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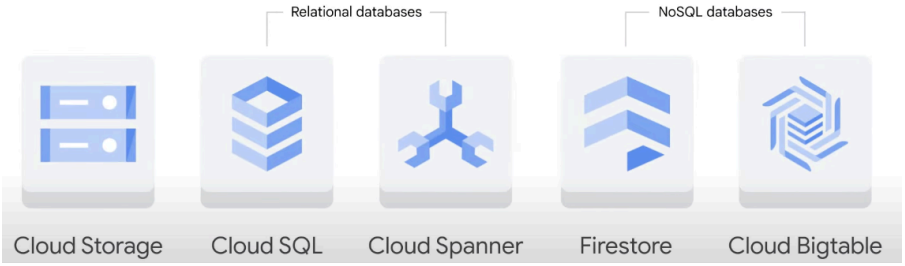
Sertifikasi Dasar Google Cloud Computing Kelas A
Where Do I Store This Stuff?

- Storage Options in the Cloud



  - Tujuan dari produk-produk di atas adalah untuk menghemat waktu dan effort untuk menyimpan data
  - Creating an elastic storage bucket langsung melalui web interface atau command line
  - Three common cloud storage use cases:
    - Content storage and delivery = saat konten (foto/video) needs to be served pada user kapanpun
    - Data analytics and general compute = proses data menggunakan analytic tools, seperti analytics stack yang melakukan IoT data analysis
    - Backup and archival storage

- Structured and Unstructured Data Storage
  a. Unstructured Data
    - Informasi disimpan dalam non-tabular form such as documents, images, audio files
    - Best suited to Cloud Storage
    - Jauh lebih sulit untuk memproses/analyze menggunakan traditional method karena data tidak memiliki internal identifier
    - Organizations are focusing increasingly on mining unstructured data for insights

b. Structured Data
    - Organized, clearly defined, easy to analyze. Contohnya adalah data yang fits within columns and rows seperti nama, alamat, dates
    - Benefitnya adalah can be understood by programming language and can be manipulated quickly
    - Terdapat 2 tipe = transactional workloads and analytical workloads
    - Cloud SQL works best for local to regional scalability
    - Cloud Spanner best to scale a database globally
    - Firestore the best option if the transactional data will be accessed without SQL
    - BigQuery the best option if you have analytical workloads that require SQL commands
    - Bigtable provides a scalable NoSQL for analytical workloads

- Unstructured Storage Using Cloud Storage
    - Layanan yang dapat diskalakan dan dikelola sepenuhnya untuk data tidak terstruktur, ideal untuk berbagai kasus penggunaan seperti archival, media storage, dan recovery
    - Cloud Storage menawarkan solusi yang dikelola sepenuhnya dan dapat diskalakan untuk menyimpan data tidak terstruktur.
    - Data disimpan sebagai objek dengan pengenal unik, yang menyederhanakan akses dan pengelolaan.
    - Kelas penyimpanan = Standard, Nearline, Coldline, Archive. Hanya membayar untuk apa yang mereka gunakan
    - Dengan protokol keamanan bawaan dan geo-redundansi, Cloud Storage menyediakan solusi yang kuat untuk melindungi data sensitif dari bencana

- Lab: Cloud Storage: Qwik Start - CLI/SDK
  Pada lab ini, saya diajarkan cara membuat bucket melalui cloud shell menggunakan gsutil. Setelah itu, meng-upload objek kedalam bucket, dan download objek tersebut ke cloud shell. Kemudian copy objek dan masukkan ke folder di dalam bucket

- SQL Managed Services
    - Database adalah koleksi informasi yang organized sehingga mudah untuk diakses dan dikelola
    - Building software applications using databases to answer business questions
    - RDBMS (Relational Database Management Systems) are used secara luas dan sering dijumpai

- Exploring Cloud SQL
    - Tidak perlu software installation atau maintenance
    - Can scale up to 96 processor cores, 624 GB RAM, 64 TB storage
    - Supports managed backups
    - Encrypts customers data
    - Includes a network firewall

- Lab: Cloud SQL for MySQL: Qwik Start
  Pada lab ini, saya diajarkan cara membuat Cloud SQL instance melalui Google Cloud console. Pertama konfigurasi terlebih dahulu, buat nama ID, password, pilih version, pilih preset, set region. Setelah itu, connect instance menggunakan MySQL client di cloud shell. Kemudian membuat database dan mencoba meng-upload data

- Cloud Spanner as a Managed Services
    - Fully managed relational database that scales horizontally, strongly consistent
    - Biasa digunakan dalam advertising, finance, marketing technology industries
    - Synchronous replication = data automatically and instantly copied across region

- NoSQL Managed Service Options
    - Firestore = fully managed serverless NoSQL that supports ACID transactions
    - Bigtable = petabyte scale, offers extremely low write latency

- Firestore, a NoSQL Document Store
    - Flexible, horizontally scalable, NoSQL cloud database for mobile, web, server dev
    - Used to retrieve individual, specific documents or to retrieve all the documents that match query
    - Uses data synchronization untuk update data di device manapun yang terkoneksi
    - Firestore memanfaatkan infrastruktur Google Cloud yang canggih = multi-region data replication, strong consistency guarantees, atomic batch operations, and real transaction support

- Bigtable as a NoSQL Option
    - Handle massive workloads at consistent low latency and high throughput
    - Data is fast with high throughput
    - Working with NoSQL data

- Quiz
    1. Each bucket has a default storage class, which you can specify when you create your bucket.
       True
    2. An access control list (ACL) is a mechanism you can use to define who has access to your buckets and objects
       True
    3. You can stop publicly sharing an object by removing the permission entry that has:
       allUsers
    4. Instance ID is used to uniquely identify your instance within the project.
       True
    5. Which storage service is best suited to unstructured data?
       Cloud Storage
    6. You are looking for an unstructured storage solution for archiving files that might never be accessed again. Which Cloud Storage class is the best option?
       Archive storage
    7. Google Cloud offers two managed relational database services. What are they?
       Cloud SQL, Cloud Spanner
    8. Which storage solution is a petabyte scale, NoSQL database?
       Bigtable