Google Cloud Platform Network Services

Learning Objectives

- Overview of GCP Network Services
- Network Tiers
- Cloud Load Balancing
- VPC
- Hybrid Connectivity

Demo: Configuring Load Balancing

- Use Cases of Network Services

GCP Network Services

Overview of GCP Network Services

- Network services are one of the key building blocks of cloud
- GCP leverages Google's global network for connectivity
- Customers can choose between standard and premium tiers
- Load balancers route the traffic evenly to multiple endpoints
- Virtual Private Cloud (VPC) offers private and hybrid networking
- Customers can extend their data center to GCP through hybrid connectivity

GCP Network Service Tiers

GCP Network Service Tiers

- Network service tiers provide a choice of traffic optimization
- There are two service tiers:
  - Premium Tier
  - Standard Tier
- Premium Tier delivers traffic via Google's premium backbone
- Standard Tier uses regular connectivity based on ISP networks
- GCP uses premium tier as the default option

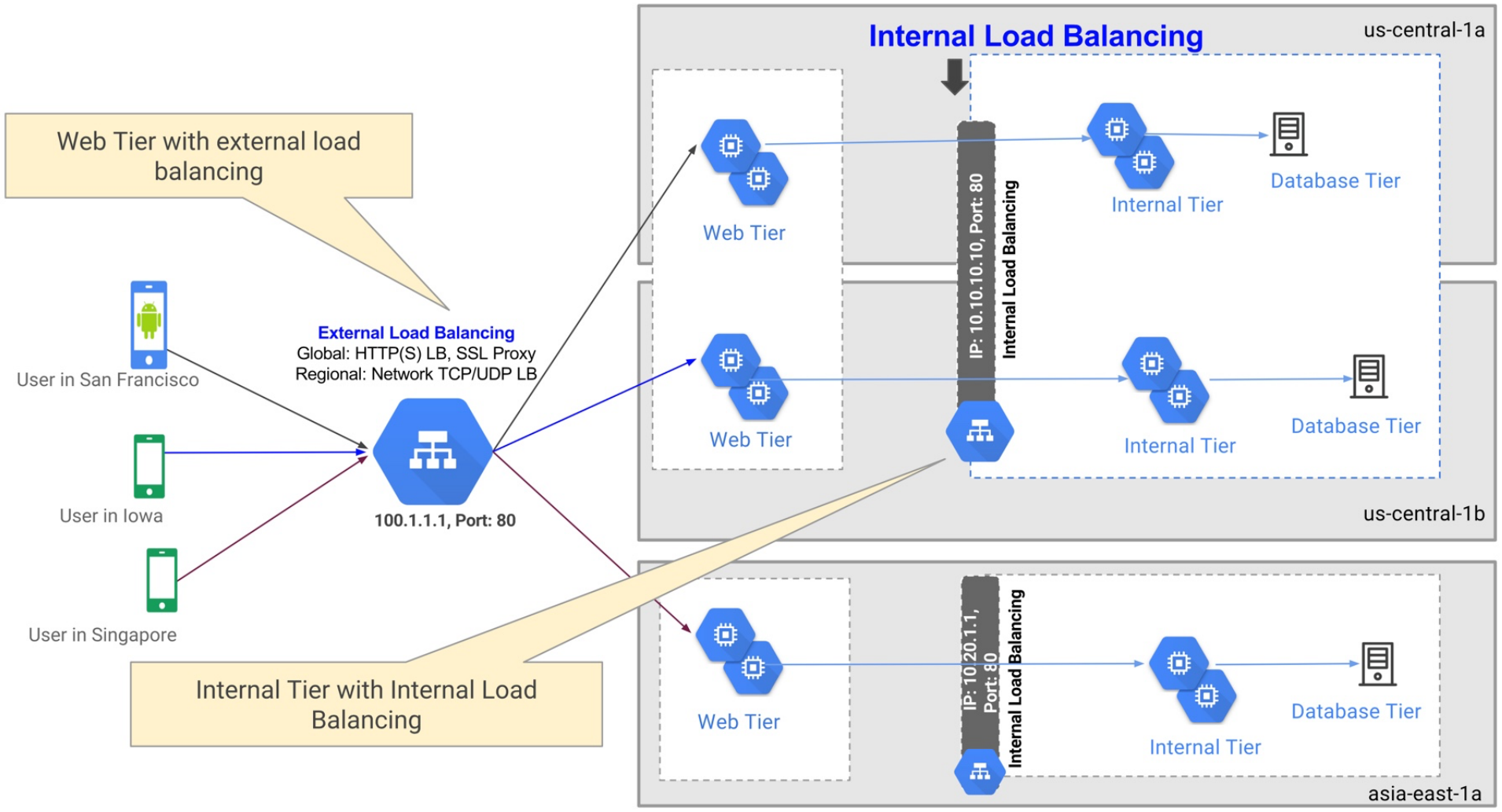
Resource link: https://cloud.google.com/network-tiers/docs/overview

Google Cloud Load Balancers

Google Cloud Load Balancing

- Load balancer distributes traffic across multiple GCE VMs in a single or multiple regions
- There are two types of GCP load balancers:
  - HTTP(S) load balancer
  - Network load balancer
- HTTP(S) load balancer provides global load balancing
- Network load balancer balances regional TCP and UDP traffic
- Both types can be configured as internal or external load balancers

Google Cloud Load Balancing



Virtual Private Cloud

Virtual Private Cloud

- VPC is a software defined network providing private networking for VMs
- VPC network is a global resource with regional subnets
- Each VPC is logically isolated from each other
- Firewall rules allow or restrict traffic within subnets
- Resources within a VPC communicate via IPV4 addresses
- VPC networks can be connected to other VPC networks through VPC peering
- VPC networks are securely connected in hybrid environments using Cloud VPN or Cloud Interconnect

GCP Hybrid Connectivity

Hybrid Connectivity

- Hybrid connectivity extends local data center to GCP
- Three GCP services enable hybrid connectivity:
  - Cloud Interconnect
  - Cloud VPN
  - Peering
- Cloud Interconnect extends on-premises network to GCP via Dedicated or Partner Interconnect
- Cloud VPN connects on-premises environment to GCP securely over the internet through IPSec VPN
- Peering enables direct access to Google Cloud resources with reduced Internet egress fee

Resource link: https://cloud.google.com/hybrid-connectivity/

Google Cloud Platform Fundamentals

Lab Guide for Google Cloud Load Balancing

```
# Add the below script while creating the instance template

#! /bin/bash
apt-get update
apt-get install -y apache2
cat <<EOF > /var/www/html/index.html
<html><body><h1>Hello from $(hostname)</h1>
</body></html>
EOF
```

GCP Network Services – Use Cases

Use Cases of GCP Network Services

Product	Key Feature	Use Case
HTTP(S) Load Balancing	Global load balancing of HTTP(S) endpoints	CMS deployed in multiple regions
TCP Load Balancing	Regional load balancing of TCP/UDP endpoints	Distribute traffic evenly across gaming backend service
VPC	Private networking within GCP	Deploy GCE VMs that are not exposed to the public internet
Cloud Interconnect	Dedicated network to extend local data center	Access cloud resources from local applications with low latency
Cloud VPN	Secure access to GCP resources through public internet	Cheaper option to extend local data center to cloud
Peering	Directly access cloud resources with reduced egress fee	Secure access to GCP and G Suite resources via direct or carrier peering

Google Cloud Platform Fundamentals

Resources for Google Cloud Networking

Key Links

- Network Service Tiers
- Cloud Load Balancing
- VPC
- Hybrid Connectivity

References

- Comparing Network Service Tiers
- Google Cloud networking in depth: Understanding Network Service Tiers
- Hybrid Patterns