

1) Create an instance template with N1, f1 micro and ubuntu 18.04 TLS.

Name	Machine type	Image	Disk type	Placement policy	In use by	Creation time
instance-template-for-http-load-balancer	f1-micro	ubuntu-1604-xenial-disk-v20210416	Balanced persistent disk	No policy		Apr 25, 2021, 3:09:19 AM UTC-07:00

2) Create an instance group in region ASIA with number of instances as 1 .Delete the auto scale configuration. Select the template that we have created in step no 1.

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

Name
Name is permanent
instance-group-asia

Description (Optional)
Instance group for asia region

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

☒ Single zone
☐ Multiple zones

Region
Region is permanent
asia-southeast1 (Singapore)

Zone
Zone is permanent
asia-southeast1-b

Specify port name mapping (Optional)

Instance template
instance-template-for-http-load-balancer

New unmanaged instance group

A group of VMs that you manage yourself.

Supports:

- load balancing

Number of instances

Autoscaling

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

[Configure autoscaling](#)

Autohealing

Health check

No health check

Compute Engine will recreate VM instances only when they're not running.

[Advanced creation options](#)

Your free trial credit will be used for VM instances in this group. [GCP Free Tier](#)

[Create](#) [Cancel](#)

3) Create an instance group in region Europe with number of instances as 1. Delete the auto scale configuration and put number of instances as 1. Select the template that we have created in step no 1.

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

New managed instance group (stateless)

For stateless serving and batch workloads.

Supports:

- autoscaling, autohealing, auto-updating
- multi-zone deployment
- load balancing

New managed instance group (stateful)

For stateful workloads such as databases.

Supports:

- disk and metadata preservation
- autohealing and updating
- multi-zone-deployment
- load balancing

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

Name

Name is permanent

Description (Optional)

Location

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

☒ Single zone
 ☐ Multiple zones

Region
 Region is permanent

Zone
 Zone is permanent

[Specify port name mapping](#) (Optional)

Instance template

4) Create an instance group in region US with number of instance as 1. Delete the autoscale configuration to enter number of instances as 1.

← Create an instance group

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



New managed instance group (stateless)

For stateless serving and batch workloads.

Supports:

- autoscaling, autohealing, auto-updating
- multi-zone deployment
- load balancing



New managed instance group (stateful)

For stateful workloads such as databases.

Supports:

- disk and metadata preservation
- autohealing and updating
- multi-zone-deployment
- load balancing

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

Name

Name is permanent

instance-group-us

Description (Optional)

instance group in us

Location

To ensure higher availability, select a multiple zone location for an instance group.

[Learn more](#)

- ☒ Single zone
☐ Multiple zones

Region

Region is permanent

us-central1 (Iowa)

Zone

Zone is permanent

us-central1-a

Specify port name mapping (Optional)

Instance template

instance-template-for-http-load-balancer

5)At the end of step no 4 verify we shall have 6 virtual instances created. Login to each instance and verify that we have os installed is Ubuntu.

uname -a

6)On each instance do the following steps

Upload file my-web-app-load-balancer.py .

Run following command

sudo apt update

sudo apt install python3-pip

pip3 install flask

python3 my-web-app-load-balancer.py

Note :Step 6 need to be done on each instance.


7)Take the external Ip of any machine as hit the url external_ip:3000/main for each machine. We shall not be able to access the url as we don't have a firewall access.


8)Add firewall access on port 3000. Choose tcp port as 3000.Source ip filter 0.0.0.0/0 and target is all instances in network.


9)Verify that we are able to access the url external_ip:3000/main for each machine.


10)Configure a http load balancer to access these instances .


Go to Network-service -> Load balancing option


 Network services


 Load balancing


 Cloud DNS


 Cloud CDN


 Cloud NAT


 Traffic Director


 Service Directory

 Cloud Domains

 Private Service Connect

 Marketplace

 Release Notes

 Create a load balancer

HTTP(S) Load Balancing

Layer 7 load balancing for HTTP and HTTPS applications [Learn more](#)













Configure
HTTP LB
HTTPS LB (includes HTTP/2 LB)

Options
Internet-facing or internal
Single or multi-region


Start configuration


<|


11)Select from external to my Vms


 Network services	 Create a load balancer
<div data-bbox="207 380 457 415"> Load balancing</div> <div data-bbox="207 457 410 489"> Cloud DNS</div> <div data-bbox="207 531 410 567"> Cloud CDN</div> <div data-bbox="207 609 410 644"> Cloud NAT</div> <div data-bbox="207 686 453 720"> Traffic Director</div> <div data-bbox="207 762 477 798"> Service Directory</div> <div data-bbox="207 840 459 871"> Cloud Domains</div> <div data-bbox="207 915 553 947"> Private Service Connect</div>	<p data-bbox="699 384 1435 445">Please answer a few questions to help us select the right load balancing your application</p> <p data-bbox="699 483 1057 516">Internet facing or internal only</p> <p data-bbox="699 533 1435 594">Do you want to load balance traffic from the Internet to your VMs or only VMs in your network?</p> <div data-bbox="699 613 993 676"><input checked="" type="radio"/> From Internet to my VMs <input type="radio"/> Only between my VMs</div> <div data-bbox="699 739 823 785">Continue</div>
<div data-bbox="207 1012 425 1050"> Marketplace</div>	
<div data-bbox="207 1106 448 1140"> Release Notes</div>	


12)put name of load balancer as “my-load-balancer-anil”.Note put your name instead of anil.


 Network services


 Load balancing


 Cloud DNS


 Cloud CDN


 Cloud NAT


 Traffic Director

 Service Directory


 Cloud Domains


 Private Service Connect

 Marketplace


 Release Notes

<|

 New HTTP(S) load balancer


Name 

Name is permanent




Backend configuration

You have not configured your backend yet




Host and path rules

You have not configured host and path rules yet



Frontend configuration

You have not configured your frontend yet



Review and finalize

Optional

Create

Cancel

13)Click on back end configuration and then click on drop down then click on create a back end service.

Load balancing

Cloud DNS

Cloud CDN

Cloud NAT

Traffic Director

Service Directory

Cloud Domains

Private Service Connect

Marketplace

Name [?]
Name is permanent
my-load-balancer-anil

Backend configuration
You have not configured your backend yet →

Host and path rules
You have not configured host and path rules yet

Frontend configuration
You have not configured your frontend yet

Review and finalize
Optional

Create or select a backend service for incoming traffic. You can add multiple backend services and backend buckets to serve different types of content.

Backend services & backend buckets

Create or select backend services & backend buckets

Backend services ▶ Create a backend service

Backend buckets ▶

14) Give the name of backend-service as “backend-service-main-app-anil”. Give description, select backend type as Instance group.

Google Cloud Platform

Network services

Load balancing

Cloud DNS

Cloud CDN

Cloud NAT

Traffic Director

Service Directory

Cloud Domains

Private Service Connect

Marketplace

Create backend service

Name [?]
Name is permanent
backend-service-main-app-anil

Description (Optional)
backend service to main applicaiton

Backend type
Instance group

Protocol, named port & timeout

Protocol [?] HTTP Named port [?] http Timeout [?] 30 seconds

Backends

New backend

15) Select asia instance group and port number 3000. Keep rest of setting as it is in instance group. Click on done.

Google Cloud Platform

Network services

- Load balancing
- Cloud DNS
- Cloud CDN
- Cloud NAT
- Traffic Director
- Service Directory
- Cloud Domains
- Private Service Connect
- Marketplace
- Release Notes

New backend

Instance group ?
instance-group-asia (asia-southeast1-b)

Port numbers ?
3000

Balancing mode ?
☒ Utilization
☐ Rate

Maximum backend utilization ?
80 %

Maximum RPS (Optional) ?
 Max total RPS. Leave blank for unlimited RPS per instance ▼

Capacity ?
100 %

[Less](#)

Done Cancel

18)After adding the first instance group ,the Ui will look like below

Google Cloud Platform

Network services

- Load balancing
- Cloud DNS
- Cloud CDN
- Cloud NAT
- Traffic Director
- Service Directory
- Cloud Domains
- Private Service Connect

Backend configuration

Name
backend-service-main-app-ami

Description (Optional)
backend service to main applicaiton

[Less](#)

Backend type
Instance group

Protocol, named port & timeout
 Protocol ? HTTP Named port ? http Timeout ? 30 seconds

Backends
 Regions: asia-southeast1
 instance-group-asia (Zone: asia-southeast1-b, Port: 3000)

[+ Add backend](#)

19)Click on Add backend to add instance group for Europe.

Network services

Load balancing

Cloud DNS

Cloud CDN

Cloud NAT

Traffic Director

Service Directory

Cloud Domains

Private Service Connect

Marketplace

Release Notes

New backend

Instance group ?

instance-group-europe (europe-west2-c)

Port numbers ?

3000

Balancing mode ?

Utilization

Rate

Maximum backend utilization ?

80 %

Maximum RPS (Optional) ?

Max total RPS. Leave blank for unlimited

RPS

per instance

Capacity ?

100 %

Less

Done

Cancel

20)Add another instance group for US.

Google Cloud Platform

Network services

Load balancing

Cloud DNS

Cloud CDN

Cloud NAT

Traffic Director

Service Directory

Cloud Domains

Private Service Connect

Marketplace

New backend

Instance group ?

instance-group-us (us-central1-a)

Port numbers ?

3000

Balancing mode ?

Utilization

Rate

Maximum backend utilization ?

80 %

Maximum RPS (Optional) ?

Max total RPS. Leave blank for unlimited

RPS

per instance

Capacity ?

100 %

Less

Done

Cancel

21)Click on create health check .Add following entry in the health check.Put your name instead of anil.

Google Cloud Platform

Network services

- Load balancing
- Cloud DNS
- Cloud CDN
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- Marketplace
- Release Notes

Name: my-main-app-health-check-anil

name is permanent

my-main-app-health-check-anil

Description (Optional)

my main app health check anil

Protocol: HTTP

Port: 3000

Proxy protocol: NONE

Request path: /healthcheck

More

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: 10 seconds

Timeout: 5 seconds

Healthy threshold: 2 consecutive successes

Unhealthy threshold: 3 consecutive failures

Save and continue Cancel

22)Click on create to create a backend service.

Cloud CDN

Cloud NAT

Traffic Director

Service Directory

Cloud Domains

Private Service Connect

Marketplace

Release Notes

Cache key

Health check: my-main-app-health-check-anil (HTTP)

port: 3000, timeout: 5s, check interval: 10s, unhealthy threshold: 3 attempts

Logging

Enable logging

Security

Cloud Armor security policy (Optional)

None

Advanced configurations (Request and response headers, session affinity, timeouts, connection draining, and CDN settings)

Create Cancel

23)Don't do any changes in host and port rules ,Click on Front end configuration as below.

Load balancing

Cloud DNS

Cloud CDN

Cloud NAT

Traffic Director

Service Directory

Cloud Domains

Private Service Connect

Marketplace

Release Notes

Name

Name is permanent

my-load-balancer-anil

Backend configuration

You have configured 1 backend(s)

Host and path rules

You have created host and path rules

Frontend configuration

Your frontend is configured

Review and finalize

Optional

Create

Cancel

Name (Optional)

Name is permanent

my-main-app-front-end-component-anil

Add a description

Protocol

HTTP

Network Service Tier

Premium (Current project-level tier, change)

Standard

Your load balancer has backends in multiple regions. Standard tier only works with backends that are in one region.

IP version

IPv4

IP address

Ephemeral

Port

80

Done

Cancel

24)Click on review and finalize.IT shall look like below.

Network services

Load balancing

Cloud DNS

Cloud CDN

Cloud NAT

Traffic Director

Service Directory

Cloud Domains

Private Service Connect

Marketplace

Release Notes

Name

Name is permanent

my-load-balancer-anil

Backend configuration

You have configured 1 backend(s)

Host and path rules

You have created host and path rules

Frontend configuration

Your frontend is configured

Review and finalize

Optional

Create

Cancel

Review and finalize

Instance group	Zone	Autoscaling	Balancing mode	Capacity	Selected ports
instance-group-asia	asia-southeast1-b	No configuration	Max backend utilization: 80%	100%	3000
instance-group-europe	eu-west2-c	No configuration	Max backend utilization: 80%	100%	3000
instance-group-us	us-central1-a	No configuration	Max backend utilization: 80%	100%	3000

Host and path rules

Hosts	Paths	Backend
All unmatched (default)	All unmatched (default)	backend-service-main-app-anil

Frontend

Protocol	IP:Port	Network Tier
HTTP	EPHEMERAL:80	Premium

25)Click on create after verifying the above configuration.Wait for few mins to allow load balancer to work.

26)Verify on the server of each instance that we are getting a health check call back from load balancer as below.

GET /healthcheck HTTP/1.1" 200

27)Now check the Ip of the load balancer from hit the url from the browser.

<http://34.98.77.175/main>

where 34.98.77.175 represents the ip of the load balancer.

Observe the output given by different servers.