

GCP Network Engineer Crash Course Lab 1

VPC Exercise 1

- *You can create and manage your own virtual topology network where you can launch your Google Cloud resources using Google Virtual Private Cloud (VPC). (Sandbox)*
- *A VPC spans all the zones in the region.*
- *After creating a VPC, you can add one or more subnets in each zone.*

Let's create a New VPC

(Note this VPC will be used in the VPC Peering Exercise 2)

Log in to your Google Cloud Platform Account

- Determine the project you will be creating the VPC in.
- Go to VPC

Figure 1 – VPC

Name	Region	Subnets	MTU	Mode	IP address ranges	Gateways	Firewall Rules	Status
▼ default		20	1460	Auto			6	On
	us-central1	default			10.128.0.0/20	10.128.0.1		
	europe-west1	default			10.132.0.0/20	10.132.0.1		
	us-west1	default			10.136.0.0/20	10.136.0.1		
	asia-east1	default			10.140.0.0/20	10.140.0.1		
	us-east1	default			10.142.0.0/20	10.142.0.1		
	asia-northeast1	default			10.146.0.0/20	10.146.0.1		
	asia-southeast1	default			10.148.0.0/20	10.148.0.1		
	us-east4	default			10.150.0.0/20	10.150.0.1		
	australia-southeast1	default			10.152.0.0/20	10.152.0.1		
	europe-west2	default			10.154.0.0/20	10.154.0.1		

After selecting Create VPC Network

- Enter a name
- Select for Subnets Automatic.

Figure 2 Create a VPC network Part 1

The screenshot shows the 'Create a VPC network' page in the Google Cloud console. On the left is a navigation menu with options like 'VPC networks', 'External IP addresses', 'Bring your own IP', 'Firewall', 'Routes', 'VPC network peering', 'Shared VPC', 'Serverless VPC access', and 'Packet mirroring'. The main area is titled 'Create a VPC network'. It contains a 'Name' field with the text 'vpcnetworkengineer' and a note 'Lowercase letters, numbers, hyphens allowed'. Below this is a 'Description' field. The 'Subnets' section explains that subnets create a private cloud topology and offers two creation modes: 'Custom' and 'Automatic', with 'Automatic' selected. A warning banner at the bottom states: 'These IP address ranges will be assigned to each region in your VPC network. When an instance is created for your VPC network, it will be assigned an IP from the appropriate region's address range.'

(Some notes to consider)

Auto mode VPC networks create subnets in each region automatically.

These automatically created subnets use a set of predefined IP ranges that fit within the 10.128.0.0/9 CIDR block.

Custom mode VPC networks start with no subnets giving you full control.

You can create more than one subnet per region.

You can switch a VPC network from auto mode to custom mode.

This is a one-way conversion which means custom mode VPC networks cannot be changed to auto mode VPC networks.

Firewall rules are defined at the network level.

They only apply to the network where they are created but the name defined for each of them must be unique to the project.

When you create a VPC network, it includes a system-generated default route which serves as a path out of the VPC network, including the path to the Internet, and provides the standard path for Private Google Access.

Now enter/Select

- **VPC Firewall rules**
- **Dynamic Routing Mode – Regional**
- **Select Create**

Figure 3 – Create a VPC Part 2

← Create a VPC network

firewall rules on the Firewall rules page.

<input checked="" type="checkbox"/>	Name	Type	Targets	Filters	Protocols / ports	Action	Priority ↑
<input checked="" type="checkbox"/>	vpcnetworkengineer-allow-icmp ?	Ingress	Apply to all	IP ranges: 0.0.0.0/0	icmp	Allow	65,534
<input checked="" type="checkbox"/>	vpcnetworkengineer-allow-internal ?	Ingress	Apply to all	IP ranges: 10.128.0.0/9	all	Allow	65,534
<input checked="" type="checkbox"/>	vpcnetworkengineer-allow-rdp ?	Ingress	Apply to all	IP ranges: 0.0.0.0/0	tcp:3389	Allow	65,534
<input checked="" type="checkbox"/>	vpcnetworkengineer-allow-ssh ?	Ingress	Apply to all	IP ranges: 0.0.0.0/0	tcp:22	Allow	65,534
	vpcnetworkengineer-deny-all-ingress ?	Ingress	Apply to all	IP ranges: 0.0.0.0/0	all	Deny	65,535
	vpcnetworkengineer-allow-all-egress ?	Egress	Apply to all	IP ranges: 0.0.0.0/0	all	Allow	65,535

Dynamic routing mode ?

☒ Regional
Cloud Routers will learn routes only in the region in which they were created

☐ Global
Global routing lets you dynamically learn routes to and from all regions with a single VPN or interconnect and Cloud Router

Enable DNS API to pick a DNS policy

ENABLE

Maximum transmission unit (MTU)

1460

CREATE

CANCEL

The VPC will be created and can take up to three minutes. It will show this in both Notifications and the VPC dashboard.

Figure 4 - Notifications

The screenshot shows the Google Cloud Platform console. On the left, the 'VPC networks' section is active, displaying a list of VPC networks. The table has columns for location, name, network, and IP range. A red checkmark is next to the 'networkengineerdemo' VPC. On the right, the 'Notifications' panel is open, showing a list of recent actions. A red checkmark is next to the notification 'Create network "vpcnetworkengineer"'. The notification list includes:

- Create network "vpcnetworkengineer" (Google Analytics)
- Create network "networkengineerdemo" (27 minutes ago)
- Updating subnetwork "networkengineerdemo" (3 days ago)
- Create network "networkengineerdemo" (3 days ago)
- Create VM instance "instance-1" and its boot disk "instance-1" (3 days ago)
- Create router "routerdemo" (3 days ago)
- Create load balancer "oreillydemo1" (4 days ago)
- Enable service: firewall.googleapis.com (4 days ago)
- Updating Project Network Tier (4 days ago)
- Create security policy "vpcnetworkengineer" (4 days ago)

Once the VPC is created you will see the vpc created. Note the number of subnets.

Figure 5 - VPC Created

▼ networkengineerdemo	29	1400	Auto	0	Off
us-central1	networkengineerdemo	10.128.0.0/20	10.128.0.1		Off
us-east1	networkengineerdemo	10.132.0.0/20	10.132.0.1		Off
us-west1	networkengineerdemo	10.136.0.0/20	10.136.0.1		Off
asia-east1	networkengineerdemo	10.140.0.0/20	10.140.0.1		Off
us-east1	networkengineerdemo	10.142.0.0/20	10.142.0.1		Off
asia-northeast1	networkengineerdemo	10.146.0.0/20	10.146.0.1		Off
asia-southeast1	networkengineerdemo	10.148.0.0/20	10.148.0.1		Off
us-east4	networkengineerdemo	10.150.0.0/20	10.150.0.1		Off
australia-southeast1	networkengineerdemo	10.152.0.0/20	10.152.0.1		Off

For the next exercise we will be peering this VPC we created with another VPC.

End.