Day 3

TOPICS

- Shared VPC
- Hybrid Connectivity
- VPN
- Routers
- Interconnects
- Best Networking solution to select on GCP
- Compute Engine
- Load Balancers

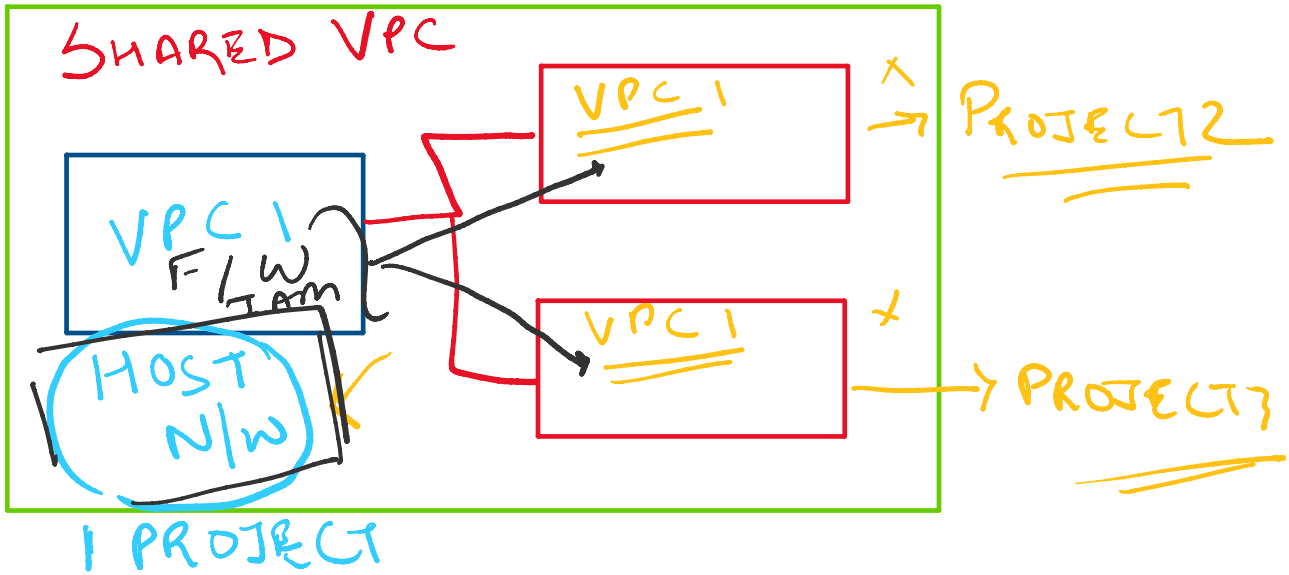
- Sharing Network across projects:
  - VPC Peering
  - Shared VPC

SHARED VPC

- This allows you to share a network across several projects **in your GCP organization.**
- VPC peering allows you to configure private communication across projects in the same or different organization.

Shared VPC reduces your operational overhead.

- Apply policies on one VPC and it gets applied to all the resources using that VPC.
- Centralize way of managing your VPCs in your organization.



Inside GCP Organization or No organization.

If i want to share my VPC across projects:

- Shared VPC
- VPC Peering

What If I want to connect to on-premise or AWS or Azure?

Hybrid Connectivity

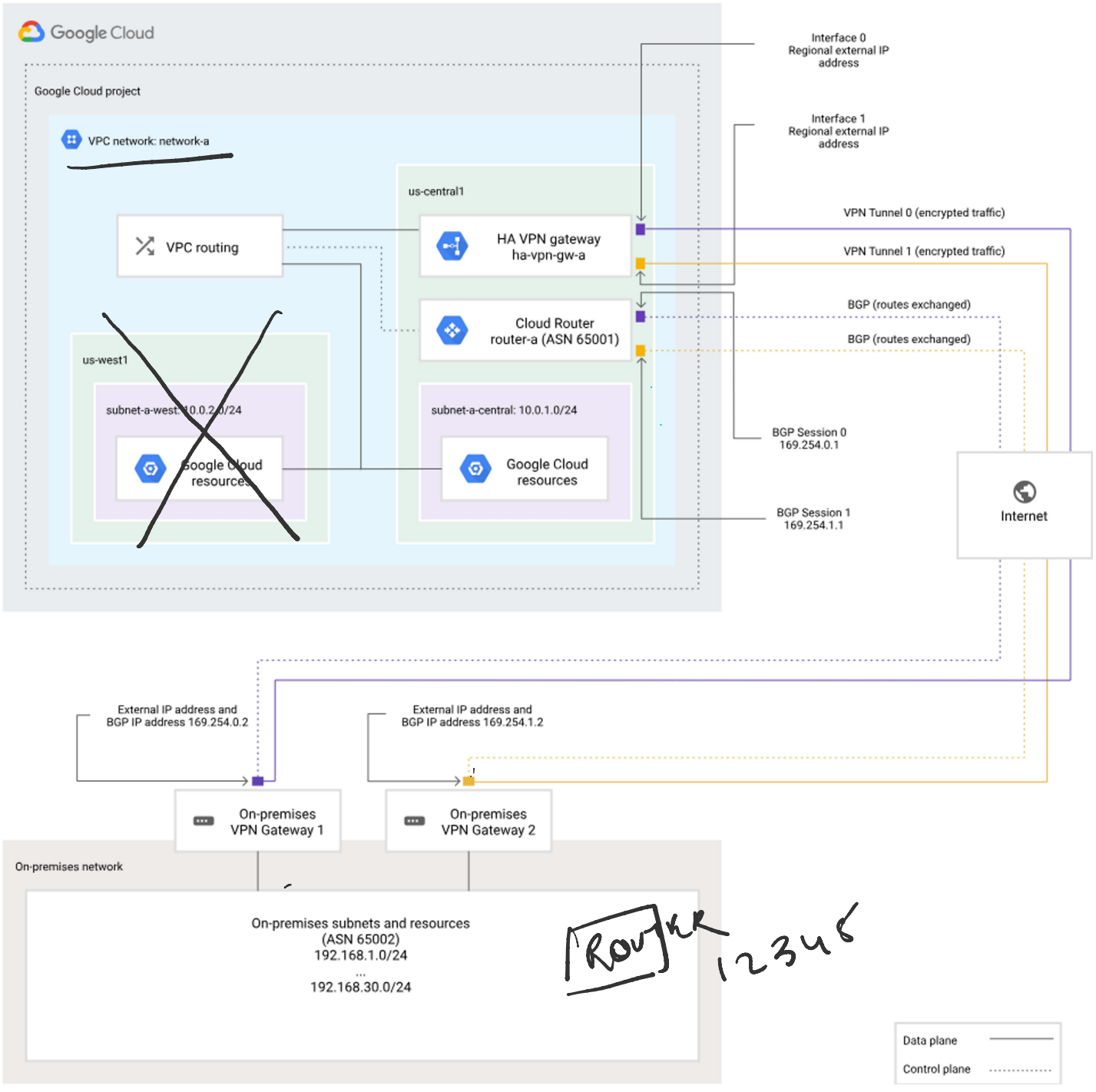
1. VPN

a. Gateway
b. Router
c. BGP
d. Tunnel
e. Demo

2. Interconnect
   a. Dedicated Interconnect
   b. Partner Interconnect

Cloud VPN

- Cloud VPN securely connects your on premise/another cloud network to your GCP VPC network through a VPN tunnel.



1. Gateway - Entry point to a network. [Networking concept]
2. Gateway to talk to another gateway will need a PUBLIC IP ADDRESS
   a. You can have 2 Public IP address to have redudancy.
3. In a gateway you create a tunnel for connecting and exchanging data over the internet.
   a. Everything data in encrypted.
4. Cloud Router - Helps to exchange networks [route] between 2 or more networks.
   a. To share any EXCISTING networks that are shared across the nteworks via the Gateway.
   b. To share dynamic routing you enable BGP [Border Gateway Protocol]
      i. You need additinal IP to be assigned on each end of the VPN. 169.254.0.0/16

CLOUD VPN is useful for low-volume data connections only - 1.5 gbps to 3 gbps should use VPN as a solution.

Demo - VPN

1. ON PREMISE SETUP [Project on GCP] 1.Lets create VMs in both the projects. VM IP - 10.128.0.2 vpn-gw-onprem 0 : 34.157.106.51 1 : 34.157.239.0 Router ASN - 64513 BGP - ASN of peer router - 64512	Project on GCP - Project-alpha12 VM IP - 192.168.1.3 vpn-gw-gcp - • 0 : 34.157.98.116 • 1 : 35.220.75.81 Router ASN - 64512 BGP - ASN of peer router - 64513

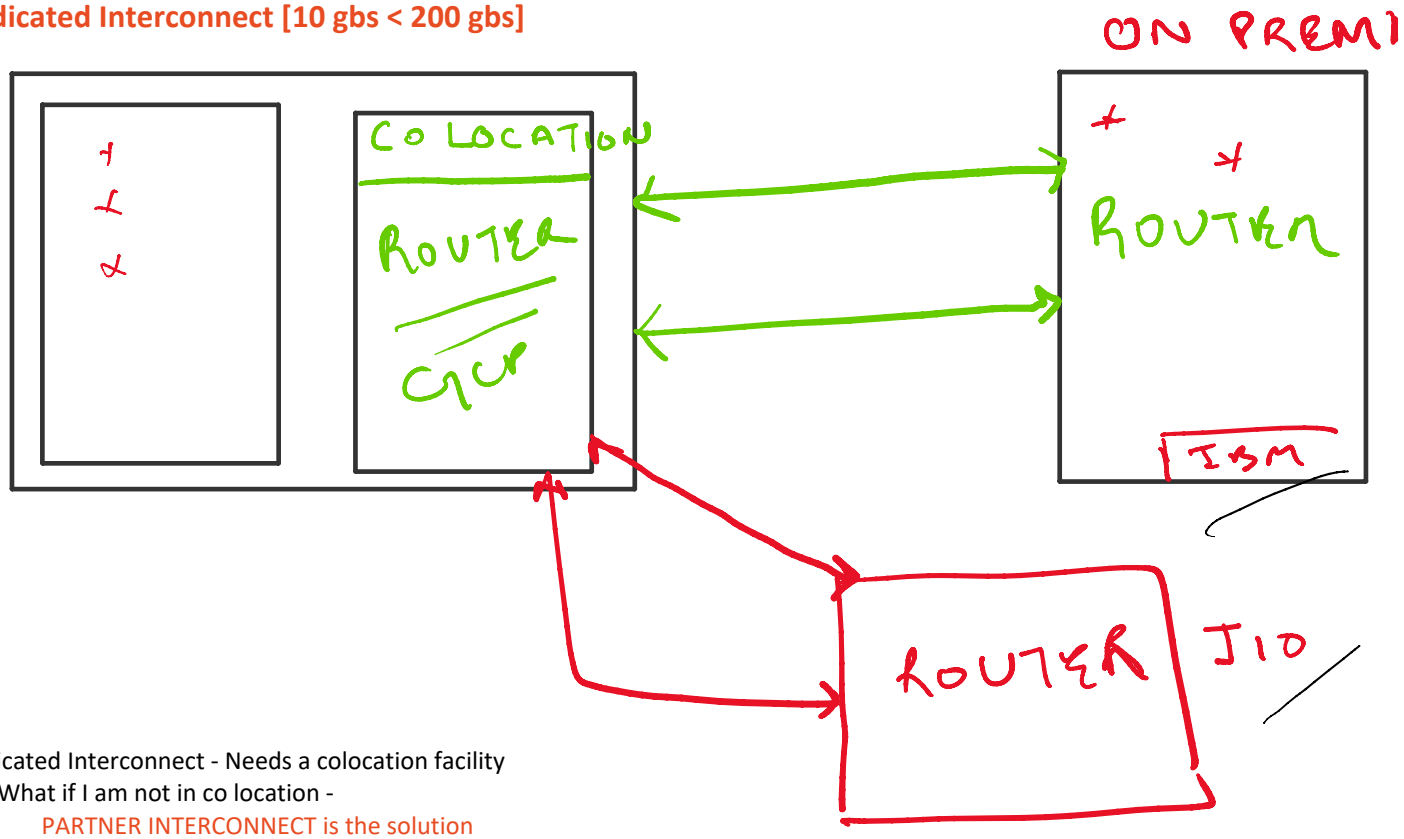
1. In Both the projects setup a gateway.
2. Need to setup tunnel between the gateways next.
3. While setting up the tunnel you need to select/setup the router as well.
   a. Every router has an ASN assgined. [Autonomous system Number]
   b. ASN are like SSN/Aadhar Number or roll numbers. Unique number assigned to a router which helps to identify the networkit is serving and help create a route.
   c. 64512 - 65534, 4200000000 - 4294967294)
4. Define tunnels both the end.

With VPN we had 2 major challenges:
- 1.5 - 3 gbps of data
- The data of travelling over the internet.

Cloud Interconnect

1. 1.Dedicated Interconnect
2. 2.Partner Interconnect

Dedicated Interconnect [10 gbs < 200 gbs]

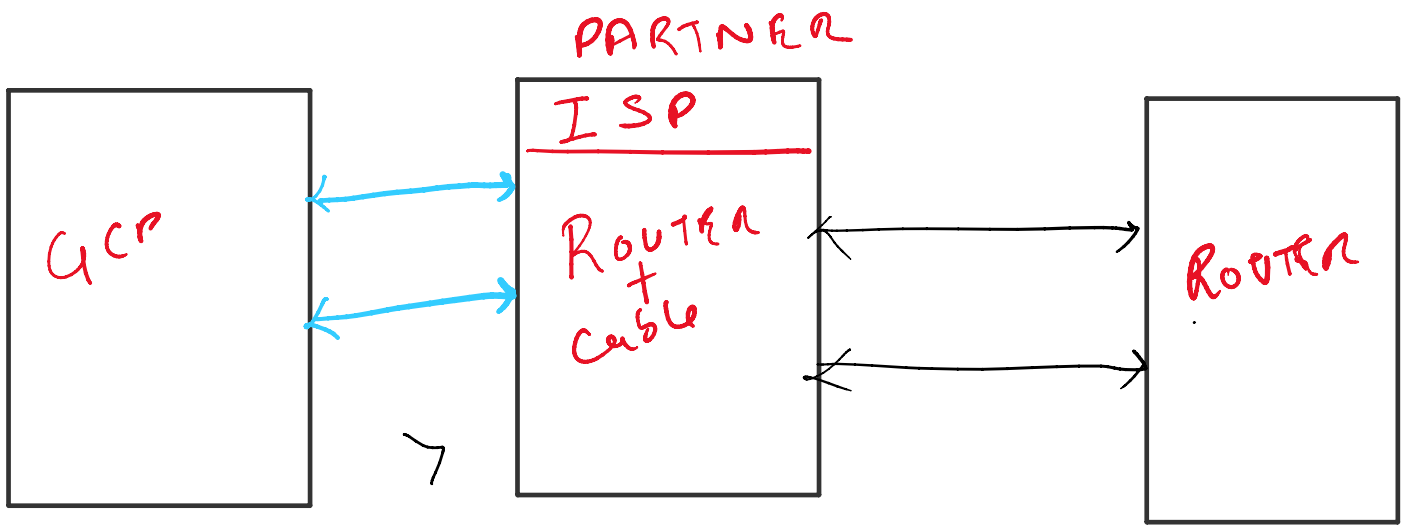


Dedicated Interconnect - Needs a colocation facility

What if I am not in co location -

PARTNER INTERCONNECT is the solution

PARTNER INTERCONNECT [50 mbps - 10gbps]



Cross-Cloud Interconnect connection

- AWS
- Azure
- OCI
- Alibaba Cloud

- You will use peering:
  - 2 VPC networks in same organization but in different projects.
  - 2 VPC networks in different organization.
- You want to connect over private IP.

  With peering the challenge was operational overhead and we had no central way of managing the VPC.
- Shared VPC.