**Snowflake Architecture**

What’s unique with snowflake architecture?

How snowflake architecture is different from traditional databases (RDBMS like SQL Server, Oracle, My SQL) ?

What’s your understanding of Snowflake architecture?

Tell me about snowflake architecture?

It's a hybrid of shared-disk and shared-nothing architecture

Basically its Multi cluster shared data architecture. Storage and compute are separate and can be scaled independently to any extent and also it charges separately for storage and compute

(i.e. storage and compute are decoupled)

It’s 3 layer architecture

Storage layer => that stores data in hybrid columnar format and saved in cloud

Query Processing => Virtual Warehouse to run queries/for compute resources (muscle)

Cloud Services => brain of snowflake architecture coordinates between storage and query processing layers

/\*Data is stored in the cloud storage and works as a shared-disk model

(i.e. centralized data store like RDBMS)

Compute it will take advantage of performance and scale-out benefits of shared nothing architecture

(i.e. compute is distributed like hadoop) \*/

Why to go with Snowflake instead of other Cloud Data warehouses like AWS Redshift, Azure Synapse, Google Big query?

Snowflake is available on all cloud platforms like AWS, Azure and GCP (Multi cloud). Other cloud Data warehouses were restricted to that one cloud example: Redshift will be available in only AWS, Big Query will be available in GCP.

Unique features like Data Market place, Zero Copy Clone, Time travel, Data sharing, Streams for CDC

Separate Storage and compute costs, Zero Administration/Maintenance (partitioning, data backups, index maintenance, performance tuning will be taken care by snowflake itself).No software or hardware required to be installed or upgraded as snowflake is SaaS (Software as a service). Synapse and BigQuery are PaaS (Platform as a service)

How Snowflake charges for Storage and compute?

Snowflake Charges separately for Storage and separately for compute

**Virtual Warehouse(Query Processing)**

How is compute done in Snowflake?

Using virtual warehouses

What is Virtual Warehouse?

Cluster of compute nodes/machines

Cluster => group of nodes/machines connected together

Compute Resources => CPU + Memory+ Temporary storage

Different sizes of warehouses?

XS(1) will have one compute nodes/machines, S(2) will have 2 compute nodes, M(4), L(8), XL(16), 2XL(32), 3XL(64), 4XL(128) -- generally available

5XL(256) and 6 XL(512) are in preview state