

# Question 1

- Create a VPC network and a subnet from console,
  - Click Create VPC network.
  - Enter a Name of krutik-network1
  - Under Subnets, set Subnet creation mode to Custom.
  - Enter a Name of krutik-sub-us-central
  - Select a Region of us-central1
  - Enter an IP address range of 192.168.1.0/24
  - Click Done
  - Click Create
- Create a bastion host for testing
  - Navigate to VM instance and create an instance
  - Specify a Name of krutik-bastion for your instance
  - Set the Region to us-central1
  - Set the Zone to us-central1-b
  - Click the Management, security, disks, networking, sole tenancy link
  - Click the Networking tab
  - Under Network interfaces, click VM's default interface
  - Set the Network to krutik-network1
  - Set the Subnetwork to krutik-us-central
  - Click Done.
  - Click the Create button to create and start the instance.
- Create a VM instance with no external IP
  - Navigate to Create button.
  - Specify a Name of krutik-nat-test for your instance.
  - Set the Region to us-central1.
  - Set the Zone to us-central1-c.
  - Click the Management, security, disks, networking, sole tenancy link.
  - Click the Networking tab.
  - Under Network interfaces, click the pencil icon for the VM's default interface.
  - Set the Network to krutik-network1.
  - Set the Subnetwork to krutik-sub-us-central.
  - Set External IP to None.
  - Click Done.
  - Click the Create button to create and start the instance.
- Create firewall rule that allows connection
  - Navigate to Create firewall rule
  - Enter a Name of krutik-allow-ssh.
  - Specify a Network of krutik-network1.

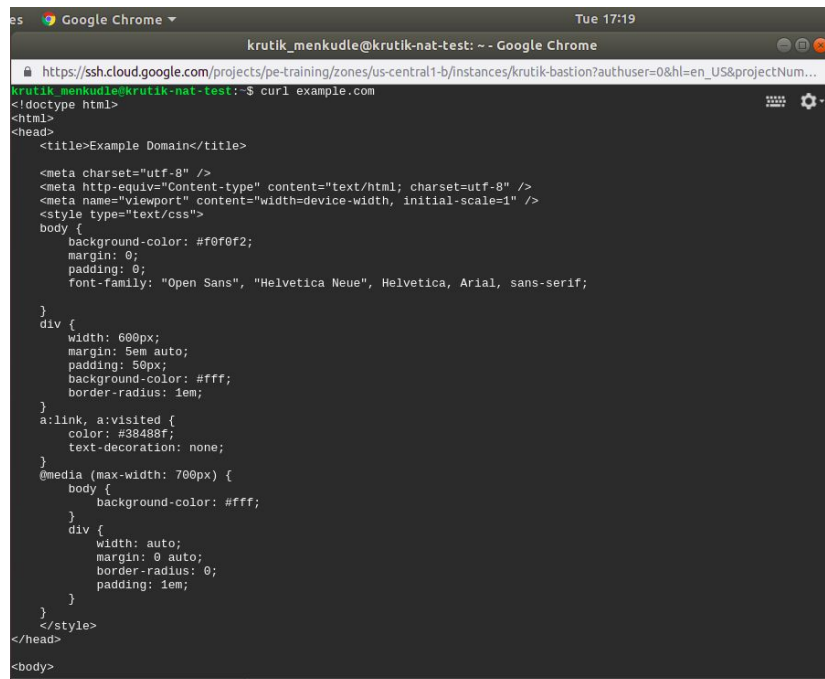
- Set Direction of traffic to ingress.
  - Set Action on match to allow.
  - Set Targets to All instances in the network.
  - Set Source filter to IP ranges.
  - Set Source IP ranges to 0.0.0.0/0.
  - Set Protocols and ports to Specified protocols and ports.
  - Select tcp and specify port 22
  - Click Create
- Give a network tag in krutik-bastion instance and allow secondary tag in krutik-network1 and enter the same network tag
- Login to krutik-nat-test to see we can reach internet
    - Connect krutik-bastion via ssh.
    - From krutik-bastion, connect to nat-test-1:
      - ssh krutik-nat-test -A
    - From krutik-nat-test, attempt to connect to the Internet:
      - curl example.com

The screenshot shows a Google Chrome browser window with the address bar displaying an SSH session URL: `https://ssh.cloud.google.com/projects/pe-training/zones/us-central1-b/instances/krutik-bastion?authuser=0&hl=en_US&projectNum...`. The terminal window shows the prompt `krutik_menkudle@krutik-nat-test: ~ - Google Chrome`. The user enters `curl example.com`, and the output shows `curl: (7) Failed to connect to example.com port 80: Connection timed out`.

- Create a NAT configuration using cloud router
  - Click Get started or Create NAT gateway.
  - Enter a Gateway name of krutik-nat-config
  - Set the VPC network to krutik-network1
  - Set the Region to us-central1
  - Under Cloud Router, select Create new router
  - Enter a Name of krutik-nat-router

- Click Create
- Click Create

- Attempt to connect to the internet again from krutik-nat-test



```
es Google Chrome Tue 17:19
krutik_menkudle@krutik-nat-test: ~ - Google Chrome
https://ssh.cloud.google.com/projects/pe-training/zones/us-central1-b/instances/krutik-bastion?authuser=0&hl=en_US&projectNum...
krutik_menkudle@krutik-nat-test:~$ curl example.com
<!doctype html>
<html>
<head>
<title>Example Domain</title>

<meta charset="utf-8" />
<meta http-equiv="Content-type" content="text/html; charset=utf-8" />
<meta name="viewport" content="width=device-width, initial-scale=1" />
<style type="text/css">
body {
background-color: #f0f0f2;
margin: 0;
padding: 0;
font-family: "Open Sans", "Helvetica Neue", Helvetica, Arial, sans-serif;
}
div {
width: 600px;
margin: 5em auto;
padding: 50px;
background-color: #fff;
border-radius: 1em;
}
a:link, a:visited {
color: #38488f;
text-decoration: none;
}
@media (max-width: 700px) {
body {
background-color: #fff;
}
div {
width: auto;
margin: 0 auto;
border-radius: 0;
padding: 1em;
}
}
</style>
</head>
<body>
```