducing **AWS Transit Gateway (TGW)**.

You will attach all three VPCs to the TGW and update route tables to enable **full-mesh private communication** across all VPCs.

By the end of this lesson, VPC-A, VPC-B, and VPC-C will all communicate with each other through a scalable architecture widely used in real-world enterprises.

PHASE OUTLINE FOR THIS LESSON

Phase 1: Why Transit Gateway (Architecture Reasoning)

Phase 2: Create the Transit Gateway

Phase 3: Create VPC Attachments

Phase 4: Modify Transit Gateway Route Tables

Phase 5: Update VPC Route Tables

Phase 6: Test Full-Mesh Connectivity

Phase 7: Compare Peering vs Transit Gateway (Industry View)

PHASE 1: WHY TRANSIT GATEWAY NOW?

From Lesson 4, you discovered the main limitation of VPC Peering:
Non-transitive routing.

In the PayWave Systems scenario:

Even though VPC-A was connected to VPC-B, and VPC-B connected to VPC-C, VPC-A could not talk to VPC-C.

As the environment grows (10+ VPCs), peering becomes unmanageable because:

- Too many connections
- Hard to maintain
- Complex routing
- Lack of central visibility
- No transitive traffic support

Explanation:

Transit Gateway solves all of this by acting as a **central hub**.

PHASE 2: CREATE AN AWS TRANSIT GATEWAY

Steps:

1. Go to AWS Console → VPC.
2. Under “Transit Gateways”, choose “Create Transit Gateway”.
3. Name: **PayWave-Transit-Gateway**
4. Description: Central Hub for Application, Analytics, and Shared Services
5. ASN (keep default unless required)
6. DNS Support: Enable
7. Auto-accept shared attachments: Disable (default)
8. Multicast: Disable
9. Click Create.

Explanation:

A Transit Gateway is like a giant router that can connect thousands of VPCs and on-premises networks.

PHASE 3: CREATE ATTACHMENTS FOR EACH VPC

You must attach every VPC to the Transit Gateway.

Attachment 1: VPC-A

1. Go to Transit Gateway Attachments → Create attachment.
2. Name: **tgw-attach-vpc-a**
3. Transit Gateway: PayWave-Transit-Gateway
4. Attachment type: VPC
5. Select VPC: VPC-A-Application
6. Select subnets: choose **private subnets** for maximum realism
7. Create.

Attachment 2: VPC-B

Repeat with:

Name: tgw-attach-vpc-b

VPC: VPC-B-Analytics

Attachment 3: VPC-C

Repeat with:

Name: tgw-attach-vpc-c

VPC: VPC-C-SharedServices

Explanation:

Transit Gateway needs attachments to serve as entry points for each VPC. Using private subnets ensures traffic flows internally without using the internet.

PHASE 4: MODIFY THE TRANSIT GATEWAY ROUTE TABLE

Your TGW acts as the central router, so you must tell it where each VPC resides.

Steps:

1. Go to Transit Gateways → Select PayWave-Transit-Gateway.
2. Choose the Route Table tab.
3. Click "Edit Route Table" or "Create Association" depending on UI version.
4. Add routes:

Destination: 10.0.0.0/16 → Target: tgw-attach-vpc-a

Destination: 10.1.0.0/16 → Target: tgw-attach-vpc-b

Destination: 10.2.0.0/16 → Target: tgw-attach-vpc-c

Explanation:

The TGW route table controls how traffic flows between attachments. Without routes, the TGW cannot forward traffic.

PHASE 5: UPDATE THE VPC ROUTE TABLES

Each VPC must send traffic for other VPCs **to the Transit Gateway** instead of to the old peering connections.

You will update both **public** and **private route tables** since the EC2 instances are in private networks.

For each VPC:

VPC-A route table

Add routes:

10.1.0.0/16 → Transit Gateway

10.2.0.0/16 → Transit Gateway

VPC-B route table

Add routes:

10.0.0.0/16 → Transit Gateway

10.2.0.0/16 → Transit Gateway

VPC-C route table

Add routes:

10.0.0.0/16 → Transit Gateway

10.1.0.0/16 → Transit Gateway

Important:

Remove or disable old peering routes to avoid confusion.

The TGW now handles all connectivity.

PHASE 6: TEST FULL-MESH CONNECTIVITY

Now test connectivity across all three VPCs.

Test 1: VPC-A → VPC-B

SSH into app-test-instance.

Ping private IP of analytics-test-instance.

Example:

```
ping 10.1.1.10
```

Expected: success.

Test 2: VPC-A → VPC-C

```
ping 10.2.1.10
```

Expected: success (this previously failed under peering).

Test 3: VPC-B → VPC-C

```
ping 10.2.1.10
```

Expected: success.

Test 4: VPC-C → VPC-A

```
ping 10.0.1.10
```

Expected: success.

If anything fails:

- Check VPC route tables
- Check TGW route tables
- Check attachment states
- Check security groups (ensure ICMP allowed from all VPC CIDRs)

Once all tests work, your Transit Gateway design is fully functional.

PHASE 7: COMPARISON - WHY TRANSIT GATEWAY IS BETTER

Now you can clearly see the difference:

VPC Peering:

- One-to-one
- No transitive routing
- Too many connections as environment grows
- Hard to manage when 5+ VPCs exist

Transit Gateway:

- Central hub
- Transitive routing supported
- Enterprise-level scalability
- Simplified route management
- Ideal for 10, 50, or even 500+ VPCs
- Supports hybrid (on-prem + cloud) networks

This architecture is what large companies like banks, SaaS platforms, and healthcare systems use.

Implementation:

Create Transit Gateway (VPC -> Transit Gateway -> Create Transit Gateway)

The screenshot shows the AWS VPC console with the 'Transit gateways' page open. The left sidebar has sections for Verified Access instances, Transit gateways (selected), and Traffic Mirroring. The main content area has a search bar and a table with columns for Name, Transit gateway ID, Owner ID, and State. A message indicates 'No transit gateways' and 'You do not have any transit gateways in this region'. At the top right, there is an 'Actions' dropdown and a large orange 'Create transit gateway' button.

Choose:

- Name
- Description
- ASN (keep default)
- DNS Support: Enable
- Auto Accept shared attachment: Disable (default)
- Multicast: Disable
- Create

VPC > Transit gateways > Create transit gateway

Create transit gateway [Info](#)

A transit gateway (TGW) is a network transit hub that interconnects attachments (VPCs and VPNs) within the same AWS account or across AWS accounts.

Details - optional

Name tag [Info](#)
Creates a tag with the key set to Name and the value set to the specified string.

Description [Info](#)
Set the description of your transit gateway to help you identify it in the future.

Configure the transit gateway

Amazon side Autonomous System Number (ASN) [Info](#)

DNS support [Info](#)
 Security Group Referencing support [Info](#)
 VPN ECMP support [Info](#)
 Default route table association [Info](#)
 Default route table propagation [Info](#)
 Multicast support [Info](#)

Configure cross-account sharing options

Auto accept shared attachments [Info](#)

Transit gateway CIDR blocks

CIDR - optional [Info](#)

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 [Remove](#)

[Add new tag](#)
You can add up to 49 more tags.

[Cancel](#) [Create transit gateway](#)

Transit gateways (1) [Info](#)

[Actions](#) [Create transit gateway](#)

Name	Transit gateway ID	Owner ID	State
<input type="checkbox"/> PayWave-Transit-Gat... tgw-0be8dc3fd57db3284	tgw-0be8dc3fd57db3284	447657623308	Pending

Create Attachment

VPC > Transit gateway attachments

Verified Access Instances
Verified Access trust providers
Verified Access groups
Verified Access endpoints

Transit gateways
Transit gateway attachments
Transit gateway policy tables
Transit gateway route tables
Transit gateway multicast
Metering policies [New](#)

Traffic Mirroring
Mirror sessions
Mirror targets

Transit gateway attachments [Info](#)

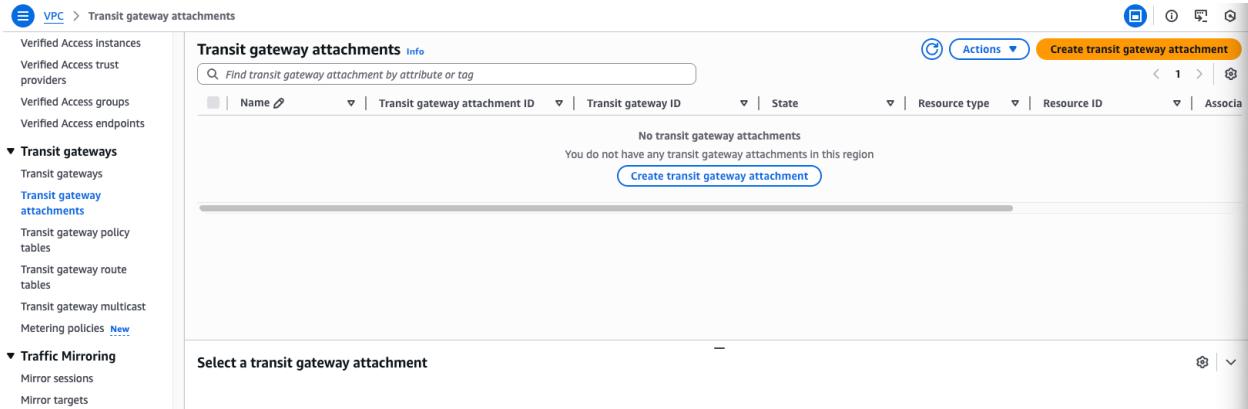
Find transit gateway attachment by attribute or tag

Name | Transit gateway attachment ID | Transit gateway ID | State | Resource type | Resource ID | Associa

No transit gateway attachments
You do not have any transit gateway attachments in this region

Create transit gateway attachment

Select a transit gateway attachment



Create Attachment for VPC-A and give below details

Name: tgw-attach-vpc-a

Transit Gateway: PayWave-Transit-Gateway

Attachment type: VPC

Select VPC: VPC-A-Application

Select subnets: private subnets

VPC > Transit gateway attachments > Create transit gateway attachment

Create transit gateway attachment Info

A transit gateway (TGW) is a network transit hub that interconnects attachments (VPCs and VPNs) within the same AWS account or across AWS accounts.

Details

Name tag - optional
Creates a tag with the key set to Name and the value set to the specified string.

Transit gateway ID Info

Attachment type Info

VPC attachment

Select and configure your VPC attachment.

DNS support Info

Security Group Referencing support Info

IPv6 support Info

Appliance Mode support Info

VPC ID
Select the VPC to attach to the transit gateway.

Subnet IDs Info
Select the subnets in which to create the transit gateway VPC attachment.

ap-south-1a

ap-south-1b No subnet available

ap-south-1c No subnet available

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.

Value - optional

You can add up to 49 more tags.

Created

VPC > Transit gateway attachments

You successfully created VPC attachment tgw-attach-0b50168b9bab3ee7c / tgw-attach-vpc-a.

Transit gateway attachments (1) Info

Find transit gateway attachment by attribute or tag

Name	Transit gateway attachment ID	Transit gateway ID	State	Resource type	Resource ID	Associations
tgw-attach-vpc-a	tgw-attach-0b50168b9bab3ee7c	tgw-0be8dc3fd57db3284	Pending	VPC	vpc-074fd47e9de711830	-

Create attachment for VPC-B

VPC > Transit gateway attachments > Create transit gateway attachment



Create transit gateway attachment [Info](#)

A transit gateway (TGW) is a network transit hub that interconnects attachments (VPCs and VPNs) within the same AWS account or across AWS accounts.

Details

Name tag - optional

Creates a tag with the key set to Name and the value set to the specified string.

tgw-attach-vpc-b

Transit gateway ID [Info](#)

tgw-0be8dc3fd57db3284

Attachment type [Info](#)

VPC

VPC attachment

Select and configure your VPC attachment.

DNS support [Info](#)

Security Group Referencing support [Info](#)

IPv6 support [Info](#)

Appliance Mode support [Info](#)

VPC ID

Select the VPC to attach to the transit gateway.

vpc-0b340ad5c058f85a3

Subnet IDs [Info](#)

Select the subnets in which to create the transit gateway VPC attachment.

ap-south-1a No subnet available

ap-south-1b

subnet-0306c3eb6df797fd5 ▲

ap-south-1c

Q |

subnet-0728cf182039ee934 (subnet-b-public)

subnet-0306c3eb6df797fd5

subnet-0306c3eb6df797fd5 (subnet-b-private) ✓

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

Q tgw-attach-vpc-b

Remove

Add new tag

You can add up to 49 more tags.

Cancel

Create transit gateway attachment

Created attachment

VPC > Transit gateway attachments



Verified Access instances

Verified Access trust providers

Verified Access groups

Verified Access endpoints

Transit gateways

Transit gateways

Transit gateway attachments

✓ You successfully created VPC attachment tgw-attach-0bcfa78a0e5d93662 / tgw-attach-vpc-b.

Transit gateway attachments (2) [Info](#)

Find transit gateway attachment by attribute or tag

Actions

Create transit gateway attachment



Name	Transit gateway attachment ID	Transit gateway ID	State	Resource type	Resource ID	Associa
tgw-attach-vpc-a	tgw-attach-0b50168b9bab3ee7c	tgw-0be8dc3fd57db3284	Available	VPC	vpc-074fd47e9de711830	tgw-rtb
tgw-attach-vpc-b	tgw-attach-0bcfa78a0e5d93662	tgw-0be8dc3fd57db3284	Pending	VPC	vpc-0b340ad5c058f85a3	-

Create attachment for VPC-C

VPC > Transit gateway attachments > Create transit gateway attachment



Create transit gateway attachment Info

A transit gateway (TGW) is a network transit hub that interconnects attachments (VPCs and VPNs) within the same AWS account or across AWS accounts.

Details

Name tag - optional

Creates a tag with the key set to Name and the value set to the specified string.

tgw-attach-vpc-c

Transit gateway ID Info

tgw-0be8dc3fd57db3284

Attachment type Info

VPC

VPC attachment

Select and configure your VPC attachment.

DNS support Info

Security Group Referencing support Info

IPv6 support Info

Appliance Mode support Info

VPC ID

Select the VPC to attach to the transit gateway.

vpc-04563ee4223a8aeb3

Subnet IDs Info

Select the subnets in which to create the transit gateway VPC attachment.

ap-south-1a

No subnet available

ap-south-1b

No subnet available

ap-south-1c

subnet-03e7151bccf911d58 ▲



subnet-03e7151bccf911d58

subnet-0dd4f5686bb5e50b4 (subnet-c-public)

subnet-03e7151bccf911d58 (subnet-c-private)✓

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

Name

Value - optional

tgw-attach-vpc-c

[Remove](#)

[Add new tag](#)

You can add up to 49 more tags.

[Cancel](#)

[Create transit gateway attachment](#)

Created attachment

You successfully created VPC attachment tgw-attach-0b3782df2f4fa19be / tgw-attach-vpc-b.



Actions

[Create transit gateway attachment](#)



Transit gateway attachments (4) Info

Find transit gateway attachment by attribute or tag

<input type="checkbox"/>	Name	Transit gateway attachment ID	Transit gateway ID	State	Resource type	Resource ID	Associa
<input type="checkbox"/>	tgw-attach-vpc-c	tgw-attach-038484b1c0d50fa4f	tgw-0be8dc3fd57db3284	Available	VPC	vpc-04563ee4223a8aeb3	tgw-rtb
<input type="checkbox"/>	tgw-attach-vpc-b	tgw-attach-0b3782df2f4fa19be	tgw-0be8dc3fd57db3284	Pending	VPC	vpc-0b340ad5c058f85a3	-
<input type="checkbox"/>	tgw-attach-vpc-a	tgw-attach-0b50168b9bab3ee7c	tgw-0be8dc3fd57db3284	Available	VPC	vpc-074fd47e9de711830	tgw-rtb

Modify the transit gateway route table

There are no changes required in this phase as we have already added during the attachments

To see the route tables - go to Transit Gateway – PayWave-Transit-Gateway

- select Association route table ID – (in this page go to) Routes tab

The screenshot shows the AWS VPC console with the following details:

Details:

- Transit gateway route table ID: tgw-rtb-0dd8485f68bffffbf1
- State: Available
- Default association route table: Yes
- Default propagation route table: Yes

Associations: None

Propagations: None

Prefix list references: None

Routes: (3)

Exact CIDR	Longest prefix match	Supernet of match	Subnet of match
0.0.0.0/0, ::/0	0.0.0.0, ::/0	0.0.0.0/0, ::/0	0.0.0.0/0, ::/0

CIDR	Attachment ID	Resource ID	Resource type	Route type	Route state	P...
10.0.0.0/16	tgw-attach-0b50168b9bab3ee7c	vpc-074fd47e9de711830	VPC	Propagated	Active	-
10.1.0.0/16	tgw-attach-0b5782df2f4fa19be	vpc-0b340ad5c058f85a3	VPC	Propagated	Active	-
10.2.0.0/16	tgw-attach-038484b1c0d50fa4f	vpc-04563ee4223a8ae5	VPC	Propagated	Active	-

Update the VPC Route tables

Go to Route Table and update the routes tables of both Public and Private of VPC A, B and C.

For Route Table A:

Add CIDR of B

Destination – 10.1.0.0/16

Target – Internet Gateway

And add CIDR of C

Destination – 10.2.0.0/16

Target – Internet Gateway

For Route Table B:

Add CIDR of C

Destination – 10.2.0.0/16

Target – Internet Gateway

And add CIDR of A

Destination – 10.0.0.0/16

Target – Internet Gateway

For Route Table C:

Add CIDR of A

Destination – 10.0.0.0/16

Target – Internet Gateway

And add CIDR of B

Destination – 10.1.0.0/16

Target – Internet Gateway

NOTE: Make sure to remove any peering connection in any of the route tables and add proper CIDR for all VPC A, B and C in both public and private route tables.

- Route Table of A should have CIDR of B and C
- Route Table of B should have CIDR of A and C
- Route Table of C should have CIDR of A and B

VPC-A-Public-RouteTable

Before

rtb-067a3584a07286e2e / rt-public-vpc-a

Details [Info](#)

Route table ID rtb-067a3584a07286e2e	Main <input checked="" type="checkbox"/> No	Explicit subnet associations subnet-08fd2b11a1ea3f59a / subnet-a-public	Edge associations -
VPC vpc-074fd47e9de711830 VPC-A-Application	Owner ID <input checked="" type="checkbox"/> 447657623308		

[Routes](#) [Subnet associations](#) [Edge associations](#) [Route propagation](#) [Tags](#)

Routes (3)

[Edit routes](#) (1)

Destination	Target	Status	Propagated	Route Origin
0.0.0.0/0	igw-01a3cdd9220e11f6c	Active	No	Create Route
10.0.0.0/16	local	Active	No	Create Route Table
10.1.0.0/16	pxc-066375a7b0397df...	Active	No	Create Route

[VPC](#) > [Route tables](#) > [rtb-067a3584a07286e2e](#) > Edit routes

Edit routes

Destination	Target	Status	Propagated	Route Origin	
10.0.0.0/16	local	Active	No	CreateRouteTable	
10.1.0.0/16	Peering Connection	Active	No	CreateRoute	Remove
0.0.0.0/0	Internet Gateway	Active	No	CreateRoute	Remove
	IGW	In Progress			

[Add route](#) [Cancel](#) [Preview](#) [Save changes](#)

After

☰ VPC > Route tables > rtb-067a3584a07286e2e > Edit routes

Destination	Target	Status	Propagated	Route Origin	
10.0.0.0/16	local	Active	No	CreateRouteTable	
10.1.0.0/16	Transit Gateway	Active	No	CreateRoute	<button>Remove</button>
0.0.0.0/0	Internet Gateway	Active	No	CreateRoute	<button>Remove</button>
10.2.0.0/16	Transit Gateway	-	No	CreateRoute	<button>Remove</button>
Add route					
			Cancel	Preview	
				Save changes	

rtb-067a3584a07286e2e / rt-public-vpc-a

Details		Main		Explicit subnet associations		Edge associations	
Route table ID	rtb-067a3584a07286e2e	<input checked="" type="checkbox"/> Main	<input checked="" type="checkbox"/> No				
VPC	vpc-074fd47e9de711830 VPC-A-Application		Owner ID	447657623308			
Routes		Subnet associations	Edge associations	Route propagation	Tags		
Routes (4)							
<div style="display: flex; justify-content: space-between;"> Both Edit routes </div> <div style="display: flex; justify-content: space-between;"> 1 > ⚙️ </div>							
Destination	▼	Target	▼	Status	▼	Propagated	▼
0.0.0.0/0		igw-01a3cd9220e11f6c		Active		No	Create Route
10.0.0.0/16		local		Active		No	Create Route Table
10.1.0.0/16		tgw-0be8dc3fd57db3284		Active		No	Create Route
10.2.0.0/16		tgw-0be8dc3fd57db3284		Active		No	Create Route

VPC-A-Private-RouteTable (remove the peering connection shown in red box)

Before

rtb-03565c8da29276896 / VPC-A-private-RouteTable

Details [Info](#)

Route table ID rtb-03565c8da29276896	Main <input checked="" type="checkbox"/> Yes	Explicit subnet associations -	Edge associations -
Owner ID vpc-074fd47e9de711830 VPC-A-Application			

[Actions ▾](#)

[Routes](#) | [Subnet associations](#) | [Edge associations](#) | [Route propagation](#) | [Tags](#)

Routes (3)

Destination	Target	Status	Propagated	Route Origin
10.0.0.0/16	local	Active	No	Create Route Table
10.1.0.0/16	pxc-066375a7b0397df2e	Active	No	Create Route
10.2.0.0/16	pxc-066375a7b0397df2e	Active	No	Create Route

[Edit routes](#)

Edit routes

Destination	Target	Status	Propagated	Route Origin
10.0.0.0/16	local	Active	No	CreateRouteTable
10.1.0.0/16	Peering Connection pxc-066375a7b0397df2e	Active	No	CreateRoute
10.1.0.0/16	Transit Gateway tgw-0be8dc3fd57db3284	-	No	CreateRoute
10.2.0.0/16	Transit Gateway tgw-0be8dc3fd57db3284	-	No	CreateRoute

[Add route](#)

[Cancel](#) [Preview](#) [Save changes](#)

After

[VPC](#) > [Route tables](#) > [rtb-03565c8da29276896](#) > [Edit routes](#)

Edit routes

Destination	Target	Status	Propagated	Route Origin
10.0.0.0/16	local	Active	No	CreateRouteTable
10.1.0.0/16	Transit Gateway tgw-0be8dc3fd57db3284	Active	No	CreateRoute
10.2.0.0/16	Transit Gateway tgw-0be8dc3fd57db3284	Active	No	CreateRoute

[Add route](#)

[Cancel](#) [Preview](#) [Save changes](#)

rtb-03565c8da29276896 / VPC-A-private-RouteTable

Details [Info](#)

Route table ID rtb-03565c8da29276896	Main <input checked="" type="checkbox"/> Yes	Explicit subnet associations -	Edge associations -
Owner ID vpc-074fd47e9de711830 VPC-A-Application			

[Actions ▾](#)

[Routes](#) | [Subnet associations](#) | [Edge associations](#) | [Route propagation](#) | [Tags](#)

Routes (3)

Destination	Target	Status	Propagated	Route Origin
10.0.0.0/16	local	Active	No	Create Route Table
10.1.0.0/16	tgw-0be8dc3fd57db3284	Active	No	Create Route
10.2.0.0/16	tgw-0be8dc3fd57db3284	Active	No	Create Route

VPC-B-Public-RouteTable

Before

rtb-0415ebde041915ffb / rt-public-vpc-b

Actions ▾

Details Info

Route table ID rtb-0415ebde041915ffb	Main No	Explicit subnet associations subnet-0728cf182039ee934 / subnet-b-public	Edge associations -
VPC vpc-0b340ad5c058f85a3 VPC-B-Analytics	Owner ID 447657623308		

Routes Subnet associations Edge associations Route propagation Tags

Routes (4)

Destination	Target	Status	Propagated	Route Origin
0.0.0.0/0	igw-00d91208d1f5eb4ca	Active	No	Create Route
10.0.0.0/16	pxc-066375a7b0397df2e	Active	No	Create Route
10.1.0.0/16	local	Active	No	Create Route Table
10.2.0.0/16	pxc-0f64cc86ba058321f	Active	No	Create Route

Both ▾ 1 ▾ 🔍

Filter routes

≡ VPC > Route tables > rtb-0415ebde041915ffb > Edit routes

Edit routes

Destination	Target	Status	Propagated	Route Origin
10.1.0.0/16	local	Active	No	CreateRouteTable
Q 10.0.0.0/16 X	Peering Connection	Active	No	CreateRoute
Q 10.2.0.0/16 X	Peering Connection	Active	No	CreateRoute
Q 0.0.0.0/0 X	Internet Gateway	Active	No	CreateRoute

Add route

Cancel Preview Save changes

After

≡ VPC > Route tables > rtb-0415ebde041915ffb > Edit routes

Filter

Edit routes

Destination	Target	Status	Propagated	Route Origin
10.1.0.0/16	local	Active	No	CreateRouteTable
Q 10.0.0.0/16 X	Transit Gateway	Active	No	CreateRoute
Q 10.2.0.0/16 X	Transit Gateway	Active	No	CreateRoute
Q 0.0.0.0/0 X	Internet Gateway	Active	No	CreateRoute

Add route

Cancel Preview Save changes

rtb-0415ebde041915ffb / rt-public-vpc-b

Actions ▾

Details Info

Route table ID rtb-0415ebde041915ffb	Main No	Explicit subnet associations subnet-0728cf182039ee934 / subnet-b-public	Edge associations -
VPC vpc-0b340ad5c058f85a3 VPC-B-Analytics	Owner ID 447657623308		

Routes Subnet associations Edge associations Route propagation Tags

Routes (4)

Destination	Target	Status	Propagated	Route Origin
0.0.0.0/0	igw-00d91208d1f5eb4ca	Active	No	Create Route
10.0.0.0/16	tgw-0be8dc3fd57db3284	Active	No	Create Route
10.1.0.0/16	local	Active	No	Create Route Table
10.2.0.0/16	tgw-0be8dc3fd57db3284	Active	No	Create Route

Both ▾ 1 ▾ 🔍

Filter routes

≡ VPC > Route tables > rtb-0415ebde041915ffb > Edit routes

VPC-B-Private-RouteTable

Before

rtb-0e89cd537429f3a3b / VPC-B-private-RouteTable

Actions ▾

Details Info

Route table ID rtb-0e89cd537429f3a3b	Main <input checked="" type="checkbox"/> Yes	Explicit subnet associations -	Edge associations -
VPC vpc-0b340ad5c058f85a3 VPC-B-Analytics	Owner ID 447657623308		

Routes | Subnet associations | Edge associations | Route propagation | Tags

Routes (3)

Destination	Target	Status	Propagated	Route Origin
10.0.0.0/16	pxx-066375a7b0397df2e	Active	No	Create Route
10.1.0.0/16	local	Active	No	Create Route Table
10.2.0.0/16	pxx-0f64cc86ba058321f	Active	No	Create Route

≡ VPC > Route tables > rtb-0e89cd537429f3a3b > Edit routes

Edit routes

Destination	Target	Status	Propagated	Route Origin
10.1.0.0/16	local	Active	No	CreateRouteTable
10.0.0.0/16	Peering Connection	Active	No	CreateRoute
10.2.0.0/16	Peering Connection	Active	No	CreateRoute

[Add route](#)

Cancel | Preview | Save changes

After

rtb-0e89cd537429f3a3b / VPC-B-private-RouteTable

Actions ▾

Details Info

Route table ID rtb-0e89cd537429f3a3b	Main <input checked="" type="checkbox"/> Yes	Explicit subnet associations -	Edge associations -
VPC vpc-0b340ad5c058f85a3 VPC-B-Analytics	Owner ID 447657623308		

Routes | Subnet associations | Edge associations | Route propagation | Tags

Routes (3)

Destination	Target	Status	Propagated	Route Origin
10.0.0.0/16	tgw-0be8dc3fd57db3284	Active	No	Create Route
10.1.0.0/16	local	Active	No	Create Route Table
10.2.0.0/16	tgw-0be8dc3fd57db3284	Active	No	Create Route

≡ VPC > Route tables > rtb-0e89cd537429f3a3b > Edit routes

Edit routes

Destination	Target	Status	Propagated	Route Origin
10.1.0.0/16	local	Active	No	CreateRouteTable
10.0.0.0/16	Transit Gateway	Active	No	CreateRoute
10.2.0.0/16	Transit Gateway	Active	No	CreateRoute

[Add route](#)

Cancel | Preview | Save changes

VPC-C-Public-RouteTable

Before

[VPC](#) > [Route tables](#) > [rtb-0f12bbae6025952a9](#) > Edit routes

Edit routes

Destination	Target	Status	Propagated	Route Origin	
10.2.0.0/16	local	Active	No	CreateRouteTable	
Q. 10.1.0.0/16	Peering Connection	Active	No	CreateRoute	Remove
Q. 0.0.0.0/0	Internet Gateway	Active	No	CreateRoute	Remove
Add route					

Cancel [Preview](#) [Save changes](#)

rtb-0f12bbae6025952a9 / rt-public-vpc-c

[Actions](#)

Details [Info](#)

Route table ID rtb-0f12bbae6025952a9	Main No	Explicit subnet associations subnet-0dd4f5686bb3e50b4 / subnet-c-public	Edge associations -
VPC vpc-04563ee4223a8ae3 VPC-C- SharedServices	Owner ID 447657623308		

[Routes](#) [Subnet associations](#) [Edge associations](#) [Route propagation](#) [Tags](#)

Routes (3)

Destination	Target	Status	Propagated	Route Origin
0.0.0.0/0	igw-0b0d915613048b198	Active	No	Create Route
10.1.0.0/16	px-0f64cc86ba058321f	Active	No	Create Route
10.2.0.0/16	local	Active	No	Create Route Table

Both [Edit routes](#)

After

[VPC](#) > [Route tables](#) > [rtb-0f12bbae6025952a9](#) > Edit routes

Edit routes

Destination	Target	Status	Propagated	Route Origin	
10.2.0.0/16	local	Active	No	CreateRouteTable	
Q. 10.0.0.0/16	Transit Gateway	Active	No	CreateRoute	Remove
Q. 10.1.0.0/16	Transit Gateway	Active	No	CreateRoute	Remove
Q. 0.0.0.0/0	Internet Gateway	Active	No	CreateRoute	Remove
Add route					

Cancel [Preview](#) [Save changes](#)

rtb-0f12bbae6025952a9 / rt-public-vpc-c

[Actions](#)

Details [Info](#)

Route table ID rtb-0f12bbae6025952a9	Main No	Explicit subnet associations subnet-0dd4f5686bb3e50b4 / subnet-c-public	Edge associations -
VPC vpc-04563ee4223a8ae3 VPC-C- SharedServices	Owner ID 447657623308		

[Routes](#) [Subnet associations](#) [Edge associations](#) [Route propagation](#) [Tags](#)

Routes (4)

Destination	Target	Status	Propagated	Route Origin
0.0.0.0/0	igw-0b0d915613048b198	Active	No	Create Route
10.0.0.0/16	tgw-0be8dc3fd57db3284	Active	No	Create Route
10.1.0.0/16	tgw-0be8dc3fd57db3284	Active	No	Create Route
10.2.0.0/16	local	Active	No	Create Route Table

Both [Edit routes](#)

VPC-C-private-RouteTable

Before

rtb-0b387a96498dadf6b / VPC-C-private-Routetable

Details Info

Route table ID rtb-0b387a96498dadf6b	Main Yes	Explicit subnet associations -	Edge associations -
VPC vpc-04563ee4223a8aeb3 VPC-C-SharedServices	Owner ID 447657623308		

Routes Subnet associations Edge associations Route propagation Tags

Routes (2)

Destination	Target	Status	Propagated	Route Origin
10.1.0.0/16	pcc-0f64cc86ba058321f	Active	No	Create Route
10.2.0.0/16	local	Active	No	Create Route Table

Both Edit routes < 1 > ⚙️

VPC > Route tables > rtb-0b387a96498dadf6b > Edit routes

After

Edit routes

Destination	Target	Status	Propagated	Route Origin
10.2.0.0/16	local	Active	No	CreateRouteTable
10.1.0.0/16	Peering Connection	Active	No	CreateRoute
10.0.0.0/16	tgw-0be8dc3fd57db3284	-	No	CreateRoute

Add route Cancel Preview Save changes

rtb-0b387a96498dadf6b / VPC-C-private-Routetable

Details Info

Route table ID rtb-0b387a96498dadf6b	Main Yes	Explicit subnet associations -	Edge associations -
VPC vpc-04563ee4223a8aeb3 VPC-C-SharedServices	Owner ID 447657623308		

Routes Subnet associations Edge associations Route propagation Tags

Routes (3)

Destination	Target	Status	Propagated	Route Origin
10.0.0.0/16	tgw-0be8dc3fd57db3284	Active	No	Create Route
10.1.0.0/16	tgw-0be8dc3fd57db3284	Active	No	Create Route
10.2.0.0/16	local	Active	No	Create Route Table

Both Edit routes < 1 > ⚙️

Test Full-Mesh Connectivity

SSH into EC2 instances using its public IP address and ping the private IP address other instance (Example from VPC-A EC2 instance to VPC-B EC2 instance)

Public and Private IP addresses of EC2 instances:

EC2-A-Application-Test-Instance – Public: 13.201.162.141; Private: 10.0.1.18

EC2-B-Analytics-Test-Instance – Public: 3.110.118.246; Private: 10.1.1.138

EC2-C-SharedServices-Test-Instance – Public: 13.234.14.152; Private: 10.2.1.105

Security Groups of each EC2 instances

EC2-A-Application

Instance summary for i-0c3af070e2adcaad7 (ec2-a-application-test-instance) [Info](#)

Updated less than a minute ago

Instance ID i-0c3af070e2adcaad7	Public IPv4 address 13.201.62.141 open address ↗	Private IPv4 addresses 10.0.1.18
IPv6 address –	Instance state Running	Public DNS –
Hostname type IP name: ip-10-0-1-18.ap-south-1.compute.internal	Private IP DNS name (IPv4 only) ip-10-0-1-18.ap-south-1.compute.internal	Elastic IP addresses –
Answer private resource DNS name –	Instance type t3.micro	AWS Compute Optimizer finding Opt-in to AWS Compute Optimizer for recommendations. Learn more ↗
Auto-assigned IP address 13.201.62.141 [Public IP]	VPC ID vpc-074fd47e9de711830 (VPC-A-Application)	Auto Scaling Group name –
IAM Role –	Subnet ID subnet-08fd2b11a1ea3f39a (subnet-a-public)	Managed false
IMDSv2 Required	Instance ARN arn:aws:ec2:ap-south-1:447657623308:instance/i-0c3af070e2adcaad7	

Details | Status and alarms | Monitoring | [Security](#) | Networking | Storage | Tags

▼ Security details

IAM Role –	Owner ID 447657623308	Launch time Sun Nov 30 2025 12:53:13 GMT+0530 (India Standard Time)
Security groups sg-02129bfe33a06bf3a (launch-wizard-1)		

▼ Inbound rules

Name	Security group rule ID	Port range	Protocol	Source	Security groups	Description
–	sgr-025f9f15f1b2c54f1	All	ICMP	10.2.0.0/16	launch-wizard-1	VPC A to C
–	sgr-01cb7d18f458e0ba9	22	TCP	0.0.0.0/0	launch-wizard-1	–
–	sgr-0fe3c6fba90b72cb1	All	ICMP	10.1.0.0/16	launch-wizard-1	VPC A to B

EC-2-B-Analytics

Instance summary for i-02e6f89f7ab041ddc (ec2-b-analytics-test-instance) [Info](#)

Updated less than a minute ago

Instance ID i-02e6f89f7ab041ddc	Public IPv4 address 3.110.118.246 open address 	Private IPv4 addresses 10.1.1.138
IPv6 address -	Instance state Running	Public DNS -
Hostname type IP name: ip-10-1-1-138.ap-south-1.compute.internal	Private IP DNS name (IPv4 only) ip-10-1-1-138.ap-south-1.compute.internal	Elastic IP addresses -
Answer private resource DNS name -	Instance type t3.micro	AWS Compute Optimizer finding Opt-in to AWS Compute Optimizer for recommendations. Learn more
Auto-assigned IP address 3.110.118.246 [Public IP]	VPC ID vpc-0b340ad5c058f85a3 (VPC-B-Analytics) 	Subnet ID subnet-0728cf182039ee934 (subnet-b-public)
IAM Role -	Instance ARN arn:aws:ec2:ap-south-1:447657623308:instance/i-02e6f89f7ab041ddc	Auto Scaling Group name -
IMDSv2 Required		Managed false
Operator -		

Details | Status and alarms | Monitoring | [Security](#) | Networking | Storage | Tags

▼ Security details

IAM Role -	Owner ID 447657623308	Launch time Sun Nov 30 2025 12:57:28 GMT+0530 (India Standard Time)
Security groups sg-01000c833b8f6792c (launch-wizard-2)		

▼ Inbound rules

Name	Security group rule ID	Port range	Protocol	Source	Security groups	Description
-	sgr-0d3624df9ec1e61ee	22	TCP	0.0.0.0/0	launch-wizard-2 	-
-	sgr-098c31755724f3fd5	All	ICMP	10.2.0.0/16	launch-wizard-2 	VPC B to C
-	sgr-0f7bab632eeb48d67	All	ICMP	10.0.0.0/16	launch-wizard-2 	VPC A to b

EC2-C-SharedServices

Instance summary for i-0def255501a7b0ecc (ec2-c-sharedservices-test-instance) [Info](#)

Updated less than a minute ago

Instance ID i-0def255501a7b0ecc	Public IPv4 address 13.234.14.152 open address 	Private IPv4 addresses 10.2.1.105
IPv6 address -	Instance state Running	Public DNS -
Hostname type IP name: ip-10-2-1-105.ap-south-1.compute.internal	Private IP DNS name (IPv4 only) ip-10-2-1-105.ap-south-1.compute.internal	Elastic IP addresses -
Answer private resource DNS name -	Instance type t3.micro	AWS Compute Optimizer finding Opt-in to AWS Compute Optimizer for recommendations. Learn more
Auto-assigned IP address 13.234.14.152 [Public IP]	VPC ID vpc-04563ee4223a8eb3 (VPC-C-SharedServices) 	Subnet ID subnet-0dd4f5686bb3e50b4 (subnet-c-public)
IAM Role -	Instance ARN arn:aws:ec2:ap-south-1:447657623308:instance/i-0def255501a7b0ecc	Auto Scaling Group name -
IMDSv2 Required		Managed false
Operator -		

Details | Status and alarms | Monitoring | [Security](#) | Networking | Storage | Tags

▼ Security details

IAM Role -	Owner ID 447657623308	Launch time Mon Dec 01 2025 11:07:22 GMT+0530 (India Standard Time)
Security groups sg-0182ead23a2d24f17 (launch-wizard-3)		

▼ Inbound rules

Name	Security group rule ID	Port range	Protocol	Source	Security groups	Description
-	sgr-099f1518cddeb5d20c	All	ICMP	10.1.0.0/16	launch-wizard-3 	VPC B to C
-	sgr-0d7a07be2b7a5ecb4	22	TCP	0.0.0.0/0	launch-wizard-3 	-
-	sgr-09b44dcfe83f8ac3f	All	ICMP	10.0.0.0/16	launch-wizard-3 	VPC C to A

Test 1: VPC-A to VPC-B

```
Code — ubuntu@ip-10-0-1-18: ~ — ssh -i vikramhemchandar.pem ubuntu@13.201.62.141 — 124x24

[ubuntu@ip-10-0-1-18:~]$ echo "Ping from EC2-A instance to EC2-B instance Private IP address - 10.0.1.18"
Ping from EC2-A instance to EC2-B instance Private IP address - 10.0.1.18
[ubuntu@ip-10-0-1-18:~]$ ping 10.0.1.18
PING 10.0.1.18 (10.0.1.18) 56(84) bytes of data.
64 bytes from 10.0.1.18: icmp_seq=1 ttl=64 time=0.024 ms
64 bytes from 10.0.1.18: icmp_seq=2 ttl=64 time=0.030 ms
64 bytes from 10.0.1.18: icmp_seq=3 ttl=64 time=0.027 ms
64 bytes from 10.0.1.18: icmp_seq=4 ttl=64 time=0.029 ms
64 bytes from 10.0.1.18: icmp_seq=5 ttl=64 time=0.029 ms
^C
--- 10.0.1.18 ping statistics ---
5 packets transmitted, 5 received, 0% packet loss, time 4112ms
rtt min/avg/max/mdev = 0.024/0.027/0.030/0.002 ms
[ubuntu@ip-10-0-1-18:~]$ echo "Ping Successful"
Ping Successful
[ubuntu@ip-10-0-1-18:~]$
```

Test 2: VPC-B to VPC-C

```
Code — ubuntu@ip-10-1-1-138: ~ — ssh -i vikramhemchandar.pem ubuntu@3.110.118.246 — 124x25

[ubuntu@ip-10-1-1-138:~]$ echo "This is EC2-B and from here, ping test to EC2-C to private IP : 10.2.1.105"
This is EC2-B and from here, ping test to EC2-C to private IP : 10.2.1.105
[ubuntu@ip-10-1-1-138:~]$ ping 10.2.1.105
PING 10.2.1.105 (10.2.1.105) 56(84) bytes of data.
64 bytes from 10.2.1.105: icmp_seq=1 ttl=63 time=1.15 ms
64 bytes from 10.2.1.105: icmp_seq=2 ttl=63 time=0.915 ms
64 bytes from 10.2.1.105: icmp_seq=3 ttl=63 time=0.953 ms
64 bytes from 10.2.1.105: icmp_seq=4 ttl=63 time=0.920 ms
64 bytes from 10.2.1.105: icmp_seq=5 ttl=63 time=0.950 ms
^C
--- 10.2.1.105 ping statistics ---
5 packets transmitted, 5 received, 0% packet loss, time 4068ms
rtt min/avg/max/mdev = 0.915/0.977/1.151/0.087 ms
[ubuntu@ip-10-1-1-138:~]$ echo "Ping Successful"
Ping Successful
[ubuntu@ip-10-1-1-138:~]$
```

Test 3: VPC-C to VPC-A

```
Code — ubuntu@ip-10-2-1-105: ~ — ssh -i vikramhemchandar.pem ubuntu@13.234.14.152 — 124x26

[ubuntu@ip-10-2-1-105:~$ echo "This is EC2-C and from here, ping test to EC2-A to private IP : 10.0.1.18"
This is EC2-C and from here, ping test to EC2-A to private IP : 10.0.1.18
[ubuntu@ip-10-2-1-105:~$ ping 10.0.1.18
PING 10.0.1.18 (10.0.1.18) 56(84) bytes of data.
64 bytes from 10.0.1.18: icmp_seq=1 ttl=63 time=0.679 ms
64 bytes from 10.0.1.18: icmp_seq=2 ttl=63 time=0.444 ms
64 bytes from 10.0.1.18: icmp_seq=3 ttl=63 time=0.447 ms
64 bytes from 10.0.1.18: icmp_seq=4 ttl=63 time=0.478 ms
64 bytes from 10.0.1.18: icmp_seq=5 ttl=63 time=0.462 ms
^C
--- 10.0.1.18 ping statistics ---
5 packets transmitted, 5 received, 0% packet loss, time 4074ms
rtt min/avg/max/mdev = 0.444/0.502/0.679/0.089 ms
[ubuntu@ip-10-2-1-105:~$ echo "Ping Successful"
Ping Successful
ubuntu@ip-10-2-1-105:~$ ]
```

Test4: VPC-A to VPC-C

```
Code — ubuntu@ip-10-0-1-18: ~ — ssh -i vikramhemchandar.pem ubuntu@13.201.62.141 — 124x25

[ubuntu@ip-10-0-1-18:~$ echo "Ping from EC2-A instance to EC2-C instance Private IP address - 10.2.1.105"
Ping from EC2-A instance to EC2-C instance Private IP address - 10.2.1.105
[ubuntu@ip-10-0-1-18:~$ ping 10.2.1.105
PING 10.2.1.105 (10.2.1.105) 56(84) bytes of data.
64 bytes from 10.2.1.105: icmp_seq=1 ttl=63 time=0.689 ms
64 bytes from 10.2.1.105: icmp_seq=2 ttl=63 time=0.437 ms
64 bytes from 10.2.1.105: icmp_seq=3 ttl=63 time=0.531 ms
64 bytes from 10.2.1.105: icmp_seq=4 ttl=63 time=0.443 ms
64 bytes from 10.2.1.105: icmp_seq=5 ttl=63 time=0.444 ms
^C
--- 10.2.1.105 ping statistics ---
5 packets transmitted, 5 received, 0% packet loss, time 4085ms
rtt min/avg/max/mdev = 0.437/0.508/0.689/0.096 ms
[ubuntu@ip-10-0-1-18:~$ echo "Ping Successful"
Ping Successful
ubuntu@ip-10-0-1-18:~$ ]
```

Conclusion: Why Transit Gateway is better?

As we can clearly see the difference between VPC Peering and Transit Gateway

VPC Peering:

- One to one
- No transitive routing
- Too many connections as environment grows
- Hard to manage when 5+ VPCs exist

Transit Gateway:

- Central Hub
- Transitive routing supported
- Enterprise-level scalability
- Simplified route management
- Ideal of 10, 50 or even 500+ VPCs
- Supports hybrid (on-prem + cloud) networks

This architecture is what large organizations like banks, SaaS platforms and healthcare systems use.

===== End of the Document =====