**Virtual Warehouses:** In Snowflake, a Virtual Warehouse is the compute engine that executes queries and performs DML operations. It’s fully independent, can be scaled up or out, and supports auto-suspend/resume to save cost. we often used separate warehouses for data loading and reporting to avoid resource contention, and resized them based on workload. VW is a cluster of one or more compute resources used to process queries and other DML Operations.

We can choose warehouse based on 2 main specific reasons- 1 is Requirement specific warehouse choosing and Environment specific warehouse choosing (like development, testing, production)

**Key Features**

* **Scalable** → Can be resized (XS-1, S-2, M-4, L-8, XL-16, etc.) or set to **multi-cluster** mode for high concurrency.
* **Independent** → Each warehouse works in isolation (queries on one warehouse won’t affect another).
* **Auto-suspend & Resume** → Warehouses can pause when idle and restart instantly to save cost.
* **Elastic** → Add/remove compute instantly based on workload.

**Warehouse Resizing: Scale up or Vertical scaling:** Increasing or decreasing the size of virtual warehouse. Based upon the data size we are dealing with it and number of records we are dealing and complexity of the queries where small warehouse is not able to perform all these tasks then we will resize.

**Scale out or Horizontal Scaling**: Increasing or decreasing the number of clusters to avoid queries going in to the queues.we can increase clusters up to 10 in snowflake. In Snowflake, we can either **scale up** by increasing warehouse size for faster execution of heavy queries, or **scale out** by enabling multi-cluster warehouses to handle high concurrency.