

Module	Description		
Core Concepts	IP Addresses <ul style="list-style-type: none"> - IPv4, IPv6 - RFC 1918 Standard - RFC 6598 Standard - CIDR 		
	VPC - https://cloud.google.com/vpc/docs/overview <ul style="list-style-type: none"> - Core concept of VPC - Global routing in VPC - Subnets - Firewalls - Routes - Route to internet gateway in VPC 		
	Subnet <ul style="list-style-type: none"> - Allocating CIDR ranges - Understanding available IP addresses in Subnet and default reserved address in Subnet - Types of Subnets <ul style="list-style-type: none"> - Proxy only - Private Service Connect - Private - Understanding how to allocate IP Ranges - Understanding how to expand IP ranges 		
	Network Interfaces <ul style="list-style-type: none"> - Overview of NICs in GCP - VMs with NICs and public and private IPs on the VMs - Multiple NIC VMs and use-cases for multi-nic VMs and IP Forwarding - VPC routing for Multi NIC VMs and OS routes for Multi NIC VMs 		
VPC Task 1	<ul style="list-style-type: none"> - Create 1 custom VPC network - Create 2 subnets (Private subnets) - Create 1 VM in each subnet. (VM should have only private IPs and no Public IPs) Task: <ol style="list-style-type: none"> 1. Look at the VPC routes without any subnets in it. 2. Look at the VPC routes after subnet creation. 3. Look at the VPC route to internet gateway. 4. Demonstrate hot to ping from VM1 to VM2, but not from VM2 to VM1 		
VPC Task 2	<ol style="list-style-type: none"> 1. Create 2 vpc networks (VPC A & VPC B) and 2 subnets in it. 2. Create 3 VMs: <ul style="list-style-type: none"> 1 VM in each network (VM A in VPC A, VM B in VPC B) 1 VM (VM Router) which will serve as a router. This VM should be connected to both VPC networks, and should have IP forwarding turned on. 3. Configure the router VM to forward traffic between the two networks using ip routes. <ul style="list-style-type: none"> VPC A IP ranges should exit from the interface connected to VPC A and should go to the VPC A gateway (subnet gateway) VPC B IP ranges should exit from the interface connected to VPC B and should go to the VPC B gateway (subnet gateway) 4. In VM A, add a static route for for VPC B ranges which forwards traffic to the VM Router 5. In VM B, add a static route for the VPC B ranges which forwards traffic to the VM router 6. Do connectivity tests between VM A & VM B 7. After this is done, delete the custom routes in VM A & VM B 8. Create custom route in VPC A with VPC B destination ranges and forwards it to Router VM 9. Create custom route in VPC B with VPC A destination ranges and forwards it to Router VM 10. Do connectivity tests between VM A & VM B 11. Make sure all firewall rules are placed correctly. 		
	VPC Peering <ul style="list-style-type: none"> - What the hell is peering - How to setup peering - What are advanced configs in peering 		

VPC Connectivity Concepts	Cloud VPN - What the hell is VPN - Classic VPN - HA VPN - Core components & concepts in VPN - Border Gateway Protocol (BGP) - Static routing / Policy based routing - Dynamic Routing - VPN Gateway - Cloud Router - VPN Tunnels		
	Interconnects - Interconnects overview - Partner interconnect overview - Dedicated interconnect overview - Setup overview		
VPC Connectivity Tasks 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 importance 2 way connection. 4. Firewall rules list for the two VMs.		
VPC Connectivity Tasks 2	- Create 2 custom VPCs - Create 1 private subnet in each VPC - Create 1 VM in each subnet - Setup HA VPN between 2 VPCs - VM1 should be able to ping VM2, but VM2 should not be able to ping VM1		
VPC Connectivity Tasks 3	- Create 2 custom VPC networks - Create 2 subnets in 1st VPC network and 1 subnet in 2nd VPC network. - Create 1 VM in each subnet - Setup Classic route based VPN between the 2 VPCs - 2nd subnet in 1st VPC should not be routable from the 2nd VPC - Ping from VM in 2nd VPC to VM in 1st subnet of 1st VPC		
VPC Connectivity Concept 2	- VPC Peering and multiple peering connections - Transitive peering overview and limitations of VPC peering. - Solution for transitive peering		
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 Connectivity Concept 3	- Overview of Service Networking in GCP - Private Service Access in GCP - Private Google Access in GCP - Private Service Connect in GCP		

VPC Connectivity Tasks 5	<ul style="list-style-type: none"> - Setup 2 VPCs - Setup Private Service Access in VPC-1 - Setup Cloud SQL in VPC-1 - Connect to cloud SQL from VPC-2 		
VPC Services Concepts	<ul style="list-style-type: none"> - Cloud NAT - NAT overview - SNAT vs DNAT - How does Cloud NAT work - VPC Internet Gateway overview and setup 		
VPC Services Task 1	<ul style="list-style-type: none"> - Setup 1 custom VPC and subnet - Create 1 VM with no public IP - Try connecting to the internet from the VM - Setup Cloud NAT in VPC - Try connecting to the internet from the VM - Delete internet gateway route from VPC - Try connecting to the internet from VM 		