

Lab: GCP Project – Scalable Resilient Application

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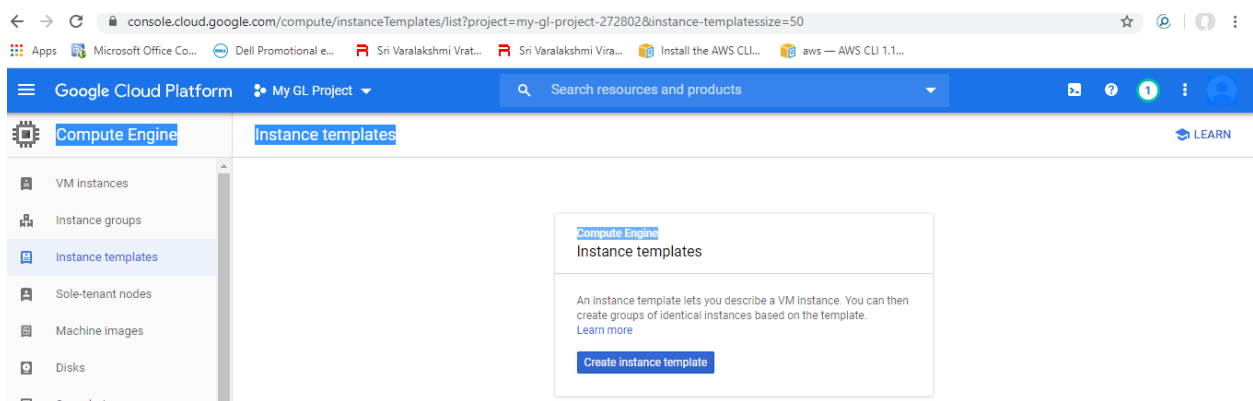
Date: Mar 30 2020

Batch: PGPCC_OCT19A

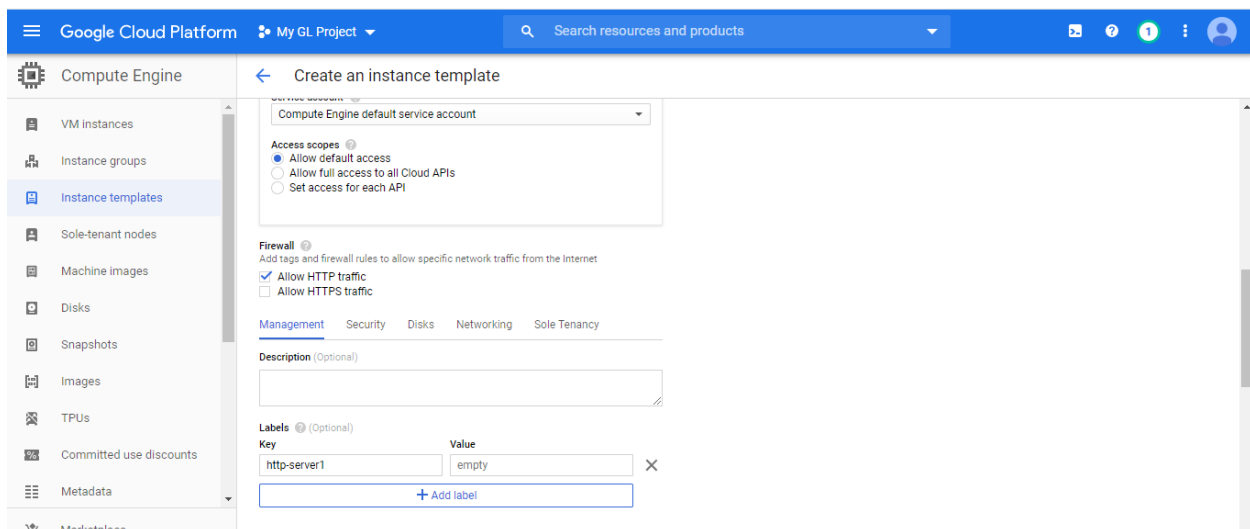
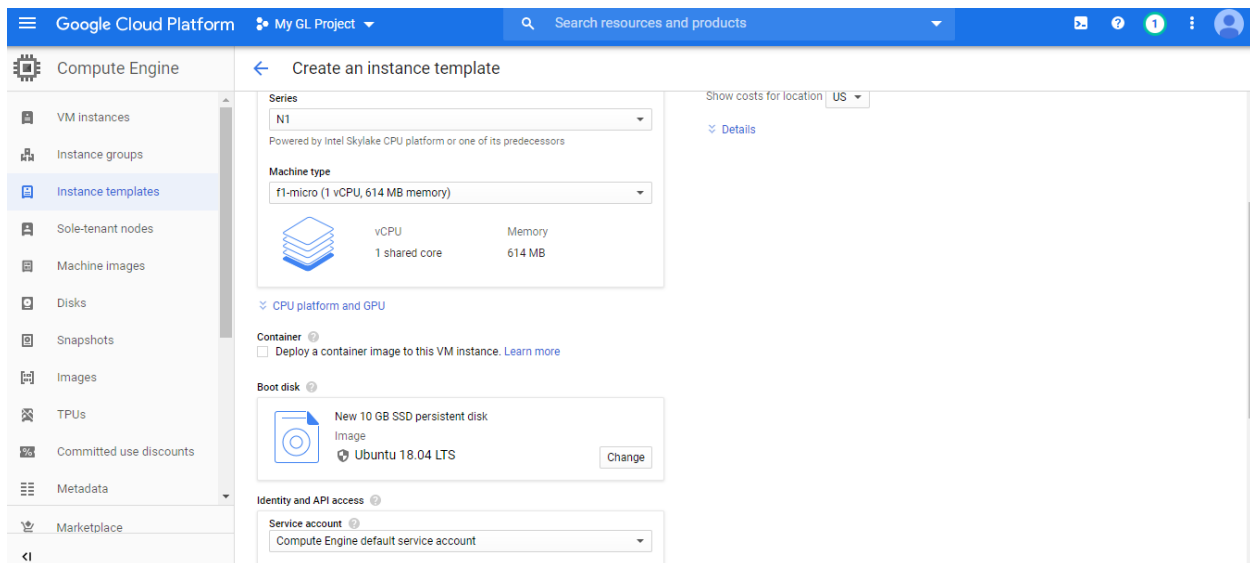
Create instance template with following settings

1. Machine type - f1-micro
2. Boot Disk - Ubuntu 18.04 LTS Image
3. Startup script
 - a. Install apache http web server
 - b. Custom index.html page displaying hostname and zone
 - c. Custom lb-health.html page displaying hostname and zone - loadbalancer health page
 - d. Custom ah-health.html page displaying hostname and zone - autoheal health page

Go to Compute Engine option in your GCP console and Create Instance template using the below option



Choose Boot disk as Ubuntu 18.04 LTS and with SSD 10 GiB and f1 micro in the machine type



Setup default access, allow http server and create a label as http-server.

Start up scripts:

```
#!/bin/bash

apt update -y

apt install apache2 -y

service apache2 start

echo "Google compute engine with Random number $RANDOM Hostname $HOSTNAME and zone $ZONE" >

/var/www/html/index.html

echo "Google compute engine Auto healing health Hostname $HOSTNAME and zone $ZONE" >
```

```
/var/www/html/al-health.html
```

```
echo "Google compute engine Load balancer healing health Hostname $HOSTNAME and zone $ZONE" >
```

```
/var/www/html/lb-health.html
```

| Name | Machine type | Image | Disk type | In use by | Creation time |
|---------------------|----------------|------------------------------|---------------------|-----------|---------------------------|
| vishgins-template-1 | 1 vCPU, 0.6 GB | ubuntu-1804-bionic-v20200317 | SSD persistent disk | | Mar 30, 2020, 11:27:29 PM |

Part 2:

Create an Instance Group in Region – us-central1, 3 zones – us-central-1b, us-central-1c, us-central-1f and refer the instance template created using create new managed instance group

To create an instance group, select one of the options:

- New managed instance group**
Create a group of identical VM instances from an existing template. Manage VM instances as a single entity.
- New unmanaged instance group**
Create a group of unique VM instances without using a template. Add and remove VM instances manually.

Organize VM instances in a group to manage them together. [Instance groups](#)

Name ⓘ
Name is permanent
instance-group-gl

Description (Optional)
This instance group is associated with the template vishgins-template-1

Location
To ensure higher availability, select a multiple zone location for an instance group. [Learn more](#)


☐ Single zone
☒ Multiple zones
Only managed instance groups can exist in multiple zones.

Region ⓘ
us-central1

Zones
☐ us-central1-a
☒ us-central1-b
☒ us-central1-c
☒ us-central1-f

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Create an instance group


Instance template 
vishgins-template-1

Number of instances
Based on autoscaling configuration


Autoscaling
Use autoscaling to allow automatic resizing of this instance group for periods of high and low load. [Autoscaling groups of instances](#)

Autoscaling mode
Autoscale

Autoscaling metrics
Use metrics to determine when to autoscale the group.
[Autoscaling policy and target utilization](#)

New metric 


Metric type
CPU utilization

Target CPU utilization 
60 %


Setup the cool down period to 60 sec, min and max instances to 2 and 3


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Create an instance group

Cool down period 
Specify how long to wait for a new instance before taking its metrics into account.
[Cool down period](#)

60 seconds

Minimum number of instances  2 ✓

Maximum number of instances  3 ✓

 To maximize availability, the minimum number of instances should be at least equal to the number of zones. Additional instances will be placed in different zones.
[Distributing instances using regional managed instance groups](#)

[Delete autoscaling configuration](#)

Setup a health check rule for the auto heal condition as below and click on save and continue

Setup a health check rule

Name ?

Name is permanent

ah-health

Description (Optional)

auto healing health

Protocol

TCP

Port ?

80

Proxy protocol ?

NONE

Request (Optional) ?

Response (Optional) ?

Health criteria

Define how health is determined: how often to check, how long to wait for a response, and how many successful or failed attempts are decisive

Check interval ?

5 seconds

Timeout ?

5 seconds

Healthy threshold ?

2 consecutive successes

Unhealthy threshold ?

3 consecutive failures

Save and continue

Cancel

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Create an instance group

different zones.
Distributing instances using regional managed instance groups [↗](#)

Delete autoscaling configuration

Less

Autohealing [?](#)
Health check [?](#)
http-server-healthcheck (TCP) [↗](#)
port: 80, timeout: 5s, check interval: 10s, unhealthy threshold: 3 attempts

Initial delay [?](#)
300 seconds

[?](#) To use autohealing, configure firewall rules. This will allow the health check to connect to VM instances in the group.
[How to configure firewall rules to allow health checking ↗](#)

You will be billed for VM instances in this group. [Compute Engine pricing ↗](#)

Create Cancel

Equivalent REST or command line

The instance group gets created based on the template created

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Compute Engine Instance groups CREATE INSTANCE GROUP REFRESH DELETE LEARN

Instance groups are collections of VM instances that use load balancing and automated services, like autoscaling and autohealing. [Learn more](#)

Filter resources Columns

| <input type="checkbox"/> Name ^ | Zone | Instances | Template | Creation time | Recommendation | Autoscaling | In use by |
|--|-------------------------|-----------|---------------------|--------------------------|----------------|--------------------------------|-----------|
| <input checked="" type="checkbox"/> instance-group-gl2 | us-central1 (3/4 zones) | 2 | vishgins-template-2 | Mar 31, 2020, 7:31:36 AM | | On: Target CPU utilization 60% | |

The minimum limit of 2 instances are now created from the template

Try to delete one instance from the list of VM instances –

Observation: We will not be able to delete the VM instances created by using Instance groups

Step 3: Create Load balancer using Network services

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Network services Load balancing

Load balancing Load balancers Backends Frontends

Network Services
Load balancing

Load balancers distribute incoming network traffic across multiple VM instances to help your application scale. [Learn more](#)

Create load balancer

Google Cloud Platform My GL Project

Network services

Load balancing

Cloud DNS

Cloud CDN

Cloud NAT

Traffic Director

Service Directory

Create a load balancer

Please answer a few questions to help us select the right load balancing type for your application

Internet facing or internal only

Do you want to load balance traffic from the Internet to your VMs or only between VMs in your network?

☐ From Internet to my VMs

☒ Only between my VMs

Continue

Create backend service from the below screens and click on create

Update the Routing rules and Front end configuration option as well from the screen

Load balancer setup:

Google Cloud Platform

Network services

Load balancing

Cloud DNS

Cloud CDN

Cloud NAT

Traffic Director

Service Directory

Marketplace

Create backend service

Name [?]

Name is permanent

backend-http-server

Description [?]

Backend type

☒ Instance groups

☐ Network endpoint groups

Protocol, named port & timeout

Protocol [?]

Named port [?]

Timeout [?]

HTTP

http-port

30 seconds

Backends

Regions: us-central1 Network: default

All backends of an internal HTTP load balancer have to be in the same region and network.

instance-group-1 (Zone: us-central1, Port: 80)

+ Add backend

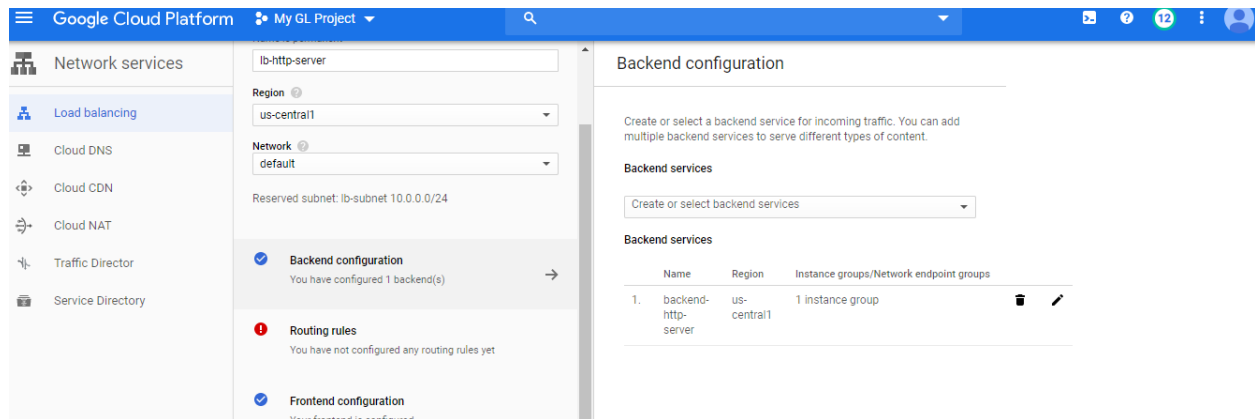
Health check [?]

lb-health (TCP)

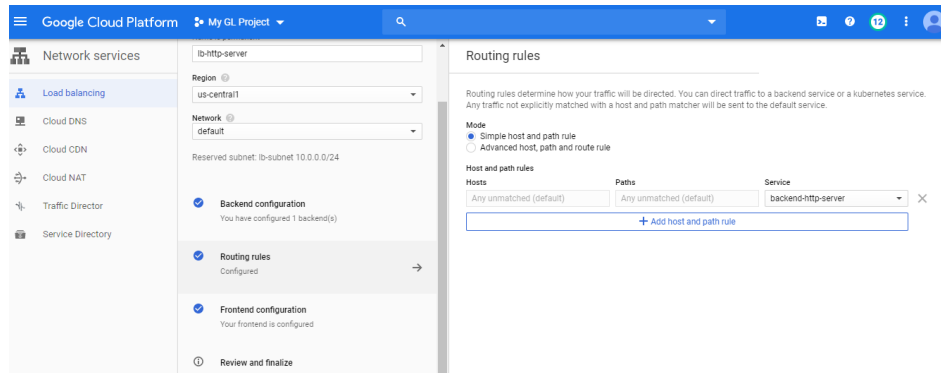
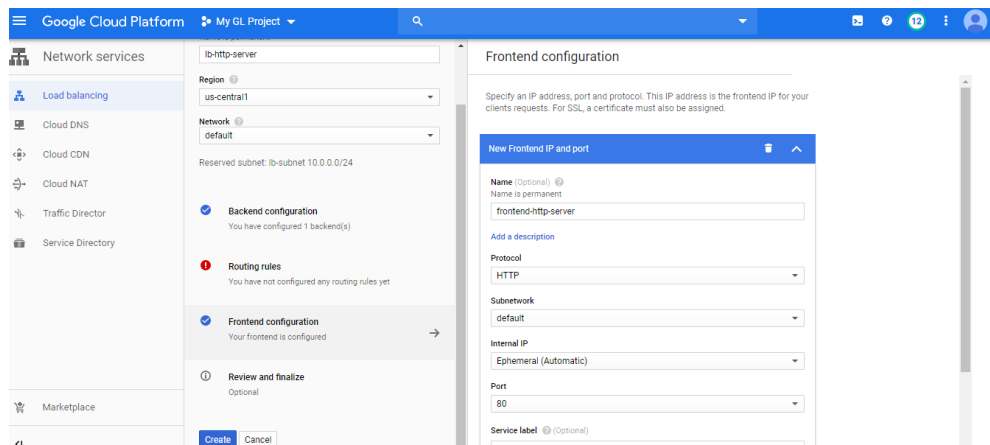
port: 80, timeout: 5s, check interval: 10s, unhealthy threshold: 3 attempts

Create Cancel

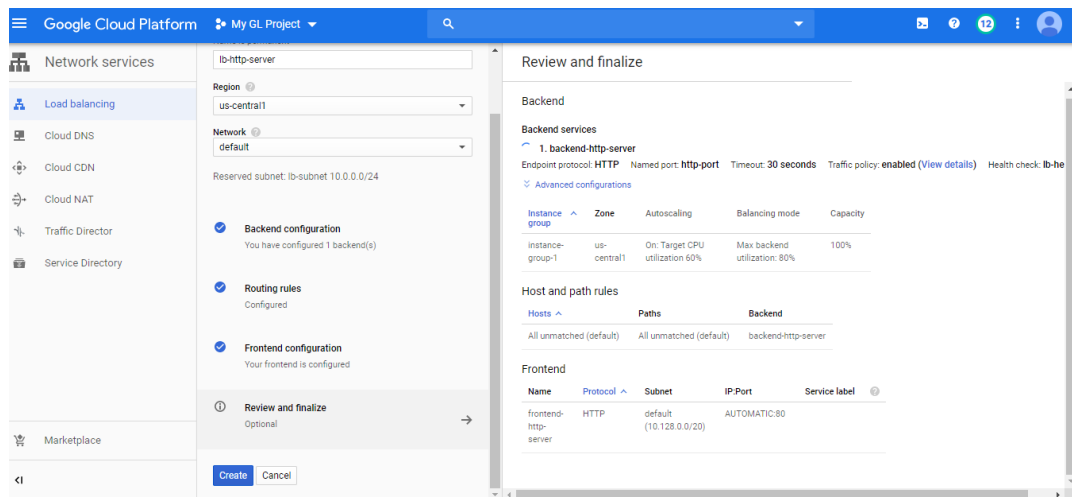
The load balancer health check is also setup



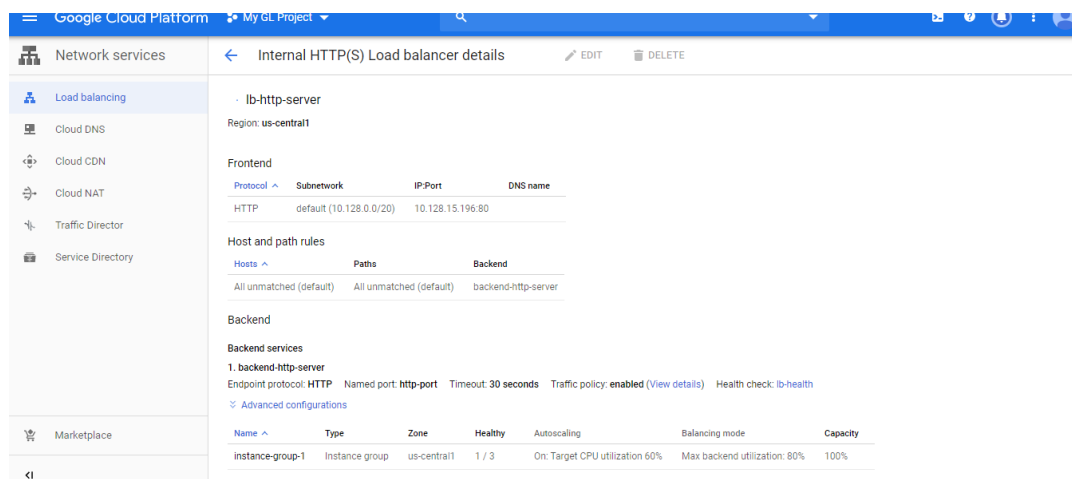
Setup the front end configuration:



Routing rules setup



Load balancer setup:



Validated that VM instances are healthy up and running

