Snowflake Architecture

- Snowflake is a true SaaS offering.
- There is no hardware (virtual or physical) to select, install, configure, or manage.
- There is virtually no software to install, configure, or manage.
- Ongoing maintenance, management, upgrades, and tuning are handled by Snowflake.

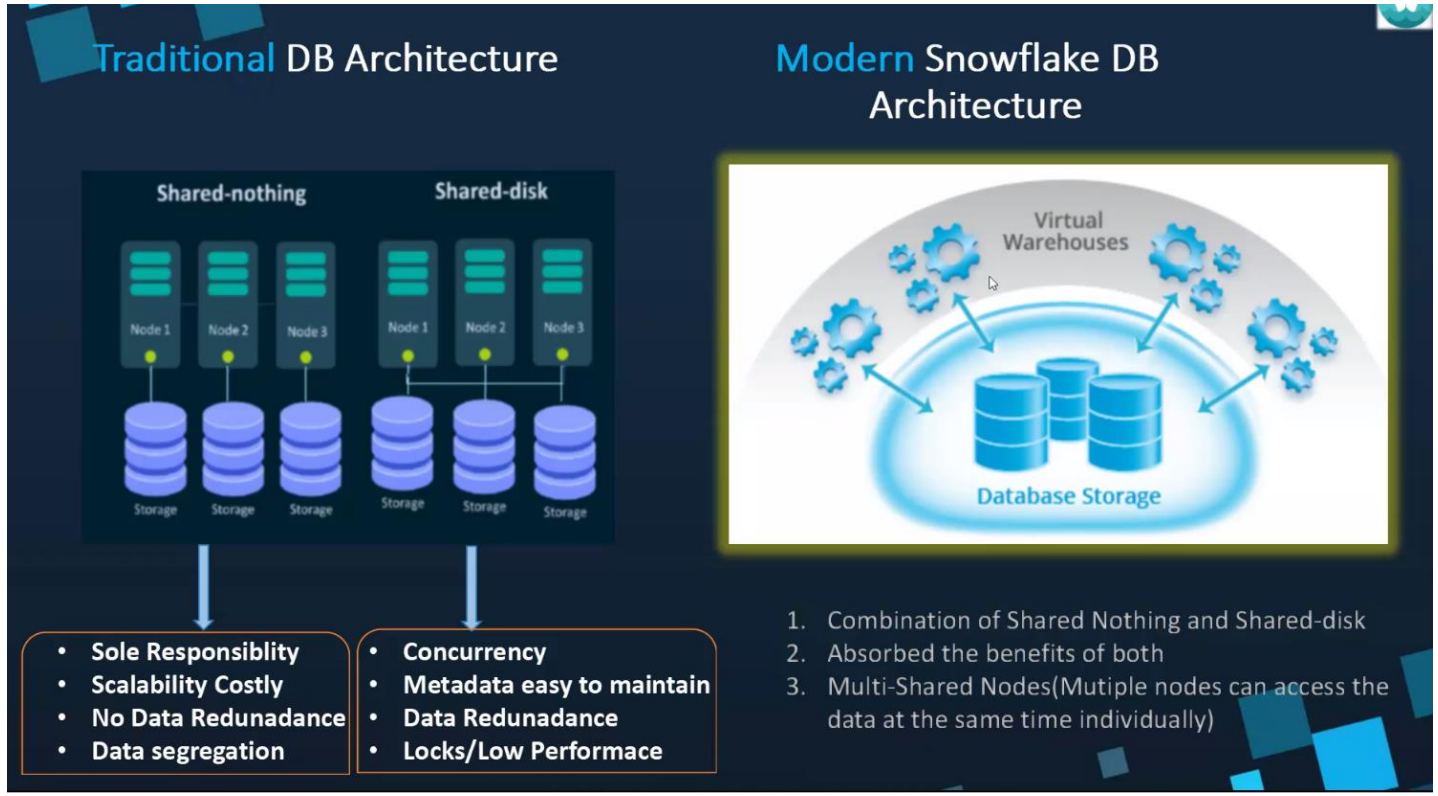
If I need to explain in simple terms, then we can say :

1- It is combination of Shared disk + Shared nothing Architecture.

2- Separate the Storage and Compute activities which result we can scale up them independently.

3- Multi cluster Shared data Architecture.

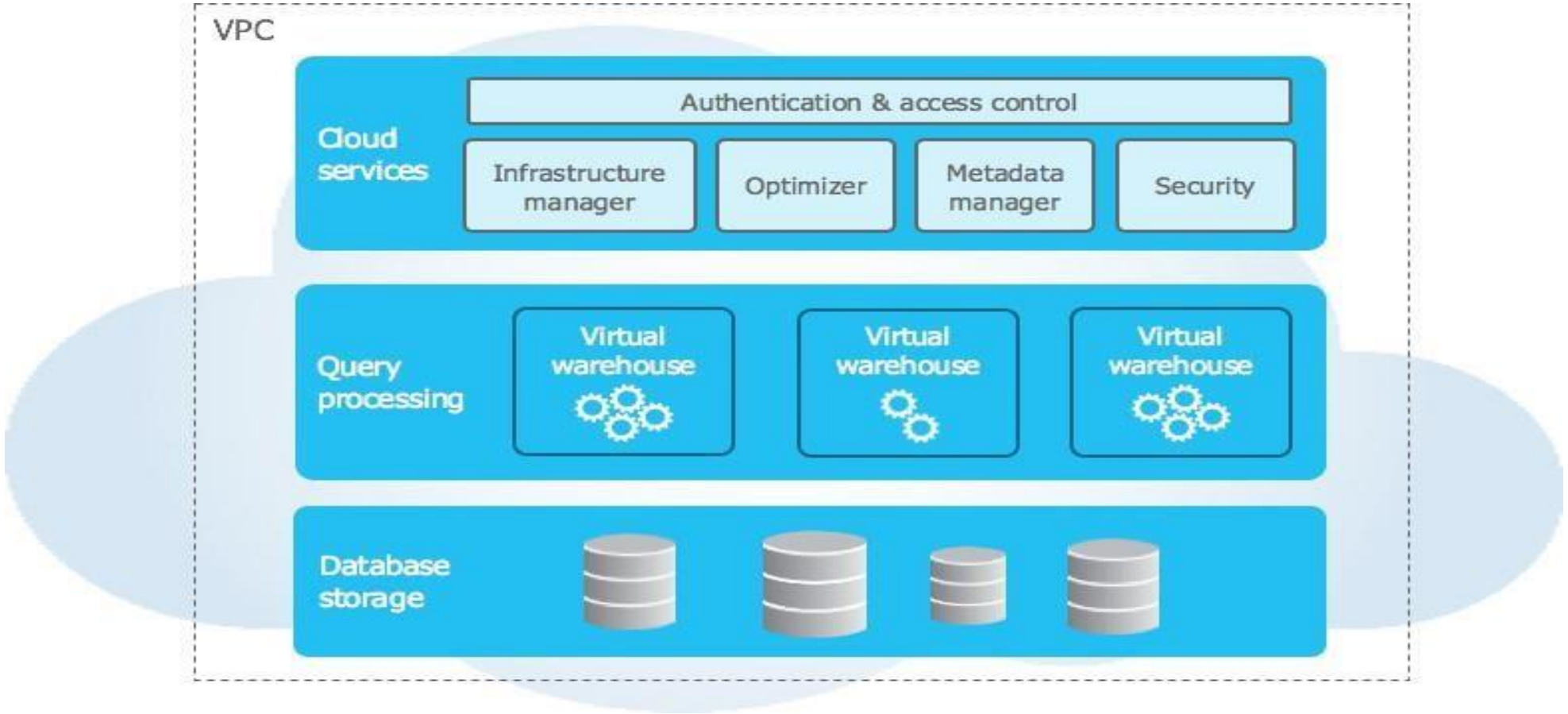
4- Elastic in nature



1.Storage layer or Database Storage

2.Compute or Query Processing layer

3. Cloud services or (**Brain layer**)



Storage layer	Processing layer	Cloud Service layer
Underlying Cloud storage (AWS S3,GCP Bucket or Azure Blob)	Underlying cloud virtual machines(EC2,Azure VM or GCP VM)	This is known as Main or Brain layer, collection of services that coordinate activities across Snowflake.
We can have infinite storage. Structured and Semi structured both type.	Query execution/Compute activities in this layer. Also known as Virtual warehouse layer	Authentication & Authorization
Stored data will always be compressed & Encrypted	Each virtual warehouse has no impact on the performance of other virtual warehouses	Query Processing & Optimization & Data Caching
Only Storage bill will be generated 23$ per TB	Scale up & Scale down whenever needed. Resize warehouse or Multi cluster warehousing	User & Session Management
Store data in Hybrid Columnar format.	Compute bills are generated depend on your warehouse size (credits)	Infrastructure & Warehouse management.