

## VPC Connectivity Tasks-4

- Setup 4 VPCs (A, B, C, D)
- Setup VPC peering between VPC-B and VPC-C
- Setup HA-VPN tunnels between VPC-A and VPC-B and tunnels between VPC-C and VPC-D
- Ping from VPC A to VPC D

### Tasks:

- Importance of firewalls
- Routing in all 4 VPCs
- Route advertisements in Cloud Routers

```

VPC A <-----> VPC B <-----> VPC C <-----> VPC D
Router      VPN      Router      Peering      Router      VPN
Router      Router      Con      Con      Router      Router

A -> D =
A -> B - Through VPN, route in A pointing to VPN tunnels in A
B -> C - Through Peering, route in B pointing to C through Peering Connection
C -> D - Through VPN, route in C pointing to VPN tunnels in C
```

VPC Peering between B & C :

Name \*  
peer-b-c

Lowercase letters, numbers, hyphens allowed

Your VPC network \*  
vpc-b

Peered VPC network

☒ In project molten-topic-395213

☐ In another project

VPC network name \*  
vpc-c

☒ 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

CREATE

CANCEL

First Creating peering between vpc-b and vpc-c  
All the configurations are the same.  
But in this case, just remember to check the checkbox  
corresponding to the custom routes.

The configurations should be like this (just on the place of none in exchange route you should see custom routes).

Peering connection details

EDITDELETE

peer-b-c

Peer VPC network is connected

Your VPC network  
vpc-b

Peered VPC network  
vpc-c

Peered project ID  
molten-topic-395213

IP stack type  
IPv4 (single-stack)

Exchange IPv4 custom routes  
None

Exchange subnet routes with public IPv4  
None

IMPORTED ROUTES

EXPORTED ROUTES

Routes in region

Region  
us-central1

Filter

Enter property name or value

Destination IP ranges	Type	Priority	Next hop region	Status
10.0.3.0/24	subnet peering route	0	us-central1	accepted

Peering connection details

EDITDELETE

peer-c-b

Peer VPC network is connected

Your VPC network  
vpc-c

Peered VPC network  
vpc-b

Peered project ID  
molten-topic-395213

IP stack type  
IPv4 (single-stack)

Exchange IPv4 custom routes  
None

Exchange subnet routes with public IPv4  
None

IMPORTED ROUTES

EXPORTED ROUTES

Routes in region

Region  
us-central1

Filter

Enter property name or value

Destination IP ranges	Type	Priority	Next hop region	Status
10.0.3.0/24	subnet route	0	us-central1	accepted by peer

After the peering the result will look as active (if it's successful)

VPC network peering

CREATE PEERING CONNECTION

REFRESH

DELETE

Filter

Enter property name or value

<input type="checkbox"/>	Name ↑	Your VPC network	Peered VPC network	Peered project ID	Status	IP stack type	Custom routes	Subnet routes with public IPv4
<input type="checkbox"/>	<a href="#">peer-b-c</a>	vpc-b	vpc-c	molten-topic-395213	Active	IPv4	None	None
<input type="checkbox"/>	<a href="#">peer-c-b</a>	vpc-c	vpc-b	molten-topic-395213	Active	IPv4	None	None

Configuring HA VPN Gateway (this time just providing only the single tunnel to it)  
We named them as follows→

Google Cloud

My First Project

vpn

Search

8

Hybrid Connectivity

VPN

VPN SETUP WIZARD

REFRESH

DELETE

RECOMMENDED ALERTS

SHOW INFO PANEL

CLOUD VPN TUNNELS

CLOUD VPN GATEWAYS

PEER VPN GATEWAYS

The following HA VPN tunnels are not properly configured for a 99.99% SLA: [tunnel-0-a-b](#), [tunnel-0-b-a](#), [tunnel-0-c-d](#), [tunnel-0-d-c](#). See the [documentation](#) for more details.

CREATE VPN TUNNEL

Filter

Enter property name or value

<input type="checkbox"/>	Name ↑	Cloud VPN gateway (IP)	Peer VPN gateway (IP)	Cloud Router BGP IP address	Peer BGP IP address	VPN tunnel status	
<input type="checkbox"/>	<a href="#">tunnel-0-a-b</a>	<a href="#">vpn-a-b</a> 34.157.111.2	vpn-b-a (project: molten-topic-395213) 34.157.100.149	--	--	Established	CONFIGURE BGP SESSION
<input type="checkbox"/>	<a href="#">tunnel-0-b-a</a>	<a href="#">vpn-b-a</a> 34.157.100.149	vpn-a-b (project: molten-topic-395213) 34.157.111.2	--	--	Established	CONFIGURE BGP SESSION
<input type="checkbox"/>	<a href="#">tunnel-0-c-d</a>	<a href="#">vpn-c-d</a> 35.242.124.182	vpn-d-c (project: molten-topic-395213) 34.157.96.115	--	--	Established	CONFIGURE BGP SESSION
<input type="checkbox"/>	<a href="#">tunnel-0-d-c</a>	<a href="#">vpn-d-c</a> 34.157.96.115	vpn-c-d (project: molten-topic-395213) 35.242.124.182	--	--	Established	CONFIGURE BGP SESSION

While configuring the tunnels you have to use the cloud routers

How we actually configured cloud routers

-> we had done all the thing as straightforward as it can for router-a and router-d but for router-b and router-c there is catch

Router details

EDIT

DELETE

router-a-b

Description

Google ASN

64512

BGP peer keepalive interval

20

seconds

Advertised routes

Routes

Advertise all subnets visible to the Cloud Router (Default)

Create custom routes

Advertise all subnets

Advertise all subnets visible to the Cloud Router

SAVE

CANCEL

router-c-d

Description

Google ASN

64514

BGP peer keepalive interval

20

seconds

Advertised routes

Routes

Advertise all subnets visible to the Cloud Router (Default)

Create custom routes

Advertise all subnets

Advertise all subnets visible to the Cloud Router

Filter

Enter property name or value

Subnet

IP ranges

subnet-c

IPv4 : 10.0.3.0/24

Custom ranges

Add IPv4 and IPv6 ranges to advertise

10.0.1.0/24

ADD A CUSTOM ROUTE

SAVE

CANCEL

We will give custom routes in b and c → as we can see that in vpc-c, we had given the custom range of vpc-a i.e, 10.0.1.0/24  
We had done so as to make c aware of vpc-a as their is no communication between vpc-a and vpc-c  
Similarly we will configure router-b where we will configure vpc-d in custom route

We named cloud routers as

---router-a-b

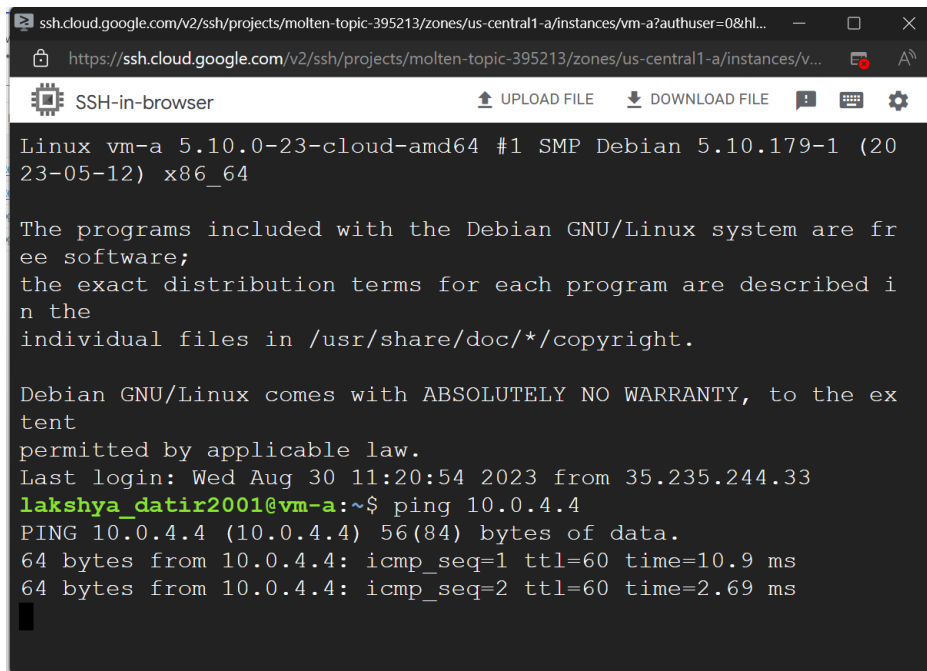
---router-b-c

---router-c-d

---router-d-c

<input type="checkbox"/>	Name ↑	Network	Region	Interconnect encryption	Google ASN	Interconnect / VPN gateway	Connection	BGP sessions	Logs
<input type="checkbox"/>	<a href="#">router-a-b</a>	<a href="#">vpc-a</a>	us-central1	Unencrypted	64512	None			<a href="#">View</a>
<input type="checkbox"/>	<a href="#">router-b-a</a>	<a href="#">vpc-b</a>	us-central1	Unencrypted	64513	None			<a href="#">View</a>
<input type="checkbox"/>	<a href="#">router-c-d</a>	<a href="#">vpc-c</a>	us-central1	Unencrypted	64514	None			<a href="#">View</a>
<input type="checkbox"/>	<a href="#">router-d-c</a>	<a href="#">vpc-d</a>	us-central1	Unencrypted	64515	None			<a href="#">View</a>

Now trying to ping the vpc-d from vpc-a ..  
Will it work ??



```
ssh.cloud.google.com/v2/ssh/projects/molten-topic-395213/zones/us-central1-a/instances/vm-a?authuser=0&hl...  
https://ssh.cloud.google.com/v2/ssh/projects/molten-topic-395213/zones/us-central1-a/instances/v...  
SSH-in-browser  
Linux vm-a 5.10.0-23-cloud-amd64 #1 SMP Debian 5.10.179-1 (2023-05-12) x86_64  
  
The programs included with the Debian GNU/Linux system are free software;  
the exact distribution terms for each program are described in the  
individual files in /usr/share/doc/*/copyright.  
  
Debian GNU/Linux comes with ABSOLUTELY NO WARRANTY, to the extent  
permitted by applicable law.  
Last login: Wed Aug 30 11:20:54 2023 from 35.235.244.33  
lakshya_datir2001@vm-a:~$ ping 10.0.4.4  
PING 10.0.4.4 (10.0.4.4) 56(84) bytes of data.  
64 bytes from 10.0.4.4: icmp_seq=1 ttl=60 time=10.9 ms  
64 bytes from 10.0.4.4: icmp_seq=2 ttl=60 time=2.69 ms  
█
```

Yeah it's working

Quick question ----> will we be able to ping vpc-c from vpc-a  
To get the answer you can simply visit to route page under vpc