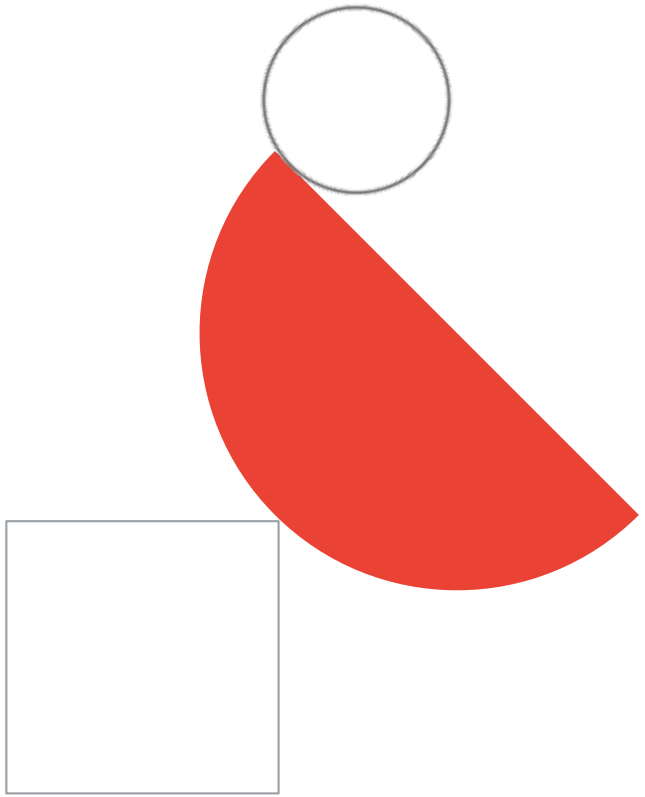
Comparing GCP storage solutions



SQL vs noSQL

SQL (aka 'Relational')	NoSQL (aka 'Non-relational')
"traditional" table-based RDBMSes	key-value, wide column, document
Strongly typed, fixed schemas	Dynamic schemas
Almost all ACID-compliant	Mostly BASE
Considerable percentage of logic can be done in database	Most of logic needs to be offloaded to application layer
Default choice for most monoliths	Suitable for some microservices
performance capped at some point (vertical scaling only, plus sharding, offloading read-only etc)	Processing nodes often separate from storage nodes (if network is fast enough)
In GCP: Cloud SQL, Cloud Spanner Outside of GCP: MySQL, Oracle, PostgreSQL, Microsoft SQL Server.	In GCP: Firestore, Bigtable Outside of GCP: MongoDB, Redis, Cassandra, HBase, CouchDB

OLTP vs OLAP

OLTransactionalP	**OLAnalyticalP**
For processing data in transaction-oriented apps	Multi-dimensional, analytical queries used in BI, reporting, data mining etc
Large amounts of transactions	Large volume of data
A mix of Inserts, Updates, Deletes on individual records.	Loading data from source + selects. Optimized for high throughput reads on large number of records
Tables are normalized	Tables are not normalized
ACID & (mostly) SQL	SQL (sometimes NoSQL)
Cloud SQL, Cloud Spanner	BigQuery

Exam Tip: *Here you'll find a GREAT Decision tree for database choices on AWS, Microsoft Azure, Google Cloud Platform, and cloud-agnostic*

Cloud Storage

Overview	Ideal for
• Fully managed, highly reliable	• Images and videos
• Cost-efficient, scalable object/blob store	• Objects and blobs
• Objects access via HTTP requests	• Unstructured data
• Object name is the only key	• Static website hosting

Cloud Datastore

Overview	Ideal for
• Fully managed NoSQL • Scalable	• Semi-structured application data • Durable key-value data • Hierarchical data • Managing multiple indexes • Transactions

Cloud Firestore

Overview	Ideal for
• Fully managed, serverless, NoSQL • Scalable • Native mobile and web client libraries • Real-time updates	• Document-oriented data • Large collections of small documents • Native mobile and web clients • Durable key-value data • Hierarchical data • Managing multiple indexes • Transactions

Cloud Bigtable

Overview	Ideal for
• High performance wide column NoSQL database service • Sparsely populated table • Can scale to billions of rows and thousands of columns • Can store TB to PB of data	• Operational applications • Analytical applications • Storing large amounts of single-keyed data • MapReduce operations

Cloud SQL

Overview	Ideal for

• Managed service
  ○ Replication
  ○ Failover
  ○ Backups
• MySQL, PostgreSQL, and SQL Server
• Relational database service
	• Web frameworks
	
	• Structured data
	• OLTP workloads

• Proxy allows for secure access to your Cloud SQL Second Generation instances without whitelisting	• Applications using MySQL/PGS

Cloud Spanner

Overview	Ideal for
• Mission-critical relational database service • Transactional consistency • Global scale • High availability • Multi-region replication • 99.999% SLA	• Mission-critical applications • High transactions • Scale and consistency requirements

BigQuery

Overview	Ideal for
• Low-cost enterprise data warehouse for analytics • Fully managed • Petabyte scale • Fast response times • Serverless	• Online Analytical Processing (OLAP) workloads • Big data exploration and processing • Reporting via Business Intelligence (BI) tools