## STACKDRIVER

- Service for collecting performance metrics, logs and event data from resources
- eg. avg CPU utilization over past minute
- Works on hybrid envs.

## METRICS & MONITORING

- measurements based on resource that is collected at regular intervals
- To monitor and collect metrics, you need to install stackdriver agent for monitoring
- Logging agent is different than monitoring agent
- VMs with agents installed collect monitoring and logging data and send it to Stackdriver
- Stackdriver needs workspace to store the data
- Initialization
  - create workspace
  - add project/s to monitor
  - install stack driver agents
  - get reports by day, week or no report - via email
- Create a policy to monitor a metric
  - A policy = conditions that determine when to issue an alert / notification (eg. CPU utilization > 80%)
- Agents send data from monitored resources to stackdriver in STREAMS. This data needs to be aggregated at certain time intervals
- Process of grouping data into regular-size buckets of time is called aligning
- Policy has 1 or more notification channels like slack, gmail etc

## LOGGING

- Service for storing, collecting, filtering and logging event data generated in GCP and AWS
- 3 tasks
  1.) Configuring log sinks
    - Default logging retention is 30 days
    - Process of copying data from Logging to storage system is called exporting and location to which you write the data is called sink
    - Sink services - BQ, GCS, Pub-Sub, custom
  2.) Viewing and filtering Logs
    - Filters include - Label or text search, resource type, log type, log level, time limit
  3.) View Message Details
    - Each log entry is displayed as a single line when you view content of logs
    - You can then keep on expanding the structure of the logs to see the content inside each log

## CLOUD TRACE

- Distributed tracing system for collecting latency data from application
- traces are generated when developers call Cloud Trace from their applications
- Filter traces on time, HTTP method and return status
- identify sections of code that are performance bottlenecks

## CLOUD DEBUG

- Applicat debugger for inspecting state of running program, allows taking snapshots or insert log statements. Enabled by default on App Engine
- You can also inject a log point, which is a log statement that is written to the log when statement executes