HIVE TUTORIAL

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What's in it for you?

1. History of Hive

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2. What is Hive?

What's in it for you?

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2. What is Hive?
3. Architecture of Hive

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7. Different modes of Hive

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7. Different modes of Hive
8. Difference between Hive and RDBMS

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7. Different modes of Hive
8. Difference between Hive and RDBMS
9. Features of Hive

History of Hive

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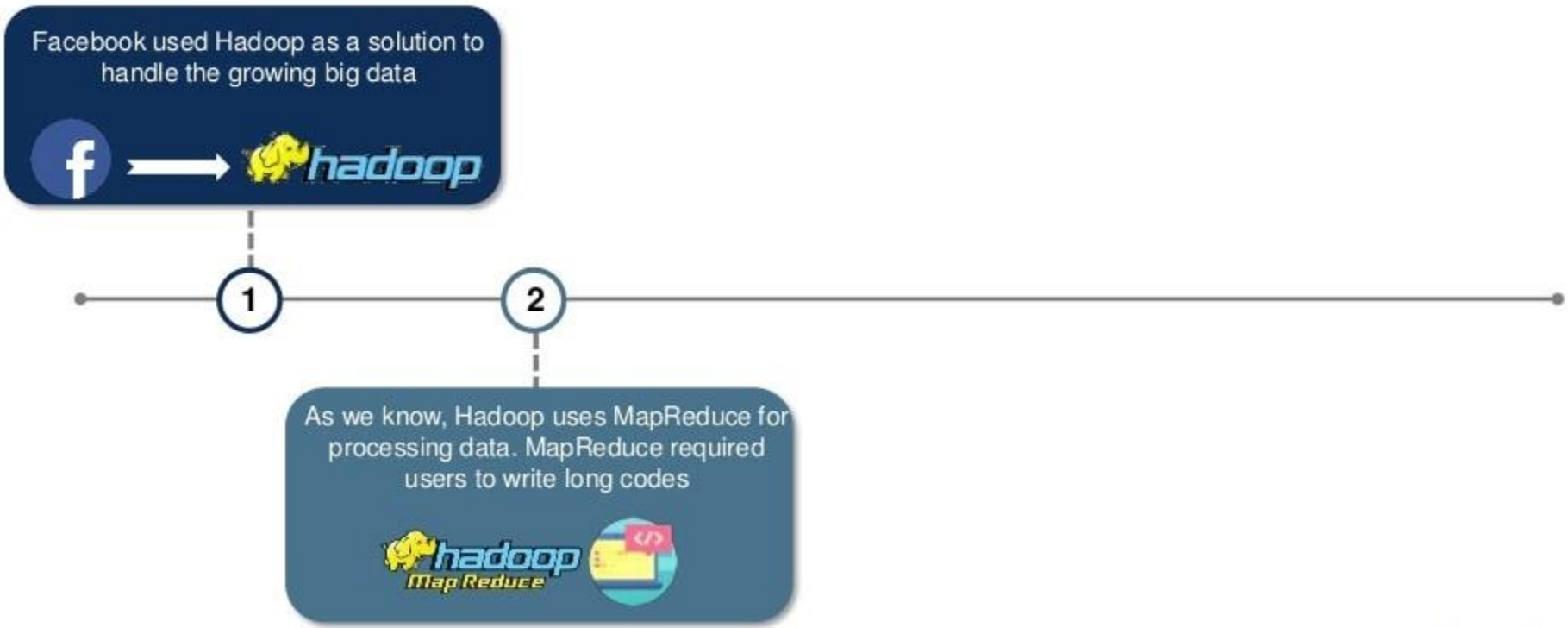

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History of Hive

1. Facebook used Hadoop as a solution to handle the growing big data

2. As we know, Hadoop uses MapReduce for processing data. MapReduce required users to write long codes

3. Not all users were well versed with Java and other coding languages. This proved to be a disadvantage for them

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4. Users were comfortable with writing queries in SQL

5. Hive was developed with a vision to incorporate the concepts of tables, columns just like SQL

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Why Hive?

Problem

For processing and analyzing data, users found it difficult to code as not all of them were well versed with the coding languages

Processing

Analyzing

Solution

Users required a language similar to SQL which was well known to all the users

Solution

HiveQL

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What is Hive?

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Hive is a data warehouse system which is used for querying and analyzing large datasets stored in HDFS

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Architecture of Hive

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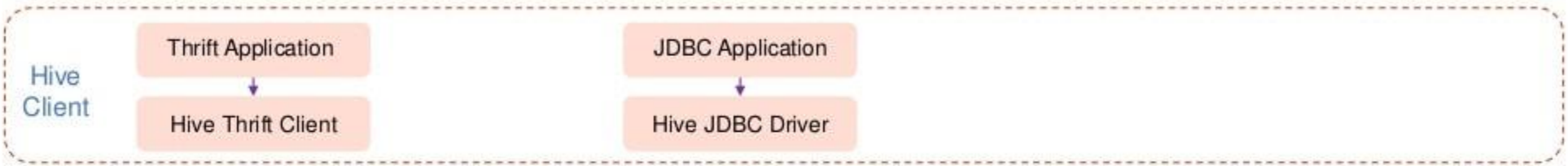
Hive Client supports different types of client applications in different languages for performing queries

Architecture of Hive

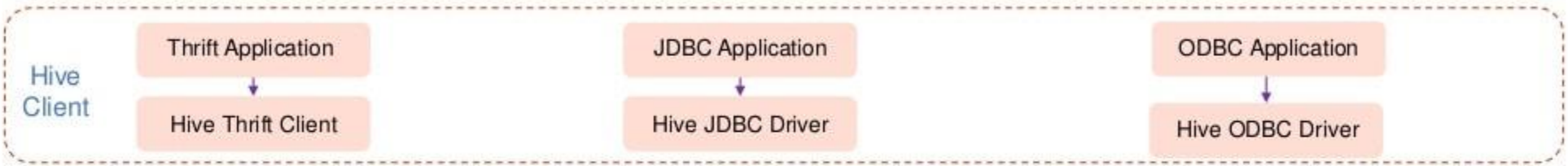
Thrift is a software framework. Hive server is based on thrift, so it can serve the request from all the programming languages that supports thrift

Architecture of Hive



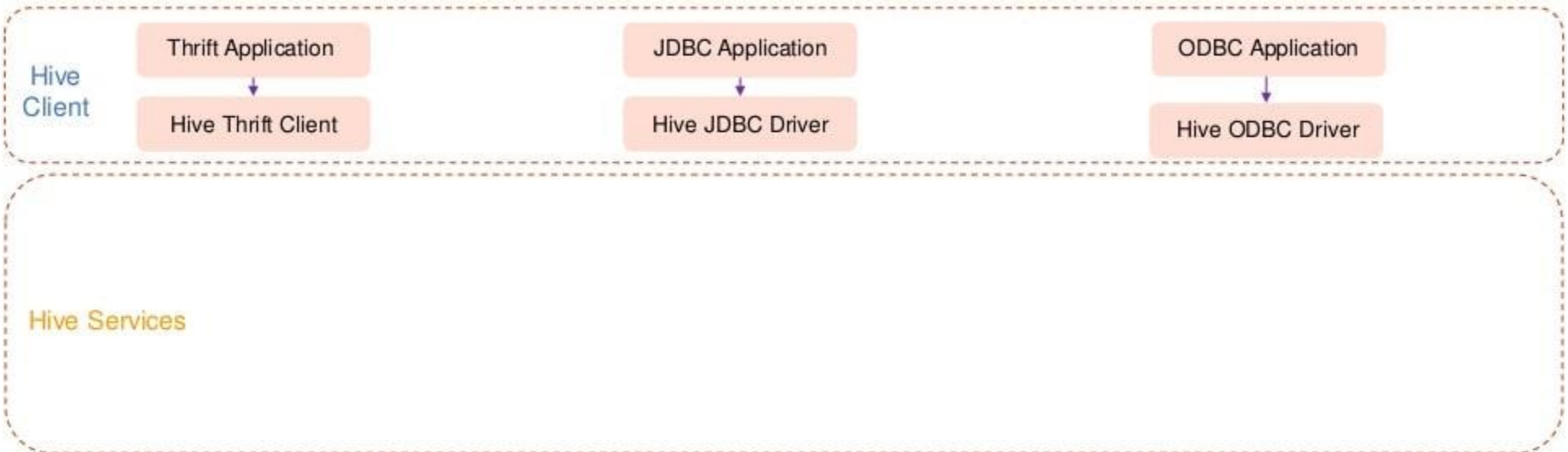
JDBC - Java Database Connectivity
JDBC application is connected through JDBC Driver

Architecture of Hive

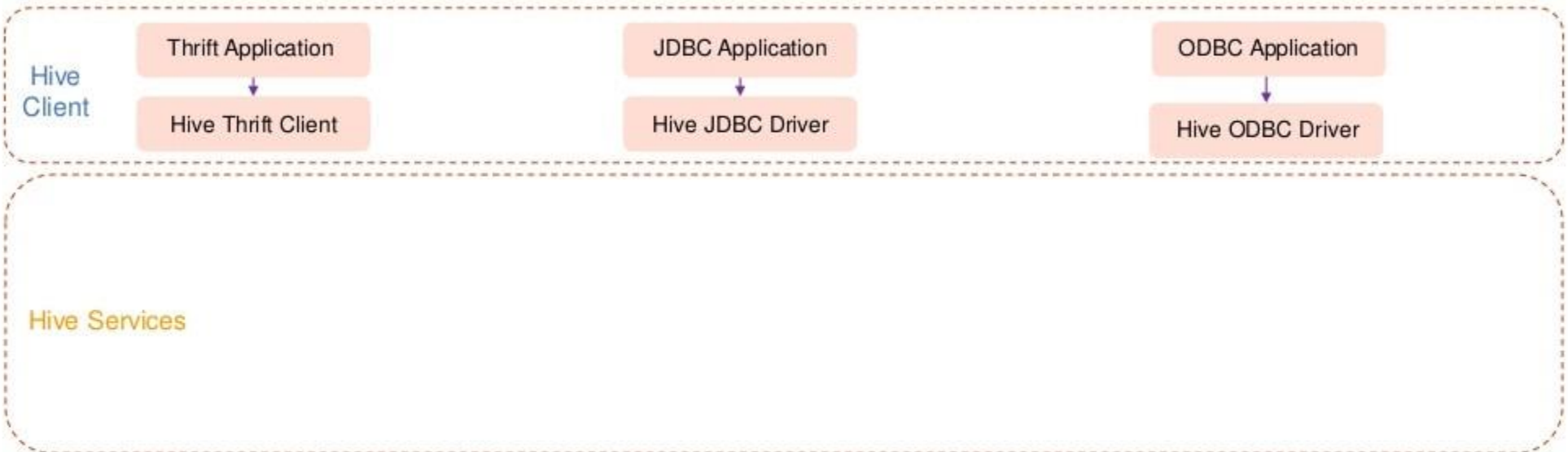


ODBC - Open Database Connectivity
ODBC application is connected through ODBC Driver

Architecture of Hive

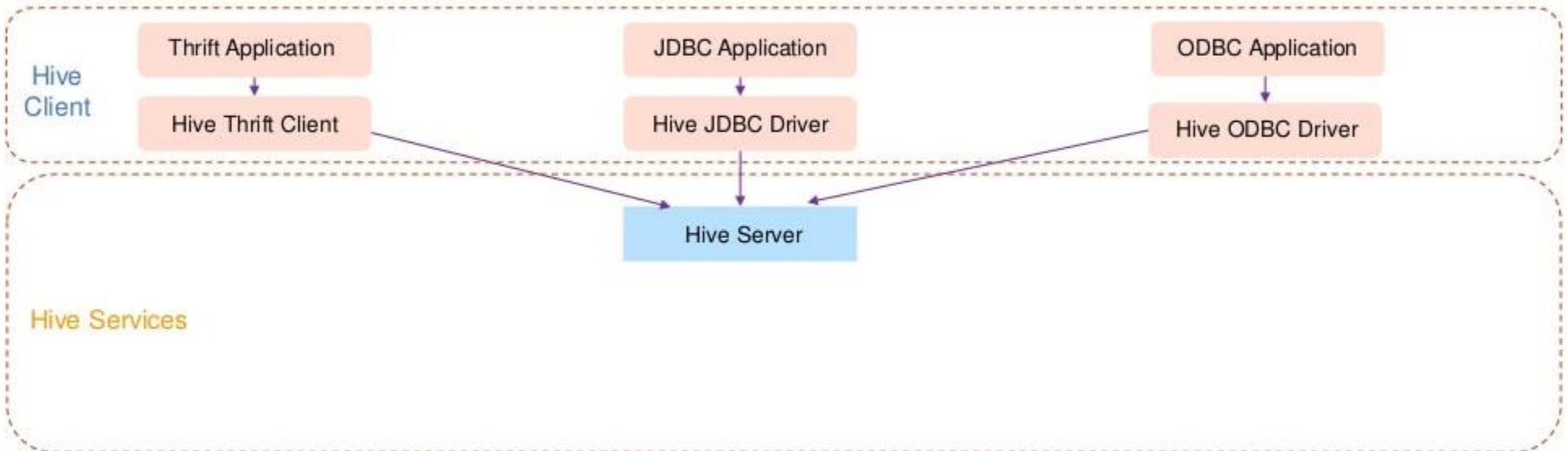


Architecture of Hive



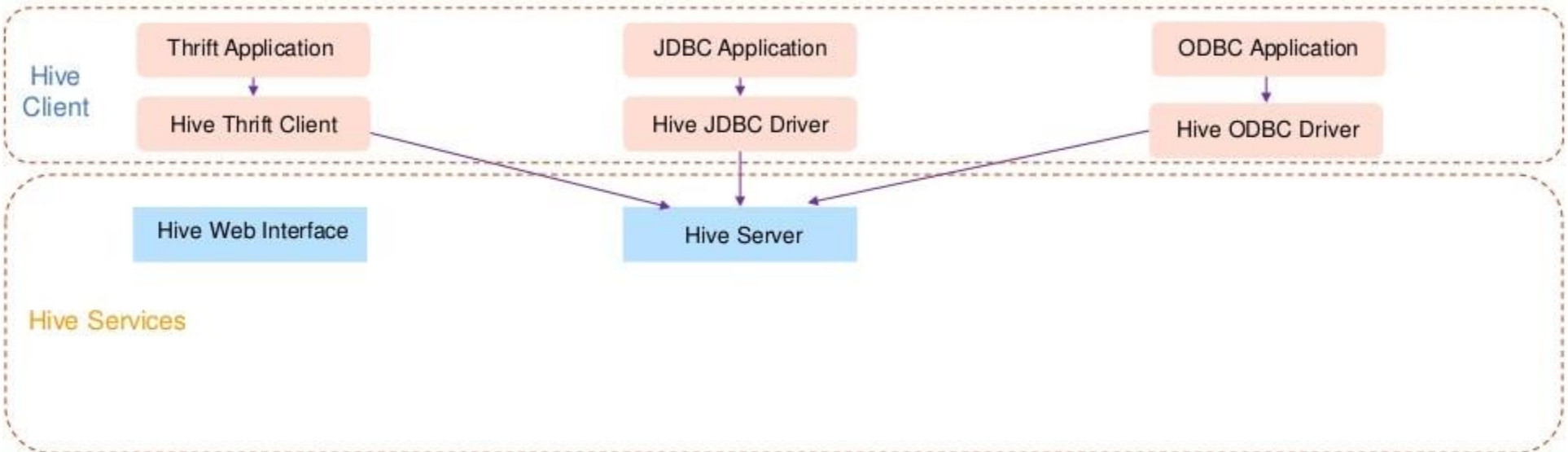
Hive supports various **services**

Architecture of Hive



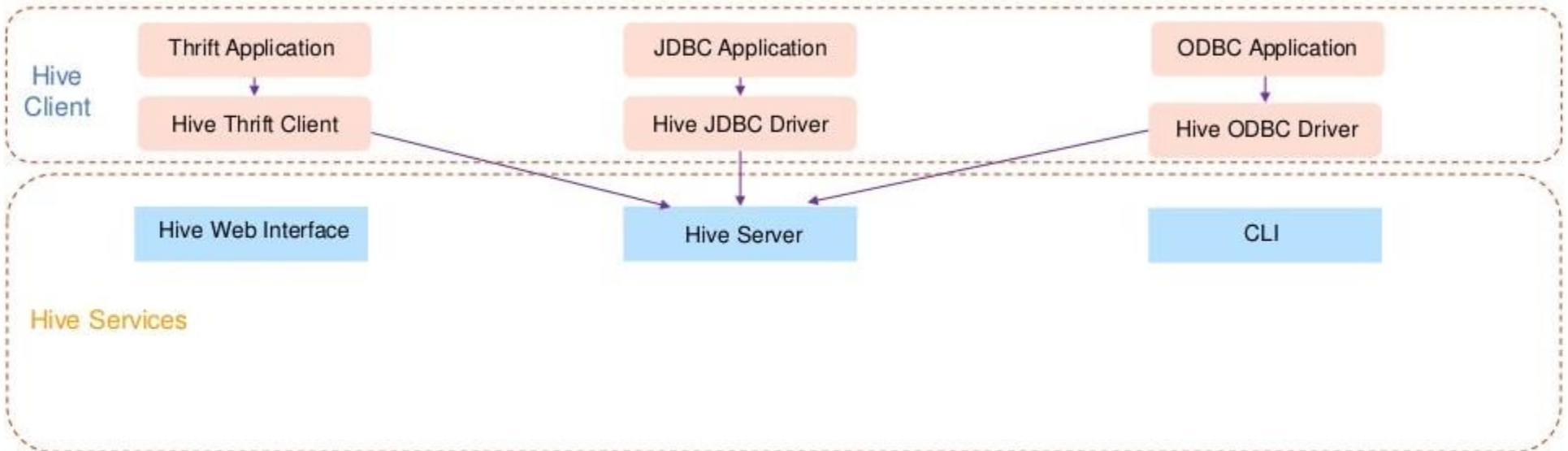
All the client requests are submitted to the **Hive server**

Architecture of Hive



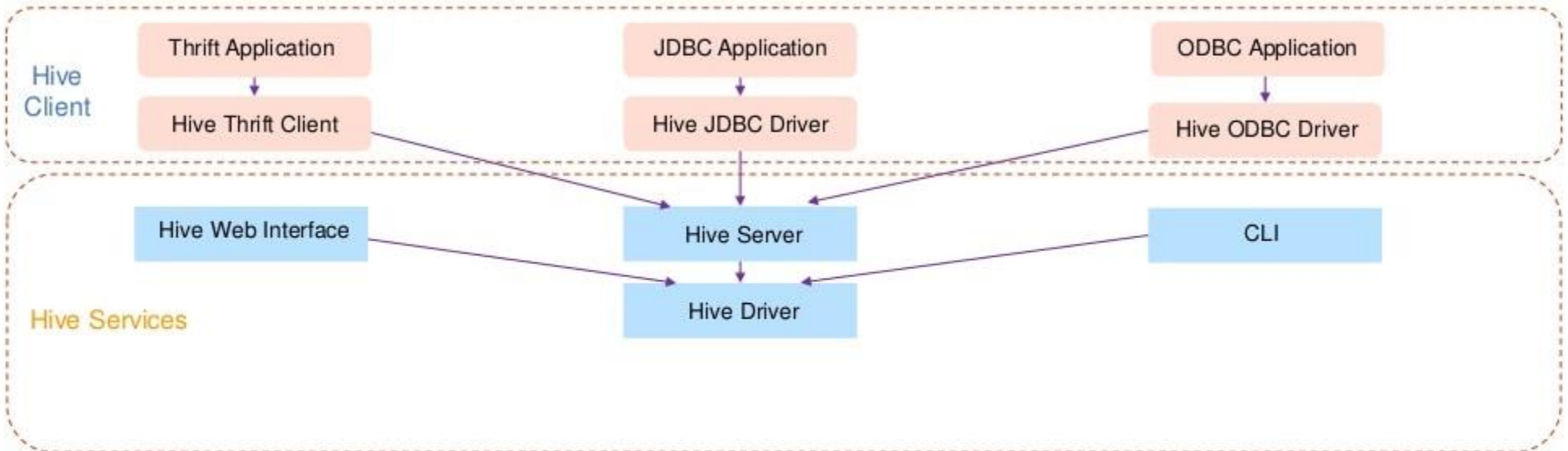
GUI is provided to execute Hive queries

Architecture of Hive



Commands are executed directly in **CLI**

Architecture of Hive

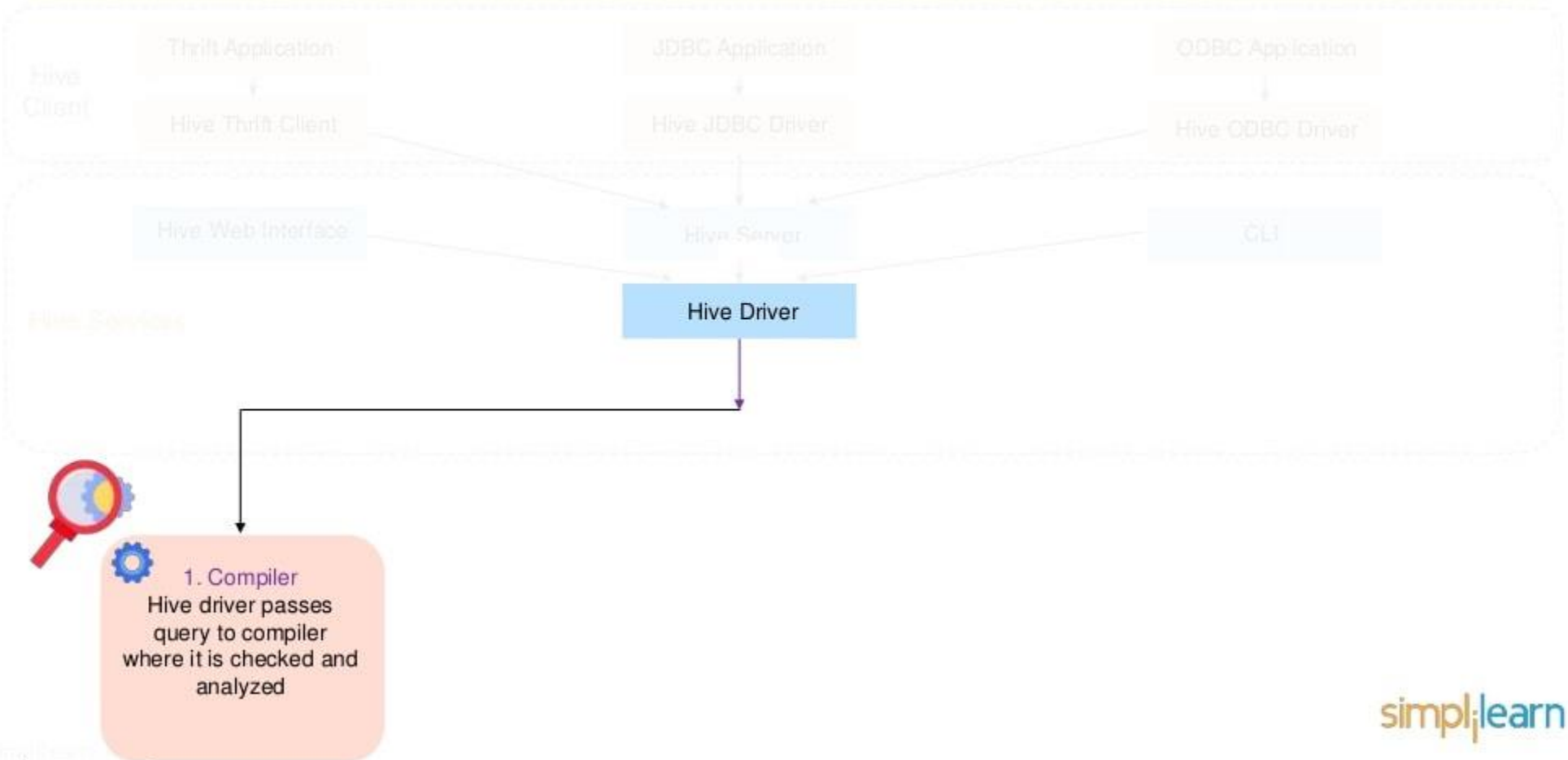


Hive driver is responsible for all the queries submitted

Architecture of Hive

The Hive Driver now performs 3 steps internally

Architecture of Hive



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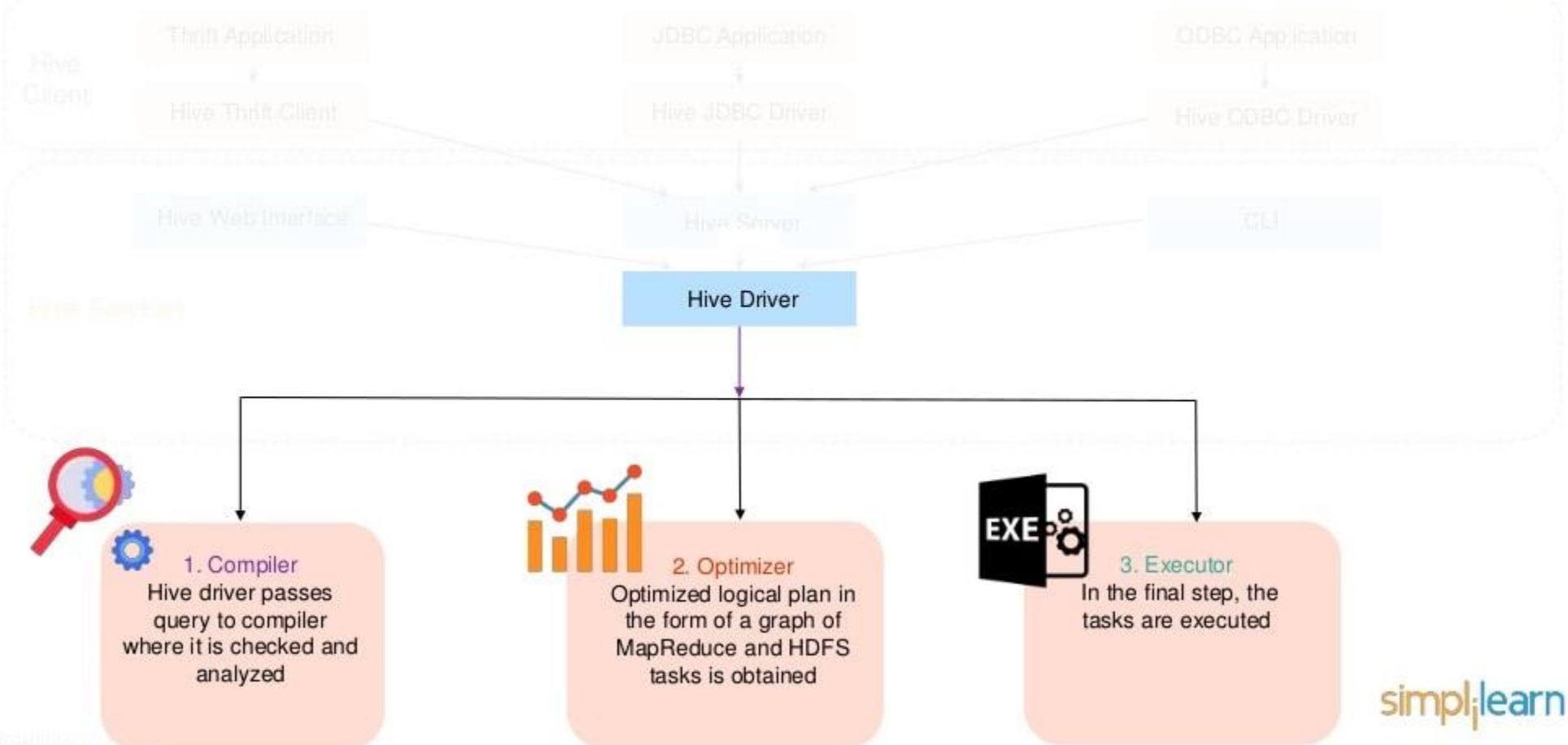

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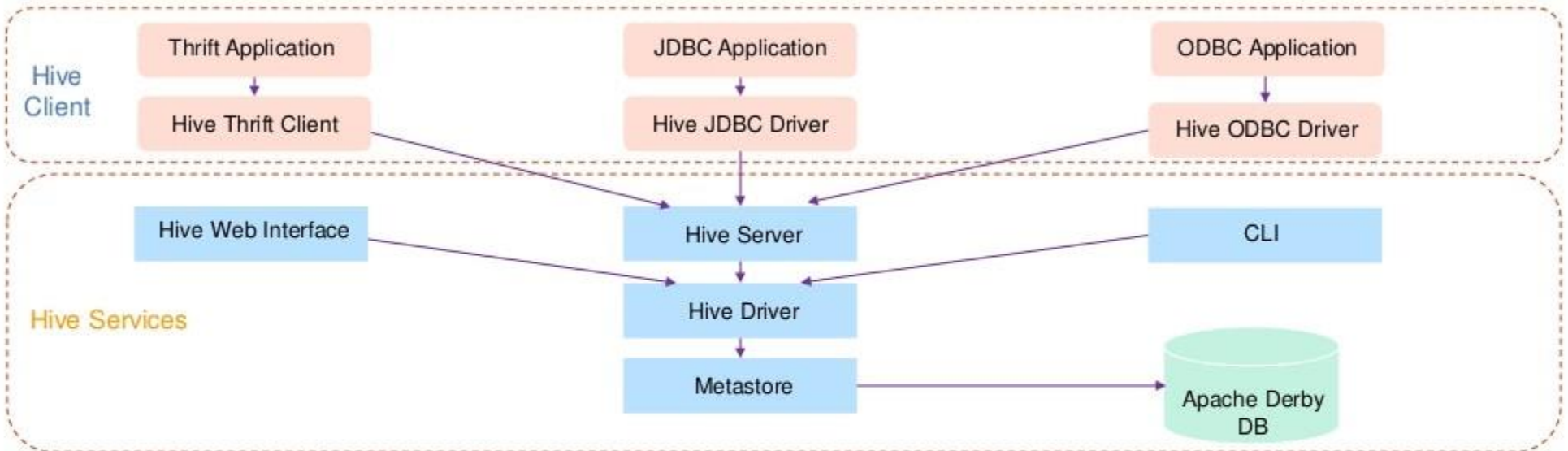
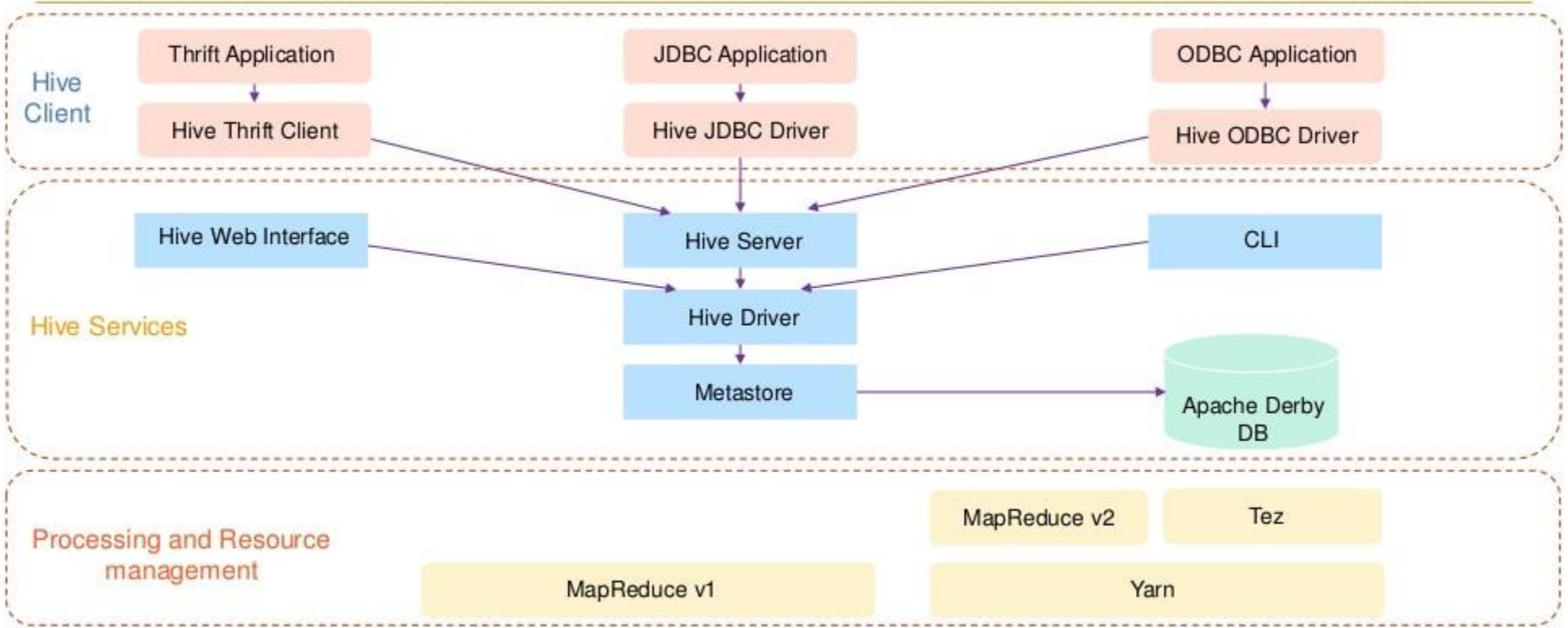


Metastore is a repository for Hive metadata. Stores metadata for Hive tables

Architecture of Hive



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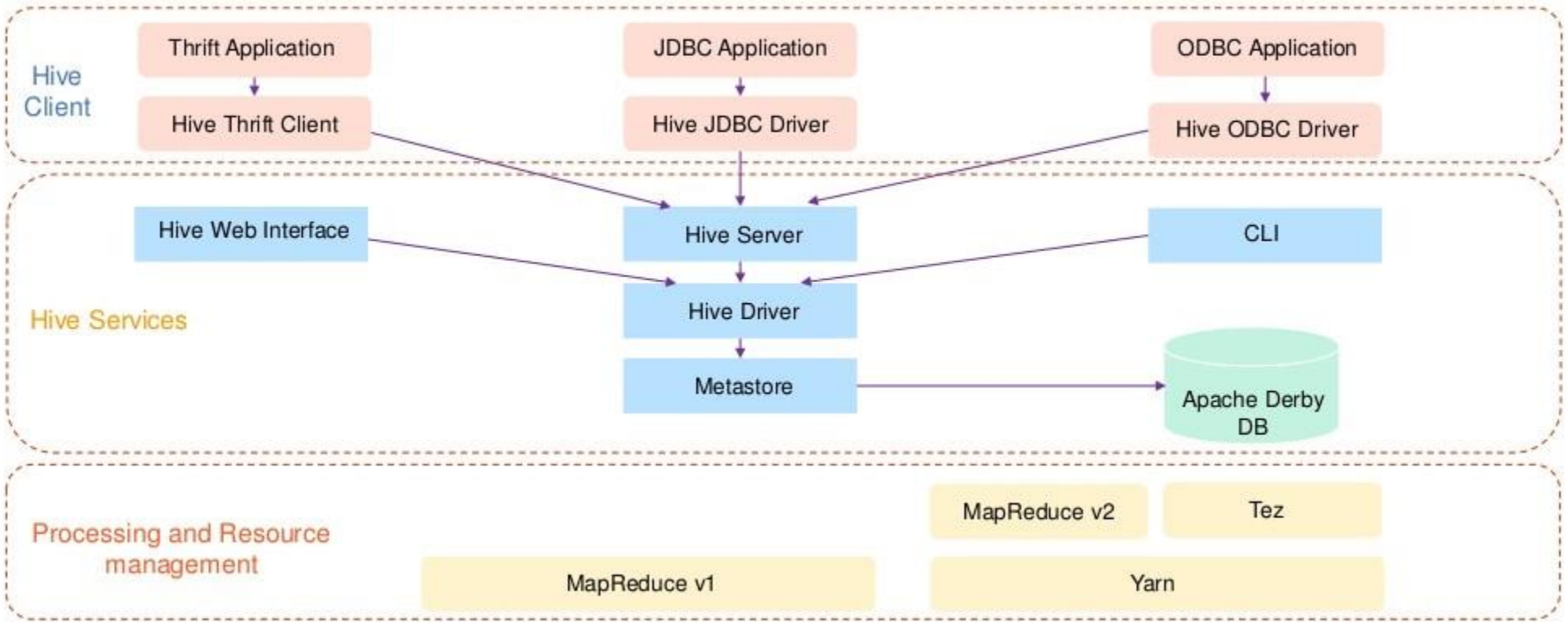
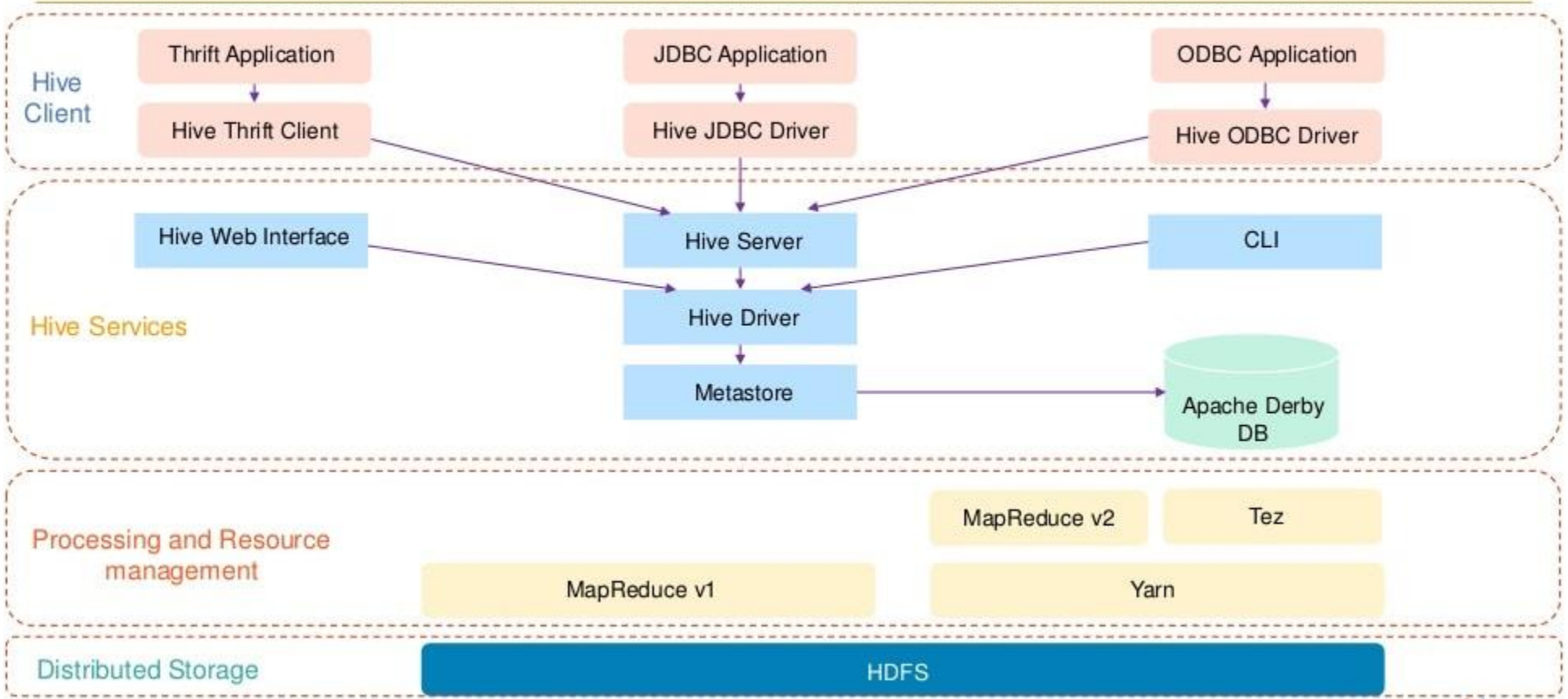


Hive uses MapReduce framework to process queries

Architecture of Hive



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Data flow in Hive

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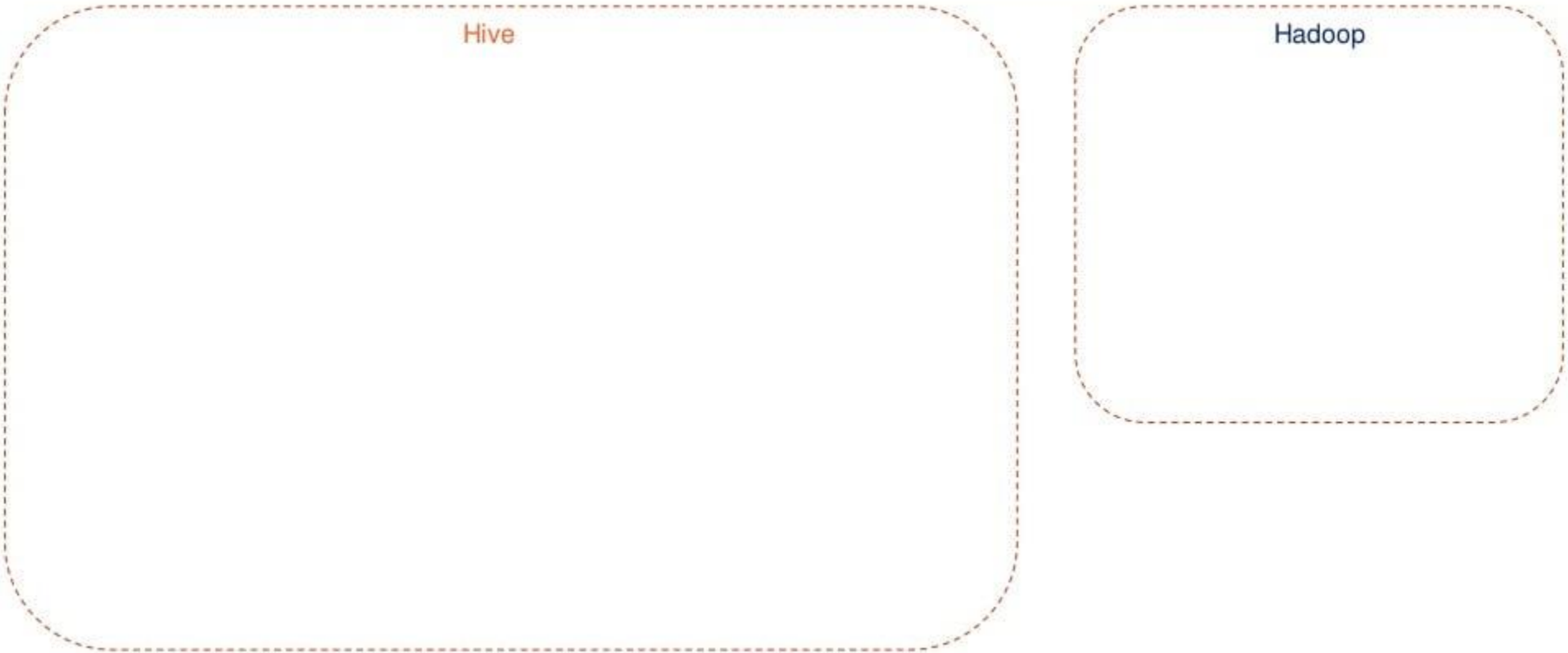

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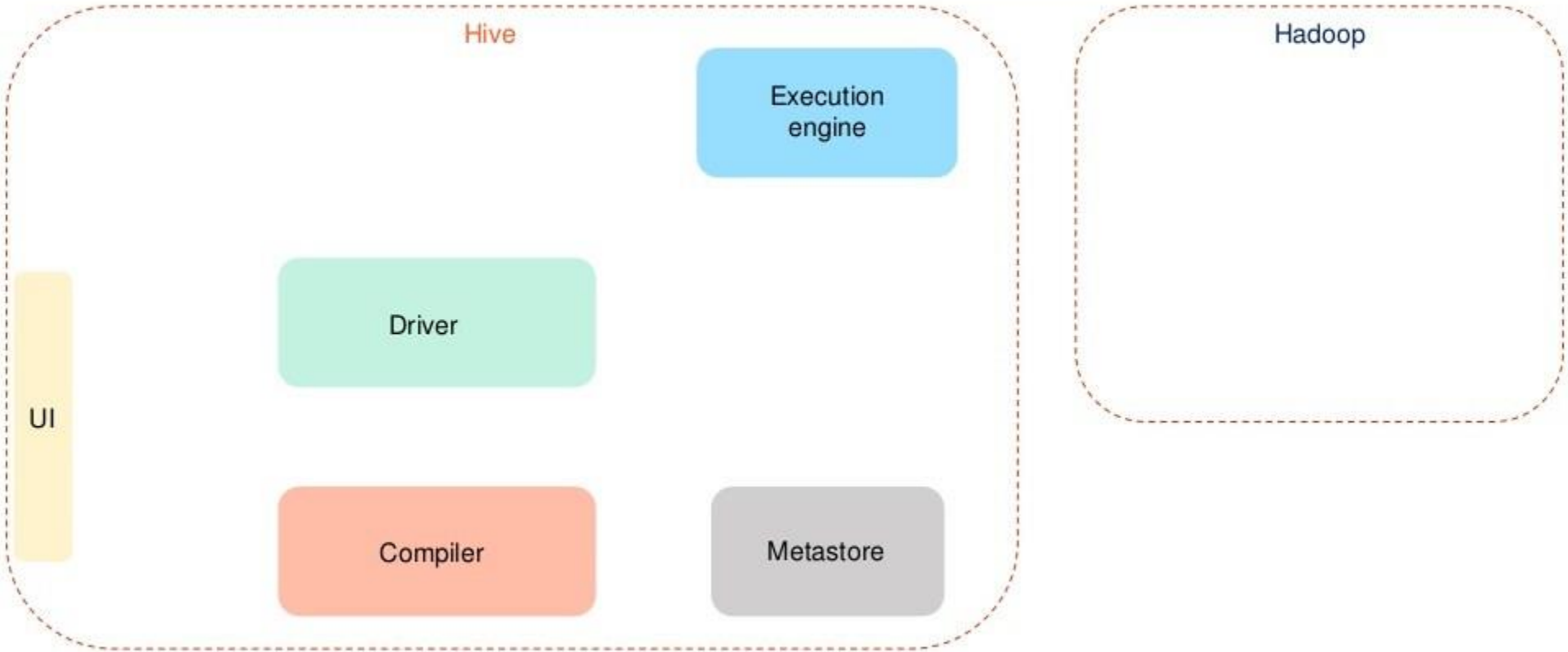

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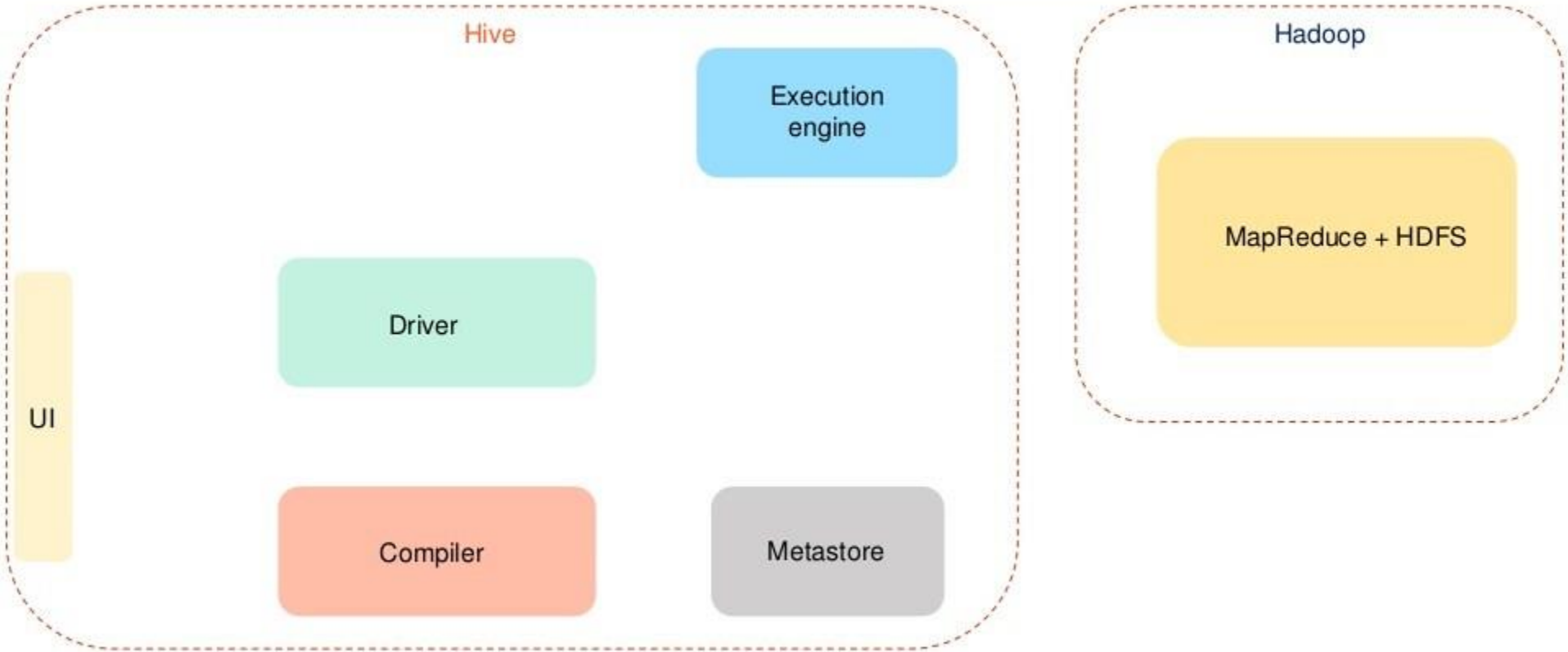

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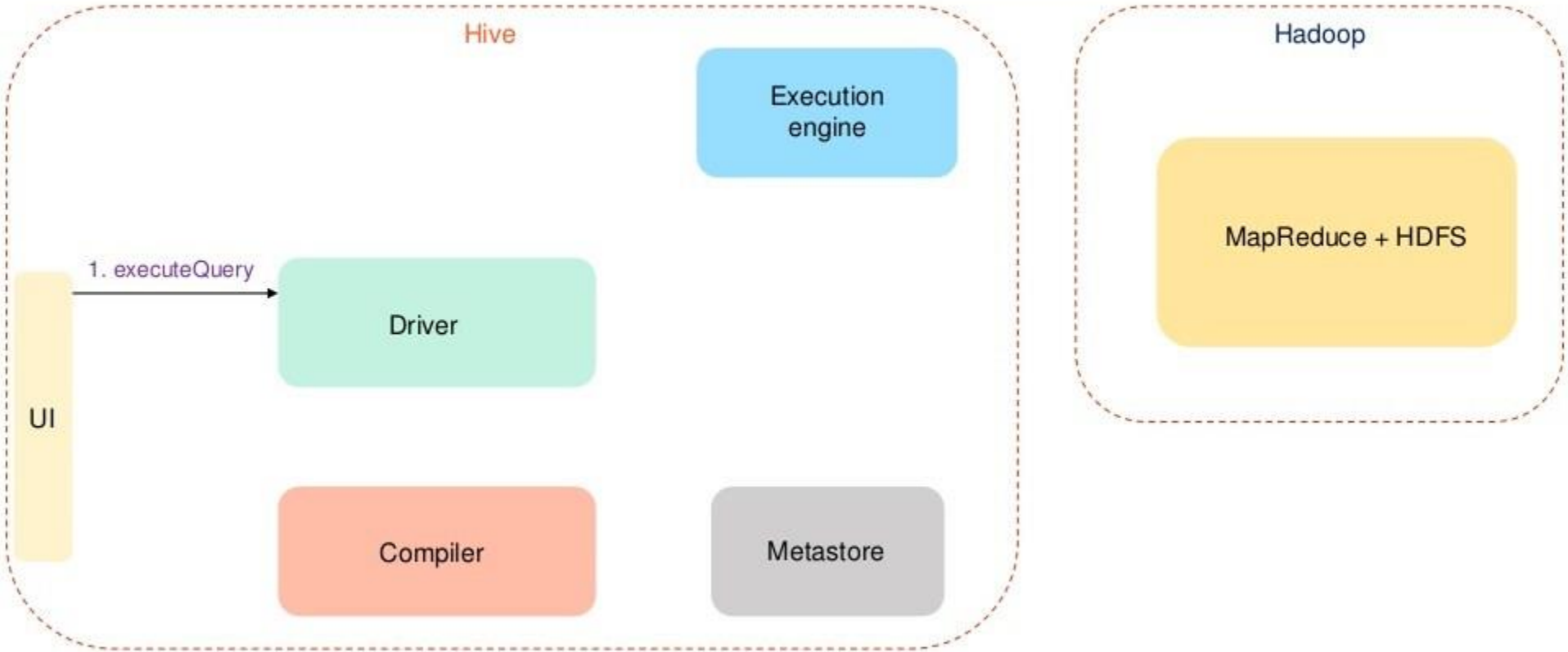

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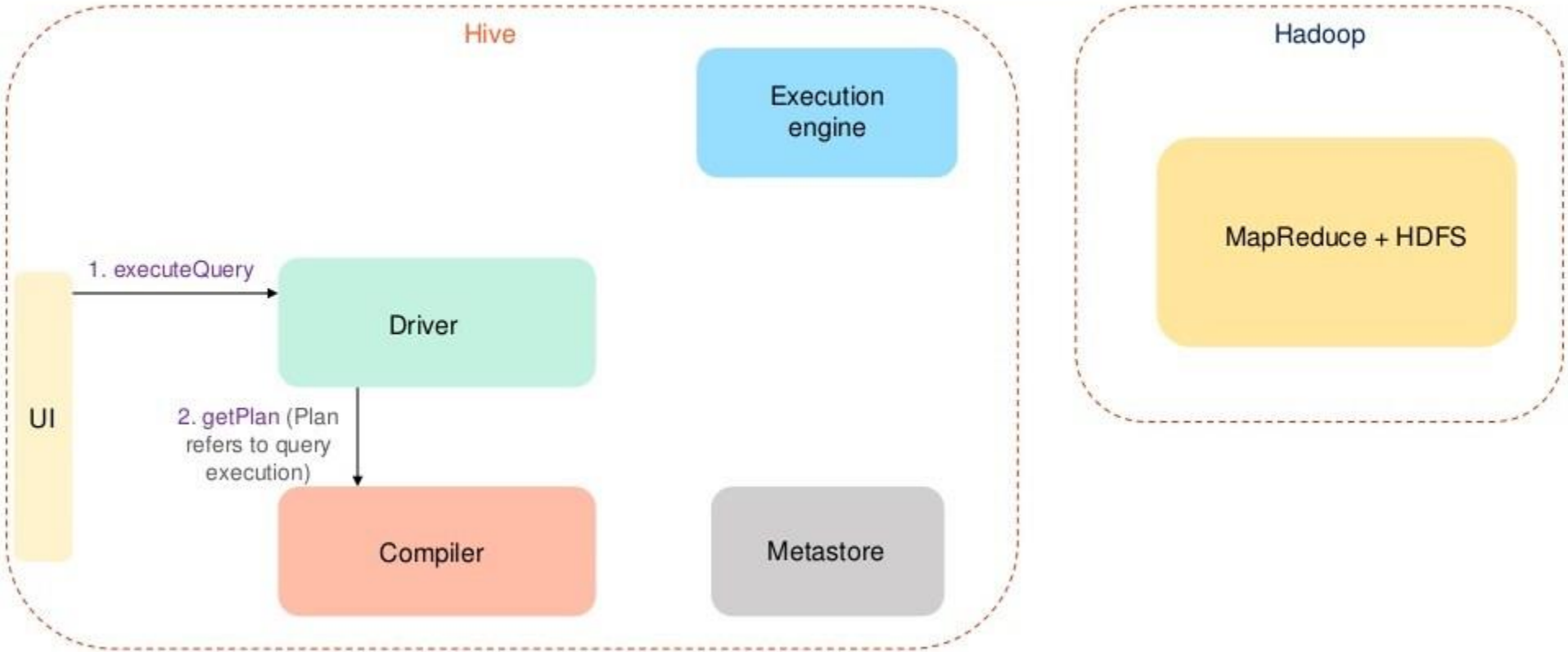

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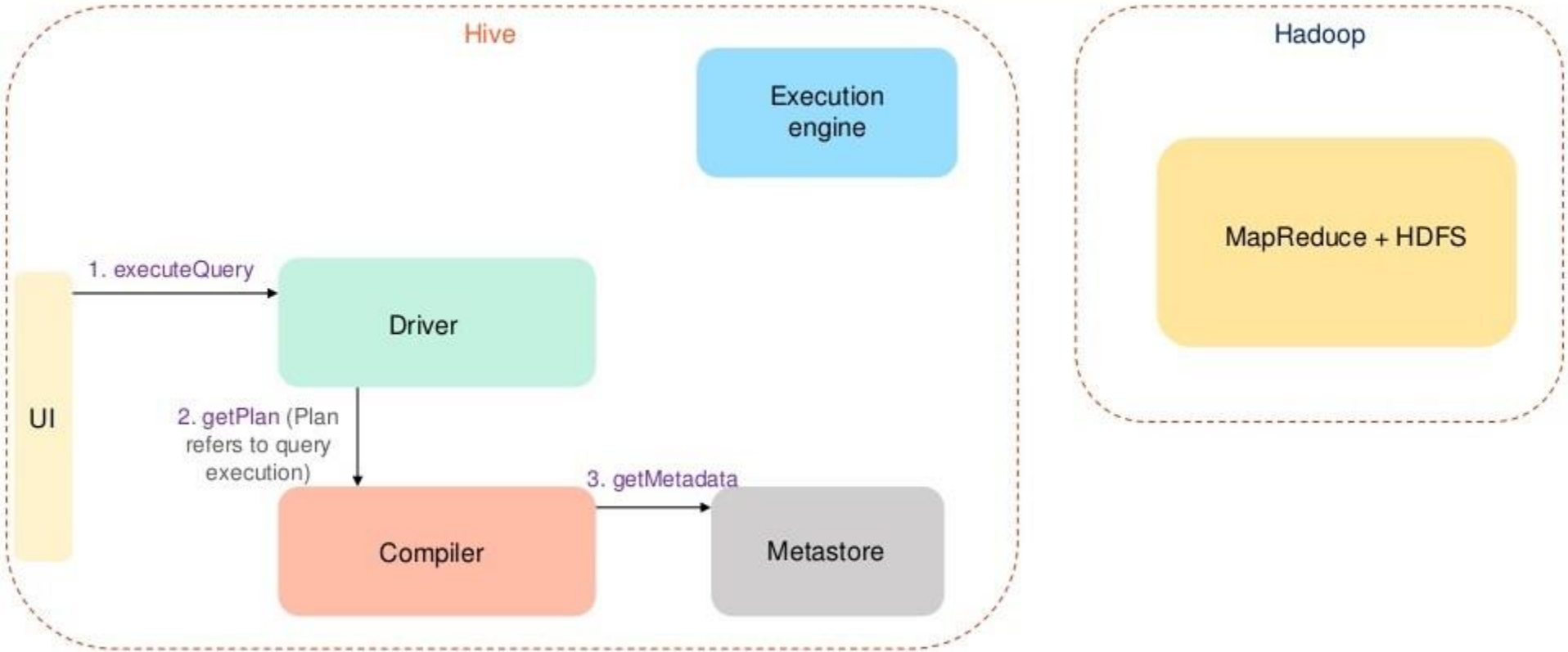

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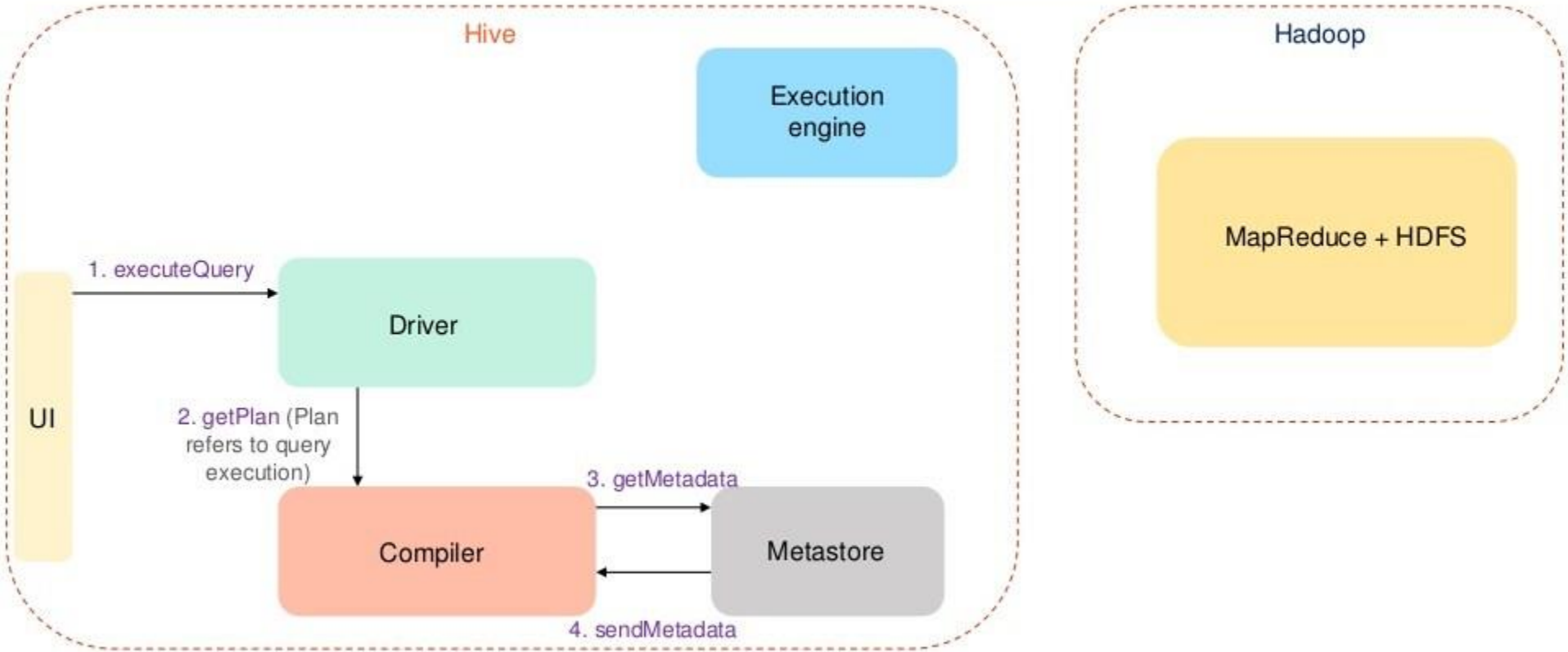

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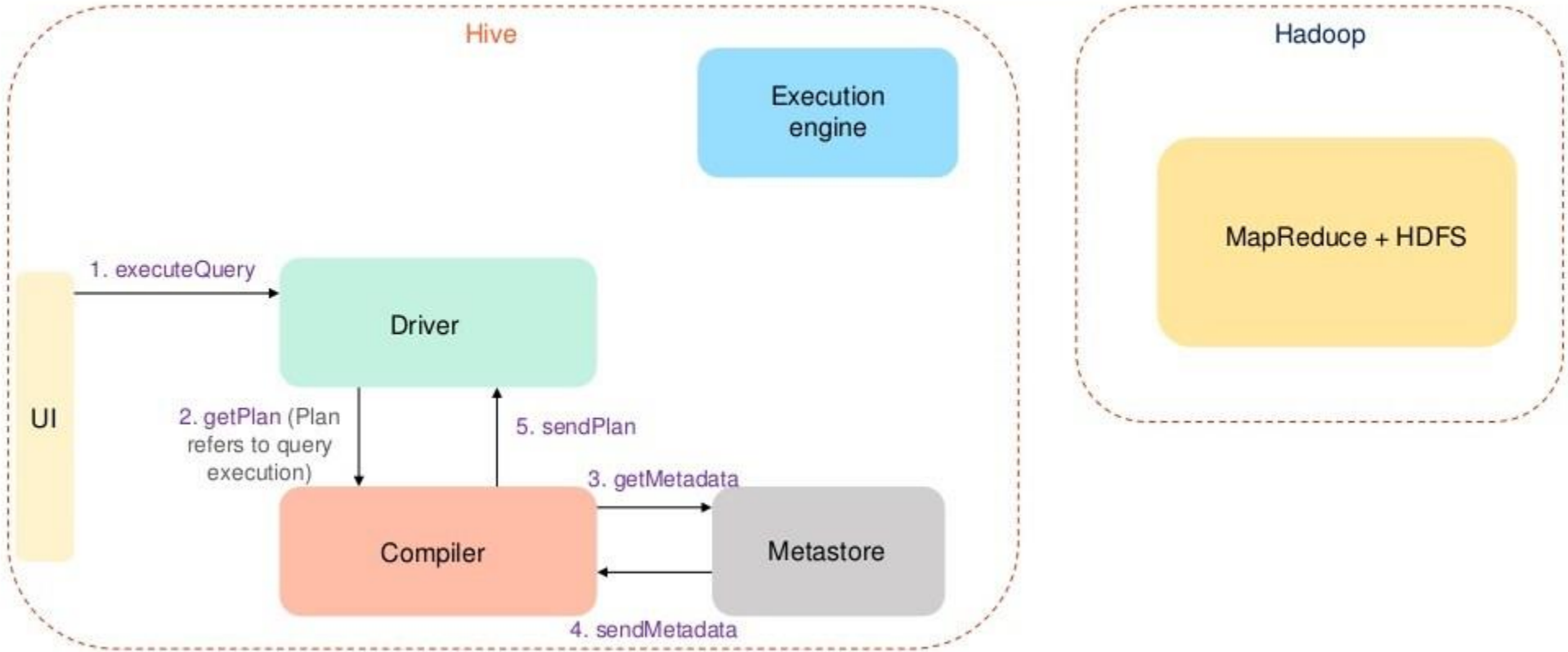

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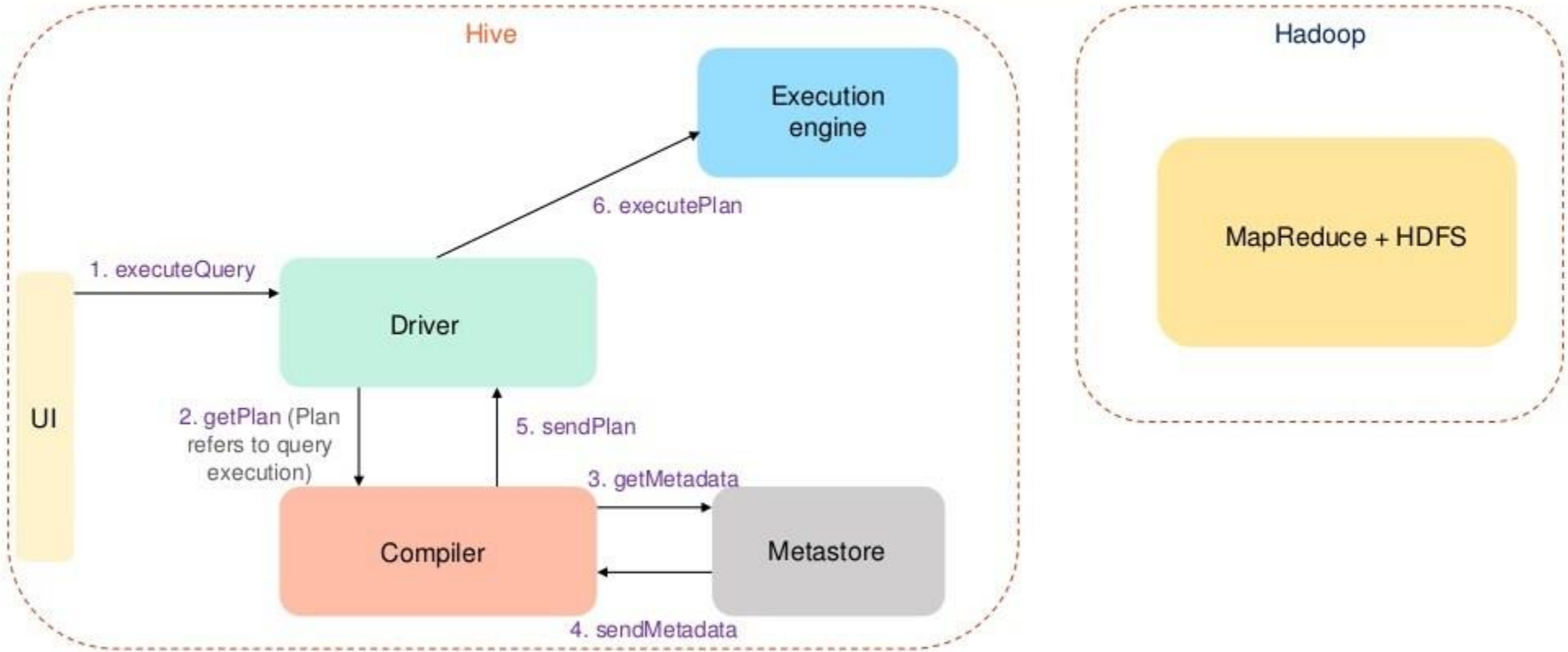

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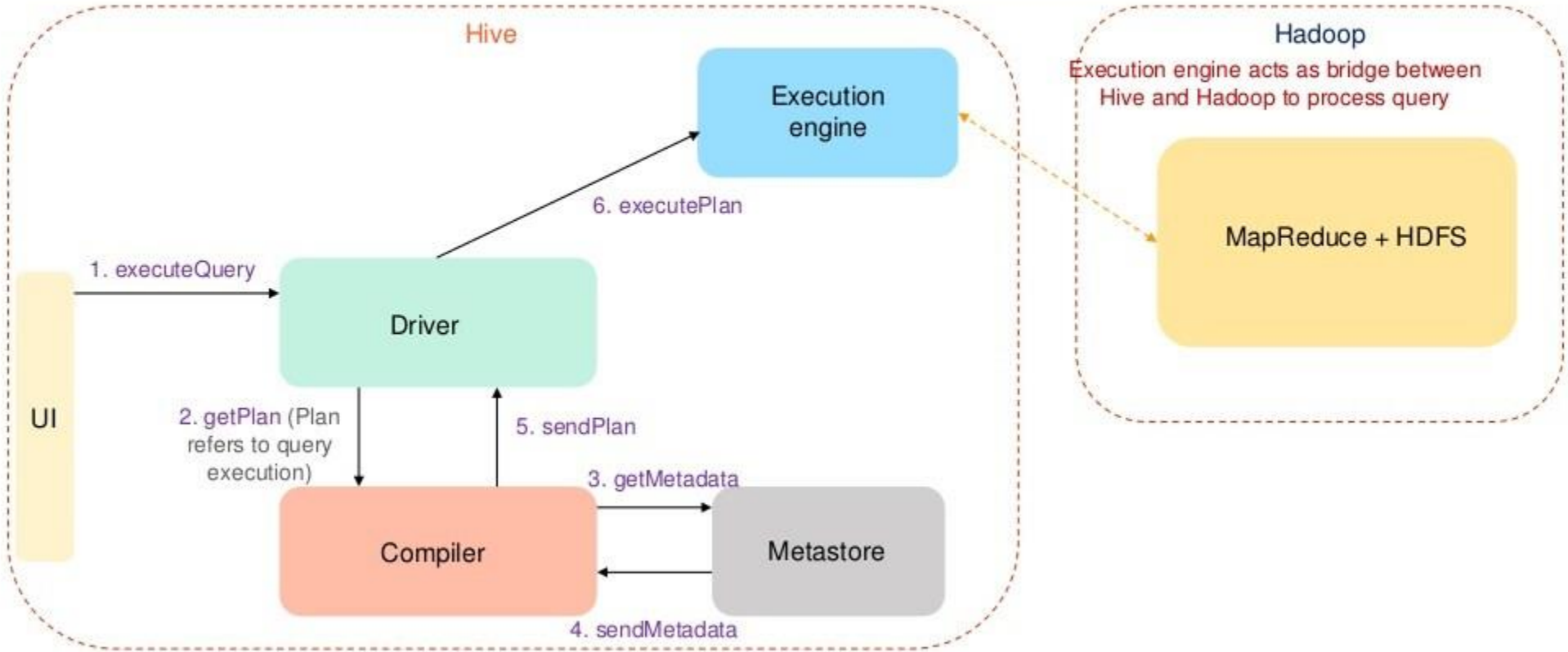

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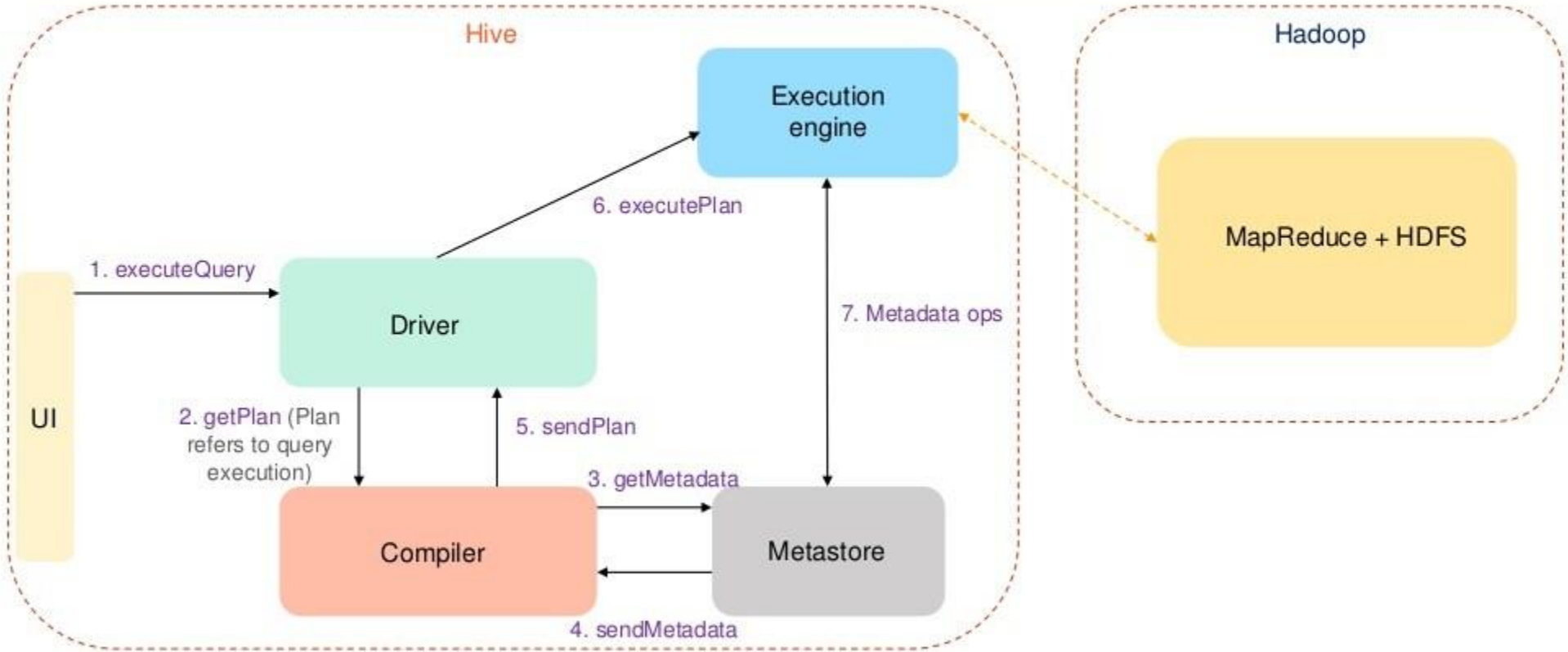

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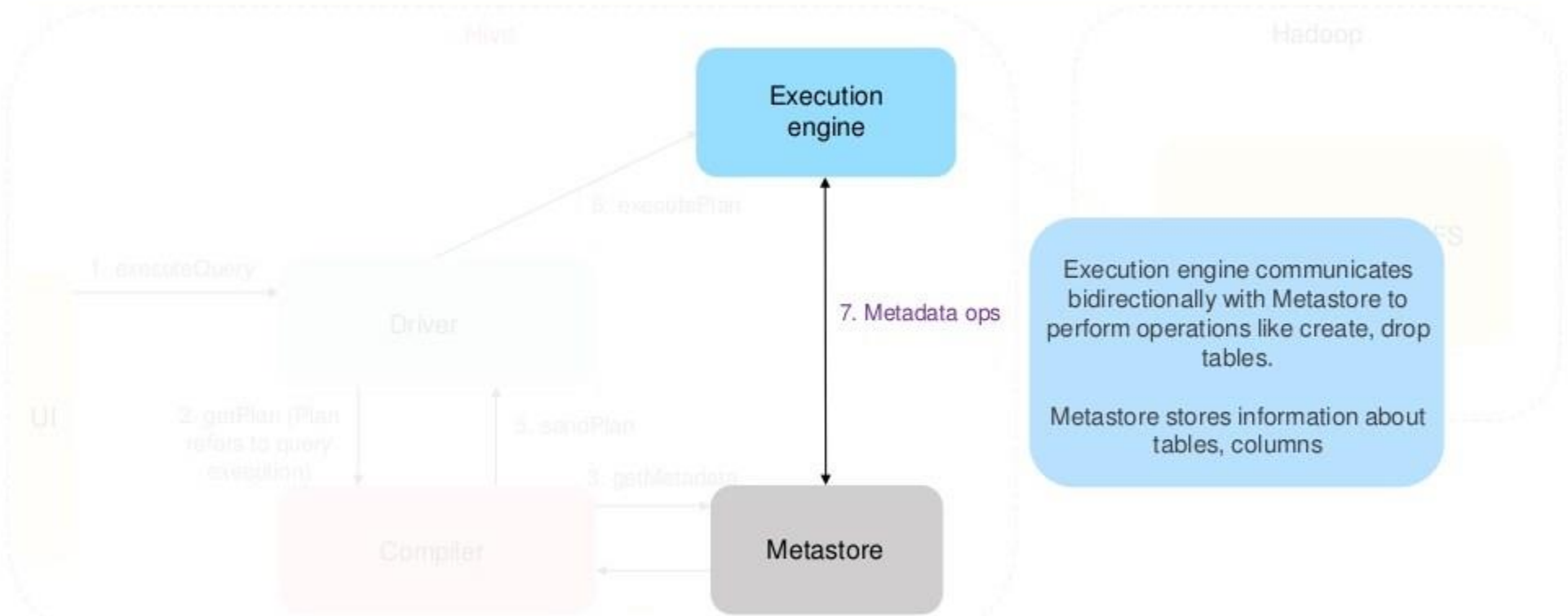

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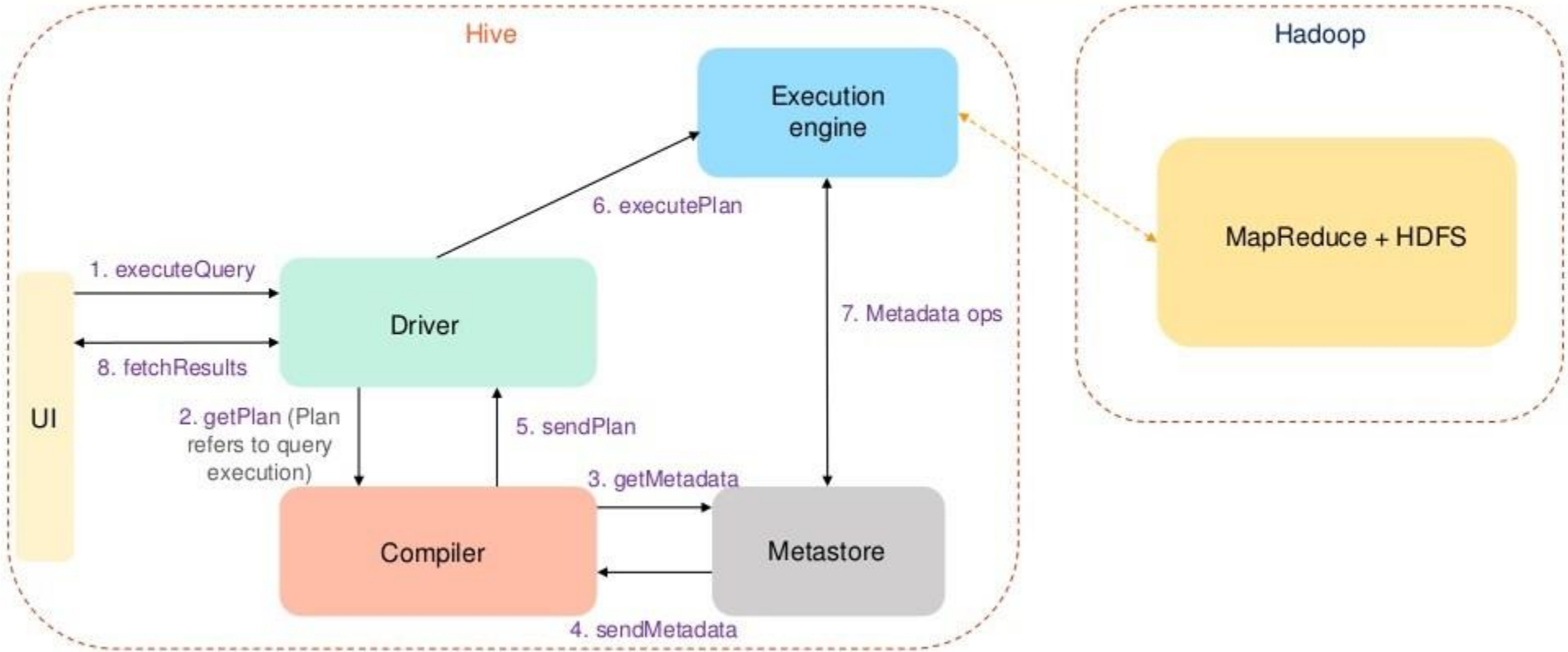

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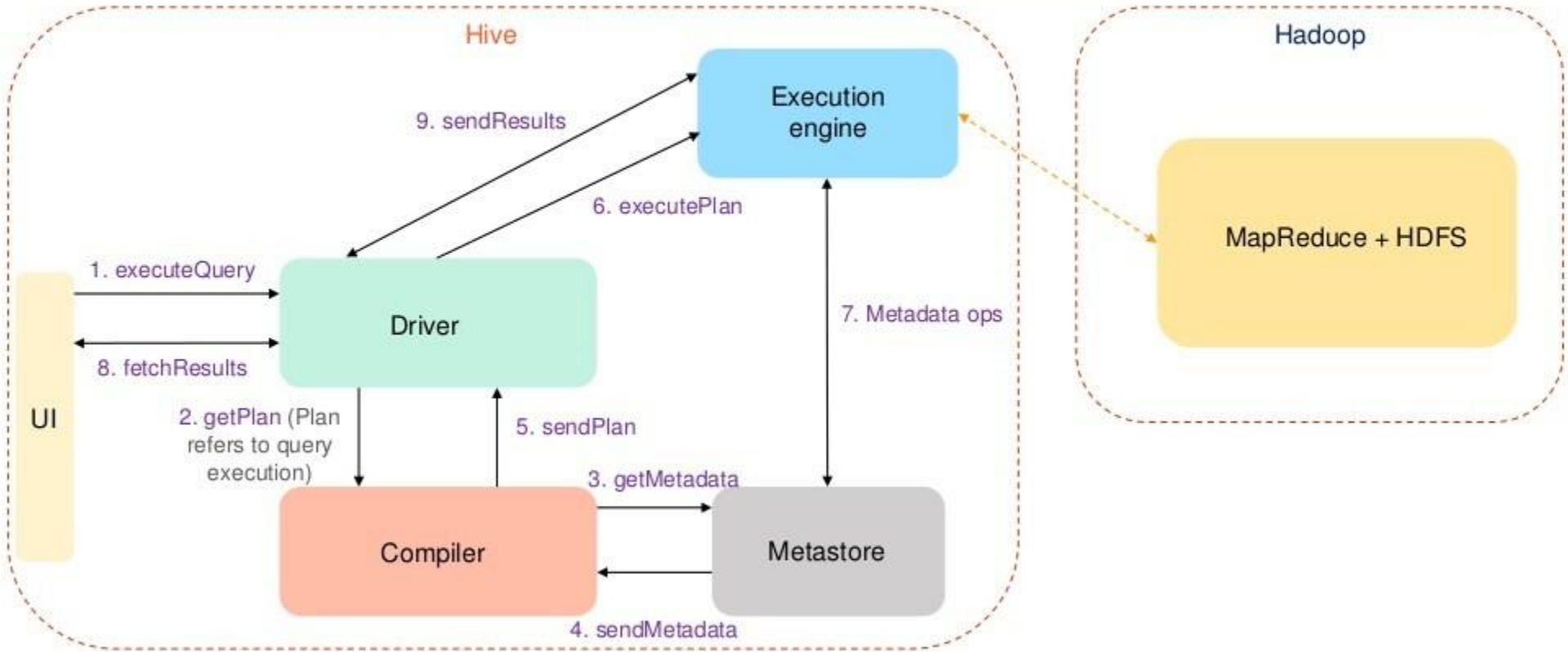

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Hive Data Modeling

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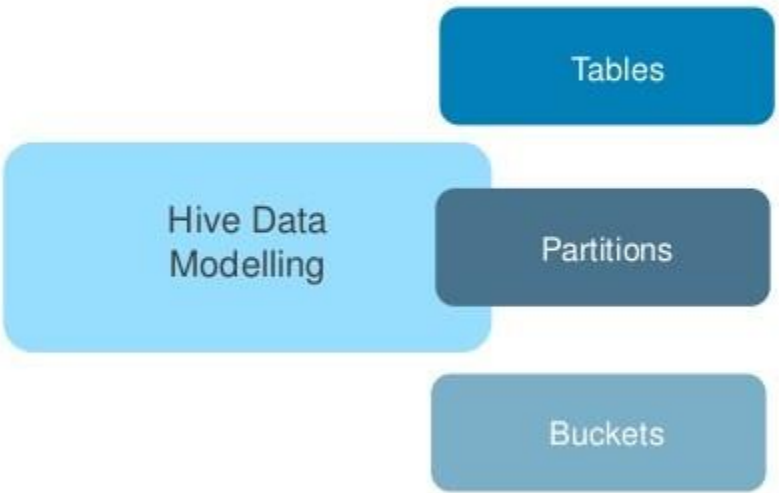

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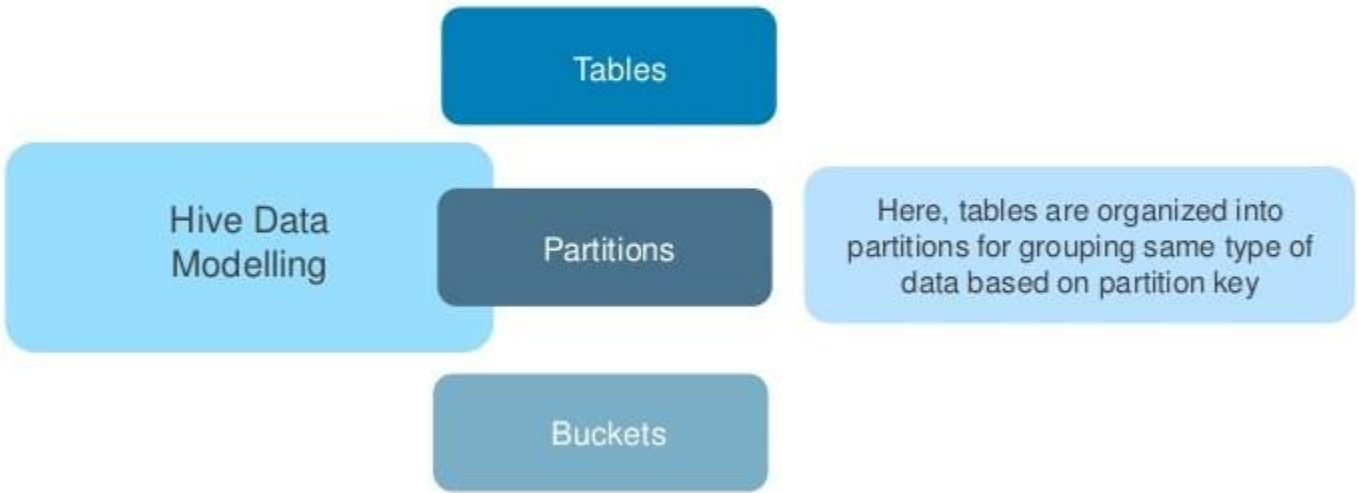

Hive Data Modeling

Hive Data types

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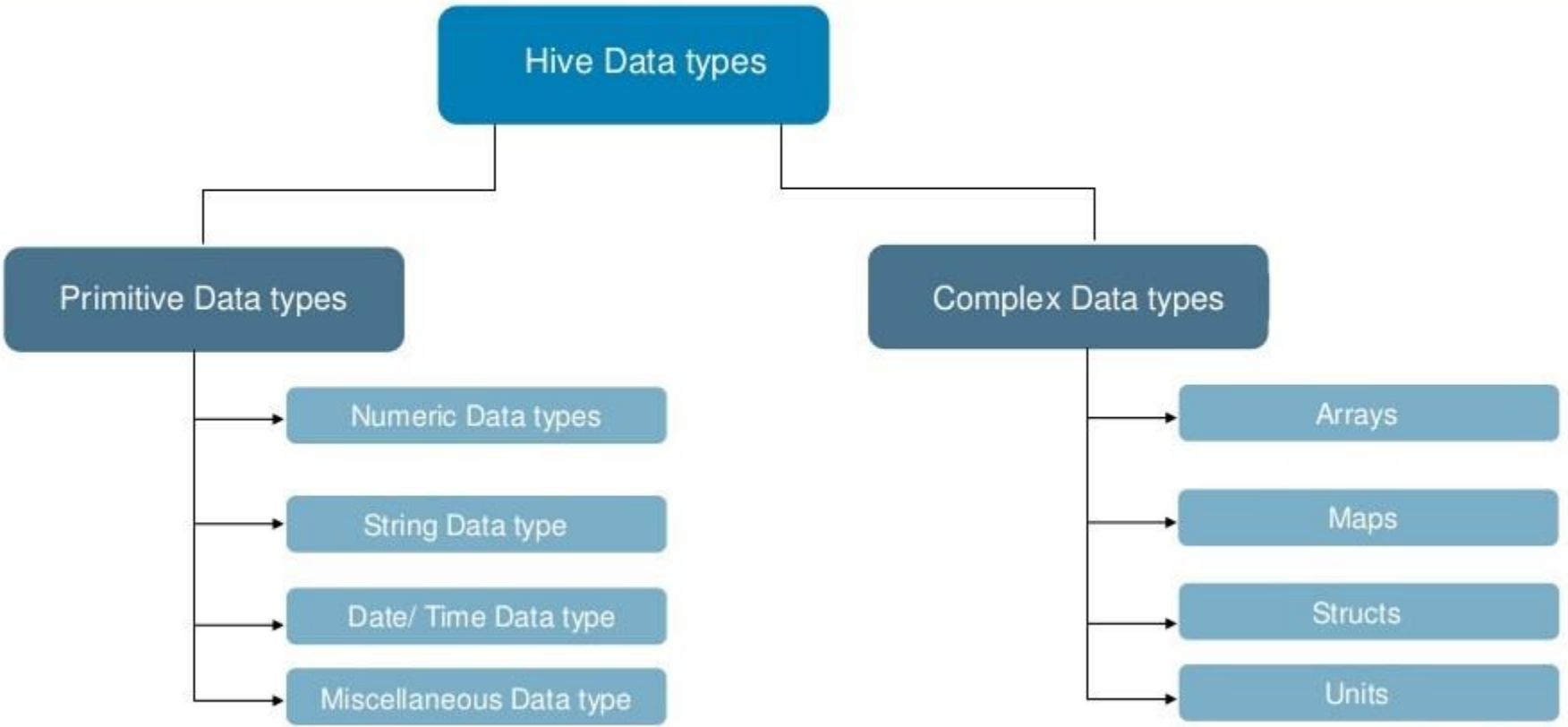

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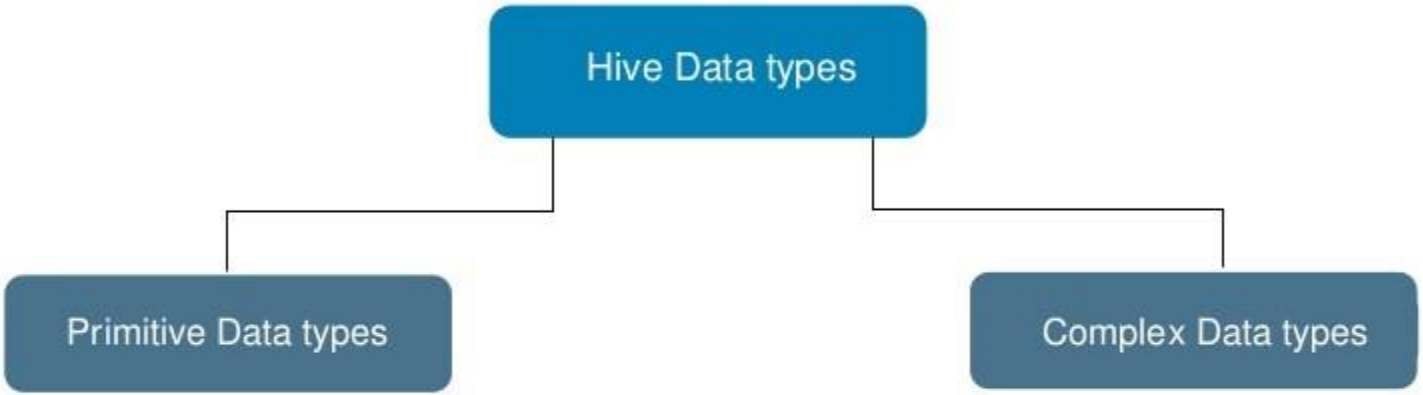

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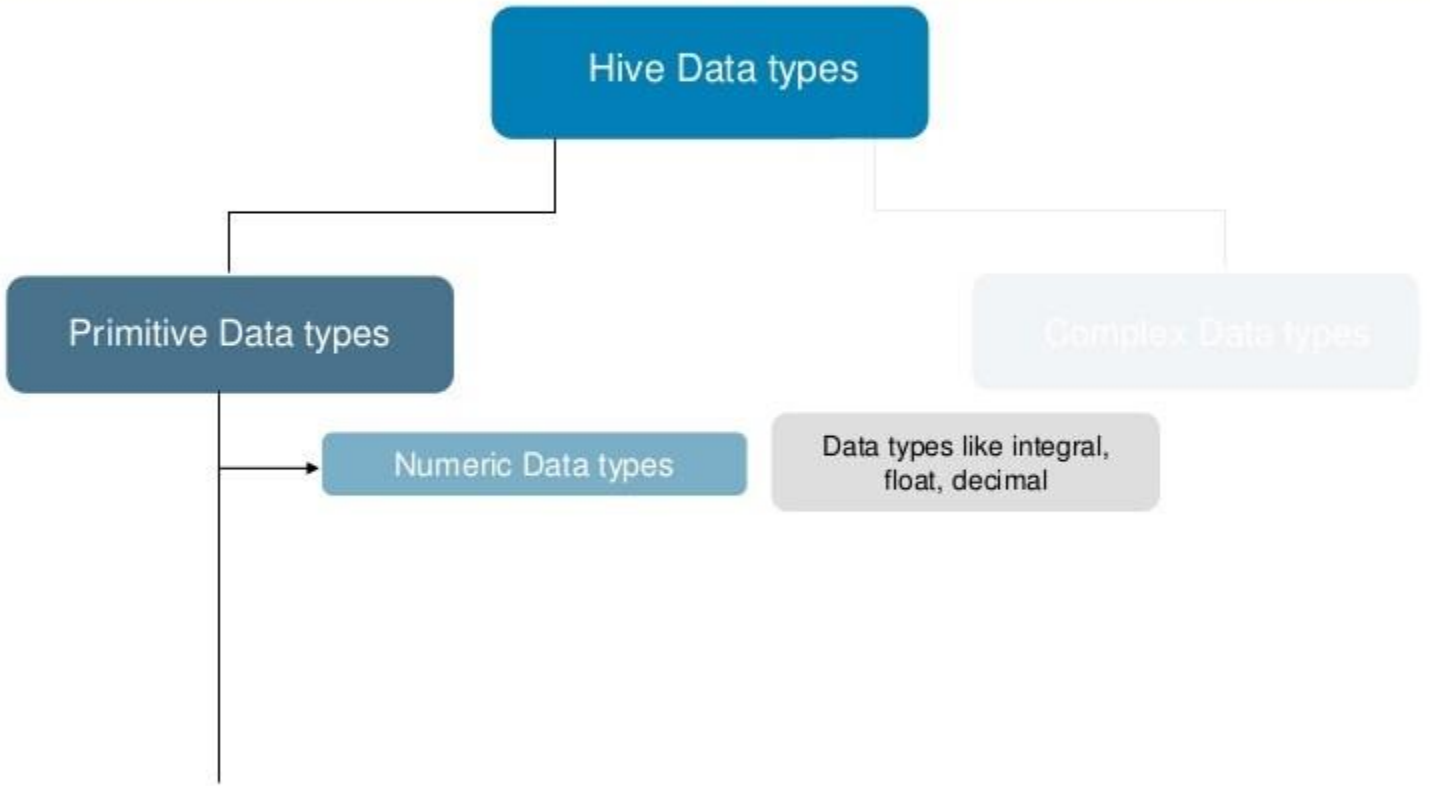

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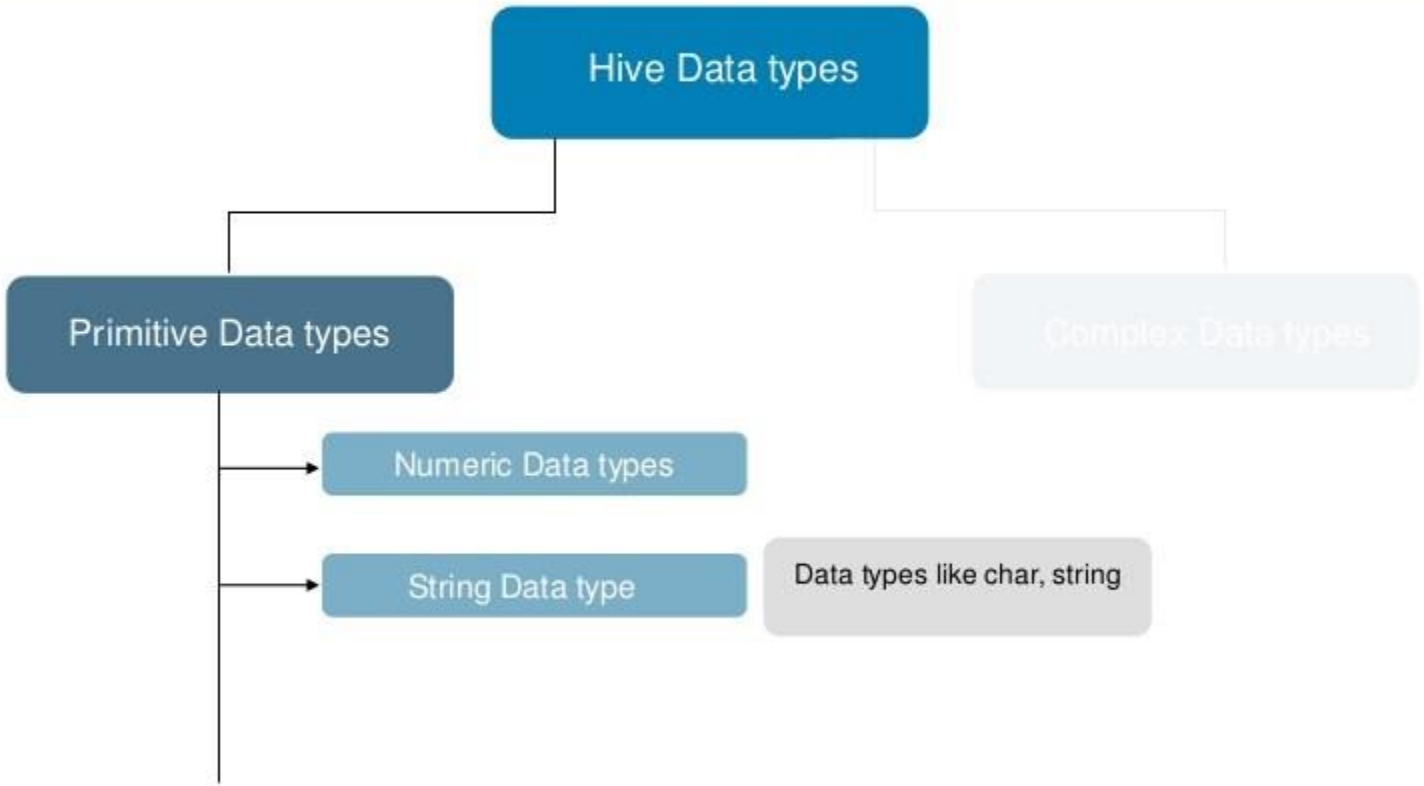

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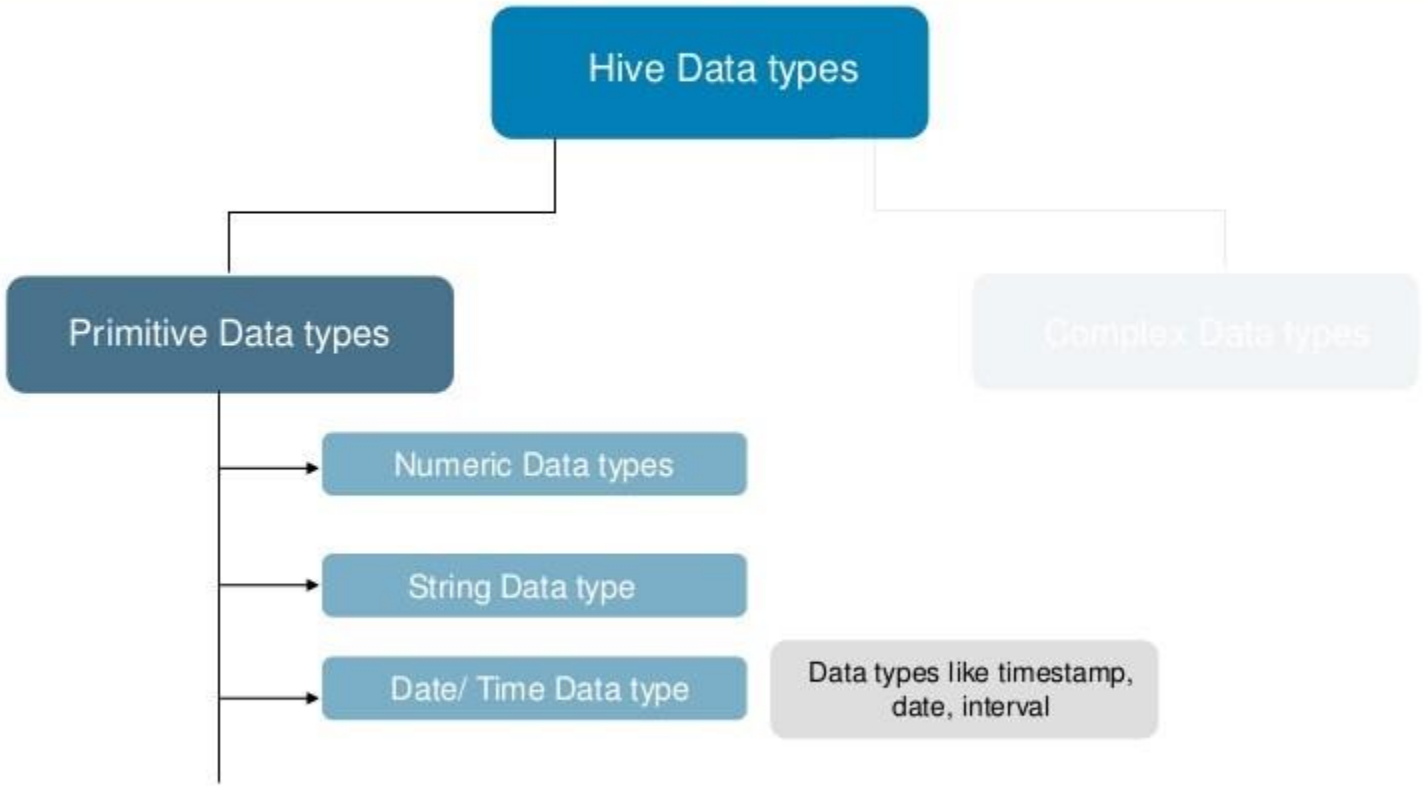

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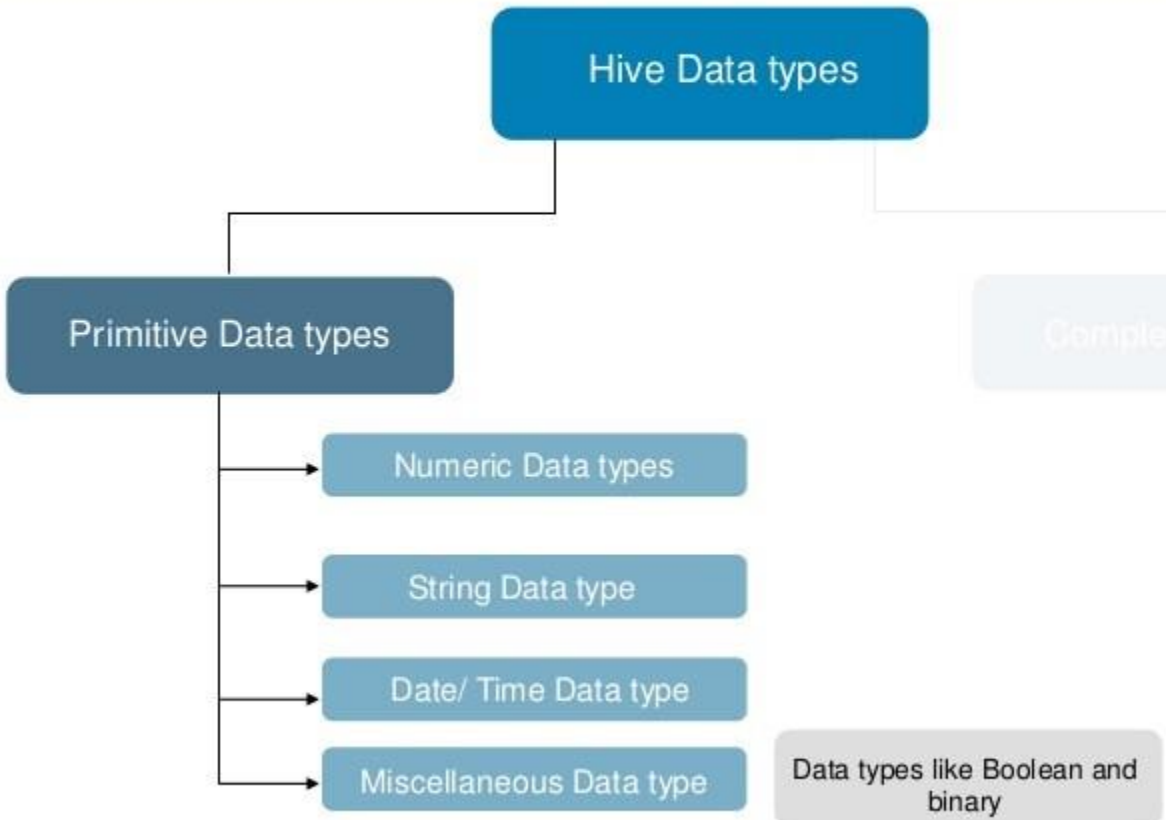

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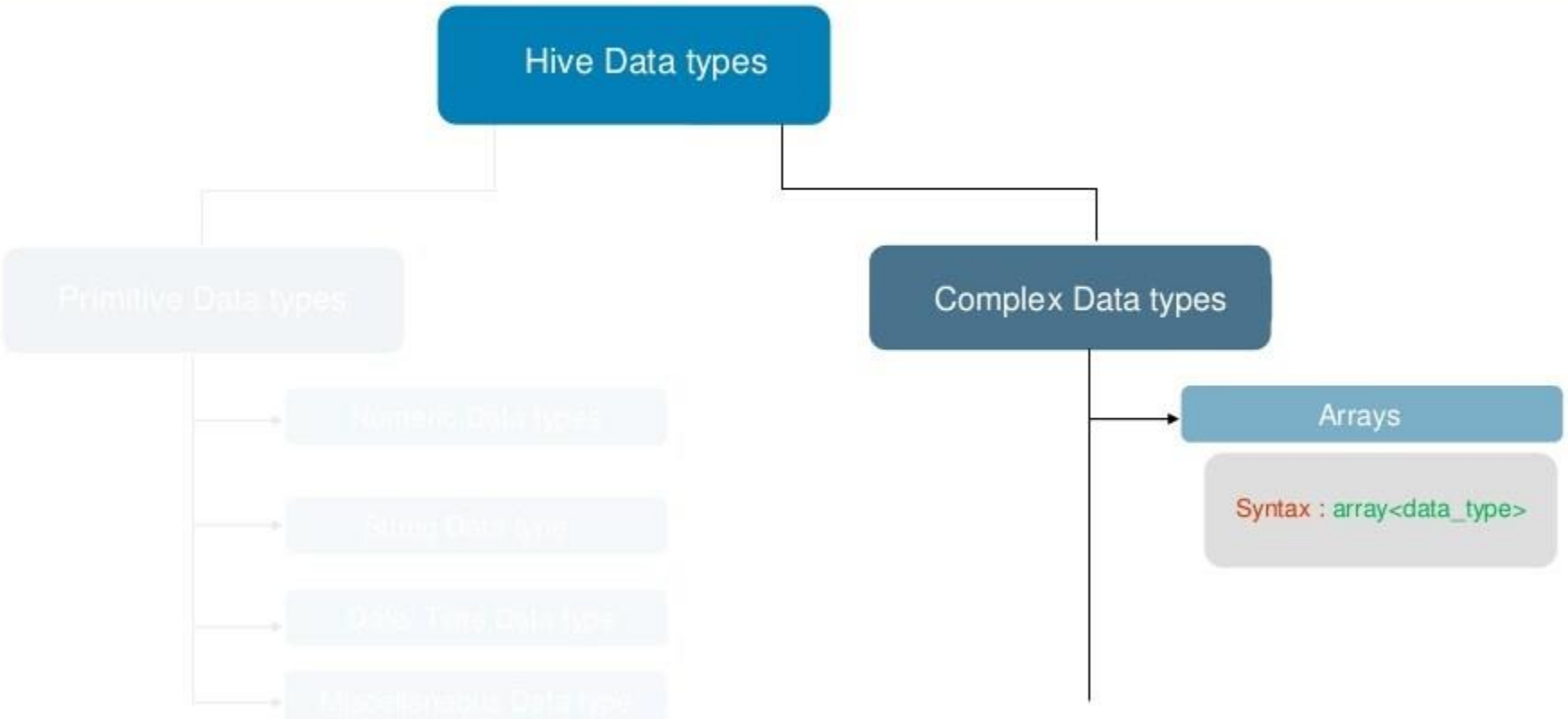

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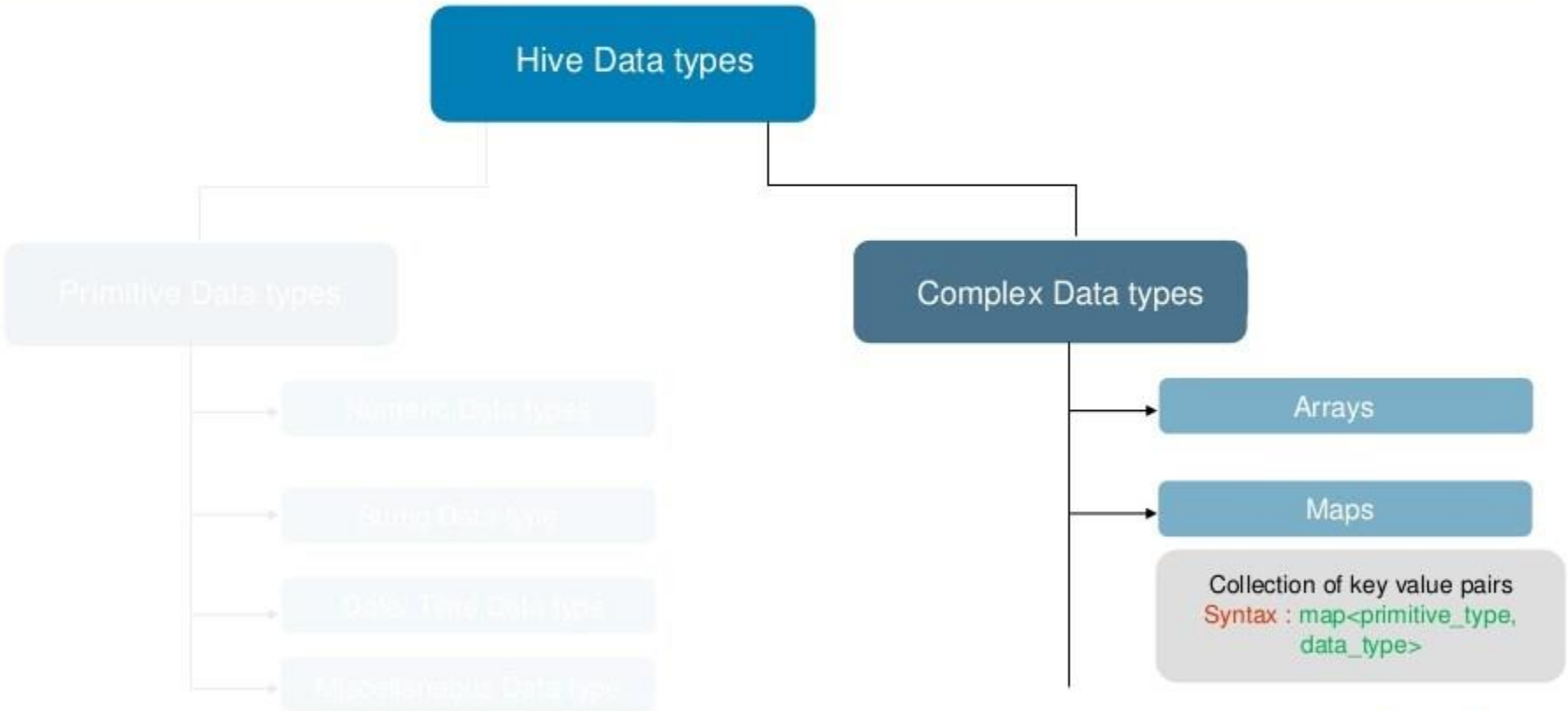

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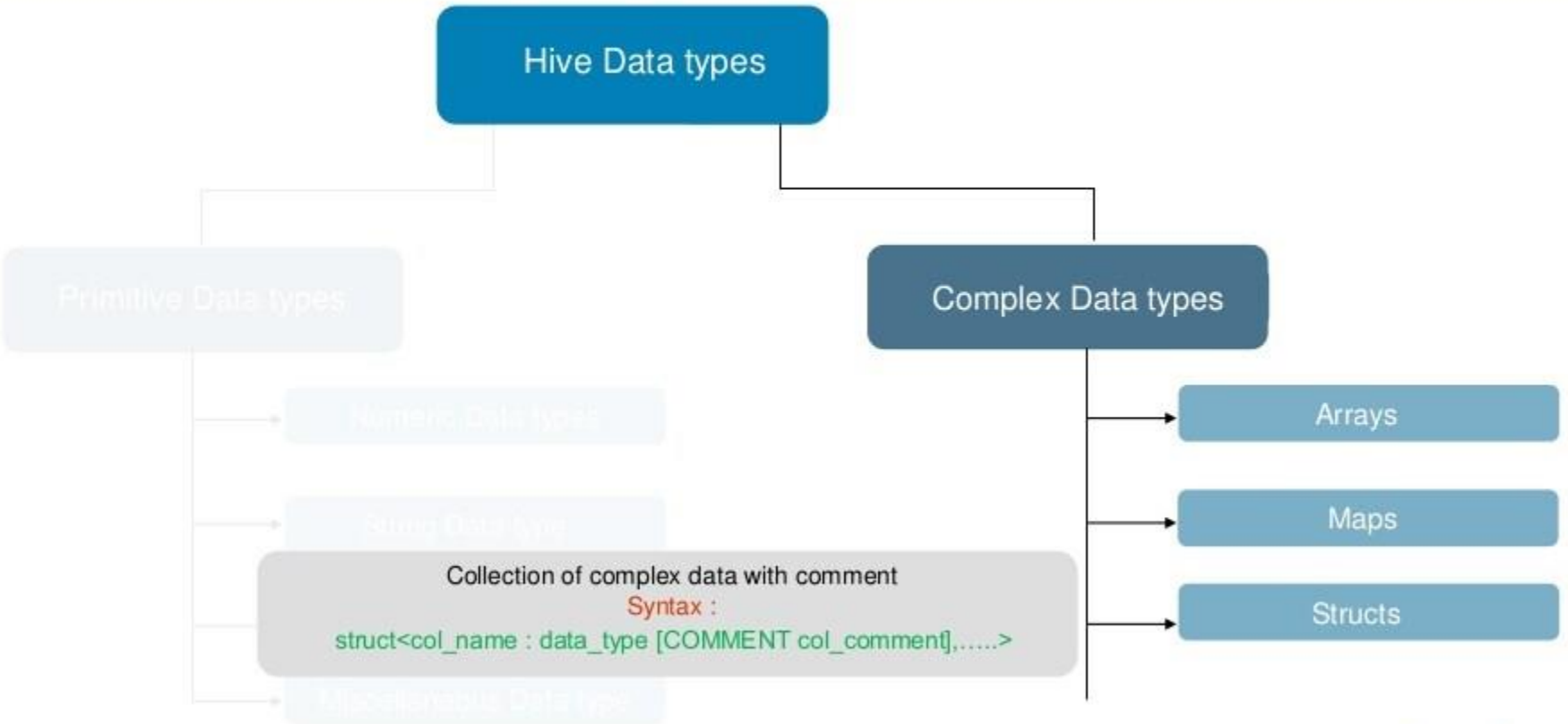

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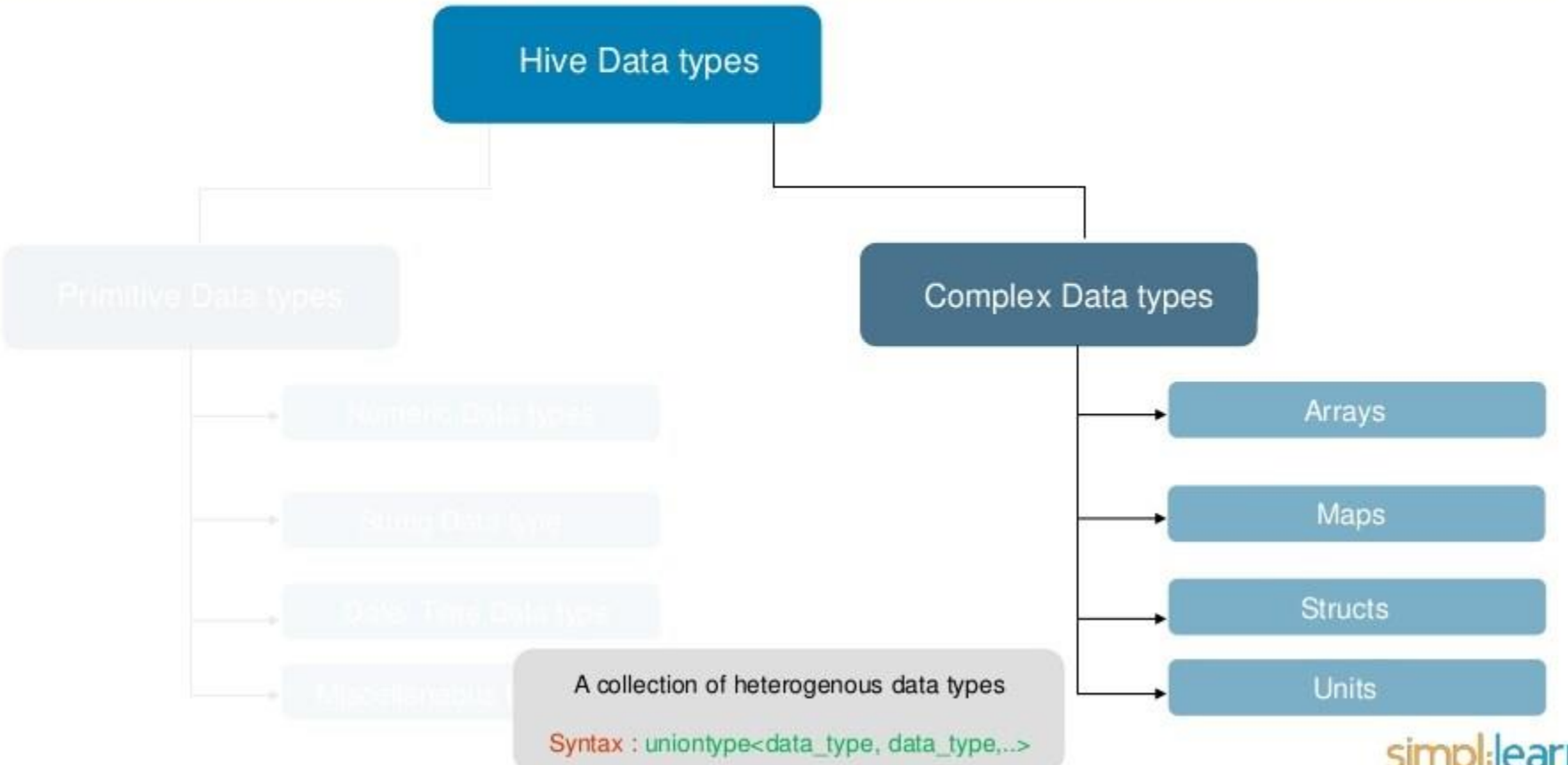

Different modes of Hive

Different modes of Hive

Hive operates in two modes depending on the number and size of data nodes

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Hive operates in two modes depending on the number and size of data nodes

Local Mode

MapReduce Mode

Different modes of Hive

Hive operates in two modes depending on the number and size of data nodes

- Is used when Hadoop is having one data node and the data is small
- Processing will be very fast on smaller datasets which are present in local machine

Local Mode

MapReduce Mode

Different modes of Hive

Hive operates in two modes depending on the number and size of data nodes

Local Mode

MapReduce Mode

- Is used when Hadoop is having multiple data nodes and the data is spread across various data notes
- Processing large datasets can be more efficient using this mode

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Difference between Hive and RDBMS

Difference between Hive and RDBMS

Hive	RDBMS
• Hive enforces schema on read	• RDBMS enforces schema on write

Difference between Hive and RDBMS

Hive	RDBMS
• Hive enforces schema on read	• RDBMS enforces schema on write
• Hive data size is in petabytes	• Data size is in terabytes

Difference between Hive and RDBMS

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Difference between Hive and RDBMS

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• Hive resembles a traditional database by supporting SQL but it is not a database. It is a data warehouse	• RDBMS is a type of database management system which is based on the relational model of data
• Easily scalable at low cost	• Not scalable at low cost

Features of Hive

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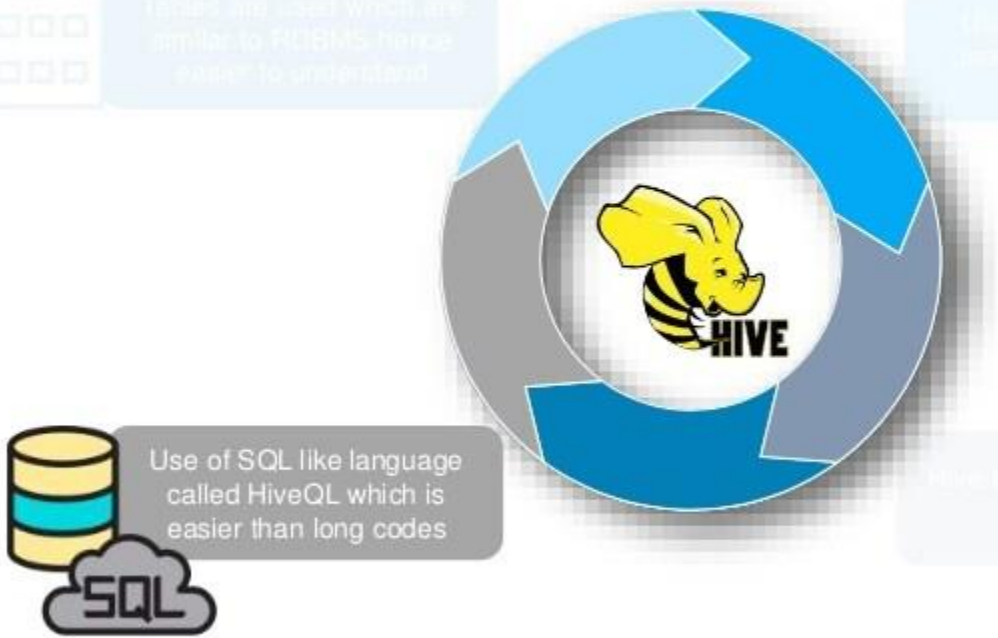
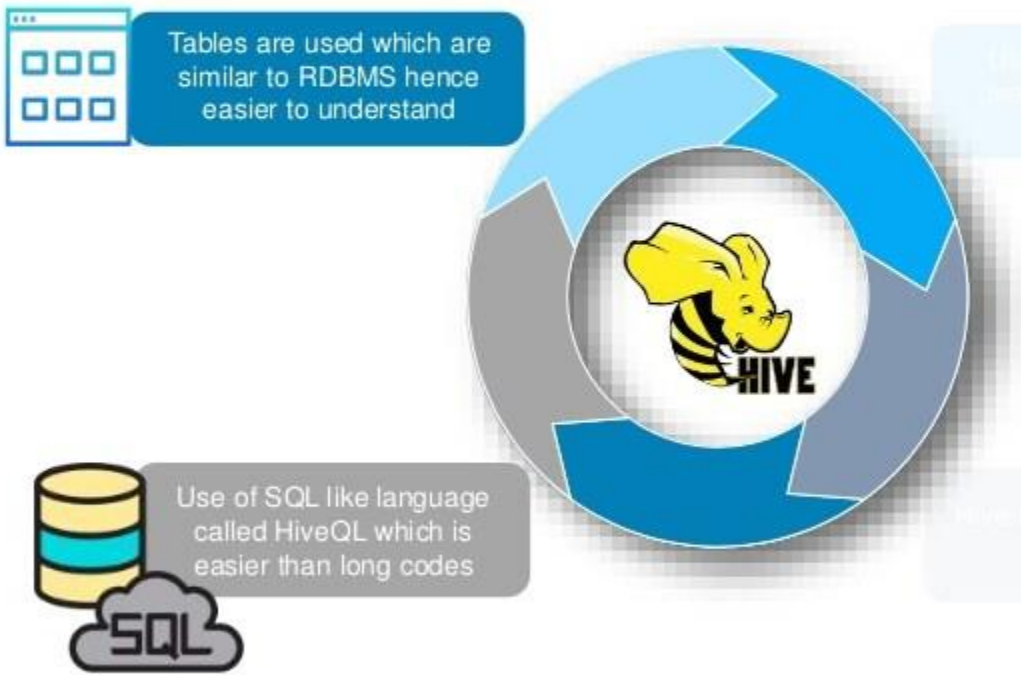
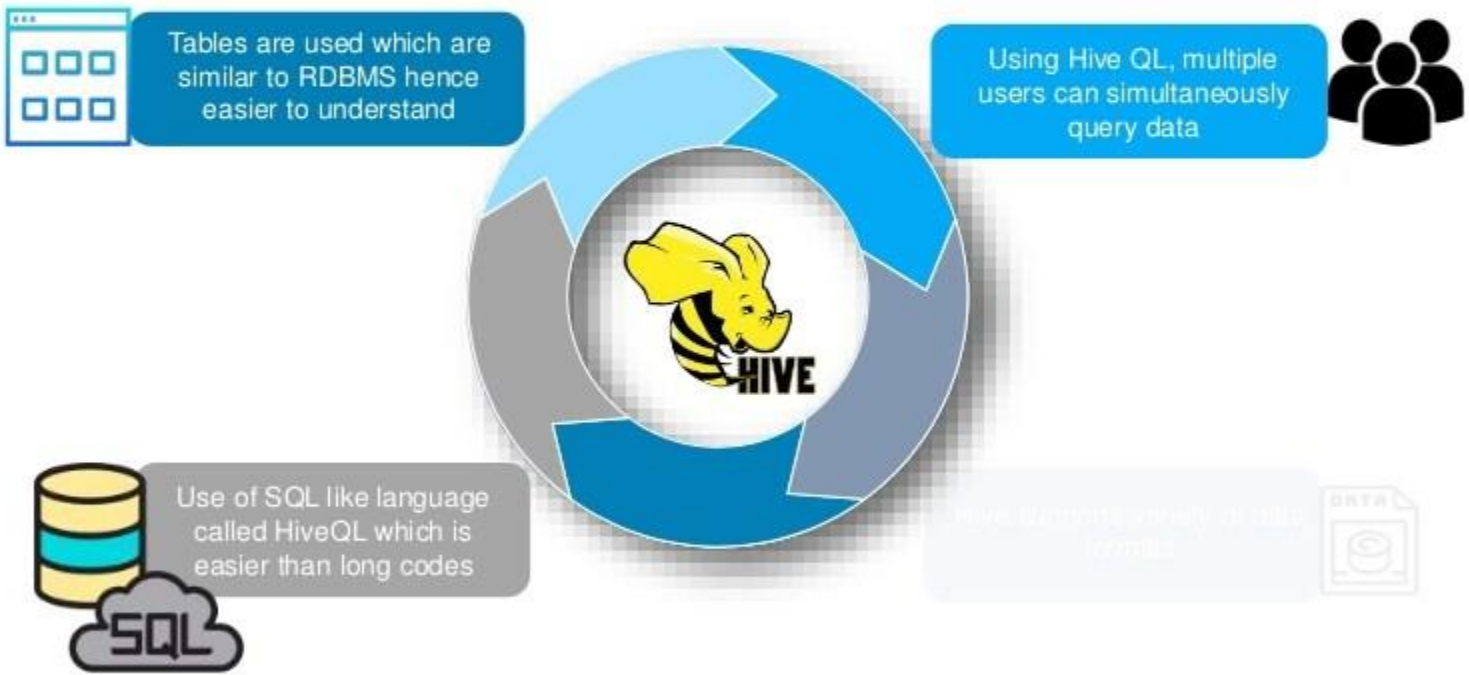


Features of Hive



Features of Hive



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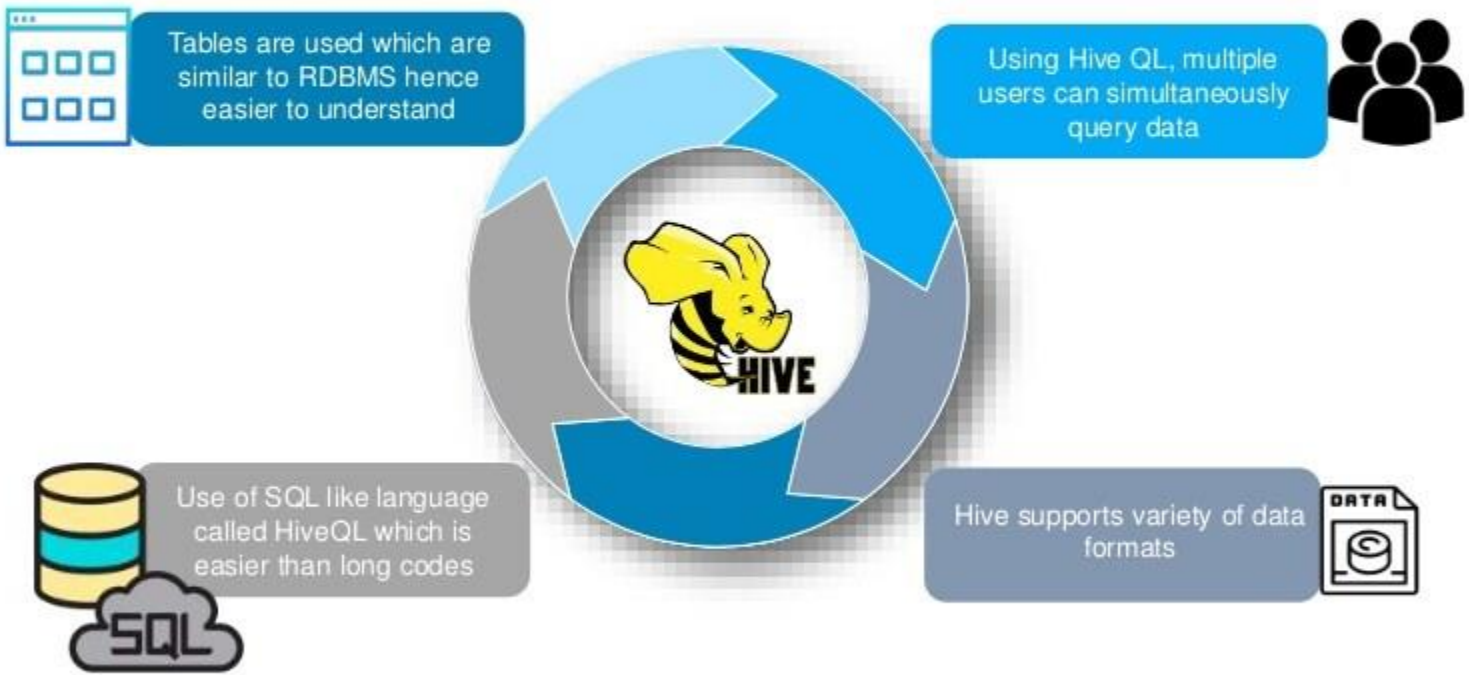

Demo on HiveQL

References

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