Google Cloud Services

Part – I

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Google Cloud

- Build What's Next, Better software. Faster.
- Use Google's core infrastructure, **data analytics** and **machine learning**.
- **Secure** and fully featured for all enterprises.
- Committed to **open source** and industry leading price-performance.

Why Google Cloud Platform?

- **Future-Proof Infrastructure**
  - Secure, **global**, high-performance, cost-effective and constantly improving.

- **Seriously Powerful Data & Analytics**
  - Tap into **big data** to find answers faster and build better products.

- **Serverless, Just Code**
  - Grow from prototype to production to **planet-scale**, without having to think about capacity, reliability or performance.

Google Cloud Services

1. Compute
2. Storage and Databases
3. Networking
4. Big Data
5. Internet of Things
6. Machine Learning
7. Management Tools
8. Developer Tools
9. Identity & Security

Compute

- From **virtual machines** with proven price/performance advantages to a fully managed app development platform.
  - Compute Engine
  - App Engine
  - Container Engine & Container Registry
  - Cloud Functions

Compute Engine

- High-Performance, Scalable VMs
- Predefined Machine Types
  - From micro to 64 vCPUs with 416GB of memory
- Custom Machine Types
- Linux & Windows Support
  - Debian, CentOS, CoreOS, SUSE, Ubuntu, Red Hat, FreeBSD, or Windows Server 2008 R2, 2012 R2, and 2016

Compute Engine

- Batch Processing
  - Preemptible VMs
  - last for up to 24 hours
- Persistent Disks
  - up to 64 TB in size
  - HDD or SSD (solid-state drive) formats
- Local SSD sizes up to 3 TB are available for any VM with at least 1 core.

Compute Engine

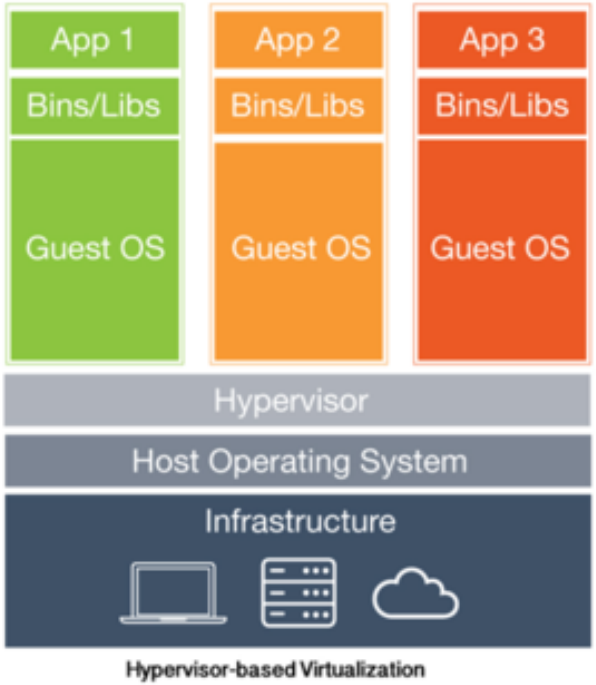
- Compliance & Security
  - ISO 27001, SSAE-16, SOC 1, SOC 2, and SOC 3 certifications
    - **ISO 27001**: The ISO/IEC 27000 family of standards helps organizations keep information assets **secure**
    - **SSAE-16:** Statement on Standards for Attestation Engagements (SSAE) No. 16 is a **Reporting Standard**
    - **SOC 1, SOC 2, and SOC 3:** System and Organization Controls (SOC) Report under the **SSAE-18**
  - Encrypted on the fly
- Per-Minute Billing
- Transparent Maintenance
- Global Load Balancing

App Engine

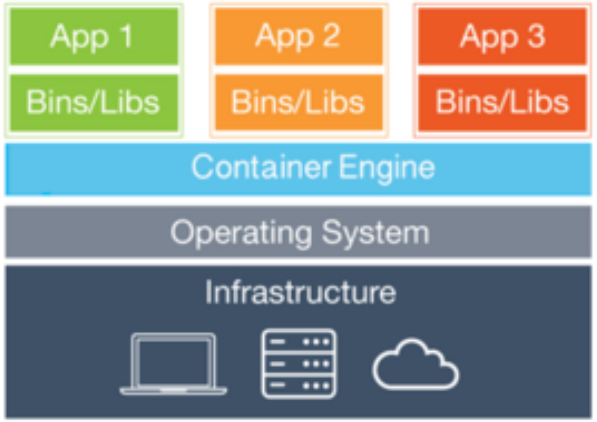
- Scalable **web** applications and **mobile** and IoT backends
- Built-in services and APIs,
  - **NoSQL** datastores, memcache, and a user authentication API
- For All Language Communities
  - **Node.js, Java, Ruby, C#, Go, Python**, and **PHP**
  - Bring **your own language runtimes**, frameworks, and third party libraries
- Monitoring, Logging & Diagnostics
  - Google **Stackdriver** to debug and monitor

Container Engine

- **Cluster manager** and **orchestration system** for running **Docker containers**
- Powered by **Kubernetes**
- **Kubernetes** is an **open-source system** for automating deployment, scaling, and management of containerized



Hypervisor-based Virtualization



Container virtualization

Container Engine

- Identity & Access Management

- Stateful Application Support
  - can attach **persistent storage** to containers, and even host complete databases

- Security and Compliance
  - **750 experts** and is both **HIPAA** and **PCI DSS 3.1** compliant
  - **HIPAA** (Health Insurance Portability and Accountability Act of 1996) is United States legislation that provides **data privacy and security provisions** for safeguarding **medical information**.
  - **PCI DSS**(Payment Card Industry Security Standards Council) is the global **data security standard** adopted by **the payment card** brands for all entities that process, store or transmit cardholder data and/or sensitive authentication data.

Container Engine

- Fully Managed
  - fully managed by Google **SRE**s (Site Reliability Engineering)
- Integrated Logging & Monitoring
  - **Stackdriver** Logging and Stackdriver Monitoring
- Container-Optimized OS
- Private Container Registry
  - easy to store and access your **private Docker images**

Container Engine

- Auto Scale
- Auto Upgrade
- Auto Repair
- Resource Limits
  - Kubernetes allows you to specify **how much CPU and memory** (RAM) each Container needs.

Container Registry

- Container Tags
  - Add and remove **image tags** with a simple click in the web UI.
- Search Images
  - Quickly search for images by **name** and **tag**
- Docker **CLI** (Command-line interface) Integration
- Regional Repositories
  - Get the fastest possible pull times by storing your images close to your Compute Engine instances in **Europe, Asia, or US** regional Cloud Storage buckets.

Cloud Functions

- A **serverless** environment to build and connect cloud services.

- Cloud Functions are written in **JavaScript** and execute in a standard **Node.js** runtime environment.
  - **Node.js** is a JavaScript runtime built on Chrome's **V8** JavaScript engine
  - **V8** is Google's open source high-performance **JavaScript** engine, written in **C++** and used in **Chromium, Node.js** and multiple other embedding applications.
    - **Chromium** is an **open-source browser project** that aims to build a safer, faster, and more stable way for all Internet users to experience the web
- Mobile Backend
  - Mobile app developers can use Cloud Functions directly from Firebase
  - Firebase helps you build better mobile apps and grow your business
- Cloud Pub/Sub Triggers
- Cloud Storage Triggers

Cloud Functions

- Mobile Backend
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- Cloud Pub/Sub Triggers
- Cloud Storage Triggers
- Firebase Triggers

Cloud Functions

- HTTP/S Invocation
  - Transport Layer Security **(TLS)** certificate for secure communication
  - Advanced from **SSL**
- GitHub/Bitbucket
  - Using Cloud Source Repositories you can **deploy** Cloud Functions directly from your **Github or Bitbucket** repository **without** needing to **upload** code or manage versions yourself
- Logging, Monitoring & Debugging
- Automatic Dependency Resolution

2. Storage & Databases

- Cloud Storage
- Cloud SQL
- Cloud Bigtable
- Cloud Spanner
- Cloud Datastore
- Persistent Disk

Cloud Storage

- Scalable **object storage** service suitable for all kinds of **unstructured data**

- A Unified Offering for Cloud Storage
  - **Coldline**: data your business expects to touch less than once a year
  - **Nearline:** data you expect to access less than once a month

- Durable
  - Designed for **99.999999999% durability**
  - With **Multi-Regional storage**, your data is maintained in geographically distinct locations

Cloud Storage

- Available
  - **Multi-Regional** offers **99.95%** and **Regional** storage offers **99.9%** monthly availability
  - **Nearline and Coldline** storage offer **99%** monthly availability.
- Scalable
  - infinitely scalable
- Consistent
  - When a write succeeds, the **latest copy** of the object is **guaranteed to be returned** to any GET, globally.
  - This applies to PUTs of new or overwritten objects and DELETEs.

Cloud SQL

- Fully-managed **MySQL** and **PostgreSQL** database service

- Simple & Fully Managed
  - It **doesn't** require any software **installation**.
  - It automates all your backups, replication, patches, and updates - while ensuring greater than **99.95% availability,** anywhere in the world.

- Performance & Scalability
  - up to **10TB** of storage capacity, **25,000 IOPS**, and **208GB of RAM** per instance

- Reliability & Security
  - automatically **encrypted** and Cloud SQL is **SSAE 16, ISO 27001, PCI DSS v3.0, and HIPAA** compliant

Cloud Bigtable

- provides a **massively scalable** NoSQL database
- **integrates** easily with popular Big Data tools like **Hadoop** and **Spark** and it supports the open-source, industry-standard **HBase API**.
- great choice for both operational and **analytical applications**, including **IoT**, user analytics, and financial data analysis
- Seamless Cluster Resizing

Cloud Spanner

- Fully managed, **mission-critical** online transaction processing (**OLTP**) applications
- Global Scale
  - **Horizontally scalable** across regions and data centers, from **1 to hundreds or thousands of nodes**.
- Fully Managed
- Relational Semantics
  - **ACID** transactions, and SQL queries (ANSI 2011)

Cloud Spanner

- Multi-Language Support
  - Client libraries in **Go, Java, Node.js, PHP, and Python**
- Transactional Consistency
- Enterprise Grade Security
  - **Data-layer encryption**, Identity and Access Management (**IAM**) integration for access and controls, and **audit logging**

Cloud Datastore

- An elastic, highly available **document-oriented** database as a service
- **NoSQL** database for your **web** and **mobile** applications
- Rich Admin Dashboard
  - View entity **statistics,** query your database, view **indexes**, and **backup/restore** your data.
  - Representational State Transfer: **RESTful interface**
    - **REST** relies on a **stateless, client-server, cacheable communications protocol**
    - **REST** is an architecture style for designing **networked applications**

Cloud Datastore

- Multiple Access Methods
  - Access your data via **JSON API**, open-source clients, or community maintained Object-relational mapping (**ORM**s)
- Diverse Data Types
  - Datastore supports a variety of data types, including **integers, floating-point** numbers, **strings, dates**, and **binary** data among others.
- ACID Transactions
- Fully Managed

Persistent Disk

- High-performance **block storage** service suitable for Virtual Machines and container storage

- Fast and Flexible Block Storage
  - SSD and HDD storage

- Share Data Easily
  - offers unique **multi-reader** capability
  - many virtual machines can read data from a single Persistent Disk with no performance degradation

- Scale Without Interruption

- Automatic Encryption
  - You can supply your **own key** or we will automatically **generate** one for you.

Still to Come

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Thank YOU


Try to be a rainbow
in someone's cloud.
Maya Angelou
BrainyQuote