gcloud compute instances create www1 \

--image-family debian-9 \

--image-project debian-cloud \

--zone us-central1-a \

--tags network-lb-tag \

--metadata startup-script="#! /bin/bash

sudo apt-get update

sudo apt-get install apache2 -y

sudo service apache2 restart

echo '<!doctype html><html><body><h1>www1</h1></body></html>' | tee /var/www/html/index.html"

gcloud compute instances create www2 \

--image-family debian-9 \

--image-project debian-cloud \

--zone us-central1-a \

--tags network-lb-tag \

--metadata startup-script="#! /bin/bash

sudo apt-get update

sudo apt-get install apache2 -y

sudo service apache2 restart

echo '<!doctype html><html><body><h1>www2</h1></body></html>' | tee /var/www/html/index.html"

gcloud compute instances create www3 \

--image-family debian-9 \

--image-project debian-cloud \

--zone us-central1-a \

--tags network-lb-tag \

--metadata startup-script="#! /bin/bash

sudo apt-get update

sudo apt-get install apache2 -y

sudo service apache2 restart

echo '<!doctype html><html><body><h1>www3</h1></body></html>' | tee /var/www/html/index.html"

gcloud compute firewall-rules create www-firewall-network-lb \

--target-tags network-lb-tag --allow tcp:80

Configure the load balancing service

Create a static external IP address for your load balancer:

gcloud compute addresses create network-lb-ip-1 \

--region us-central1

Add a legacy HTTP health check resource:

gcloud compute http-health-checks create basic-check

Add a target pool in the same region as your instances. Run the following to create the target pool and use the health check, which is required for the service to function:

gcloud compute target-pools create www-pool \

--region us-central1 --http-health-check basic-check

Add the instances to the pool:

gcloud compute target-pools add-instances www-pool \

--instances www1,www2,www3

Add a forwarding rule:

gcloud compute forwarding-rules create www-rule \

--region us-central1 \

--ports 80 \

--address network-lb-ip-1 \

--target-pool www-pool

Enter the following command to view the external IP address of the www-rule forwarding rule used by the load balancer:

gcloud compute forwarding-rules describe www-rule --region us-central1

Use curl command to access the external IP address, replacing IP\_ADDRESS with an external IP address from the previous command:

while true; do curl -m1 IP\_ADDRESS; done

First, create the load balancer template:

gcloud compute instance-templates create lb-backend-template \

--region=us-central1 \

--network=default \

--subnet=default \

--tags=allow-health-check \

--image-family=debian-9 \

--image-project=debian-cloud \

--metadata=startup-script='#! /bin/bash

apt-get update

apt-get install apache2 -y

a2ensite default-ssl

a2enmod ssl

vm\_hostname="$(curl -H "Metadata-Flavor:Google" \

http://169.254.169.254/computeMetadata/v1/instance/name)"

echo "Page served from: $vm\_hostname" | \

tee /var/www/html/index.html

systemctl restart apache2'

Create a managed instance group based on the template:

gcloud compute instance-groups managed create lb-backend-group \

--template=lb-backend-template --size=2 --zone=us-central1-a

Create the fw-allow-health-check firewall rule. This is an ingress rule that allows traffic from the Google Cloud health checking systems (130.211.0.0/22 and 35.191.0.0/16). This lab uses the target tag allow-health-check to identify the VMs.

gcloud compute firewall-rules create fw-allow-health-check \

--network=default \

--action=allow \

--direction=ingress \

--source-ranges=130.211.0.0/22,35.191.0.0/16 \

--target-tags=allow-health-check \

--rules=tcp:80

Now that the instances are up and running, set up a global static external IP address that your customers use to reach your load balancer.

gcloud compute addresses create lb-ipv4-1 \

--ip-version=IPV4 \

--global

Note the IPv4 address that was reserved:

gcloud compute addresses describe lb-ipv4-1 \

--format="get(address)" \

--global

Create a healthcheck for the load balancer:

gcloud compute health-checks create http http-basic-check \

--port 80

Create a backend service:

gcloud compute backend-services create web-backend-service \

--protocol=HTTP \

--port-name=http \

--health-checks=http-basic-check \

--global

Add your instance group as the backend to the backend service:

gcloud compute backend-services add-backend web-backend-service \

--instance-group=lb-backend-group \

--instance-group-zone=us-central1-a \

--global

Create a URL map to route the incoming requests to the default backend service:

gcloud compute url-maps create web-map-http \

--default-service web-backend-service

Create a target HTTP proxy to route requests to your URL map:

gcloud compute target-http-proxies create http-lb-proxy \

--url-map web-map-http

Create a global forwarding rule to route incoming requests to the proxy:

gcloud compute forwarding-rules create http-content-rule \

--address=lb-ipv4-1\

--global \

--target-http-proxy=http-lb-proxy \

--ports=80

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