Цель модуля “Оптимизация хранилища (Data Layout)”

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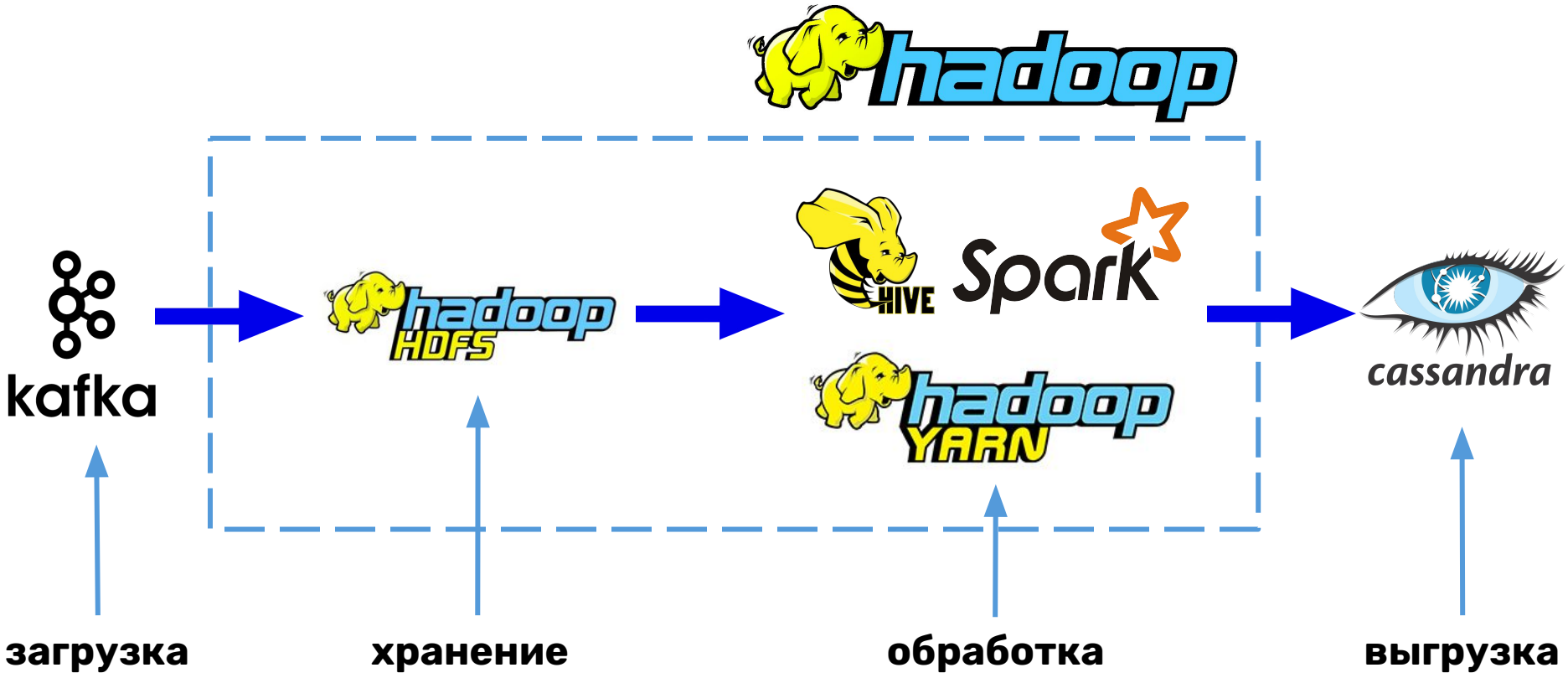
Big Data = инженерия



План

- Кодирование vs Сжатие

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- Hive: File vs Row format

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- Hive: File vs Row format
- RCFile vs ORC vs Parquet
- “горячие” vs “холодные” данные
- и многое другое

Hive разминка (warm-up)

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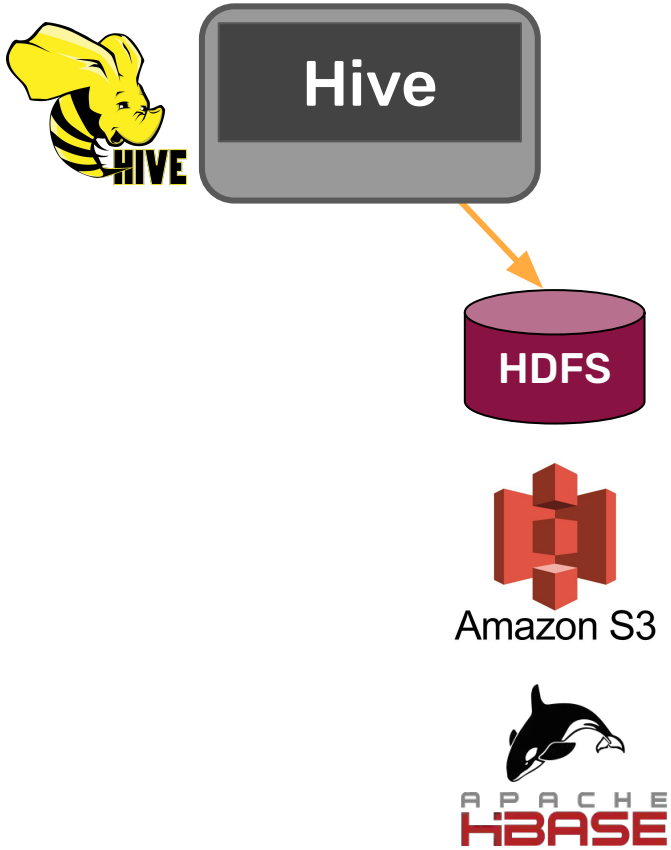
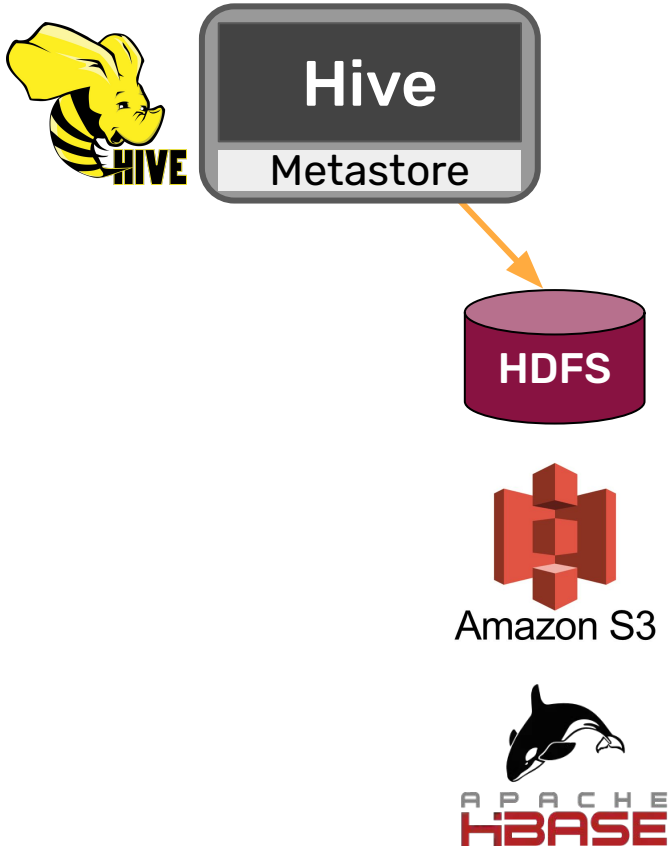


Hive разминка (warm-up)



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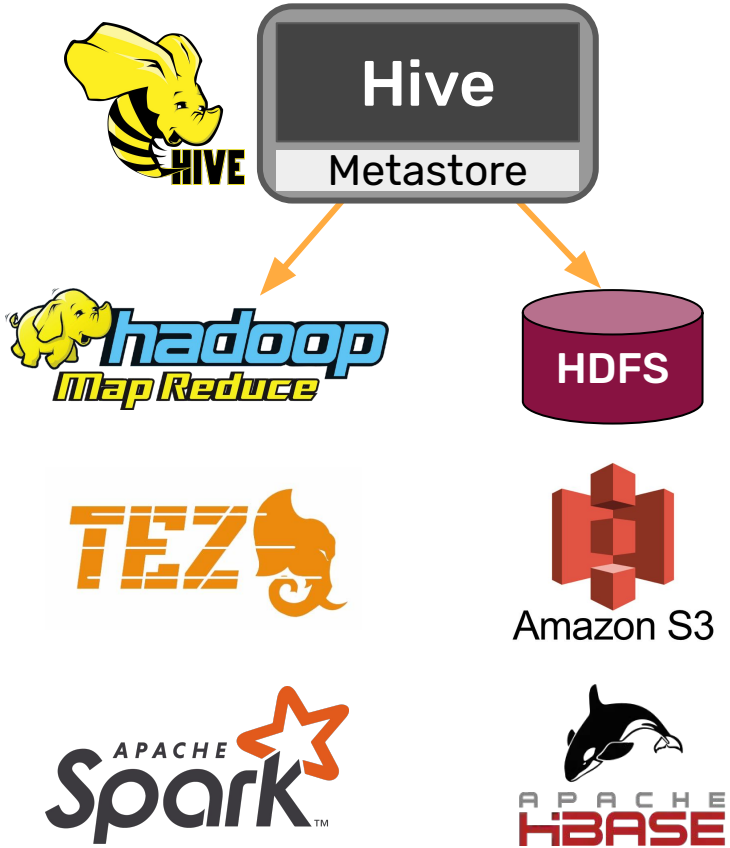
Hive разминка (warm-up)



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Explain в HiveQL

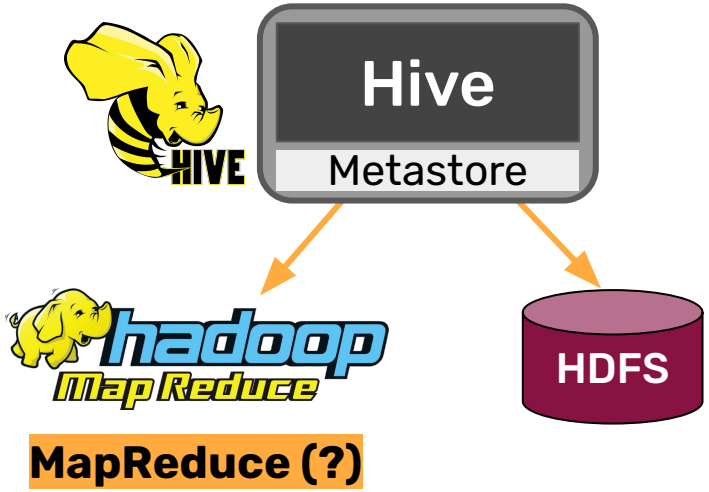
```
EXPLAIN
FROM src
INSERT OVERWRITE TABLE dest_g1
SELECT src.key, sum(substr(src.value,4))
GROUP BY src.key;
```

```
(1)  The Abstract Syntax Tree
ABSTRACT SYNTAX TREE:
(TOK_QUERY (TOK_FROM (TOK_TABREF src))
...
```

```
(2)  The Dependency Graph
STAGE DEPENDENCIES:
Stage-1 is a root stage
Stage-2 depends on stages: Stage-1
Stage-0 depends on stages: Stage-2
```

```
(3)  The plans of each Stage
STAGE PLANS:
 Stage: Stage-1
  Map Reduce
    Alias -> Map Operator Tree:
      src
          Reduce Output Operator
            key expressions:
                  expr: key
                  type: string
            sort order: +
```

HiveQL, реализация



MapReduce (?)

- SELECT .. FROM **[<--Map]**
- WHERE **[<--Map]**
- GROUP BY **[<--Shuffle & Sort]** + HAVING **[<--Reduce]**
- JOIN **[<--Map / Reduce “-side”]**
- ORDER BY / **SORT BY**