# What is OLAP ?? (Online Analytical Processing)

- **OLAP is a powerful technology for data discovery, including capabilities for limitless report viewing, complex analytical calculations, and predictive "what if" scenario (budget, forecast) planning**

- **Online Analitycal Processing (OLAP) is based on MDM**

| DATA BASES | → | DATA WAREHOUSE | → | OLAP | → | USER |

OLAP Operations

- **Drill Down :** Drill-down operation helps users navigate through the data details.
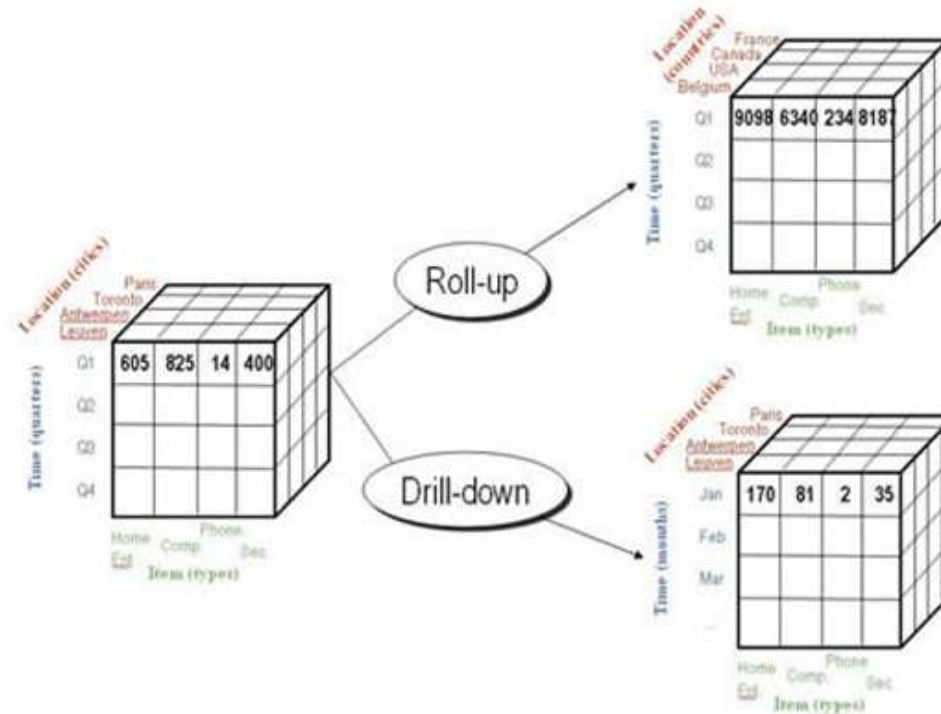
- **Roll up :** Roll up or consolidation refers to data aggregation .

OLAP Operations

- **Slice :** Performs a selection on one dimension of the given cube. Sets one or more dimensions to specific values and keeps subset of dimensions for selected values .
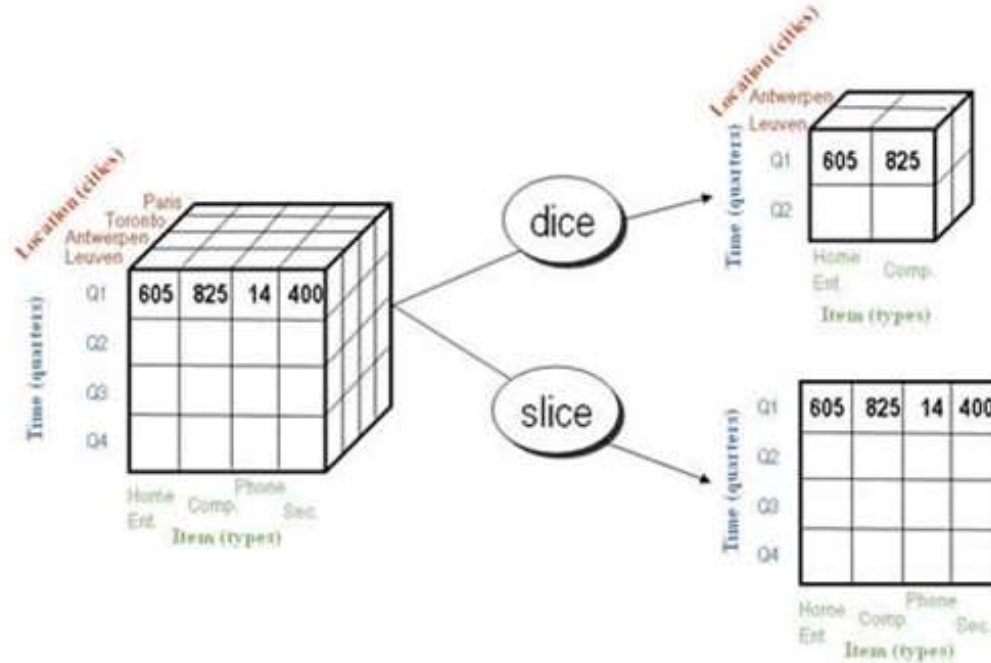
- **Dice :** Define a sub-cube by performing a selection of one or more dimensions. Refers to range select condition on one dimension, or to select condition on more than one dimension. Reduces the number of member values of one or more dimensions.

MOLAP

This is the more traditional way of OLAP analysis. In MOLAP, data is stored in a multidimensional cube.

ROLAP

This methodology relies on manipulating the data stored in the relational database to give the appearance of traditional OLAP's slicing and dicing functionality.

HOLAP

HOLAP technologies attempt to combine the advantages of MOLAP and ROLAP. For summary-type information, HOLAP leverages cube technology for faster performance. When detail information is needed, HOLAP can "drill through" from the cube into the underlying relational data.

OLTP (Online Transaction Processing)

Online Transaction Processing is a processing that supports the daily business operations. An OLTP is a database which must typically allow the real time processing of SQL transaction to support traditional processes, E-commerce and time critical applications.

Requirements

Online transaction processing increasingly requires support for transactions that span a network and may include more than one company. For this reason, new OLTP software uses client/server processing and broking software that allows transaction to run on different computer platforms in a network.

Client-Server Model
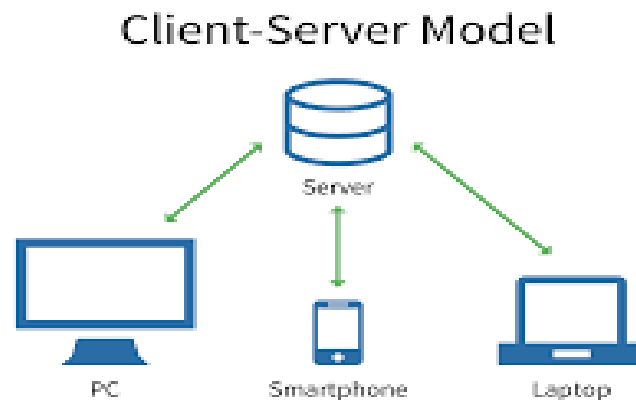
OLTP VS OLAP

	OLTP System Online Transaction Processing (Operational System	OLAP System Online Analytical Processing (Data Warehouse
Source of data	Operational data; OLTPs are the original source of the data.	Consolidation data; OLAP data comes from the various OLTP Databases
Purpose of data	To control and run fundamental business tasks	To help with planning, problem solving, and decision support
What the data	Reveals a snapshot of ongoing business processes	Multi-dimensional views of various kinds of business activities
Inserts and Updates	Short and fast inserts and updates initiated by end users	Periodic long-running batch jobs refresh the data
Queries	Relatively standardized and simple queries Returning relatively few records	Often complex queries involving aggregations
Processing Speed	Typically very fast	Depends on the amount of data involved; batch data refreshes and complex queries may take many hours; query speed can be improved by creating indexes
Space Requirements	Can be relatively small if historical data is archived	Larger due to the existence of aggregation structures and history data; requires more indexes than OLTP
Database Design	Highly normalized with many tables	Typically de-normalized with fewer tables; use of star and/or snowflake schemas
Backup and Recovery	Backup religiously; operational data is critical to run the business, data loss is likely to entail significant monetary loss and legal liability	Instead of regular backups, some environments may consider simply reloading the OLTP data as a recovery method