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## 10.1g: CDN

### Deployment

**Take a screenshot of the output to include in your lab notebook. How many networks, subnetworks, and VM instances have been created?**

There was 1 network, 5 subnetworks, and 5 VM instances created

```

hali5@cloudshell:~/networking101 (cloud-tran-hali5)$ gcloud deployment-manager deployments create networking101 --config networking-lab.yaml
The fingerprint of the deployment is b'eVwRVxqS4ZEInfPyDk4tqQ=='
Waiting for create [operation-1686197567468-5fd967707b228-c59a53b1-7bb4cefe]...done.
Create operation operation-1686197567468-5fd967707b228-c59a53b1-7bb4cefe completed successfully.
NAME: asia-east1
TYPE: compute.v1.subnetwork
STATE: COMPLETED
ERRORS: []
INTENT:

NAME: asial-vm
TYPE: compute.v1.instance
STATE: COMPLETED
ERRORS: []
INTENT:

NAME: el-vm
TYPE: compute.v1.instance
STATE: COMPLETED
ERRORS: []
INTENT:

NAME: eul-vm
TYPE: compute.v1.instance
STATE: COMPLETED
ERRORS: []
INTENT:

NAME: europe-west1
TYPE: compute.v1.subnetwork
STATE: COMPLETED
ERRORS: []
INTENT:

NAME: networking101
TYPE: compute.v1.network
STATE: COMPLETED
ERRORS: []
INTENT:

```

```

NAME: us-east5
TYPE: compute.v1.subnetwork
STATE: COMPLETED
ERRORS: []
INTENT:

NAME: us-west-s1
TYPE: compute.v1.subnetwork
STATE: COMPLETED
ERRORS: []
INTENT:

NAME: us-west-s2
TYPE: compute.v1.subnetwork
STATE: COMPLETED
ERRORS: []
INTENT:

NAME: w1-vm
TYPE: compute.v1.instance
STATE: COMPLETED
ERRORS: []
INTENT:

NAME: w2-vm
TYPE: compute.v1.instance
STATE: COMPLETED
ERRORS: []
INTENT:
hal15@cloudshell:~/networking101 (cloud-tran-hali5)$

```

Visit the web console for VPC network and show the network and the subnetworks that have been created. Validate that it has created the infrastructure in the initial figure. Note the lack of firewall rules that have been created.

cloud-tran-hali5

vpc net

×

Search

2

← VPC network details

EDIT

DELETE VPC NETWORK

HELP ASSISTANT

SHOW INFO PANEL

networking101

Subnet creation mode

Custom subnets

Dynamic routing mode

Regional

VPC network ULA internal IPv6 range

Disabled

DNS server policy

None

Maximum transmission unit

1460

SUBNETS

STATIC INTERNAL IP ADDRESSES

FIREWALLS

ROUTES

VPC NETWORK PEERING

PRIVATE SERVICE CONNECTION

ADD SUBNET

FLOW LOGS

Filter

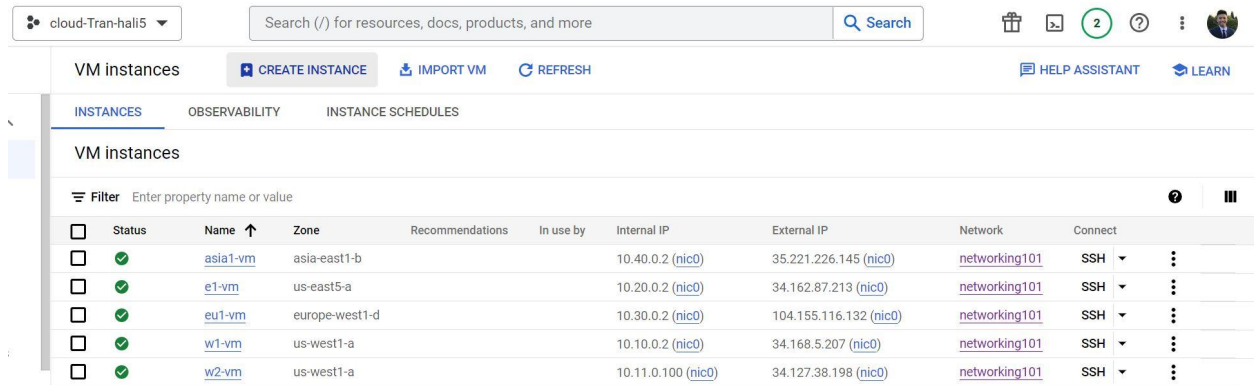
Enter property name or value

?

≡

<input type="checkbox"/>	Name ↑	Region	Stack Type	Internal IP ranges	External IP ranges	Secondary IPv4 ranges	Gateway	Private Google Access	Flow
<input type="checkbox"/>	asia-east1	asia-east1	IPv4	10.40.0.0/16	None	None	10.40.0.1	Off	Off
<input type="checkbox"/>	europa-west1	europa-west1	IPv4	10.30.0.0/16	None	None	10.30.0.1	Off	Off
<input type="checkbox"/>	us-east5	us-east5	IPv4	10.20.0.0/16	None	None	10.20.0.1	Off	Off
<input type="checkbox"/>	us-west-s1	us-west1	IPv4	10.10.0.0/16	None	None	10.10.0.1	Off	Off
<input type="checkbox"/>	us-west-s2	us-west1	IPv4	10.11.0.0/16	None	None	10.11.0.1	Off	Off

Visit the web console for Compute Engine and show all VMs that have been created, their internal IP addresses and the subnetworks they have been instantiated on. Validate that it has created the infrastructure shown in the initial figure.



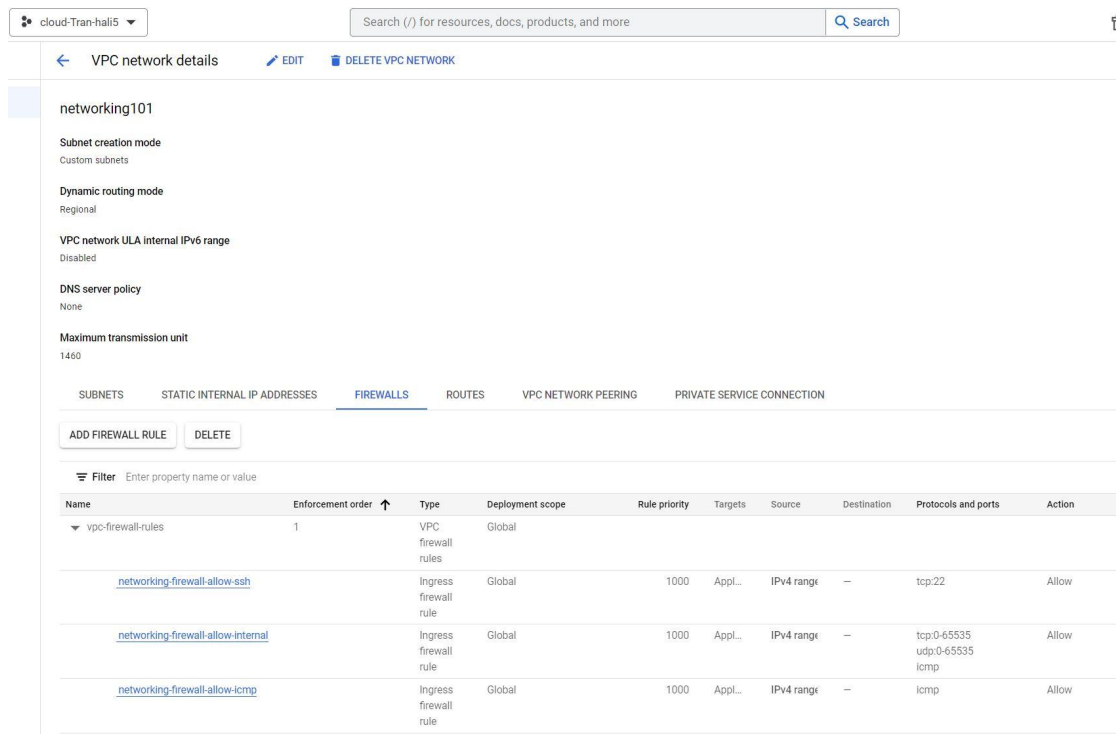
cloud-Tran-hall5										
Search (/) for resources, docs, products, and more										
VM instances										
INSTANCES										
VM instances										
Filter Enter property name or value										
Status	Name	Zone	Recommendations	In use by	Internal IP	External IP	Network	Connect		
Running	asia1-vm	asia-east1-b			10.40.0.2 (nic0)	35.221.226.145 (nic0)	networking101	SSH		
Running	e1-vm	us-east5-a			10.20.0.2 (nic0)	34.162.87.213 (nic0)	networking101	SSH		
Running	eu1-vm	europa-west1-d			10.30.0.2 (nic0)	104.155.116.132 (nic0)	networking101	SSH		
Running	w1-vm	us-west1-a			10.10.0.2 (nic0)	34.168.5.207 (nic0)	networking101	SSH		
Running	w2-vm	us-west1-a			10.11.0.100 (nic0)	34.127.38.198 (nic0)	networking101	SSH		

Click on the ssh button for one of the VMs and attempt to connect. Did it succeed?

No, it did not succeed. The VM is missing the firewall rule allowing TCP ingress traffic.

## Update deployment

Take a screenshot that indicates the new rules have been deployed



cloud-Tran-hall5										
Search (/) for resources, docs, products, and more										
VPC network details										
networking101										
Subnet creation mode										
Custom subnets										
Dynamic routing mode										
Regional										
VPC network ULA internal IPv6 range										
Disabled										
DNS server policy										
None										
Maximum transmission unit										
1460										
SUBNETS										
STATIC INTERNAL IP ADDRESSES										
FIREWALLS										
ROUTES										
VPC NETWORK PEERING										
PRIVATE SERVICE CONNECTION										
ADD FIREWALL RULE										
DELETE										
Filter Enter property name or value										
Name	Enforcement order	Type	Deployment scope	Rule priority	Targets	Source	Destination	Protocols and ports	Action	
vpc-firewall-rules	1	VPC firewall rules	Global							
networking-firewall-allow-ssh		Ingress firewall rule	Global	1000	Appl...	IPv4 range	—	tcp:22	Allow	
networking-firewall-allow-internal		Ingress firewall rule	Global	1000	Appl...	IPv4 range	—	tcp:0-65535 udp:0-65535 icmp	Allow	
networking-firewall-allow-icmp		Ingress firewall rule	Global	1000	Appl...	IPv4 range	—	icmp	Allow	

## Latency measurements

Location pair	Ideal latency	Measured latency
us-west1 us-east5	~45 ms	~49 ms
us-west1 europe-west1	~93 ms	~134 ms
us-west1 asia-east1	~114 ms	~117 ms
us-east5 europe-west1	~76 ms	~95 ms
us-east5 asia-east1	~141 ms	~165 ms
europe-west1 asia-east1	~110 ms	~265 ms

```
hali5@w1-vm:~$ ping -c 3 el-vm
PING el-vm.c.cloud-tran-hali5.internal (10.20.0.2) 56(84) bytes of data.
64 bytes from el-vm.c.cloud-tran-hali5.internal (10.20.0.2): icmp_seq=1 ttl=64 time=50.3 ms
64 bytes from el-vm.c.cloud-tran-hali5.internal (10.20.0.2): icmp_seq=2 ttl=64 time=49.5 ms
64 bytes from el-vm.c.cloud-tran-hali5.internal (10.20.0.2): icmp_seq=3 ttl=64 time=49.4 ms

--- el-vm.c.cloud-tran-hali5.internal ping statistics ---
3 packets transmitted, 3 received, 0% packet loss, time 6ms
rtt min/avg/max/mdev = 49.435/49.739/50.326/0.488 ms
hali5@w1-vm:~$ ping -c 3 eul-vm
PING eul-vm.c.cloud-tran-hali5.internal (10.30.0.2) 56(84) bytes of data.
64 bytes from eul-vm.c.cloud-tran-hali5.internal (10.30.0.2): icmp_seq=1 ttl=64 time=135 ms
64 bytes from eul-vm.c.cloud-tran-hali5.internal (10.30.0.2): icmp_seq=2 ttl=64 time=134 ms
64 bytes from eul-vm.c.cloud-tran-hali5.internal (10.30.0.2): icmp_seq=3 ttl=64 time=134 ms

--- eul-vm.c.cloud-tran-hali5.internal ping statistics ---
3 packets transmitted, 3 received, 0% packet loss, time 5ms
rtt min/avg/max/mdev = 134.140/134.367/134.816/0.317 ms
hali5@w1-vm:~$ ping -c 3 asial-vm
PING asial-vm.c.cloud-tran-hali5.internal (10.40.0.2) 56(84) bytes of data.
64 bytes from asial-vm.c.cloud-tran-hali5.internal (10.40.0.2): icmp_seq=1 ttl=64 time=117 ms
64 bytes from asial-vm.c.cloud-tran-hali5.internal (10.40.0.2): icmp_seq=2 ttl=64 time=119 ms
64 bytes from asial-vm.c.cloud-tran-hali5.internal (10.40.0.2): icmp_seq=3 ttl=64 time=119 ms

--- asial-vm.c.cloud-tran-hali5.internal ping statistics ---
3 packets transmitted, 3 received, 0% packet loss, time 4ms
rtt min/avg/max/mdev = 117.351/118.177/118.607/0.706 ms
hali5@w1-vm:~$
```

```

hali5@e1-vm:~$ ping -c 3 eul-vm
PING eul-vm.c.cloud-tran-hali5.internal (10.30.0.2) 56(84) bytes of data.
64 bytes from eul-vm.c.cloud-tran-hali5.internal (10.30.0.2): icmp_seq=1 ttl=64 time=97.7 ms
64 bytes from eul-vm.c.cloud-tran-hali5.internal (10.30.0.2): icmp_seq=2 ttl=64 time=95.4 ms
64 bytes from eul-vm.c.cloud-tran-hali5.internal (10.30.0.2): icmp_seq=3 ttl=64 time=95.4 ms

--- eul-vm.c.cloud-tran-hali5.internal ping statistics ---
3 packets transmitted, 3 received, 0% packet loss, time 5ms
rtt min/avg/max/mdev = 95.426/96.192/97.724/1.140 ms
hali5@e1-vm:~$ ping -c 3 asial-vm
PING asial-vm.c.cloud-tran-hali5.internal (10.40.0.2) 56(84) bytes of data.
64 bytes from asial-vm.c.cloud-tran-hali5.internal (10.40.0.2): icmp_seq=1 ttl=64 time=169 ms
64 bytes from asial-vm.c.cloud-tran-hali5.internal (10.40.0.2): icmp_seq=2 ttl=64 time=165 ms
64 bytes from asial-vm.c.cloud-tran-hali5.internal (10.40.0.2): icmp_seq=3 ttl=64 time=165 ms

--- asial-vm.c.cloud-tran-hali5.internal ping statistics ---
3 packets transmitted, 3 received, 0% packet loss, time 5ms
rtt min/avg/max/mdev = 165.442/166.492/168.561/1.500 ms
hali5@e1-vm:~$ █

hali5@eul-vm:~$ ping -c 3 asial-vm
PING asial-vm.c.cloud-tran-hali5.internal (10.40.0.2) 56(84) bytes of data.
64 bytes from asial-vm.c.cloud-tran-hali5.internal (10.40.0.2): icmp_seq=1 ttl=64 time=265 ms
64 bytes from asial-vm.c.cloud-tran-hali5.internal (10.40.0.2): icmp_seq=2 ttl=64 time=281 ms
64 bytes from asial-vm.c.cloud-tran-hali5.internal (10.40.0.2): icmp_seq=3 ttl=64 time=281 ms

--- asial-vm.c.cloud-tran-hali5.internal ping statistics ---
3 packets transmitted, 3 received, 0% packet loss, time 3ms
rtt min/avg/max/mdev = 265.349/276.031/281.396/7.578 ms
hali5@eul-vm:~$ █

```

## Test groups

**Are the instances in the same availability zone or in different ones?**

No, the instances are not in the same availability zone

**List all availability zones that your servers show up in for your lab notebook.**

Us-east5-mig zone: us-east5-a

Us-west1-mig zone: europe-west1-b, europe-west1-c, europe-west1-d

## Test load balancer

**Which availability zone does the server handling your request reside in?**

The server handling the request resides in us-east5-a

# Networking 101 Lab

## Client IP

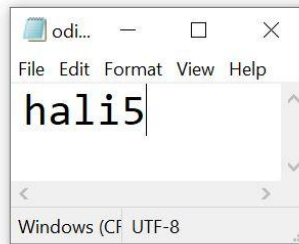
Your IP address : 35.191.20.155

## Hostname

Server Hostname: us-east5-mig-btwf

## Server Location

Region and Zone: us-east5-a



## Siege! (Part 1)

### Take a screenshot of the initial traffic distribution



**Take a screenshot of the UI as additional instances are brought up and show that the traffic distribution shifts**



## Siege! (Part 2)

**Show a screenshot of the final traffic distribution.**

