GCP

Google Cloud

Associate Cloud Engineer

Google Certified Associate Cloud Engineer

@ ANKIT MISTRY – GOOGLE CLOUD

Associate Cloud Engineer

- Pay attention for 5 minutes, before we dive in.
- Challenging certification, and course is long so have patience.
- Good to have basic IT skill, but I will start from scratch in GCP
- Learn by Doing
- So with every exam objective, There is hand-on Lab – 90+

GCP certifications

https://cloud.google.com/certification/guides/cloud-engineer

Cloud Cost for this course

- $0 – for GCP account
- GCP Free trial
- $300 for next 3 months https://cloud.google.com/free
- Length: Two hours
- Registration fee: $125 (plus tax where applicable)
- Languages: English, Japanese, Spanish.
- Exam format: Multiple choice and multiple select,

Udemy Tips

ACE Exam Guide

@ ANKIT MISTRY – GOOGLE CLOUD

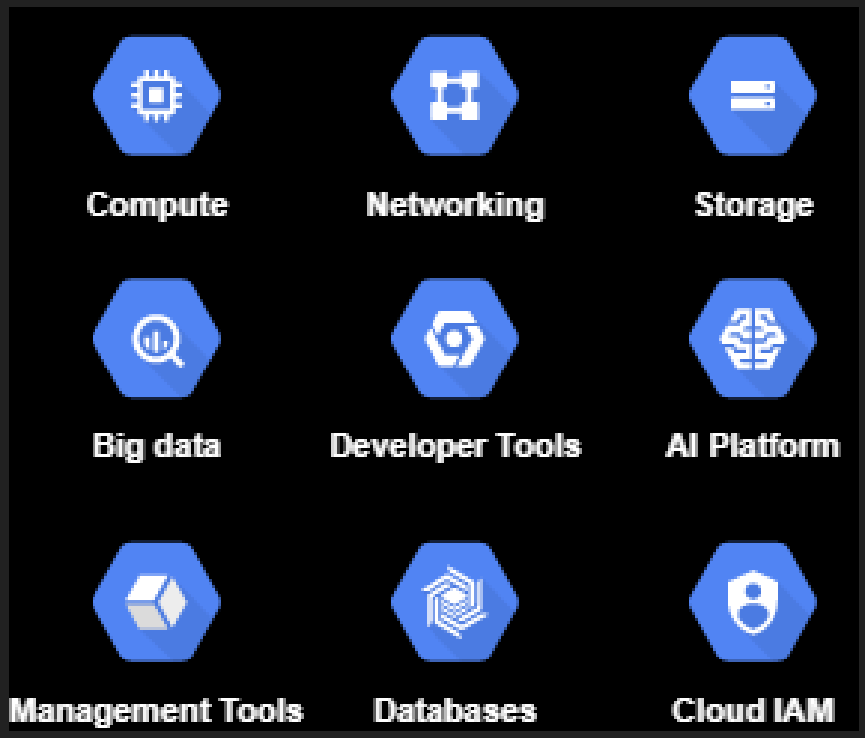
Create Free Tier GCP Account

@ ANKIT MISTRY – GOOGLE CLOUD

What is GCP & Why

WHAT IS GCP

- Suite of Cloud computing services offered by Google
- https://cloud.google.com



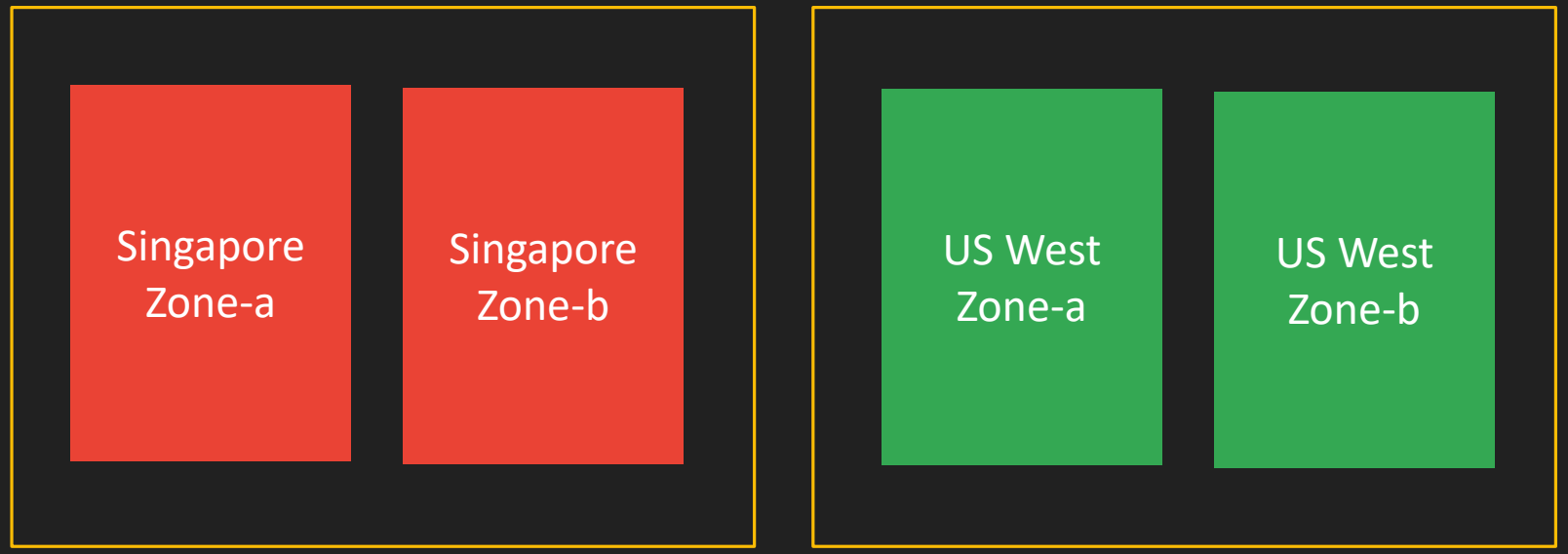
WHY GCP

- Trust & Security
  - Trust nothing by default
- Open Cloud Platform (Open API)
  - https://cloud.google.com/open-cloud
- Global Network Infrastructure
  - https://cloud.google.com/about/locations#network
- AI Driven Cloud
  - https://cloud.google.com/products/ai

GCP Regions & Zones

Why Zones & Regions

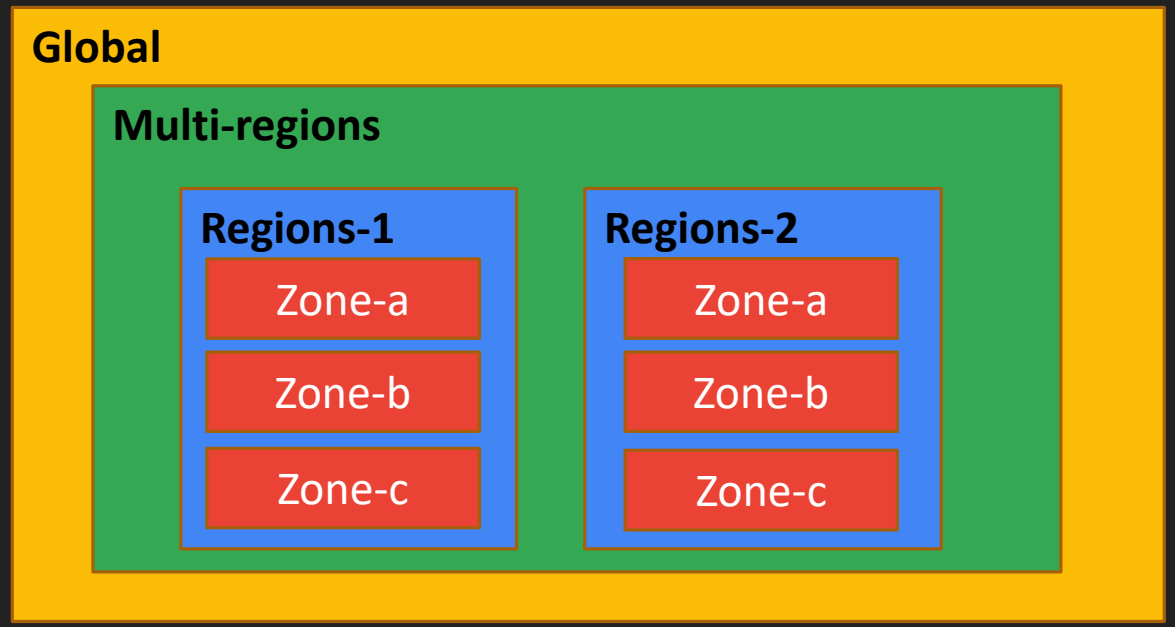
- Low latency
- Follow Government rules
- High availability
- Disaster recovery



GCP (Zones & Region)

Fascinating Number: Google Is Now 40% Of The Internet (forbes.com)

- Zones – Independent data Center
- Region – Geographical area
- Multi-region : Collection of Geographical
- Global - Anywhere



Global Locations - Regions & Zones | Google Cloud

1.1

BY ANKIT MISTRY

Creating Projects

BY ANKIT MISTRY

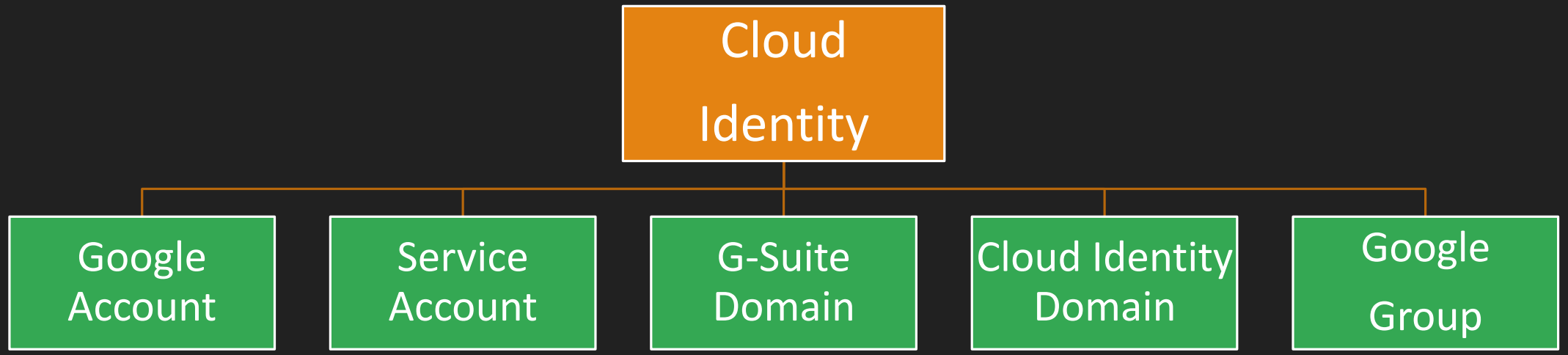
Assigning users to predefined IAM roles within a project

BY ANKIT MISTRY

Managing users in cloud identity

BY ANKIT MISTRY

Cloud Identity



Enabling APIs within projects

BY ANKIT MISTRY

Provisioning one or more Stackdriver workspaces

BY ANKIT MISTRY

1.2

BY ANKIT MISTRY

Creating one or more billing accounts

BY ANKIT MISTRY

Linking projects to a billing account

BY ANKIT MISTRY

Establishing billing budgets and alerts

BY ANKIT MISTRY

Setting up billing exports to estimate daily/monthly charges

BY ANKIT MISTRY

1.3

BY ANKIT MISTRY

Installing and configuring the command line interface (CLI), specifically the Cloud SDK, Cloud Shell

BY ANKIT MISTRY

2.1

BY ANKIT MISTRY

Planning and estimating GCP product use using the Pricing Calculator

BY ANKIT MISTRY

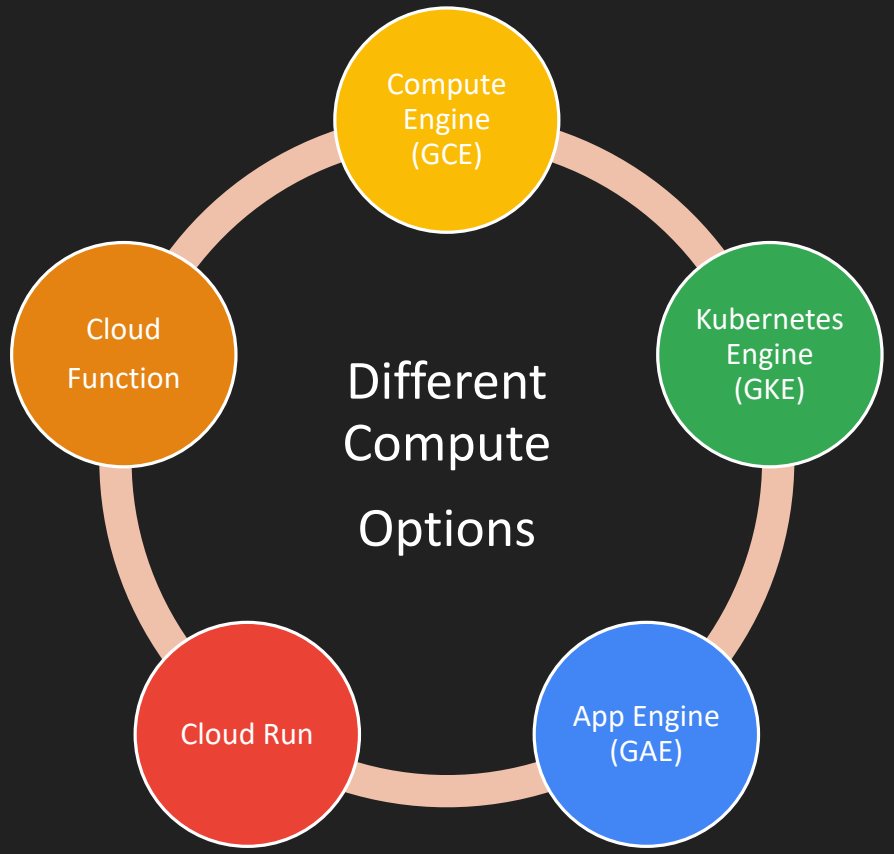
2.2

BY ANKIT MISTRY

Planning and configuring compute resources.

- Different compute Options
  - Compute Engine, Google Kubernetes Engine, App Engine, Cloud Run, Cloud Functions
- Selecting appropriate compute choices for a given workload
- Preemptible VMs
- Custom machine types

Different Compute options



- OS dependency
- Pass Solution – Fully Managed
- Simple micro service
- Event based trigger
- Containerized App

Google Compute Engine

- IAAS Solution
- Linux and windows based virtual machine
- Custom machine,
  - RAM
  - CPU
  - Hard Drive
- Sustained & Committed Discount

Google Kubernetes Engine

- Containerized applications
- Fully managed container orchestration
- Kubernetes = control plane + worker node
- Auto scaling, automatic upgrades

Google App Engine

- PAAS solution
- Fully managed service
- Deploy web app at high scale
- Standard & Flexible Environment
- Flexible Environment use Docker.

Google Cloud Run

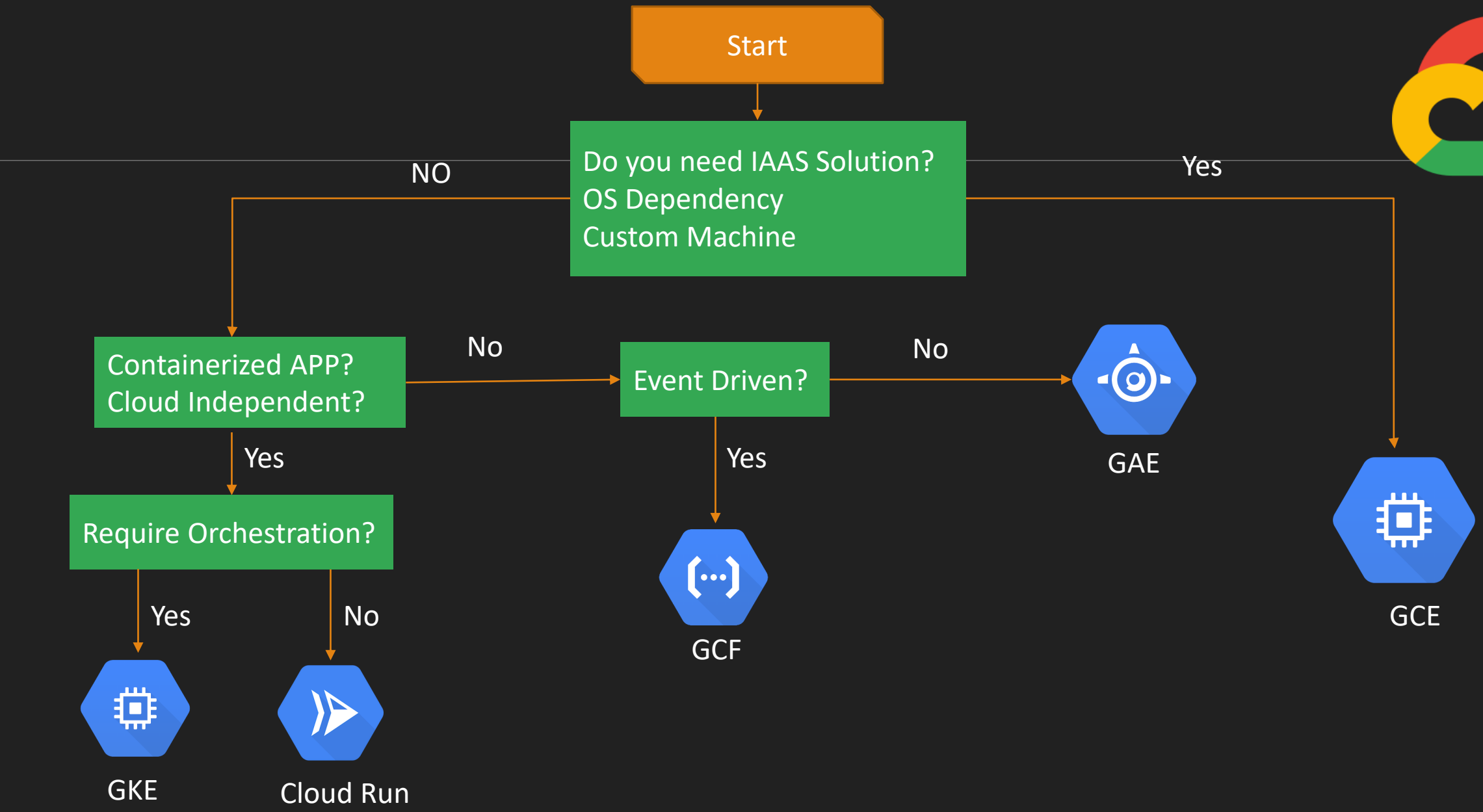
- PAAS solution
- Containerized applications
- Best of (GAE + Container)

Google Cloud Functions

- Server less
- Fully managed
- Build small micro service
- Event based trigger
  - Http
  - File upload etc.

Selecting appropriate Compute options

BY ANKIT MISTRY



@ ANKIT MISTRY – GOOGLE CLOUD

Preemptible VMs

- Just like Other virtual machine
- Workload is fault tolerant
- Not require 100% high availability
- 80% discount
- max life is 24 hours
- Google give you 30 sec warning before auto shutdown

Custom Machine Types

BY ANKIT MISTRY

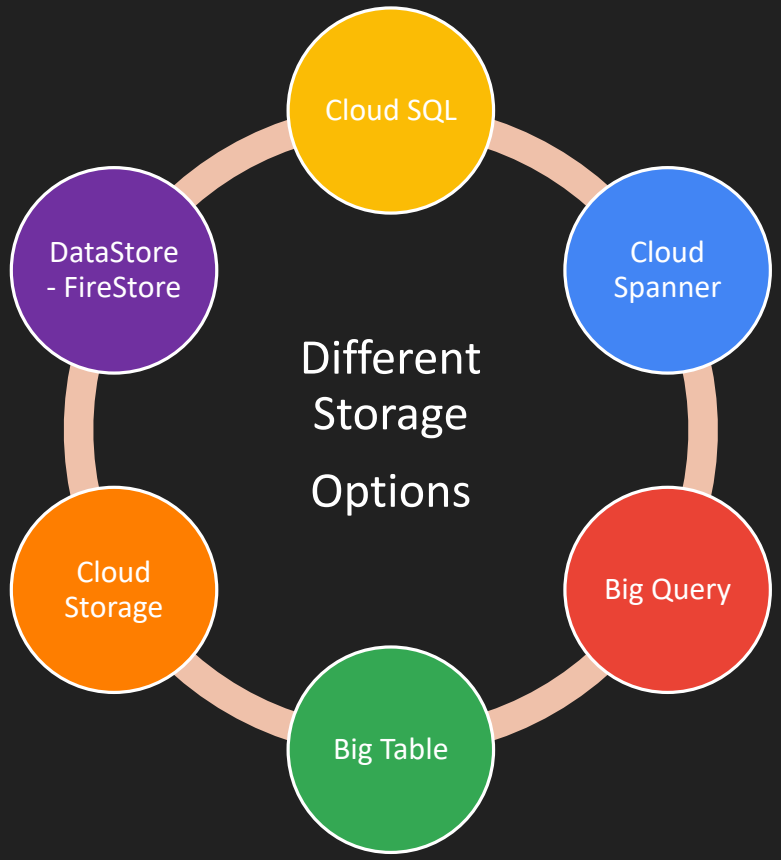
2.3

BY ANKIT MISTRY

Planning and configuring data storage options

- Different Storage options
  - Cloud Storage, Cloud SQL, BigQuery, Cloud Spanner, Cloud Bigtable
- Choosing storage options
  - Standard, Nearline, Coldline, Archive
- Select proper storage options

Data Storage options



Google Cloud SQL

- Fully managed RDBMS service
  - MySQL
  - PostgreSQL
  - Microsoft SQL Server
- PAAS solution, managed alternative of VM with Database
- Security : can be provisioned inside VPC

Google Cloud Spanner

- Relational database service
- Horizontal Scaling
- Best of relational and NoSQL databases
- Data is replicated synchronously strong consistency

Google Cloud BigTable

- Petabyte-scale, managed NoSQL
- Large-scale, low-latency
- billions of rows & thousands of columns
- Equivalent to Apache HBase column-oriented database

Google Cloud BigQuery

- It’s Data warehousing Solution
- Serverless
- Highly scalable
- Critical Query processing on petabyte scale data
- It has built in BI engine and ML capability

Cloud Storage

- Object storage Solution
  - Any kind of file (CSV, Image, Video, etc…)
- Scale to Exabyte's of data
- 99.999999999% durability (https://uptime.is/)
- Store High frequency access data as well as low freq.

Cloud Storage Location

Region	Dual-region	Multi-region
• Lowest latency within a single region • Replicated data across multiple zone in single region	• High availability and low latency across 2 regions (Paired region)	• Highest availability across continent area

Cloud Storage Classes

Standard	Nearline	Coldline	Archive
• High frequency access • Storage Costliest • Access cost is very low • Low latency	• Low Frequency access • Once in a 30 days • Cheaper than standard • Back up	• Very low frequency to access • Once in 90 days • Cheaper than Nearline	• Offline data • backup • Storage Cheapest • Access cost very high

Select storage options

2.4

BY ANKIT MISTRY

Planning and configuring network resources

- Differentiating load balancing options
- Identifying resource locations in a network for availability
- Configuring Cloud DNS

3.1

BY ANKIT MISTRY

Deploying and implementing Compute Engine resources.

- Launching a compute instance using Cloud Console and Cloud SDK (gcloud) (e.g., assign disks, availability policy, SSH keys)
- Creating an auto scaled managed instance group using an instance template
- Generating/uploading a custom SSH key for instances
- Assessing compute quotas and requesting increases
- Configuring a VM for Stackdriver monitoring and logging
- Installing the Stackdriver Agent for monitoring and logging

Launch your first Compute instance using cloud console

BY ANKIT MISTRY

Launch your first Compute instance using cloud Shell/SDK

BY ANKIT MISTRY

Attach Disk to existing VM

BY ANKIT MISTRY

Availability policy

BY ANKIT MISTRY

Assessing compute quotas and requesting increases

BY ANKIT MISTRY

Generating/uploading a custom SSH key for instances

BY ANKIT MISTRY

Instance Group & Load balancer

- Introduction to Instance Group
- Instance Template & Provision VM from template
- Provision Managed Instance Group
- Explore managed instance group
- Create HTTP Load balancer

Instance Group

- Collection of VM instances
- Manage all instance group as single entity
- GCP offers 2 kinds of instance group.
  - Managed instance group - MIG
  - Unmanaged instance group

Managed Instance Group

- All instance identical in nature
- Autoscaling, auto-healing, regional deployment, and auto updating
- Workload highly available and scalable
- VM instance can be created from instance template
- Can not change configuration of one VM
- Good for stateless workload like,
  - Frontend of website
  - Some image related operations

Unmanaged Instance Group

- You need to manage instance yourself.
- Multiple heterogeneous VM instances.
- You can add, remove instance from group
- No Auto scaling, No auto-healing, regional deployment, and auto updating

Instance template

- An instance template is a resource that you can use to create virtual machine (VM) instances and managed instance groups (MIGs).
- Create VM from existing configuration.
- Compare like oops
  - Instance template – class
  - VM – Object
- No option to update
- Let’s create instance template

Creating VM from instance template

BY ANKIT MISTRY

Creating an Managed instance group

BY ANKIT MISTRY

Explore managed instance group

BY ANKIT MISTRY

Create HTTP Load balancer

BY ANKIT MISTRY

Rolling Update - MIG

BY ANKIT MISTRY

3.2

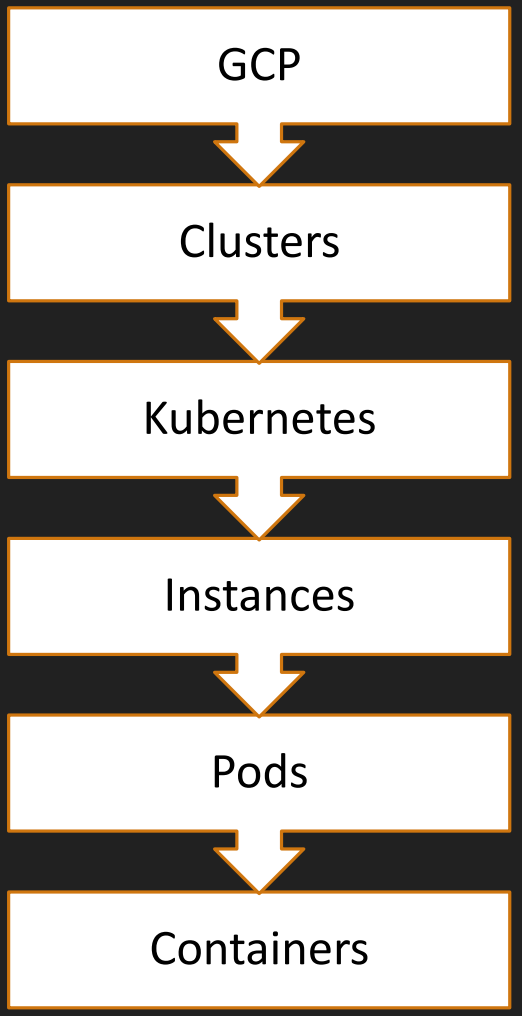
BY ANKIT MISTRY

Deploying and implementing Google Kubernetes Engine resources

- Deploying a Google Kubernetes Engine cluster
- Deploying a container application to Google Kubernetes Engine using pods
- Configuring Google Kubernetes Engine application monitoring and logging

Kubernetes

- Container orchestration engine
- Open source
- Features
  - Self healing
  - Load balancer
  - zero downtime
  - Auto Scaling
- Google created GKE – managed kubernetes services



Kubernetes Cluster deployment

1. Create kubernetes cluster from Google cloud console
2. Deploy Workload
3. Create Docker images
4. Push it to container registry
5. Deploy docker image to cluster
6. Expose as services

Configuring Google Kubernetes Engine application monitoring and logging

BY ANKIT MISTRY

Explore Kubernetes

BY ANKIT MISTRY

Container Image repository

BY ANKIT MISTRY

Working with Nodepools

BY ANKIT MISTRY

Working with Pods & Services

BY ANKIT MISTRY

3.3

BY ANKIT MISTRY

Deploying and implementing App Engine, Cloud Run, and Cloud Functions resources

- Deploying an application, updating scaling configuration, versions, and traffic splitting
- Deploying an application that receives Google Cloud events (e.g., Cloud Pub/Sub events, Cloud Storage object change notification events)

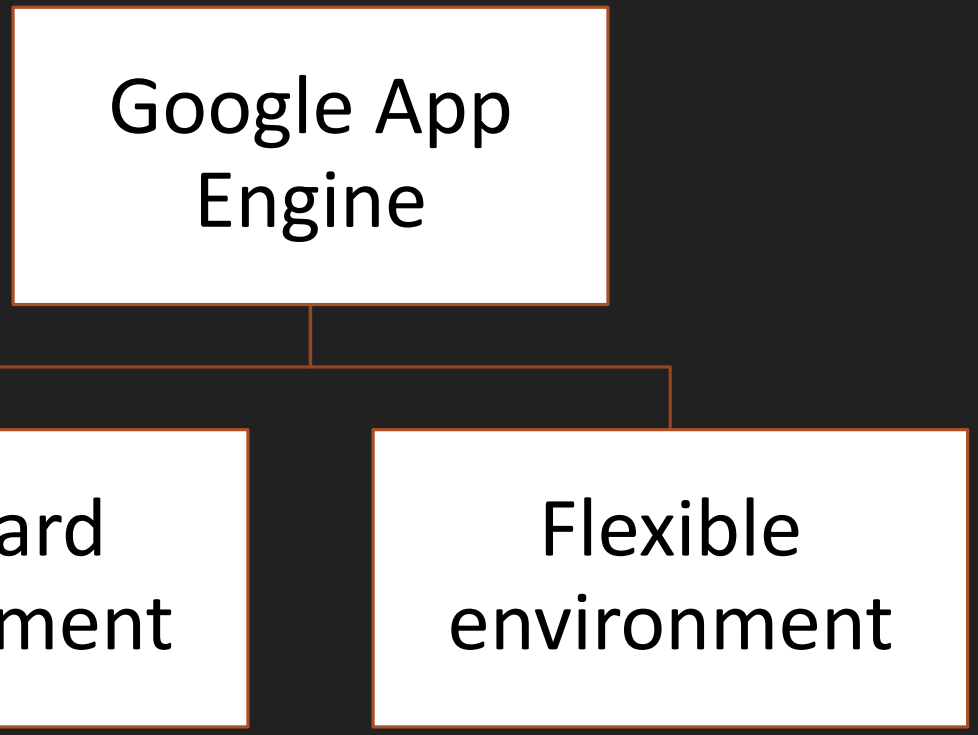
Google App Engine

BY ANKIT MISTRY

Google App Engine

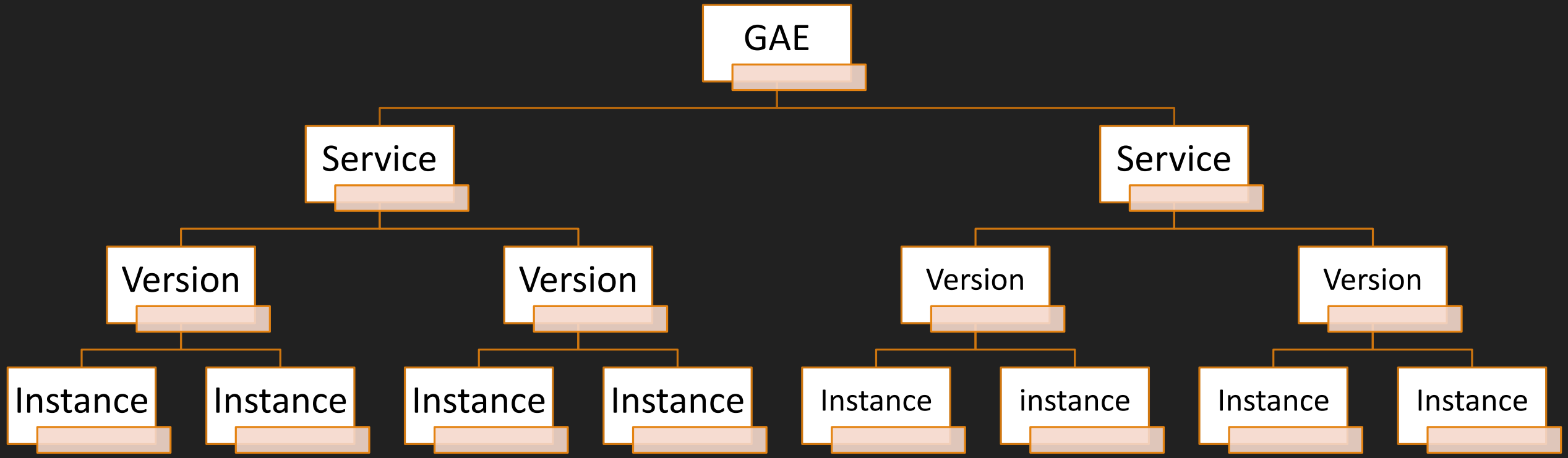
- PAAS solution
- Fully managed, no server management
- Http based web app
- Auto scaling

Google App Engine



https://cloud.google.com/appengine/docs/the-appengine-environments

Google App Engine



Google App Engine Demo

- Deploying application to App Engine
  - Standard – Scale down to 0 instances
  - Flexible – minimum 1 instance
- Auto scaling demo
- App versioning – canary deployment (Traffic splitting)
- Deploy another services

Google Cloud Run

- Serverless – fully managed
- Containerized App
- Best of App Engine Standard + Container
- App versioning – canary deployment (Traffic splitting)

Google Cloud Function

- Single purpose micro services
- Event based trigger
  - Http
  - Pub sub
  - object upload in Cloud storage
- Deploy code as function

Google Function

Pub Sub

Cloud Storage

Google Cloud Function (Hands-on)

Http
Cloud Storage
Pubsub

BY ANKIT MISTRY

3.4

BY ANKIT MISTRY

Deploying and implementing data solutions.

- Initializing data systems with products (e.g., Cloud SQL, Cloud Datastore, BigQuery, Cloud Spanner, Cloud Pub/Sub, Cloud Bigtable, Cloud Dataproc, Cloud Dataflow, Cloud Storage)
- Loading data (e.g., command line upload, API transfer, import/export, load data from Cloud Storage, streaming data to Cloud Pub/Sub)

Google Cloud Storage

- Object storage solution in GCP
- object resides inside bucket
- Location – Storage class (Standard, nearline, coldline, Archive)
- Object lifecycle
- Access control
  - Fine grained - object level permission
  - Uniform
- For temporary access – use signed URL

Google Cloud Storage (Hands-on)

Create Bucket & upload object

BY ANKIT MISTRY

Google Cloud Storage (Hands-on)

Object Lifecycle

BY ANKIT MISTRY

Google Cloud Storage (Hands-on)

Access control

BY ANKIT MISTRY

Google Cloud Storage (Hands-on)

Signed URL

BY ANKIT MISTRY

Cloud SQL

- Fully managed relational database service
- MySQL, PostgreSQL, SQL Server Support
- Vertical scalable
- 99.95% SLA
- Support for both SSD & HDD
- Encryption, High availability, Failover, Read replicas, backup, Export etc…

Cloud SQL (Hands-on)

BY ANKIT MISTRY

Cloud Spanner

- Fully managed mission critical relational database service
- Expensive
- Horizontal scalable for both read & write
- Regional & Multi regional
- 99.999% SLA
- Scale to petabyte of data

Cloud Spanner (Hands-on)

BY ANKIT MISTRY

Cloud Memorystore

- Fully managed in-memory database
- 99.9% SLA
- Only internal IP
- Redis and Memcached –supported
- Redis support persistence also

Cloud Memorystore (Hands-on)

BY ANKIT MISTRY

Cloud Datastore

- Highly scalable NoSQL database
- Document database like Mongo DB – flexible schema
- Automatic scaling
- Upto few TBs of data
- Tightly coupled with App Engine

Cloud firestore

- Next generation Datastore
- You can use in either datastore or firestore mode
- Multi device access – ios, web, Android

Comparison with relational DB

Concept	Relational database	Datastore	Firestore
Category of object	Table	Kind	Collection group
One object	Row	Entity	Document
Individual data for an object	Column	Property	Field
Unique ID for an object	Primary key	Key	Document ID

Cloud Firestore (Hands-on)

BY ANKIT MISTRY

Cloud Datastore (Hands-on)

BY ANKIT MISTRY

Cloud BigTable

- Wide column NoSQL database
- Petabyte scale
- Not Serverless
- Scale Horizontally
- Millions of transaction per seconds – Milliseconds latency
- HBase compatible
- No Multi row transactions

Cloud BigTable

Row ID	Column Family 1			Column Family 2		
	col1	col2	col3	col1	col2	col3
1						
2						
3						

Column Family 2:col1

Cloud Big table (Hands-on)

BY ANKIT MISTRY

Cloud BigQuery

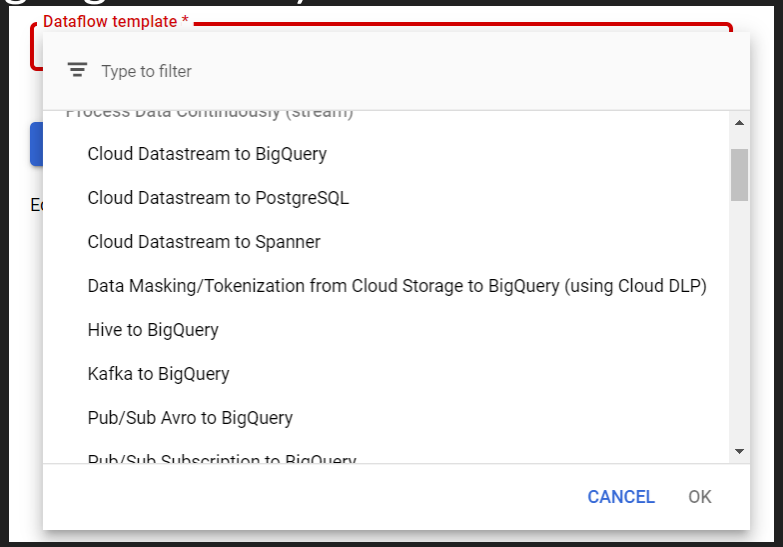
- Data warehourse solution in GCP
- Like Relational database – SQL schema
- Exabyte scale
- Query using
  - Standard SQL
  - legacy SQL
- Big Query can query from external data source.
  - Cloud storage, SQL, Big Table
- Biquery can load data from various sources.
  - CSV, JSON, Avro, SQL and many more
- Query is very expensive
- $5 approx. for 1 TB of data scanned
- Before query execution do dry run.

Cloud Big Query (Hands-on)

BY ANKIT MISTRY

Cloud Dataflow

- Fully managed data processing service
- Apache beam inside GCP (Unified programming language for ETL)
- Batch + Stream processing
- Number of template are available
- If not use custom template
  - Use Python, Java, SQL

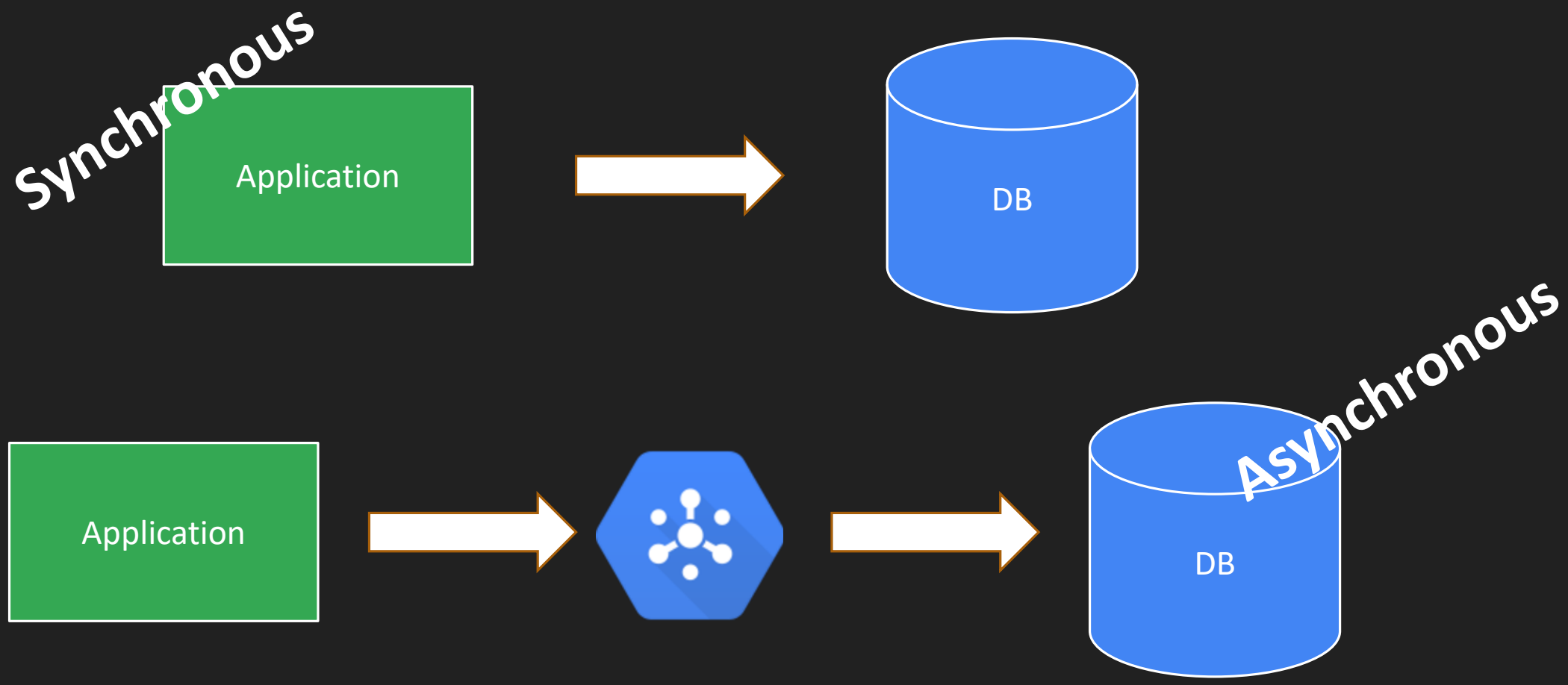


Cloud Dataflow (Hands-on)

Cloud DataProc

- Managed Hadoop & Spark inside GCP
- You can submit Spark, Hadoop job.
- DataProc – Demo
  - Create DataProc cluster
  - Submit Spark job to calculate Value of PI

Cloud PubSub



Cloud PubSub

- Fully-managed asynchronous messaging service
- Scale to billions of message per day
- Push & Pull way to access messages

- One to Many,
- Many to One,
- Many to Many

Cloud Pubsub (Hands-on)

BY ANKIT MISTRY

3.5

BY ANKIT MISTRY

Deploying and implementing networking resources.

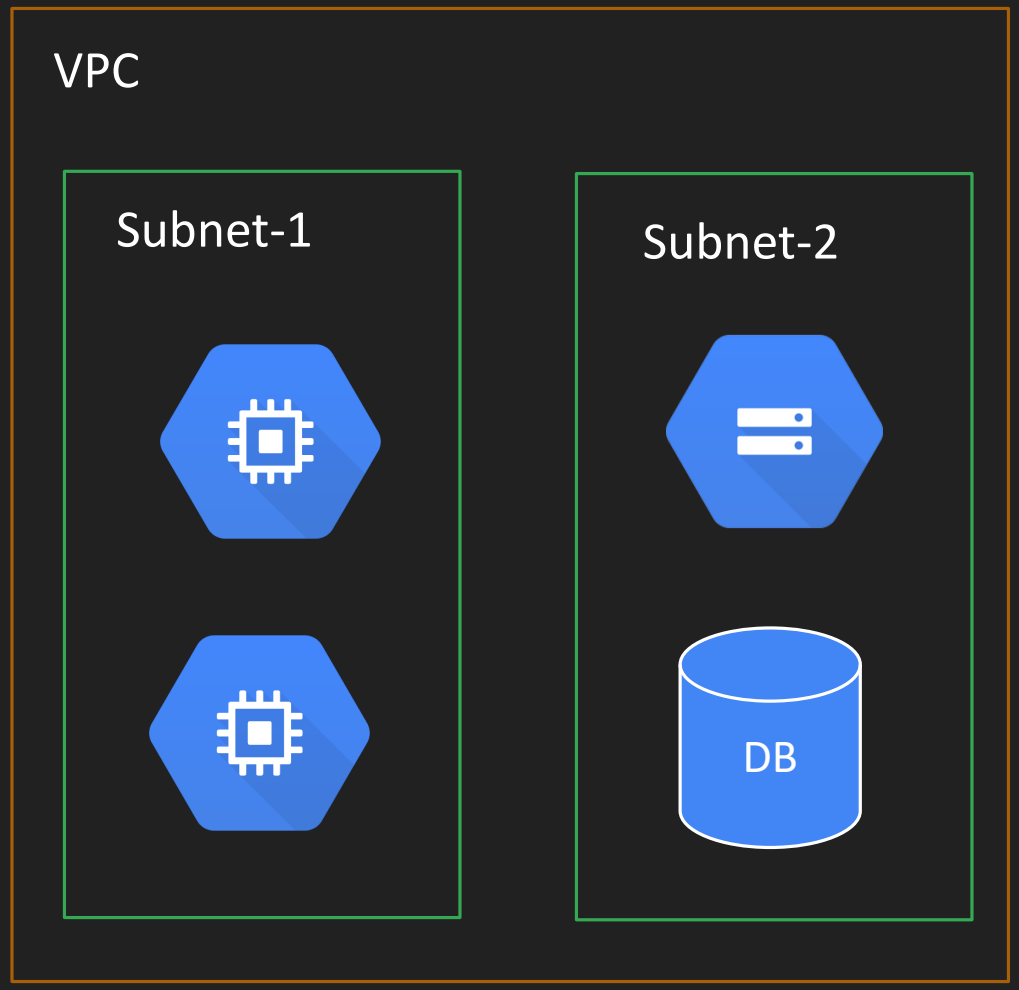
- Creating a VPC with subnets (e.g., custom-mode VPC, shared VPC)
- Launching a Compute Engine instance with custom network configuration (e.g., internal-only IP address, Google private access, static external and private IP address, network tags)
- Creating ingress and egress firewall rules for a VPC (e.g., IP subnets, tags, service accounts)
- Creating a VPN between a Google VPC and an external network using Cloud VPN
- Creating a load balancer to distribute application network traffic to an application (e.g., Global HTTP(S) load balancer, Global SSL Proxy load balancer, Global TCP Proxy load balancer, regional network load balancer, regional internal load balancer)

Networking Resource

- VPC & Subnets
- CIDR
- VPC Firewall rules
- IP address – Static & ephemeral
- Default Network & Custom VPC
- Shared VPC & Network Peering
- VM IP address
- Cloud Load balancing

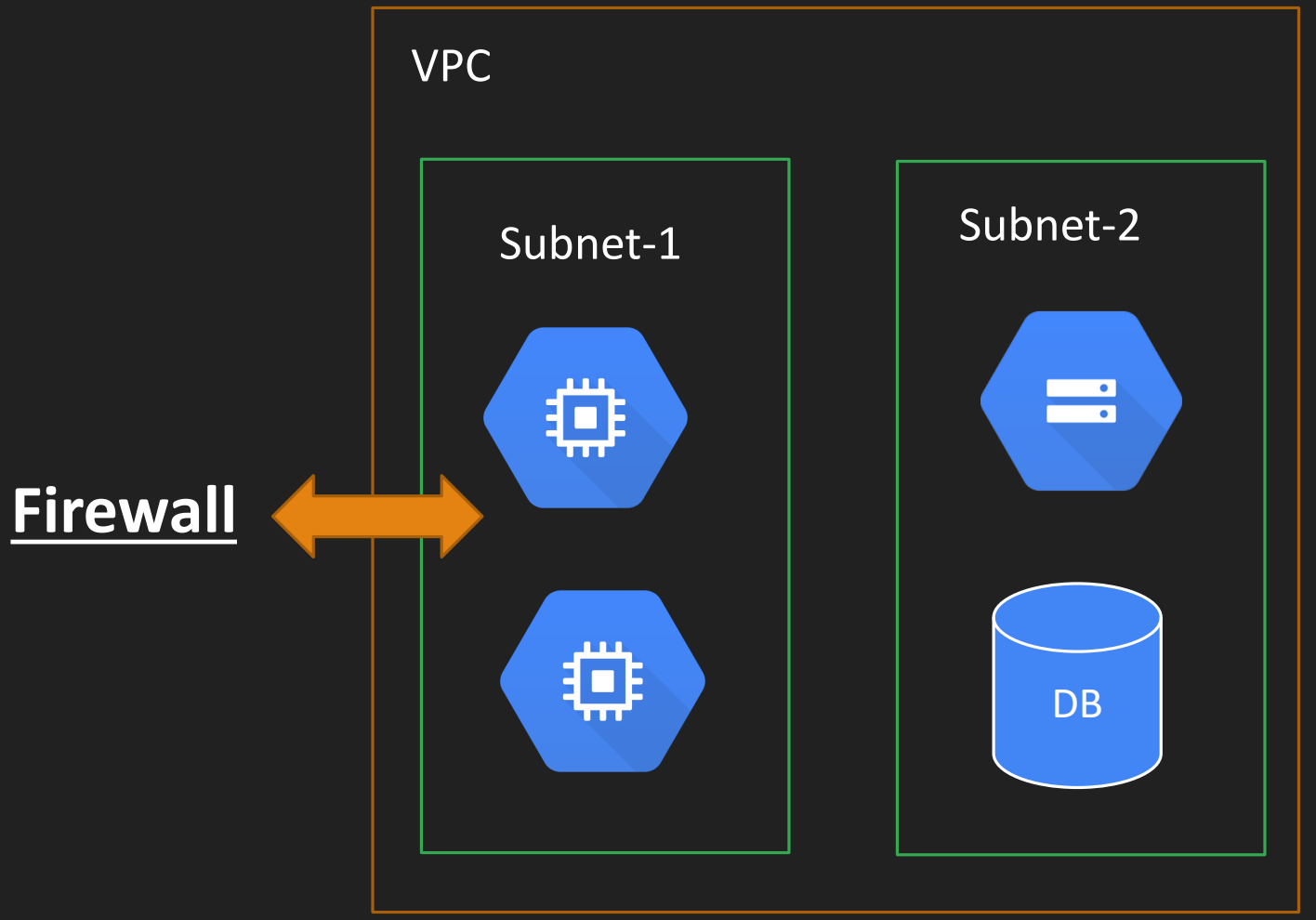
VPC & Subnets

- No Network -> No Cloud
- Virtual version of a physical network
- To isolate resources
- VPC are global
- Placeholder to keep all your resources
- No IP are associated with VPC
- VPC must have atleast one subnet



VPC & Subnets

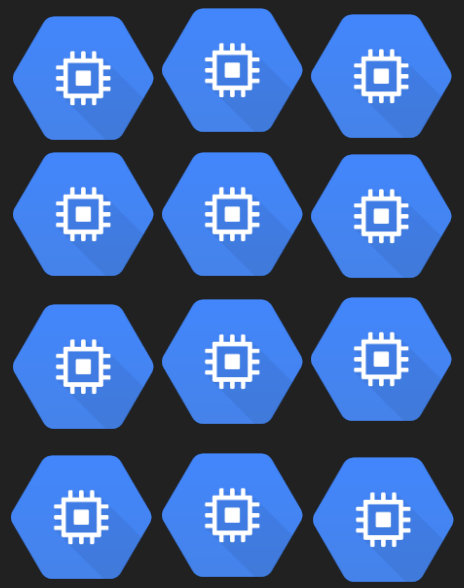
- Subnet has IP ranges
- Expressed as CIDR notation
- With every project default VPC
  - Contains subnet in each region
- Types of VPC
  - Auto mode
  - Custom mode



CIDR notation

Classless Inter-Domain Routing

123.52.36.47



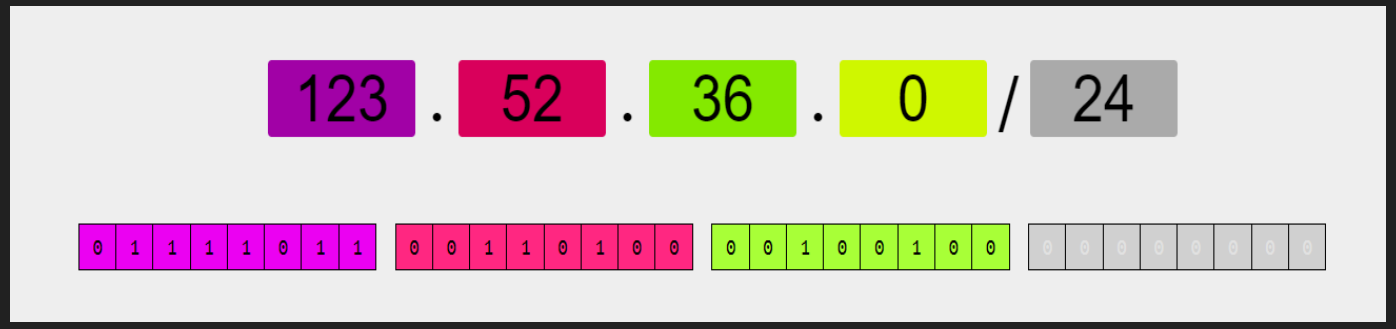
123.52.36.0
123.52.36.1
123.52.36.2
123.52.36.3
123.52.36.4
123.52.36.5
123.52.36.6
123.52.36.7
123.52.36.8
123.52.36.9
123.52.36.10
123.52.36.11

123.52.36.0 / 24

123.52.36.0/24

CIDR notation

123.52.36.0/24



123.52.36.0
123.52.36.1
123.52.36.2
123.52.36.3
123.52.36.4
| |
| |
| |
| |
| |
123.52.36.254
123.52.36.255

CIDR Notation

123.52.36.0/28	28 bits are fixed	4 bits are variable	Total IP address – 2^4 = 16
123.52.36.0/31	31 bits are fixed	1 bit is variable	Total IP address – 2^1 = 2
0.0.0.0/32	32 bits are fixed	0 bits are variable	Total IP address – 2^0 = 1
0.0.0.0/0	0 bits are fixed	32 bits are variable	Total IP address – 2^{32} = 4,294,967,296

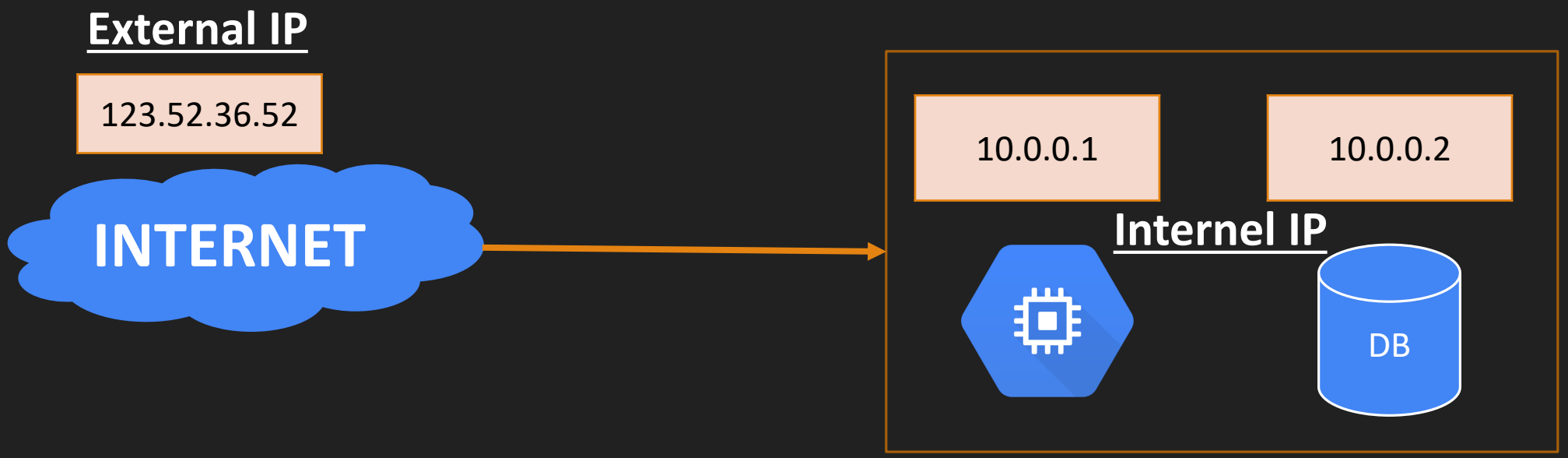
Firewall rules

- Trust nothing by default
- Some default rule :
  - Allow all outgoing traffic - egress
  - Deny all incoming traffic - ingress
- Rule has priority number : (0-65535)
  - Lower the number higher priority
- Common port/protocol
  - 22 – SSH, 3389 - RDP
  - ICMP – ping
  - 80 - HTTP/HTTPS

Types of IP

BY ANKIT MISTRY

Internal IP – External IP



Static vs ephemeral IP

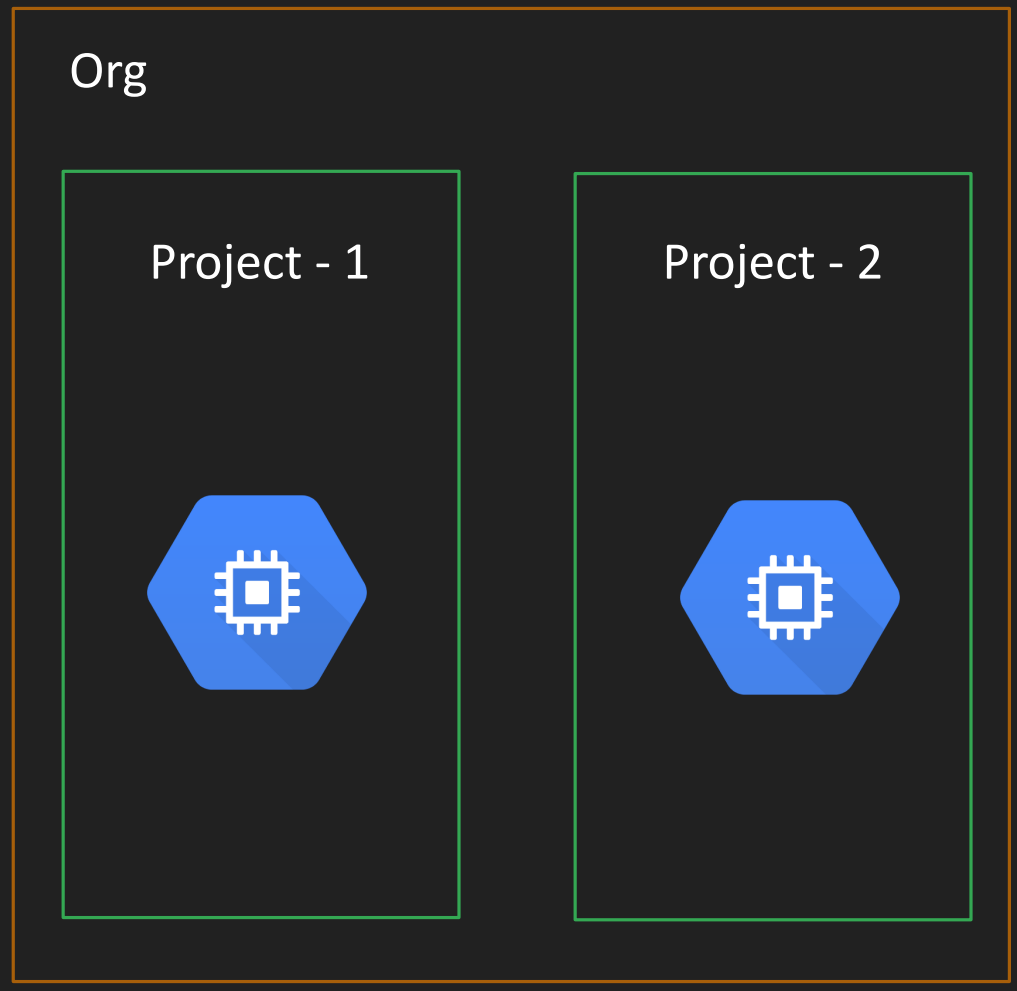
- Ephemeral IP
  - Short Lived
  - Changes after VM restarts
- Static IP
  - Not Free
  - Constant – Can be exposed to outside

VPC & Subnet (Hands-on)

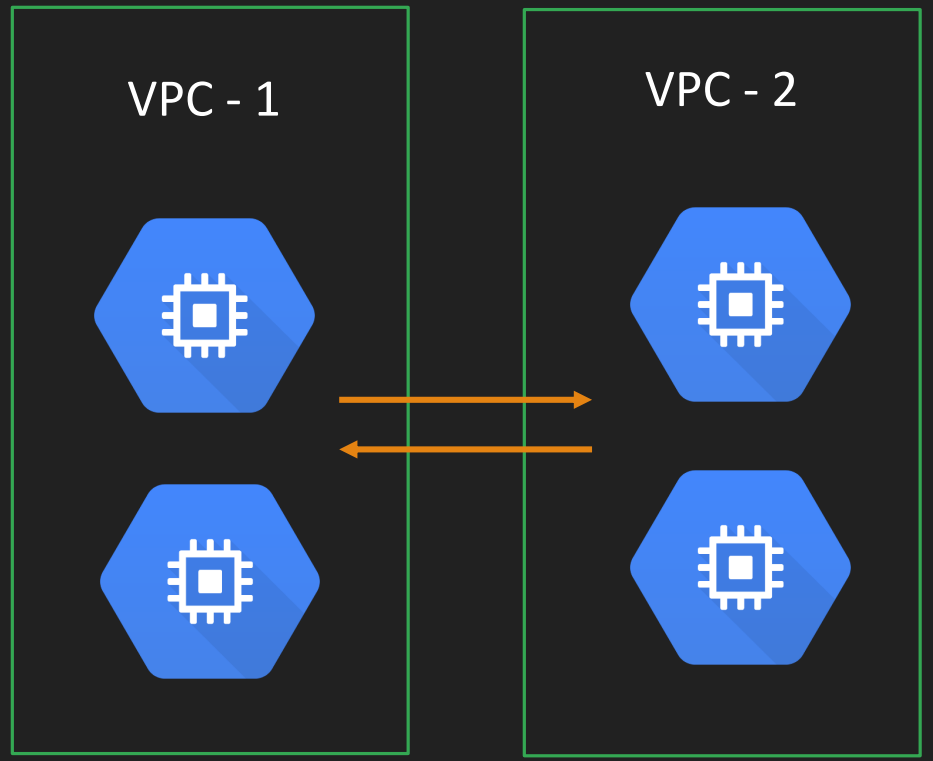
BY ANKIT MISTRY

Shared VPC

- Host Project - Shared VPC
- Multiple Service Project
- Large organization use shared VPC
- Max Host project – 100
- Max Service Project – up to 100
- Shared VPC is only available for projects within an organization node only



VPC peering



VPC Peering(Hands-on)

BY ANKIT MISTRY

3.6

BY ANKIT MISTRY

Deploying a solution using Cloud Marketplace.

- Browsing Cloud Marketplace catalog and viewing solution details
- Deploying a Cloud Marketplace solution

Browsing Cloud Marketplace catalog and viewing solution details

BY ANKIT MISTRY

Deploying a Cloud Marketplace solution

BY ANKIT MISTRY

3.7

BY ANKIT MISTRY

Deploying application infrastructure using Cloud Deployment Manager.

- Developing Deployment Manager templates
- Launching a Deployment Manager template

Cloud Deployment Manager

- Infrastructure as code
- Create and manage cloud resources with simple templates

```
resources:
 - name : bucketname
   type : storage.v1.bucket
   properties :
    storageClass : STANDARD
```

Config.yaml

https://cloud.google.com/deployment-manager/docs/configuration/supported-resource-types

4.1

BY ANKIT MISTRY

Managing Compute Engine resources.

- Managing a single VM instance (e.g., start, stop, edit configuration, or delete an instance)
- SSH/RDP to the instance
- Attaching a GPU to a new instance and installing CUDA libraries
- Viewing current running VM inventory (instance IDs, details)
- Working with snapshots (e.g., create a snapshot from a VM, view snapshots, delete a snapshot)
- Working with images (e.g., create an image from a VM or a snapshot, view images, delete an image)
- Working with instance groups (e.g., set autoscaling parameters, assign instance template, create an instance template, remove instance group)
- Working with management interfaces (e.g., Cloud Console, Cloud Shell, GCloud SDK)

Managing a single VM instance

BY ANKIT MISTRY

RDP to Windows machine

BY ANKIT MISTRY

Viewing current running VM inventory (instance IDs, details)

BY ANKIT MISTRY

Snapshots

- Disk backup
- Create while instance are running
- Snapshot are incremental
- Use within same project only
- Smaller in size

Custom Images

- Complete clone of virtual machine
- Can not Create while instance are running
- Images are always complete copy – bigger in size
- Available to use for other project also

Attaching a GPU to a new instance and installing CUDA libraries

---

BY ANKIT MISTRY

4.2

BY ANKIT MISTRY

Managing Google Kubernetes Engine resources

- Viewing current running cluster inventory (nodes, pods, services)
- Browsing the container image repository and viewing container image details
- Working with node pools (e.g., add, edit, or remove a node pool)
- Working with pods (e.g., add, edit, or remove pods)
- Working with services (e.g., add, edit, or remove a service)
- Working with stateful applications (e.g. persistent volumes, stateful sets)
- Working with management interfaces (e.g., Cloud Console, Cloud Shell, Cloud SDK)

4.3

BY ANKIT MISTRY

Managing App Engine and Cloud Run resources.

- Adjusting application traffic splitting parameters
- Setting scaling parameters for autoscaling instances
- Working with management interfaces (e.g., Cloud Console, Cloud Shell, Cloud SDK)

4.4

BY ANKIT MISTRY

Managing storage and database solutions.

- Moving objects between Cloud Storage buckets
- Converting Cloud Storage buckets between storage classes
- Setting object life cycle management policies for Cloud Storage buckets
- Executing queries to retrieve data from data instances (e.g., Cloud SQL, BigQuery, Cloud Spanner, Cloud Datastore, Cloud Bigtable)
- Estimating costs of a BigQuery query
- Backing up and restoring data instances (e.g., Cloud SQL, Cloud Datastore)
- Reviewing job status in Cloud Dataproc, Cloud Dataflow, or BigQuery
- Working with management interfaces (e.g., Cloud Console, Cloud Shell, Cloud SDK)

4.5

BY ANKIT MISTRY

Managing networking resources

- Adding a subnet to an existing VPC
- Expanding a subnet to have more IP addresses
- Reserving static external or internal IP addresses
- Working with management interfaces (e.g., Cloud Console, Cloud Shell, Cloud SDK)

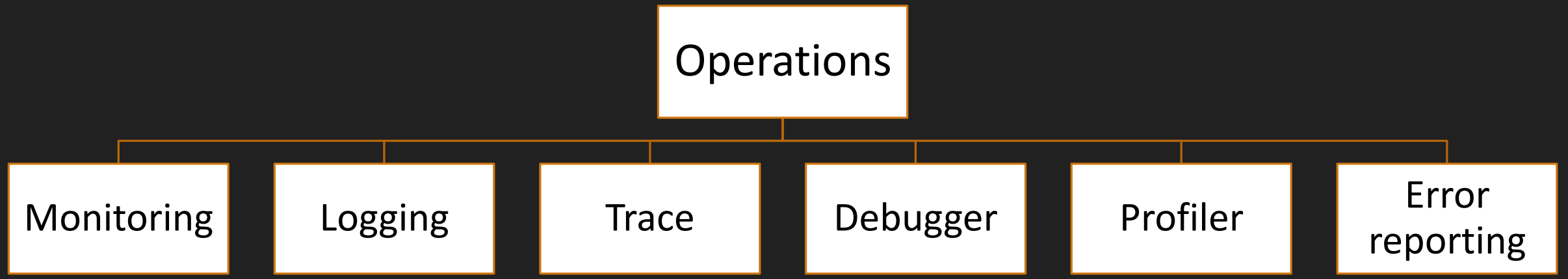
4.6

BY ANKIT MISTRY

Monitoring and logging.

- Creating Stackdriver alerts based on resource metrics
- Creating Stackdriver custom metrics
- Configuring log sinks to export logs to external systems (e.g., on-premises or BigQuery)
- Viewing and filtering logs in Stackdriver
- Viewing specific log message details in Stackdriver
- Using cloud diagnostics to research an application issue (e.g., viewing Cloud Trace data, using Cloud Debug to view an application point-in-time)
- Viewing Google Cloud Platform status
- Working with management interfaces (e.g., Cloud Console, Cloud Shell, Cloud SDK)

Operations


Operations
Monitoring
Logging
Trace
Debugger
Profiler
Error reporting

Monitoring

- Single Place to monitor all your resources.
- Is my application is running fine ??
- CPU Utilization or Network Traffic sufficient ??
- Measure different Metrics
  - CPU, Disk, Network etc…
- Monitor GCP project as well as AWS Project
- Create Alert based on condition

Explore Monitoring tool

BY ANKIT MISTRY

Monitoring agent

- Optional but recommended
- To access additional system resources and application services
- Cloud Monitoring agent
  - https://cloud.google.com/monitoring/agent/monitoring/installation

Uptime check & Alerting (Hands-on)

BY ANKIT MISTRY

Uptime check & Alerting

- Create VM Instance – allow http
- Deploy Hello world app
- Create uptime check
- Create Alert
- Stop VM or Shutdown app
- Check Email as Alert
- Observe incident
- Start App Again
- Close incident & check alerting email

Cloud Logging

- Log Management tool
- Fully managed
- Massive volume of data can be store
- Is it free ?

Types of Logging

Admin activity Logs	System Event Logs	Data Access Logs	Policy Denied Logs
By Default Enabled	By Default Enabled	By Default **Not** Enabled	By Default **Not** Enabled
400 days	400 days	30 days	30 days
Free	Free	**Not** Free	**Not** Free
Create VM, Delete VM	VM Migration	Create Object in Bucket	Security violation

Cloud Logging (Hands-on)

BY ANKIT MISTRY

Logging Agent

- More logs needs to capture
- Cloud Logging agent
  - https://cloud.google.com/logging/docs/agent/logging/installation

Cloud Trace

- Google App Engine, Load balancer
- With each service – provide latency report
- near realtime

Cloud Debugger

- Live debugging
- Inspect App without stopping it
- Supported language – Java, Python, Go, PHP, .NET core etc…

Cloud Platform Status

BY ANKIT MISTRY

5.1

BY ANKIT MISTRY

Managing identity and access management (IAM)

- Viewing IAM role assignments
- Assigning IAM roles to accounts or Google Groups
- Defining custom IAM roles

Viewing IAM role assignments

BY ANKIT MISTRY

5.2

BY ANKIT MISTRY

Managing service accounts

- Managing service accounts with limited privileges
- Assigning a service account to VM instances
- Granting access to a service account in another project

Managing service accounts with limited privileges

BY ANKIT MISTRY

Assigning a service account to VM instances

BY ANKIT MISTRY

Granting access to a service account in another project

BY ANKIT MISTRY

THANK YOU