

Deploy app to multiple machines -

Instance template - blueprint for all vm . put all config for vm in 1 template and use it for creating vm later .

Create instance from template

Instance group - managed / unmanaged .

Lb - we will attach lb to the instance group .

COMpute engine > instance template > N1 machine - 1 cpu 1.7gb ram > boot disk - 10 gb > allow http access > MAnagement > startup script >

```
#!/bin/bash
```

```
apt update
```

```
apt -y install apache2
```

```
cat <<EOF>/var/www/html/index.html
```

```
<html><body><h1>APACHE HOME PAGE WITH STARTUP SCRIPT $(hostname) $(hostname  
-i ) $(hostname -d)</h1></body></html>
```

Management
Description, deletion protection, reservations, automation, and availability policies

Description

Reservations
Automatically use created reservation
Use an existing reservation when creating an instance from this template

Automation

Startup script

```
#!/bin/bash
apt update
apt -y install apache2
cat <<EOF>/var/www/html/index.html
<html><body><h1>APACHE HOME PAGE WITH STARTUP SCRIPT $(hostname)
$(hostname -i ) $(hostname -d)</h1></body></html>
```

Or

```
#!/bin/bash
```

```
apt update
```

```
apt -y install apache2
```

```
echo "<h3>APACHE HOME PAGE WITH STARTUP SCRIPT $(hostname) $(hostname -i )  
$(hostname -d)</h3>">/var/www/html/index.html
```

Create a template .


<input type="checkbox"/>	Name ↑	Machine type	Image	Disk type	Placement policy	Actions
<input type="checkbox"/>	instance-template-1	g1-small	debian-11-bullseye-v20221206	Balanced persistent disk	No policy	⋮


Instance templates are global resources . We don't mention region zones in it but we mention the same for vm .


Instance template > options > create vm > it will take all values by default > Default region zone > all details will be extracted from template . > create .

Once done we can access .

<input checked="" type="checkbox"/>	Name ↑	Machine type	Image	Disk type	Placement policy	Actions
<input checked="" type="checkbox"/>	instance-template-1	g1-small	debian-11-bullseye-v20221206	Balanced persistent disk	No policy	⋮

 Create VM

 Create Instance Group

 Delete

We can ssh to the machine and check host details .

← → ↻ ⚠ Not secure | 34.171.161.29

APACHE HOME PAGE WITH STARTUP SCRIPT instance-template-1 10.128.0.2 us-central1-a.c.qwiklabs-gcp-01-85db45aa04cf.internal

Create instance group - Managed instance group stateless - identical vms > create instance group > instance template - select > select single zone > us central1 - all node will be created in regions and zone only > Autoscaling > on - add and remove instances to group > min - 3 , max 10 > auto scaling metric > cpu utilization - 60% > Create .

← Create Instance Group

New managed instance group (stateless)
Automatically manage groups of VMs that do stateless serving and batch processing.

New managed instance group (stateful)
Automatically manage groups of VMs that have persistent data or configurations (such as databases or legacy applications).

New unmanaged instance group
Manually manage groups of load balancing VMs.

Region *
us-central1 (Iowa)

Zone *
us-central1-a

Autoscaling

Use autoscaling to automatically add and remove instances to the group for periods of high and low load. [Learn more](#)

Autoscaling mode
On: add and remove instances to the group

Minimum number of instances *
3

Maximum number of instances *
10

Autoscaling metrics

Use metrics to help determine when to scale the group. [Learn more](#)

CPU utilization: 60% (default)
Predictive autoscaling is off

[ADD METRIC](#)

CREATE CANCEL EQUIVALENT COMMAND LINE ▾

Managed instance group - stateless , stateful

3 Instances will be created as part of mig .

<input type="checkbox"/>	Status	Name ↑
<input type="checkbox"/>		instance-group-1-6b1f
<input type="checkbox"/>		instance-group-1-76xd
<input type="checkbox"/>		instance-group-1-kmz7

We can access it using an external ip . If we try to delete 1 instance of mig . then a new vm will be created by mig automatically .

Creating lb to distribute traffic from mig . Lb is part of networking service > lb > http lb > from internet to my vm > classic > create backend service > backend type > instance group > protocol > http > timeout - 30 > request path - / > health check -http 80 -request path - / > instance group > port 80 > balancing mode - utilization max - 80 , max rps - 100 if utilization goes beyond this then it will redirect traffic to other vm > create .

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 serverless services, or only between VMs in your network or serverless services?

- ☒ From Internet to my VMs or serverless services
- ☐ Only between my VMs or serverless services

Global or Regional

Do you want to deploy your application in global, regional, or classic mode?

- ☐ Global HTTP(S) Load Balancer 
- ☒ Global HTTP(S) Load Balancer (classic) 
- ☐ Regional HTTP(S) Load Balancer (recommended for Standard Network Tier) 


CONTINUE

New Global HTTP(S) load balancer

Name *



Lowercase, no spaces.

- ☒ Frontend configuration
- ☐ Backend configuration
- ☐ Host and path rules
-  Review and finalize (optional)

Create backend service

Description

Backend type
Instance group

Protocol
HTTP

Named port *
http

Timeout *
30 seconds

Backends

Regions

us-central1

New backend

Instance group *
instance-group-1

Port numbers *

Balancing mode ?
☒ Utilization

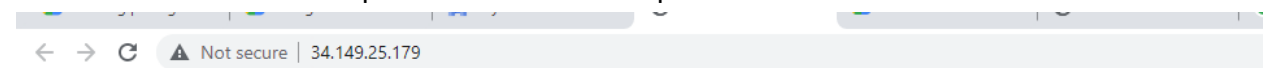
3 config required : backend , host and path rules > frontend config .

Browse lb ip with port and we can see traffic from all vms when we reload .

We can delete lb ,

Site is not reachable with lb since firewall rule is not created for traffic .

Create firewall rule with lb ip and source as all on port 80 . Once done .



APACHE HOME PAGE WITH STARTUP SCRIPT instance-group-
central1-c.c.qwiklabs-gcp-00-984516362570.internal