

VPC-Connectivity-task-1

- Create 2 custom VPCs
- Create 1 private subnet in each VPC
- Create 1 VM in each subnet - Only private IPs and no Public IPs
- Setup VPC Peering between the 2 VPCs
- Figure out how to ping from VM 1 to VM 2, but not from VM 2 to VM 1

Tasks:

1. Routing in individual standalone VPCs.
2. Routing between two peered VPCs.
3. Understanding peering connections and the importance of 2 way connection.
4. Firewall rules list for the two VMs.

VPC Peering:

It is mainly used for establishing connection between 2 VPC's network

The VPC's can be in different region, different project , or in different organization also

It is not transitive in nature (suppose if $\text{vpc-a} \rightarrow \text{vpc-b}$ is true)

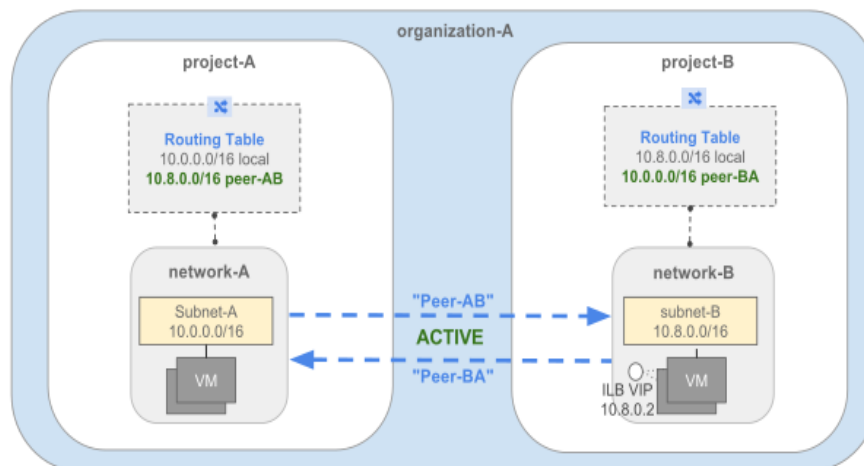
(and $\text{vpc-b} \rightarrow \text{vpc-c}$ is true)

(then $\text{vpc-a} \rightarrow \text{vpc-c}$ is not always true)

To create VPC peering one should have the IAM permission of VPC administration to perform all tasks that correspond to make it possible.

Also you would not get the access to any of the components of other VPC.

If you haven't peered from both sides then vpn peering connection would not work with showing status as inactive in the status section.



Steps to perform task →

Create the vpc-a and vpc-b with the custom subnets (remember the subnets should not overlap)
Create the Private ip only VM by providing none to Ephemeral address.

Create 2 vpc (vpc-peer-a and vpc-peer-b) with firewall rule as

Firewall Rules

vpc-peer-a

Filter

Enter property name or value

	Enforcement order	Type	Deployment scope	Rule priority	Targets	Source	Destination	Protocols and ports	Action
firewall-rules	1	VPC firewall rules	Global						
vpc-peer-a-allow-ssh		Ingress firewall rule	Global	65534	Appl...	IPv4 range	—	tcp:22	Allow

Vpc-peer-b

Filter

Enter property name or value

<input type="checkbox"/>	Name	Enforcement order	Type	Deployment scope	Rule priority	Targets	Source	Destination	Protocols and ports	Action
<input type="checkbox"/>	<div><div>▼</div>vpc-firewall-rules</div>	1	VPC firewall rules	Global						
<input type="checkbox"/>	vpc-peer-b-allow-icmp		Ingress firewall rule	Global	65534	Appl...	IPv4 range	—	icmp	Allow
<input type="checkbox"/>	vpc-peer-b-allow-ssh		Ingress firewall rule	Global	65534	Appl...	IPv4 range	—	tcp:22	Allow

Create 2 VMs

vm-peer-a and vm-peer-b

Compute Engine

Virtual machines

VM instances

Instance templates

Sole-tenant nodes

Machine images

TPUs

Committed use discounts

VM instances

CREATE INSTANCE

IMPORT VM

REFRESH

INSTANCES

OBSERVABILITY

INSTANCE SCHEDULES

VM instances

Filter

	Status	Name	Zone	Recommendations	In use by	Internal IP	External IP	Connect
<input type="checkbox"/>	✓	vm-a	us-central1-a			10.0.1.2		SSH
<input type="checkbox"/>	✓	vm-b	us-central1-c			10.0.2.2		SSH
<input type="checkbox"/>	✓	vm-peer-a	us-central1-c			10.0.2.2		SSH
<input type="checkbox"/>	✓	vm-peer-b	us-central1-a			10.0.1.2		SSH

Go to vpc peering inside the vpc networks
And create peering connection (peer-a & peer-b) →

Create peering connection

Name *

peer-a

Lowercase letters, numbers, hyphens allowed

Your VPC network *

vpc-a

Peered VPC network

☒ In project molten-topic-395213

☐ In another project

VPC network name *

vpc-b

☒ IPv4 (single-stack)

☐ IPv4 and IPv6 (dual-stack)

Exchange IPv4 custom routes

☒ Import custom routes

☒ Export custom routes

Exchange subnet routes with privately used public IPv4 addresses

☐ Import subnet routes with privately used public IPv4 addresses

☐ Export subnet routes with privately used public IPv4 addresses

Name → provide name to vpc peering
Your VPC network → the vpc to which we want peering to establish.
Preferred VPC network → can select name of any other project whose VPC you want to use
VPC network name → the name of the other vpc.

By default-> static routes are exported and imported and you can't change them.

You can exchange the custom routes that you had made or not if you want to.

VPC network

VPC networks

IP addresses

Bring your own IP

Firewall

Routes

VPC network peering

VPC network peering

CREATE PEERING CONNECTION

REFRESH

DELETE

HELP ASSISTANT

Filter

Enter property name or value

	Name	Your VPC network	Peered VPC network	Peered project ID	Status	IP stack type	Custom routes
<input type="checkbox"/>	peer-a	vpc-peer-a	vpc-peer-b	molten-topic-395213	Active	IPv4	None
<input type="checkbox"/>	peer-b	vpc-peer-b	vpc-peer-a	molten-topic-395213	Active	IPv4	Import & Export custom routes

Routes::When we create vpc network peering we get a default route to internet gateway .

<input type="checkbox"/>	default-route-7fba02542cbc2dc8	Default route to the Internet.	IPv4	0.0.0.0/0	1000	None	Default internet gateway	vpc-peer-a
<input type="checkbox"/>	default-route-95285568dcf48f58	Default route to the Internet.	IPv4	0.0.0.0/0	1000	None	Default internet gateway	vpc-b
<input type="checkbox"/>	default-route-9ee29f486b83bd1e	Default route to the Internet.	IPv4	0.0.0.0/0	1000	None	Default internet gateway	vpc-peer-b

Now trying to ping

ssh.cloud.google.com/v2/ssh/projects/molten-topic-395213/zones/us-central1-c/instances/vm-peer-a?authuser...

SSH-in-browser

UPLOAD FILE

DOWNLOAD FILE

```
g19btc036@vm-peer-a:~$ 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
        valid_lft forever preferred_lft forever
2: ens4: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1460 qdisc mq state UP group default qlen 1000
    link/ether 42:01:0a:00:02:02 brd ff:ff:ff:ff:ff:ff
    altname enp0s4
    inet 10.0.2.2/32 brd 10.0.2.2 scope global dynamic ens4
        valid_lft 55191sec preferred_lft 55191sec
    inet6 fe80::4001:aff:fe00:202/64 scope link
        valid_lft forever preferred_lft forever
g19btc036@vm-peer-a:~$ ping 10.0.1.2
PING 10.0.1.2 (10.0.1.2) 56(84) bytes of data.
^C
```

ssh.cloud.google.com/v2/ssh/projects/molten-topic-395213/zones/us-central1-a/instances/vm-peer-b?authuser...

SSH-in-browser

UPLOAD FILE

DOWNLOAD FILE

```
g19btc036@vm-peer-b:~$ 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
        valid_lft forever preferred_lft forever
2: ens4: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1460 qdisc mq state UP group default qlen 1000
    link/ether 42:01:0a:00:01:02 brd ff:ff:ff:ff:ff:ff
    altname enp0s4
    inet 10.0.1.2/32 brd 10.0.1.2 scope global dynamic ens4
        valid_lft 64480sec preferred_lft 64480sec
    inet6 fe80::4001:aff:fe00:102/64 scope link
        valid_lft forever preferred_lft forever
g19btc036@vm-peer-b:~$ ping 10.0.2.2
PING 10.0.2.2 (10.0.2.2) 56(84) bytes of data.
64 bytes from 10.0.2.2: icmp_seq=1 ttl=64 time=2.34 ms
64 bytes from 10.0.2.2: icmp_seq=2 ttl=64 time=0.376 ms
64 bytes from 10.0.2.2: icmp_seq=3 ttl=64 time=0.355 ms
64 bytes from 10.0.2.2: icmp_seq=4 ttl=64 time=0.357 ms
64 bytes from 10.0.2.2: icmp_seq=5 ttl=64 time=0.312 ms
64 bytes from 10.0.2.2: icmp_seq=6 ttl=64 time=0.352 ms
64 bytes from 10.0.2.2: icmp_seq=7 ttl=64 time=0.435 ms
64 bytes from 10.0.2.2: icmp_seq=8 ttl=64 time=0.342 ms
64 bytes from 10.0.2.2: icmp_seq=9 ttl=64 time=0.487 ms
64 bytes from 10.0.2.2: icmp_seq=10 ttl=64 time=0.370 ms
64 bytes from 10.0.2.2: icmp_seq=11 ttl=64 time=0.421 ms
64 bytes from 10.0.2.2: icmp_seq=12 ttl=64 time=0.412 ms
^C
--- 10.0.2.2 ping statistics ---
12 packets transmitted, 12 received, 0% packet loss, time 11247ms
rtt min/avg/max/mdev = 0.312/0.546/2.339/0.542 ms
g19btc036@vm-peer-b:~$
```