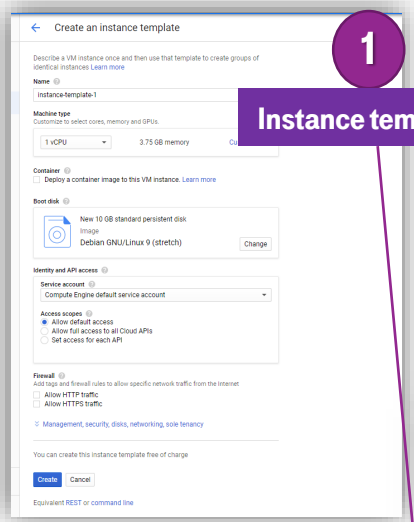
Assignment and Exam Content

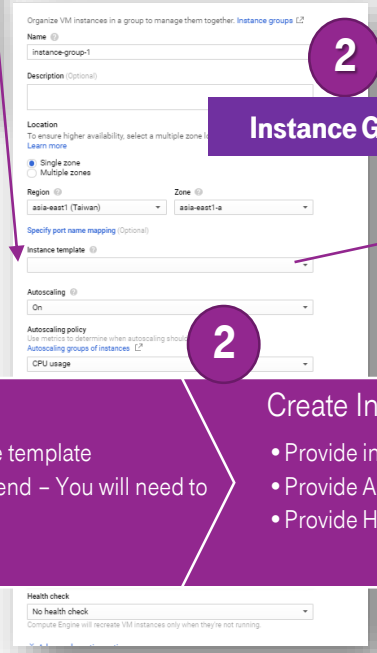
HTTP Load balancer

HTTP Load Balancer Configuration - 3 Major Steps



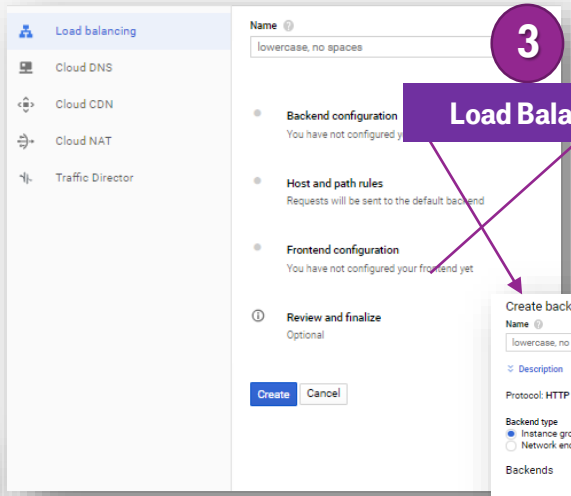
1

Instance template



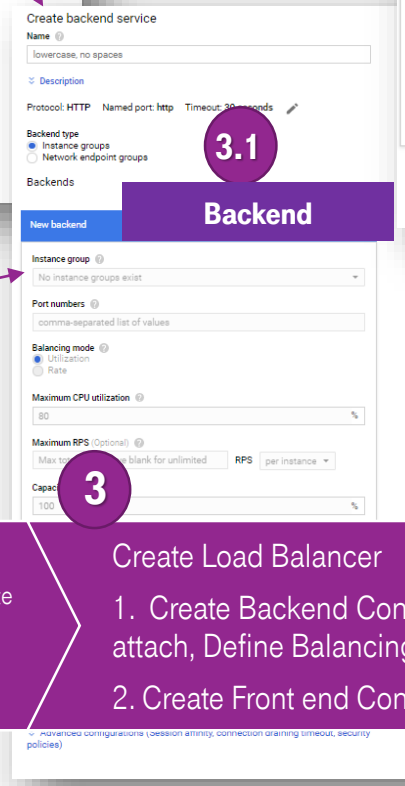
2

Instance Group



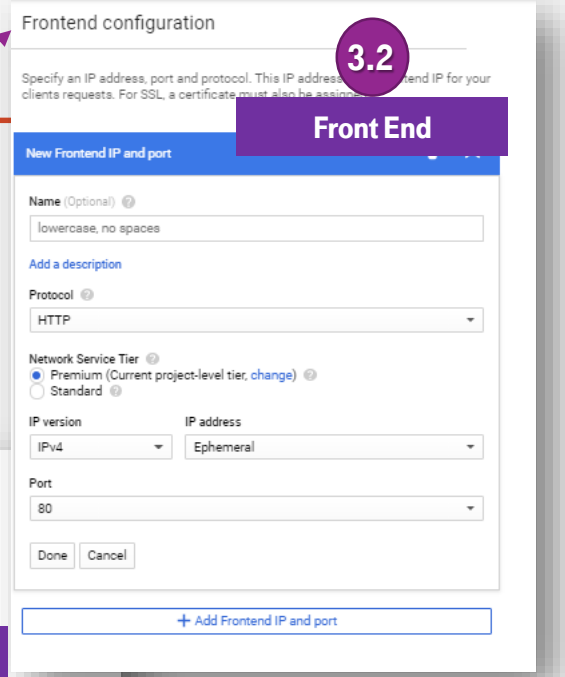
3

Load Balancer



3.1

Backend



3.2

Front End

1

Create Instance template

- Provide all information like Virtual machine to create template
- If you want to provide startup script to run your backend – You will need to include here

2

Create Instance Group

- Provide information like region and Zone and Instance Template
- Provide Autoscaling Configuration
- Provide Health Check Configuration

3

Create Load Balancer

1. Create Backend Configuration – Use Instance Group to attach, Define Balancing Configuration
2. Create Front end Configuration and Security , IP etc ...

1

Create Instance template

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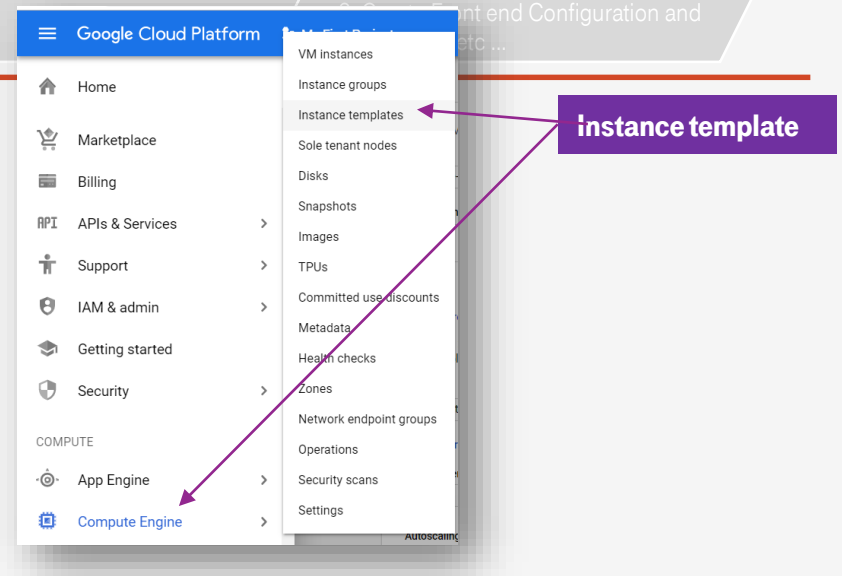
Create Load Balancer
1. Create Backend Configuration – Use Instance Group to attach, Define Balancing Configuration

...t end Configuration and ...etc ...

1 Go To -> COMPUTE -> Compute Engine -> Instance Template, Click on Create



2 Information is equivalent to that of VM with only difference being Instance Template is Global Resource and you can not attach Zone and Region.

Lets Create Instance Template for USA

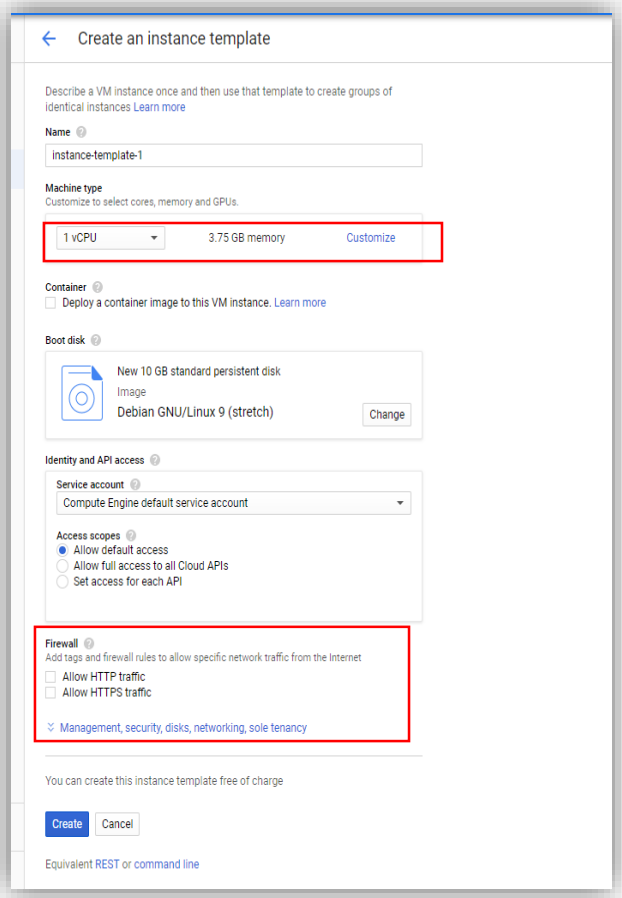
Fill in information as you like (Keep Machine Type to Low configuration – default 1 CPU is good.)

Download and Copy Startup Script from

https://github.com/dhanajimusale/GCPTrain

Open Firewall – for HTTP Traffic (Click on Check box and make it on)

Click on Management, Security Disks..



We should Create

1 Instance Template per region for at least 2 regions – Please name it accordingly.

with Different Startup Script as per Demo for Auto Scaling demo as well.

1

Create Instance template

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Create Load Balancer
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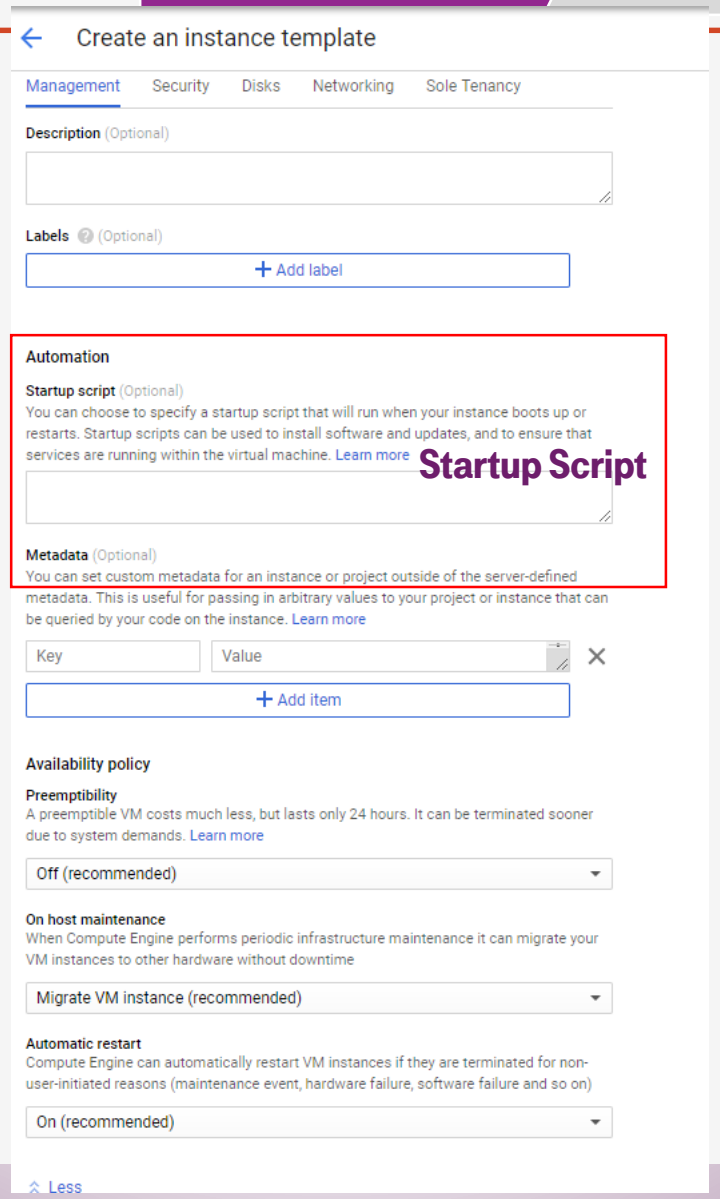
3 Enter Startup Script attached (please check demo video)

Create 2nd Instance template as well for Asia with Startup script in it and name it appropriately.

Again Code is Located at

https://github.com/dhanajimusale/GCPTrain



Things to remember

*1.Instance template is **Global Resource**, but you can attach Zonal resources to make it Zonal.*

2.Instance template is just template definitions to create instance. Creating Instance Template will not create actual instance.

3.Instance Template can be used to create VM directly or used by Instance Group/

2

Create Instance Group

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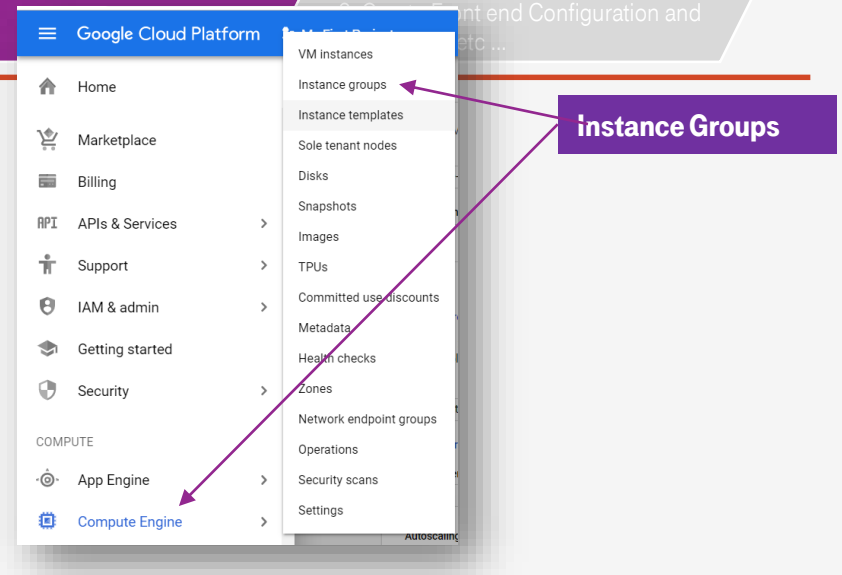
Create Load Balancer
1. Create Backend Configuration – Use Instance Group to attach, Define Balancing Configuration

1 Go To -> COMPUTE -> Compute Engine -> Instance Groups, Click on Create



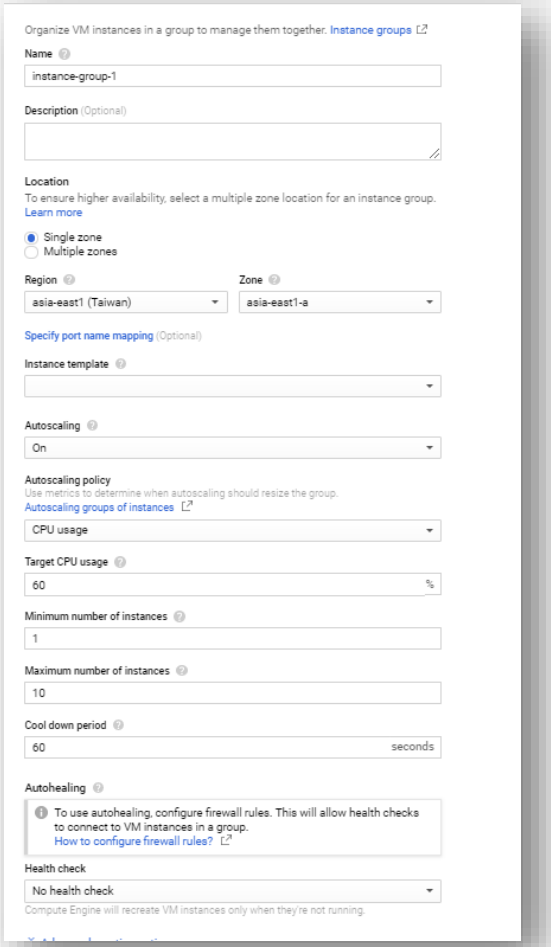
2 There are three main components of Instance Groups Information -> 1. Instance template and remaining information (for Compute engine to start) Region and Zone , 2. Autoscaling configuration, 3. Health Check

Try to Choose Multiple Zones (Click radio button) to have configurations from *failure* of one Zone.

Create two instance Groups one for USA and other for Asia.

1. Choose Instance Template and corresponding Region (USA and Asia)
2. Choose Autoscaling Policy – CPU Utilization and Other param in Screen.
3. Configure Health Check – Use Port 80.

Once you create Instance Group – Compute Engine will start Virtual machines specified minimum number of instances.



Things to remember

1.Instance Group used for configuration to mention how many instance should run.

2.HTTP Load Balancer use Instance groups to configure backend for Compute Service.

3

Configure HTTP Load Balancer

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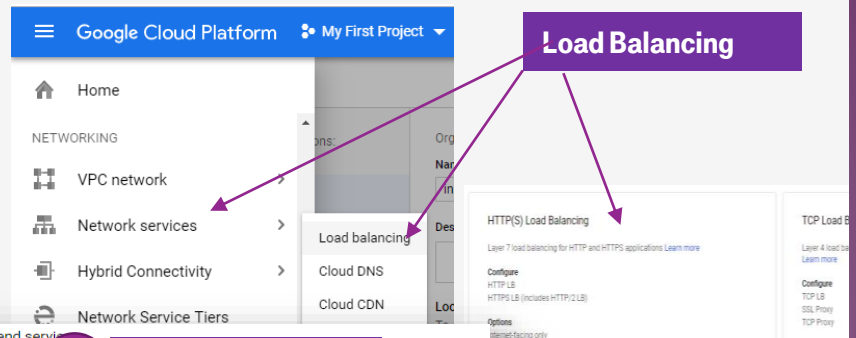
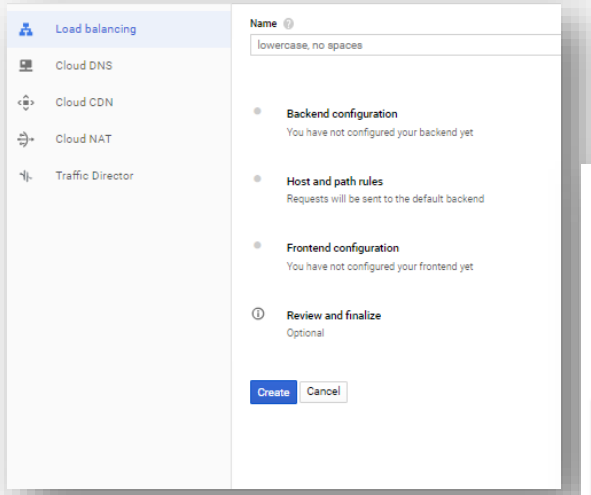
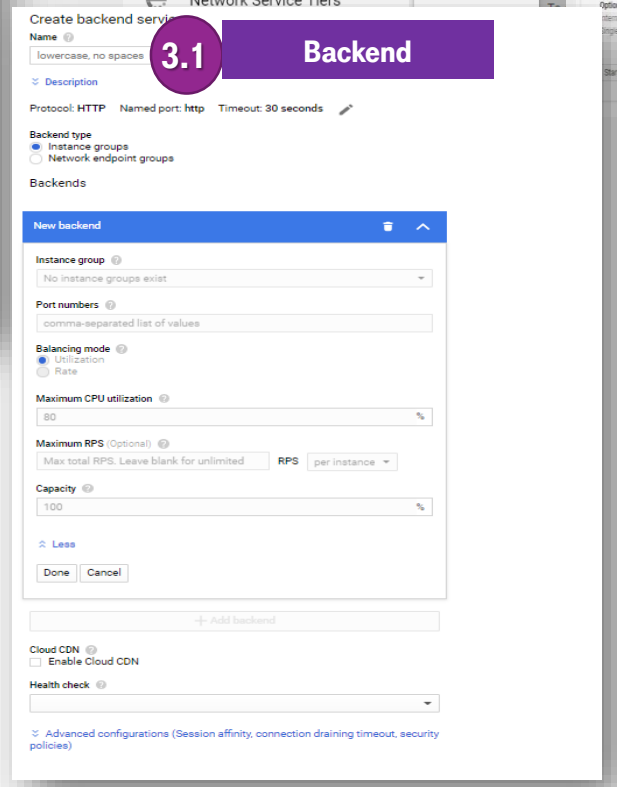
1 Go To -> NETWORKING -> Network Services -> Load balancing , Click on Create Load Balancer and Select HTTP Load Balancer.







2 **Load Balancer has 3 Main Configurations**

Backend, Host & Path Rules, Frontend configurations

1. Backend Configuration : backend let your configure backend compute service or Cloud Storage (for Images , Videos etc). Backend configure also let you configure balancing mode which will let HTTL Load Balancer how to choose backend instances.

Select

Backend Type : Instance Group

- Configure New Backend - Select Instance Group you created for **USA**
- Select **Balancing Mode** as Utilization.
- **Max CPU – 80%** Leave all other things as default

Add Another Backend for **Asia** instance group similarly.

You don't have to choose **Cloud CDN**

3

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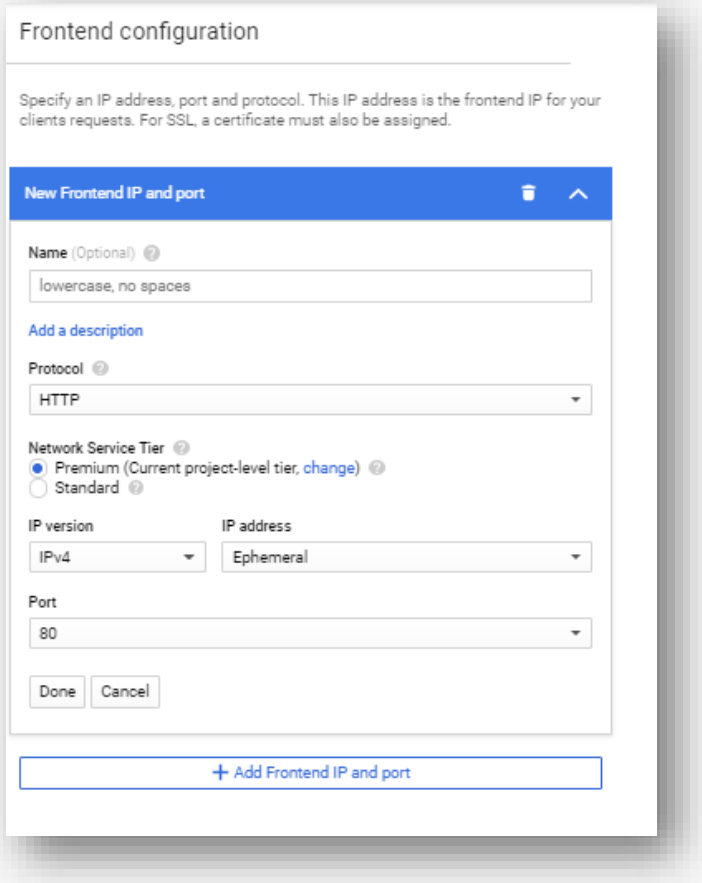
2. **Host and Path Rules** - > If you want to route traffic to backend based on type of request e.g. php , Images or videos etc

We don't have specific configurations now. Leave it blank.

3

3. **Frontend Configurations** : frontend let you configure Load balancer IP , Network Tier, Protocol etc

Leave HTTP protocol and leave all others as default.



3

Test HTTP Load Balancer

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You will clients in different Zone – Which you can do it using VM again – You can use AWS or GCP VM. We are using GCP VMs, Refer Demo for any doubts

1. Client Instances

Launch VM in Regions/Zones you created Instance Template/Groups (at least two)

2. SSH instance using console and Use following commands to access Service

Curl Command Slow

$ while true ; do (curl http://[Load Balancer ExternalIP]/service) ; sleep 2 ; done

Curl Command Fast

$ while true ; do (curl http://[Load Balancer ExternalIP]/service) ; sleep 0.1 ; done

HTTP Load Balancer : Try Yourself

1. Install Apache , and Host different type of content like PHP and Images or Videos

   Use Host Rule to configure different end point or backend. Host images on Cloud Storage and Enable CDN.

2. Create Instance Group without Auto Scaling and see behavior

3. HTTP Load Balancer – Backend Service configure Balancing Mode to RPS (Request per Second)

4. **Exam Tips**

   Try different techniques/Configurations on Balancing Modes , Auto Scaling – Very Important for Exam.

Test HTTP Load Balancer

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End of HTTP LB Assignment