



1 Environment Setup

- Overview
 - Establish resource hierarchy
 - > Organization level
 - > Folder level
 - > Project level
 - Identify identity and access roles
 - > Who --- Data analyst
 - > Can do what --- view data and run queries
 - > on which resource --- BigQuery datasets
 - Operations Suite
 - > Cloud monitoring and metrics
 - > Scoping project - monitor metrics for multiple projects
 - > Monitored projects
 - Interacting with GCP
 - > Console - web user interface
 - > SDK and Cloud Shell - CLI
 - > Mobile app - for iOS and Android
 - > REST-based API - for custom apps
 - Outcomes of this phase of the migration journey
 - > Establishing resource hierarchy
 - > Implementing org policies
 - > Aanaging projects and quotas
 - > Aanaging users and groups
 - > Applying access management
 - > Setup billing and monitoring

- Dagnostic Qs
 - Best practice to manage role assignment by groups, not by individual users
 - Billing acc can handle billing for more than 1 project
A project and its resources can only be tied to 1 billing acc
 - Can set up to 5 Cloud Monitoring channels to define email recipients that will receive budget alerts
 - GCP resource hierarchy = ORG > Folder > Proj > Res
 - Use gsutil to interact with Cloud Storage via SDK in Cloud Shell
 - Basic roles are broad and don't use least priv, grant only the roles that someone needs through predefined and custom roles
 - Editor = lowest level basic role that gives permissions to change resource state

2 Planning and Configuring a cloud solution

- Selecting Resources
 - > Planning and estimating pricing using Public Calculator
 - > Planning and config for compute resources
 - > Planning and config for data storage options
 - > Planning and config for network resources
 - Gather/obtain customer app requirements and map to appropriate GCP service(s)
 - > technical reqs: compute, data, network
 - > functional reqs: need/ask/purpose of app
- Dagnostic Qs
 - Data storage pricing is based on amount of data and storage type; (min duration)
 - > Standard - none
 - > Nearline - 30 days
 - > Coldline - 90 days
 - > Archive - 365 days
 - BigQuery = GCP data warehouse. Analyzes historical data using SQL query engine
 - Cloud Run provides serverless container mgmt; lets you focus on code and you can deploy your solution quickly
 - K8s Engine gives full control of container orchestration and availability
 - HTTP/S = L7 load balancer
SSL = L4 load balancer
 - Compute Engine gives full control over OS choice and config
 - Compute Engine = great option for quick migration of traditional apps. Can implement a solution in the cloud without changing your existing code
 - To populate visual dashboards with historical time-based data, need to use BigQuery (SQL) or Cloud Bigtable (NoSQL)
 - Cloud Functions = submit and execute small snippets of code the fire based on system events (like AWS Lambda)

3 Configuring Access & Security

- Managing Access
 - IAM
 - Service Accounts
 - > Create Acc
 - > Assign perms
 - > Attach to VM
 - Audit logs
- Diagnostic Qs
 - Data Access logs are disabled by default except for BigQuery
 - Service Accounts = uses account identity and access key, it is used by apps to connect to services
 - Service Account keys used for accessing private data such as Pub/Sub info from external environment, e.g. mobile app

ensure ongoing access and security for cloud solutions

4 Ensuring Successful Ops of a Cloud Solution

- Diagnostic Qs
 - > Compute Engine resources
 - > GKE resources
 - > Cloud Run resources
 - > storage and db solutions
 - > network resources
 - > monitoring and logging
- Diagnostic Qs
 - Storage:
 - > MatchesStorageClass = required to look for objects with a standard storage type
 - > CreatedBefore = specify date
 - CloudRun: Max instances controls costs, limits number of connections to a backing services
 - Managed Instance Group config:
 - > Health Checks
 - > number of instances
 - Understand basic GKE commands and objects
 - Understand basic gsutil commands and options
 - Understand basic gcloud commands for cloudshell and SDK

Understand how to manage the resources used in an orgs cloud solutions

5 Deploying & Implementing a cloud solution

- Diagnostic Qs
 - Understand availability, concurrency, connectivity, and access options for services/solutions being deployed
 - Deploy and implement:
 - > Compute Engine resources
 - > GKE resources
 - > Cloud Run and Cloud Functions resources
 - > data solutions
 - > networking resources
 - > using Cloud Marketplace
 - > implementing resources using IaC
- Dagnostic Qs
 - BigQuery transfer service is simplest process to set up transfers between Cloud Storage and BigQuery. Only one command and it's free
 - VPC - custom mode network = control over regions you place subnets in and lets you specify IP ranges
 - Terraform Apply = sets up resources specified in config file
 - Instance OS - Proactive mode = institutes rolling update where surge is auto set to 1, minimizes resources
 - Cloud Run = serverless, exposes services as an endpoint, abstracts all infra
 - Cloud SQL: -availability-type : option allows you to specify zonal or regional availability; regional provides auto failover to a standby node in another region
 - Cloud Spanner = GCP globally available, horizontally scalable RDB