

## Types of OLAP - ROLAP VS MOLAP VS HOLAP:

### 1. ROLAP Server:

- > ROLAP stands for relational OLAP.
- > There are "intermediate servers" which stand in between relational back-end servers and user frontend tools.
- > They use a relational DBMS to store and handle warehouse data.
- > The systems work primarily from the data that resides in a relational database, where the base data and dimension tables are stored as relational tables.
- > This model permits the multidimensional analysis of data.

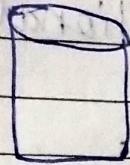
### ROLAP Architecture

\* Database Server

\* ROLAP Server

\* Front-end tools

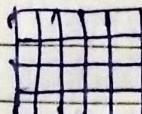
Database  
Server



SQL

Result  
set

ROLAP server.



Metadata  
request  
processing

INFO  
requestresult  
setFront-end  
tools.

> ROLAP is the latest and fastest - growing OLAP technology segment in the market.

> We can use the same data in different ways without changing the underlying Table structure.

e.g.: pivot tables, SQL views, DWT.

Advantages:

Scalability: It can handle large amount of data.

Flexibility: It can perform complex queries.

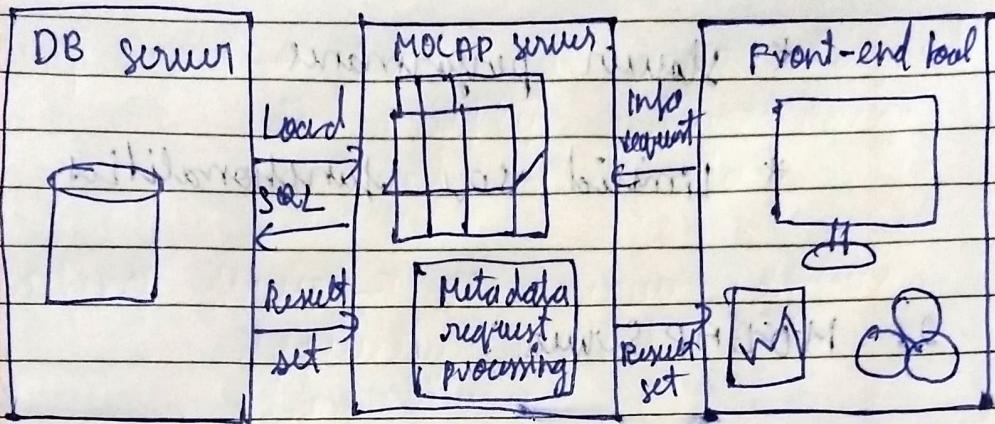
Detailed Data Access: We can see the data in detailed manner.

## Dis - Adv :

- \* slower performance
- \* limited SQL functionalities.

## 2. MOLAP Server:

- > It stands for multidimensional OLAP.
- > The system is based on a native logical model that directly supports multi-dimensional data and operations.
- > Data are stored physically into multidimensional arrays and positional techniques are used to access them.
- > MOLAP stores the data in a special format called a "multidimensional cube" rather than in a regular database.
- > Here the data is already summarised and calculated based on what the user needs.



> Applications requiring iterative and comprehensive time-series analysis of trends are well-suited for MOLAP Technology.

> It is hard to maintain multiple subject areas in RDBMS. Some vendors can solve these problems by continuing queries from MOLAP tools to detailed data in RDBMS.

A disadvantage is:

> Excellent performance

> Can perform complex calculations

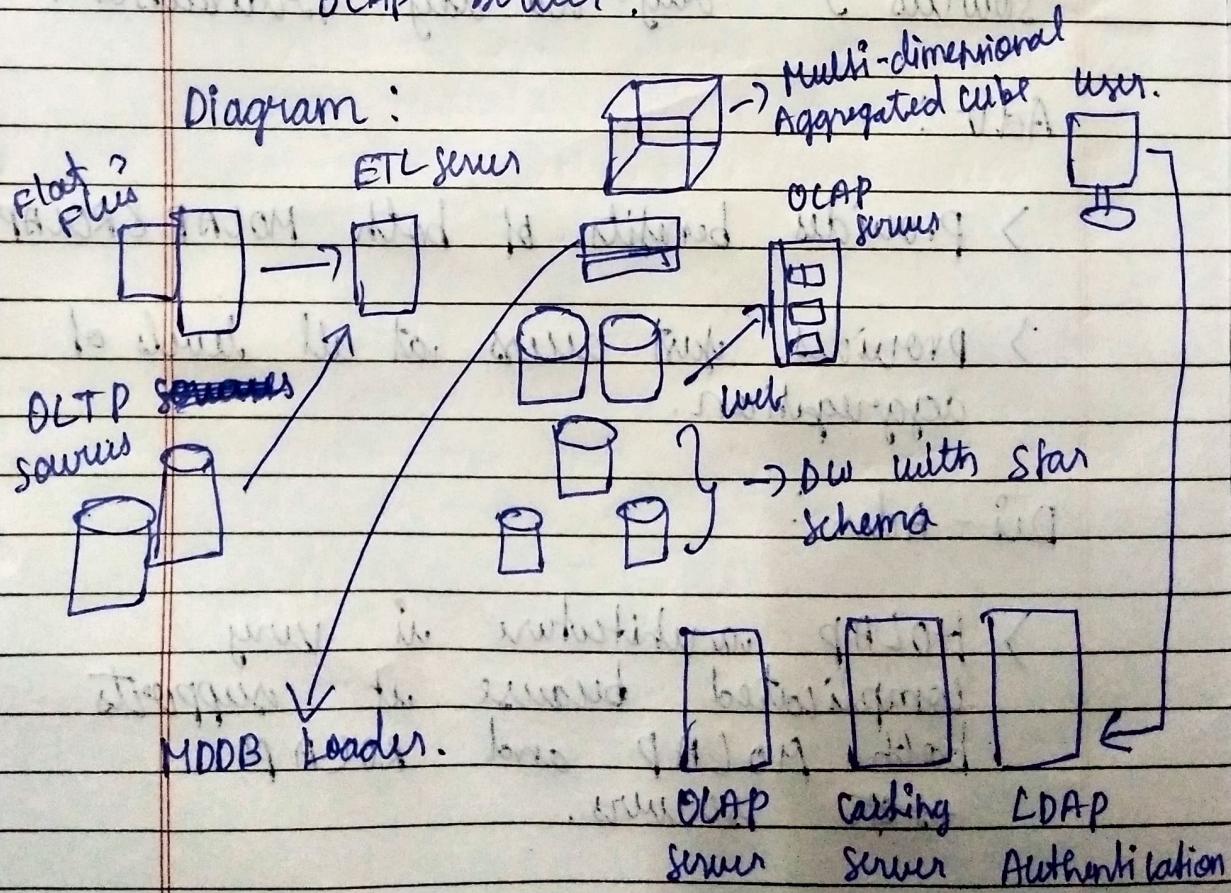
> Limited in the amount of information it can handle.

> Requires additional investment.

### 3. HOLAP Server (or) hybrid OLAP

- > It combines the features of MOLAP & ROLAP into a single architecture.
- > The system can store both the detailed data in the relational tables and the data in the pre-calculated cubes.
- > The Microsoft SQL server provides since 2000 provides a hybrid OLAP server.

Diagram :



MDDDB → Multidimensional Database: Leader.

MOLAP server → This is a server designed to quickly analyse large amount of data.

Caching server → The server stores frequently accessed data temporarily.

LDAP → This is a method used to verify user identities, usually for logging into systems.

OLTP → Database that handle sources day-to-day transaction.

Advantages:

> provides benefits of both MOLAP & ROLAP

> provides fast access at all levels of aggregation.

Dis-Adv:

> HOLAP architecture is very complicated because it supports both MOLAP and ROLAP servers.