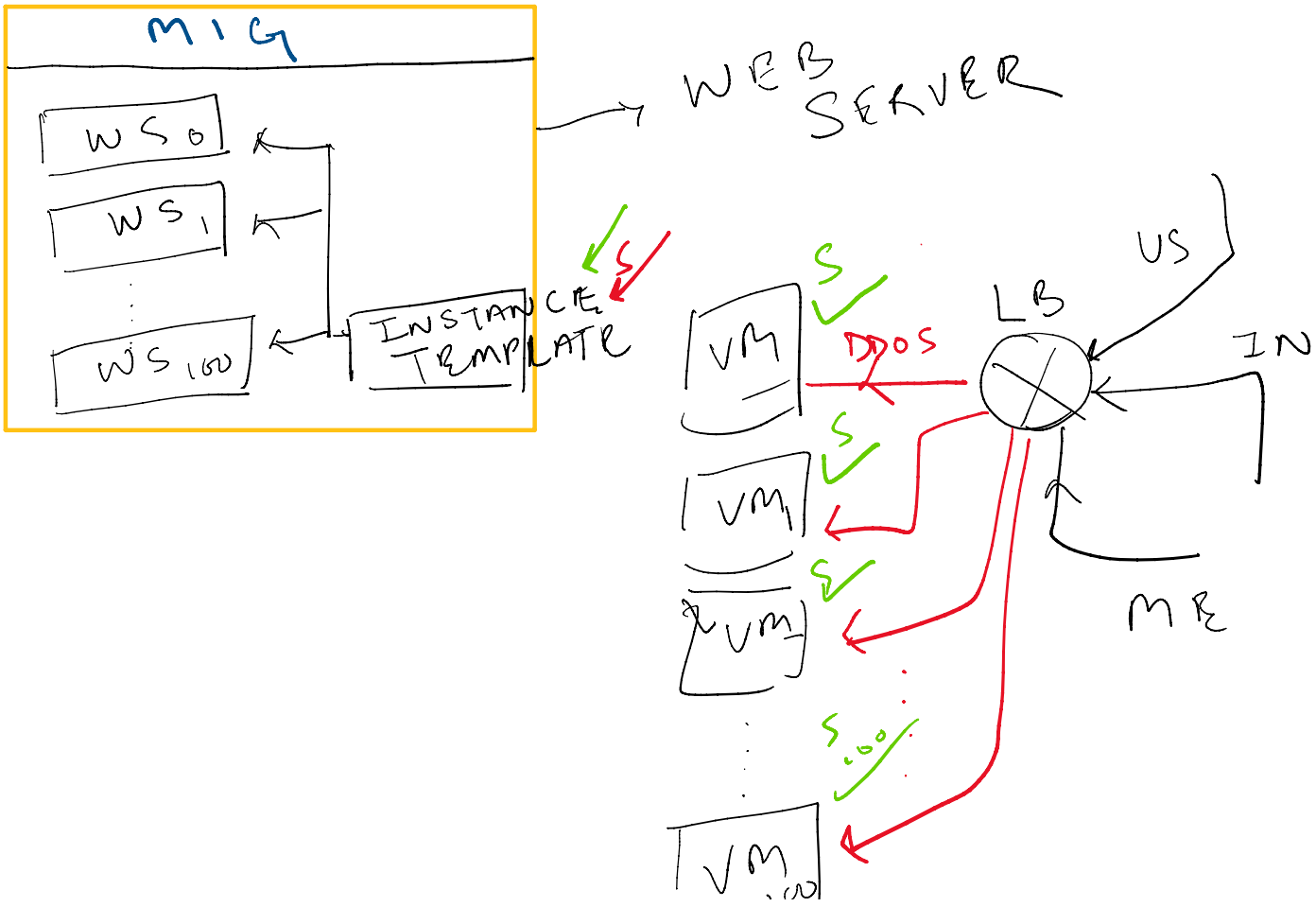
Day 5

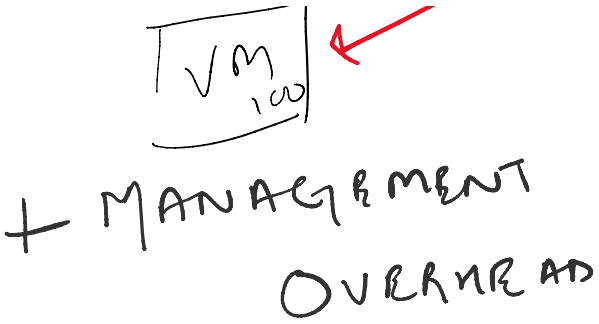
TOPICS COVERED

1. Managed Instance Groups
2. Demo : Managed Instance Group
3. HTTP(S) Load Balancing
4. Demo:
    a. Create a VM Template
    b. Create a Instance Group
    c. Create static IPv4
    d. Create LB:
        Create Backend
        Create Frontend
    e. Test LB.
5. SSL/TCP Proxy Load Balancing
6. Network Load Balancing
7. Internal HTTP/S Load Balancing
8. Choosing a Load Balancer

Managed Instance Group

- Is a collection of identical VM instances that you control as a single entity.
    - Instance Template.
    - You need to have an Instance template to create a MIG.
- MIGs will help you to **autoscale** your vms in the MIG as needed.



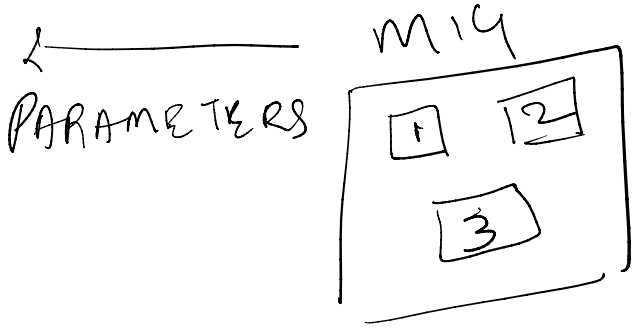


- If an instance in the MIG crashes/stops/deletes - MIG will automatically recreate the instance so it can resume its processing tasks.
  - The recreated instance will use same name and the same instance template.
- MIG can automatically identify and recreate unhealthy instances in a group.
- Scale in and scale out.

Use this script for LB Demo and MIG Demo

```
#! /bin/bash
apt-get update
apt-get install -y apache2 php
apt-get install -y wget
cd /var/www/html
rm index.html -f
rm index.php -f
wget https://storage.googleapis.com/cloud-training/gcpnet/httplb/index.php
    META_REGION_STRING=$(curl "http://metadata.google.internal/computeMetadata/v1/instance/zone" -H "Metadata-Flavor: Google")
    REGION=`echo "$META_REGION_STRING" | awk -F/ '{print $4}'`
    sed -i "s|region-here|$REGION|" index.php
```

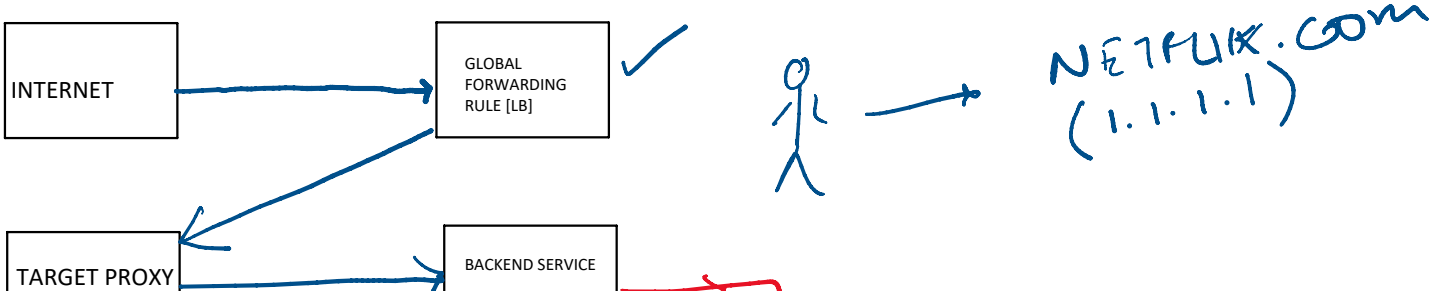
Autohealing

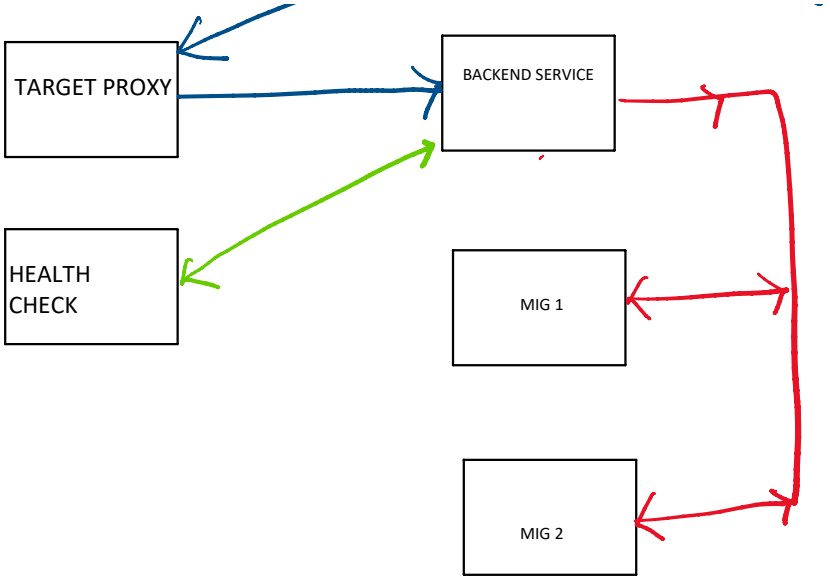


Parameters that will help you out to understand the health of VMs in your MIG.

LOAD BALANCERS

- LBs are used to distribute your load of incoming traffic to the back end servers.
- Basic Architecture of LB



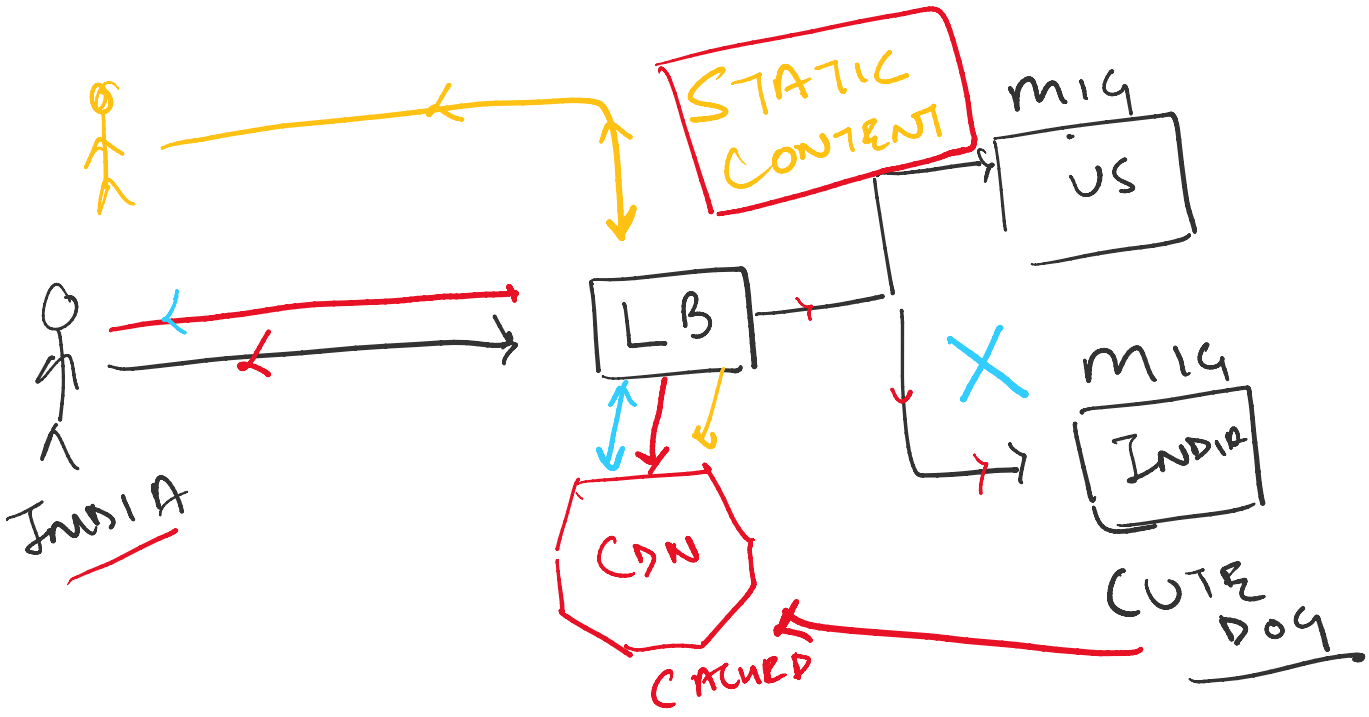


Session Affinity

- Round robin method to distribute their load.
- Session affinity attempts to send all requests from the same client to the same vm in the backned.

Cloud CDN

- Content Delivery Network
- Cache the content at the pop location of GCP. [point of presence]
- CDN works only in integration with the GCP LBs.



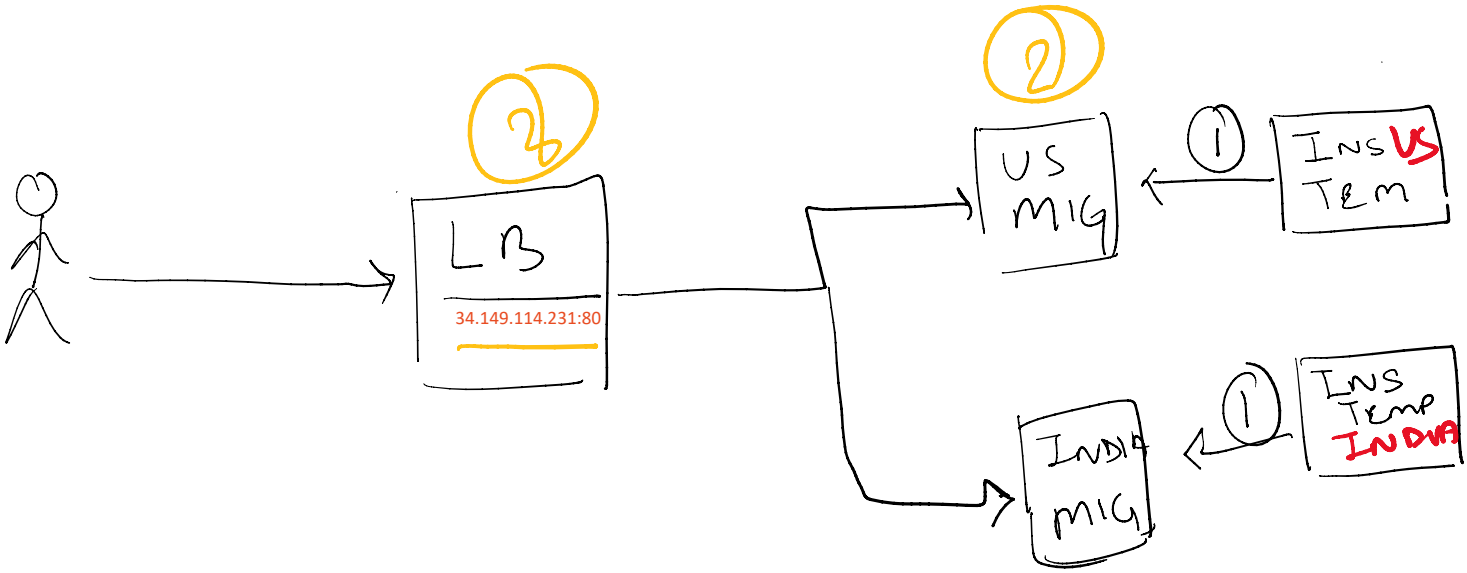
Types of LB

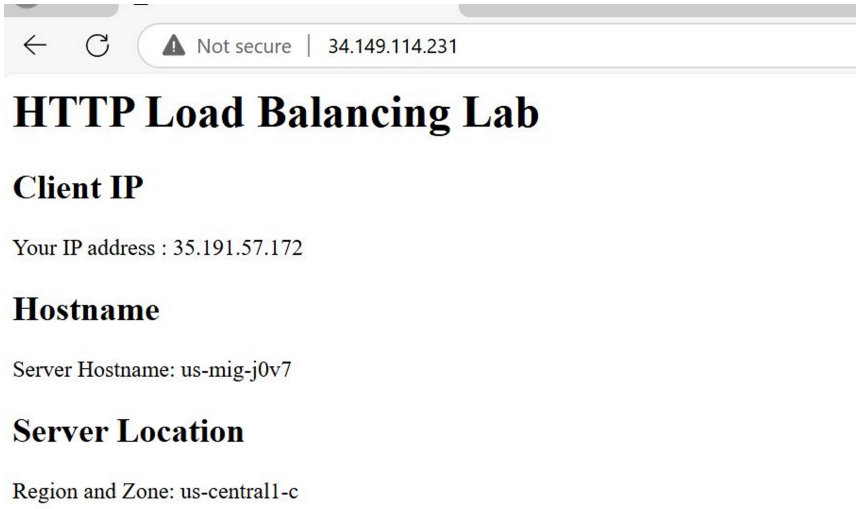
- Application Load Balancer (HTTP/HTTPS) - Layer 7 OSI model
-Network Load Balancer (TCP/UDP/SSL) - Layer 4 OSI Model

Demo LB

1. Create 2 instance templates - us - india

2. Then Create 2 MIG - us and India.
3. Configure L7 HTTP load balancer.
4. Stress test LB and MIG to trigger auto scaling. Install the siege utility
    1. sudo apt-get -y install siege
5. Cloud Armour - To protect from DDOS attacks.





Important Points for LB

- Load balancer made sure that the user gets landed on the server which is closer to the user.
    - If the mig in India gets deleted, the user getting server from the mig india will be no redirected to the US mig.
- LB uses Round Robin by default.
- Auto scaling in action.