Hybrid Cloud

Cloud VPN

- **Cloud VPN** - Connect on-premise to GCP network over internet
  - Implemented using **IPSec VPN Tunnel**
  - Traffic through internet (public)
  - Traffic encrypted using **Internet Key Exchange** protocol

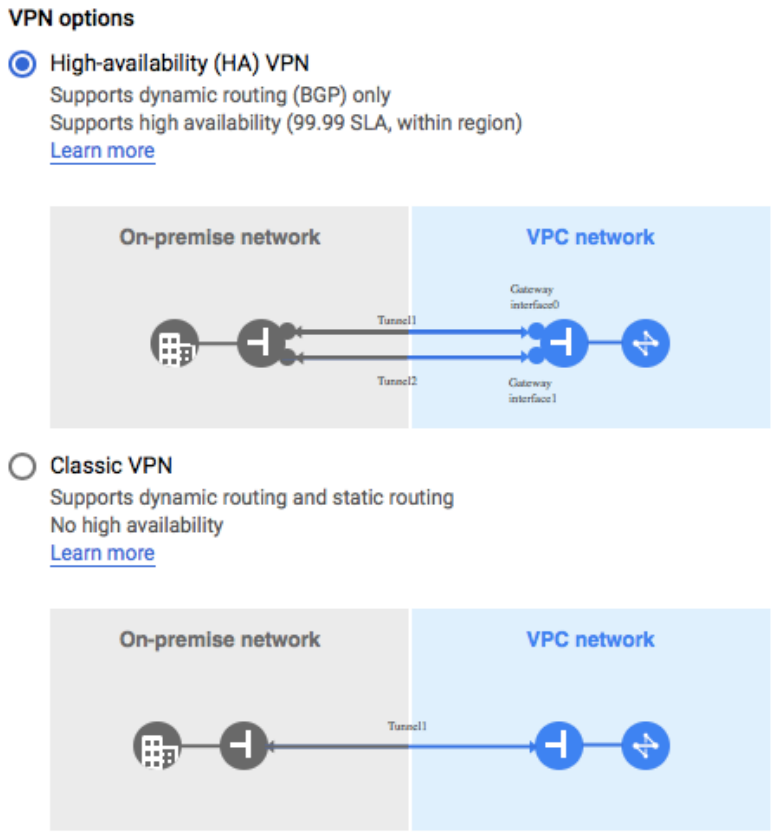
Cloud VPN

- Two types of Cloud VPN solutions:
  - **HA VPN** (SLA of 99.99% service availability with two external IP addresses)
    - Only dynamic routing (BGP) supported
  - **Classic VPN** (SLA of 99.9% service availability, a single external IP address)
    - Supports Static routing (policy-based, route-based) and dynamic routing using BGP
- **Easy to establish**: Does NOT need carrier circuits or contracts
- **Go for Cloud VPN if**:
  - You want the network to encrypt traffic OR
  - You want a lower throughput, low cost solution OR
  - You are experimenting with connectivity between cloud and on-premises

Cloud VPN - VPN Gateway, Peer Gateway and Cloud router

In28 Minutes

- **High-availability (HA) VPN**
  - High availability (99.99 SLA, within region)
  - Needs a Cloud HA VPN gateway
    - Regional resources with two interfaces
    - Connects to an on-premises VPN gateway (or peer gateway) through VPN tunnels
- **Classic VPN**
  - No high availability
  - Needs a Google Compute Engine VPN gateway
- (REMEMBER) VPN gateway - Regional resource
- (REMEMBER) Cloud Router enables Dynamic Routing: Enables Automatic route update when network topology changes



Cloud Interconnect

- High speed, highly available, low-latency private connection into Google Cloud from your company's on-premises network
- **Dedicated Interconnect**: Ideal if you need high-bandwidth connection for large data transfers
  - Minimum private connection speed of 10Gbps (**OPTIONS: 10 Gbps or 100 Gbps**)
    - Go upto 8 x 10-Gbps (80 Gbps) circuits, or 2 x 100-Gbps (200 Gbps) circuits for each connection
  - Takes time to establish
- **Partner Interconnect**: Ideal if you need a private connection with lower bandwidth needs
  - 50Mbps to 10Gbps
- Data exchange happens through a private network:
  - Communicate using VPC network's internal IP addresses from on-premise network
  - Reduces egress costs
    - As public internet is NOT used

Hybrid Connectivity - Remember

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- When you connect networks, ensure that resources on the networks **use different range of IP addresses**!
- **Always think**: What will we do if things go wrong?
  - Have a fallback option if the primary connection from on-premise to GCP fails
    - Dedicated Interconnect as primary
    - VPN as backup in case of failure
- Remember that there is a third hybrid connectivity option:
  - **Direct Peering**: Connect customer network to google network using network peering
    - Direct path from on-premises network to Google services
    - **Not a GCP Service**
      - Lower level network connection outside of GCP
    - NOT RECOMMENDED:
      - Use Cloud Interconnect and Cloud VPN

Cloud VPN