The Hadoop Ecosystem:

So much free stuff!

After this video you will be able to..

- Differentiate the major layers in the Hadoop ecosystem

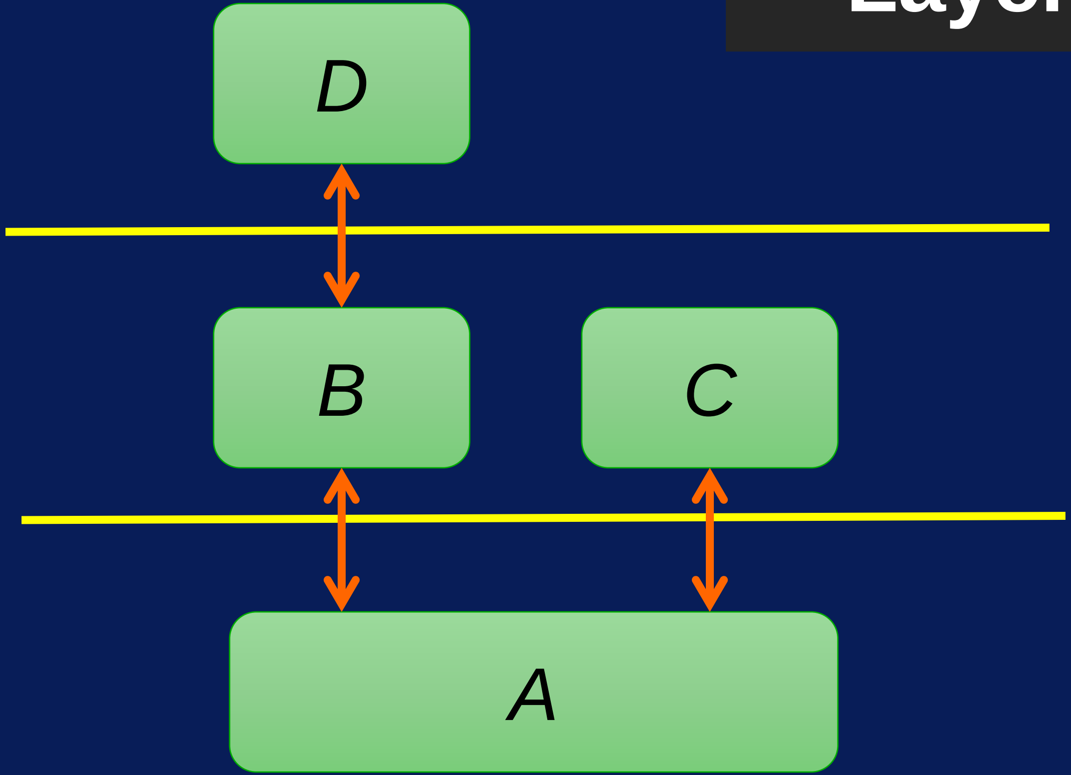
- Recognize key tools of the Hadoop ecosystem including HDFS, YARN, and MapReduce

Yahoo created Hadoop in 2005

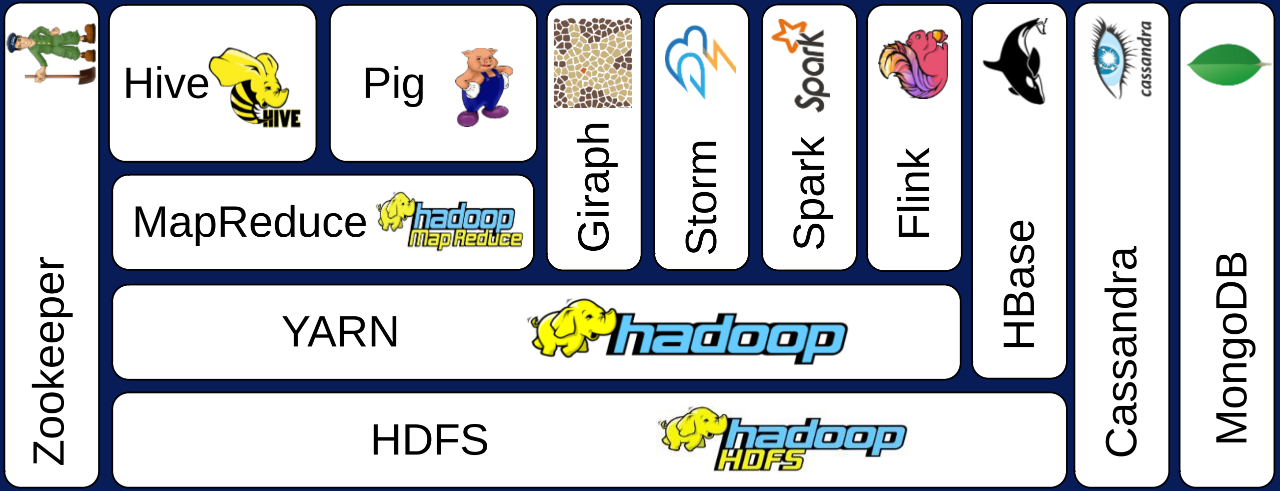
More Big Data frameworks released

Now there’s over a 100!

Layer Diagram



One possible layer diagram for Hadoop



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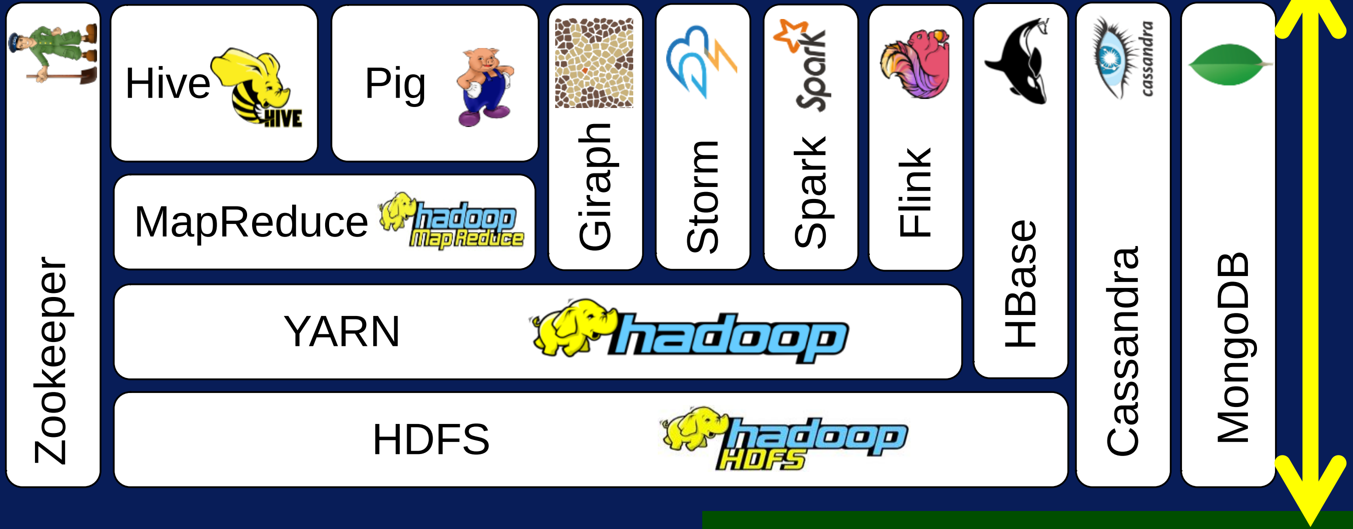


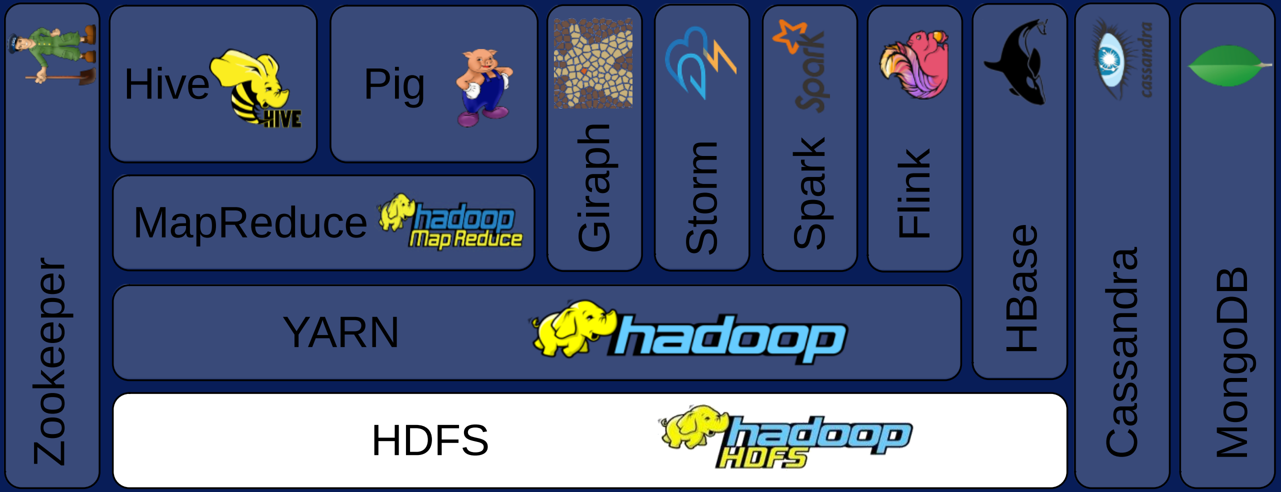
Higher levels: Interactivity

Lower levels: Storage and scheduling

Distributed file system as foundation

Scalable storage

Fault tolerance



Zookeeper

Hive

Pig

MapReduce

Giraph

Storm

Spark

Flink

HBase

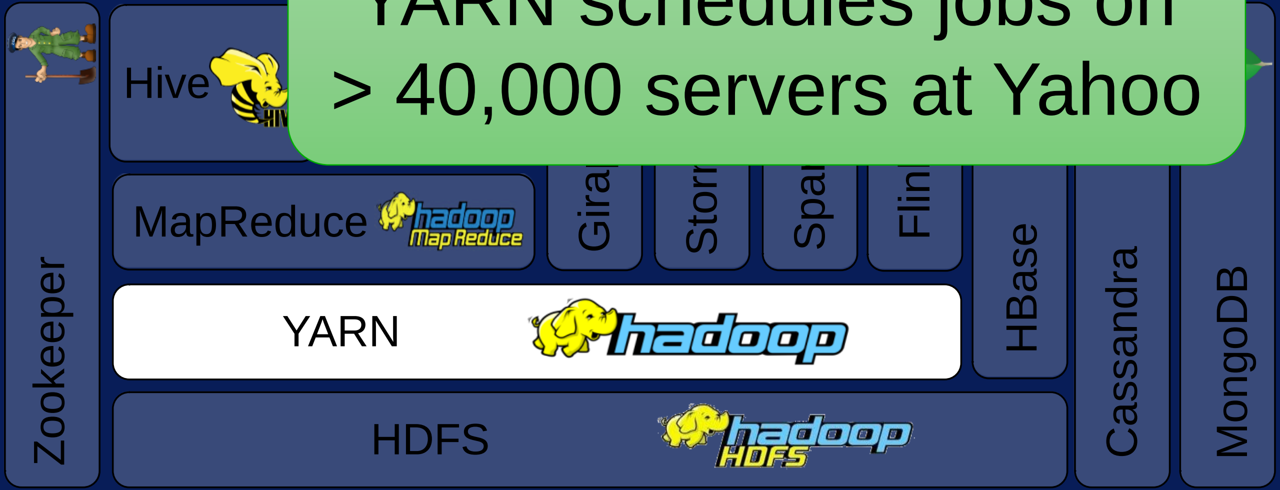
Cassandra

MongoDB

YARN

HDFS

Flexible scheduling and resource management

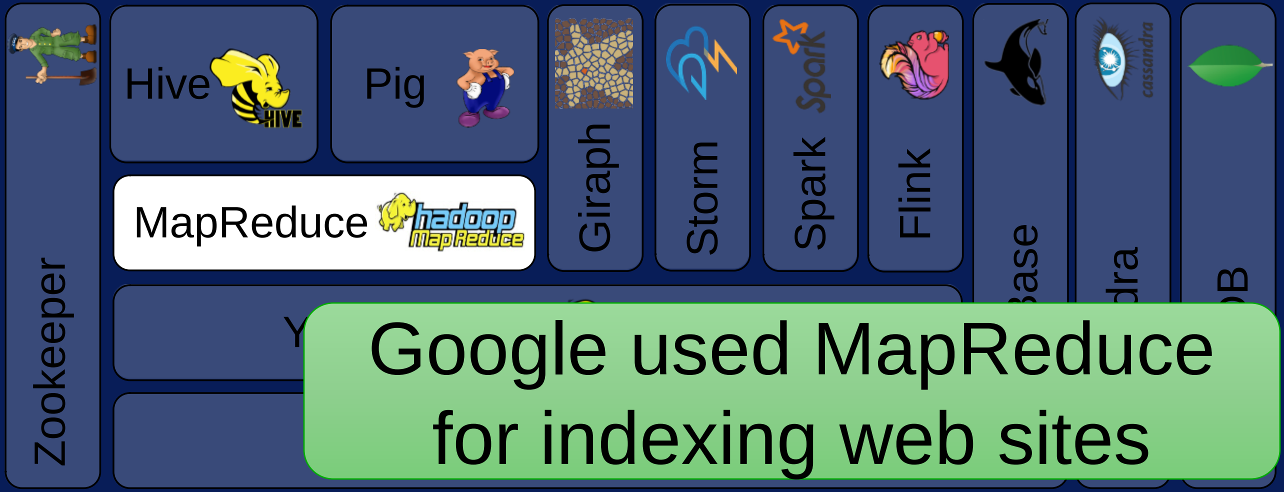


YARN schedules jobs on > 40,000 servers at Yahoo

Simplified programming model

Map → apply()

Reduce → summarize()

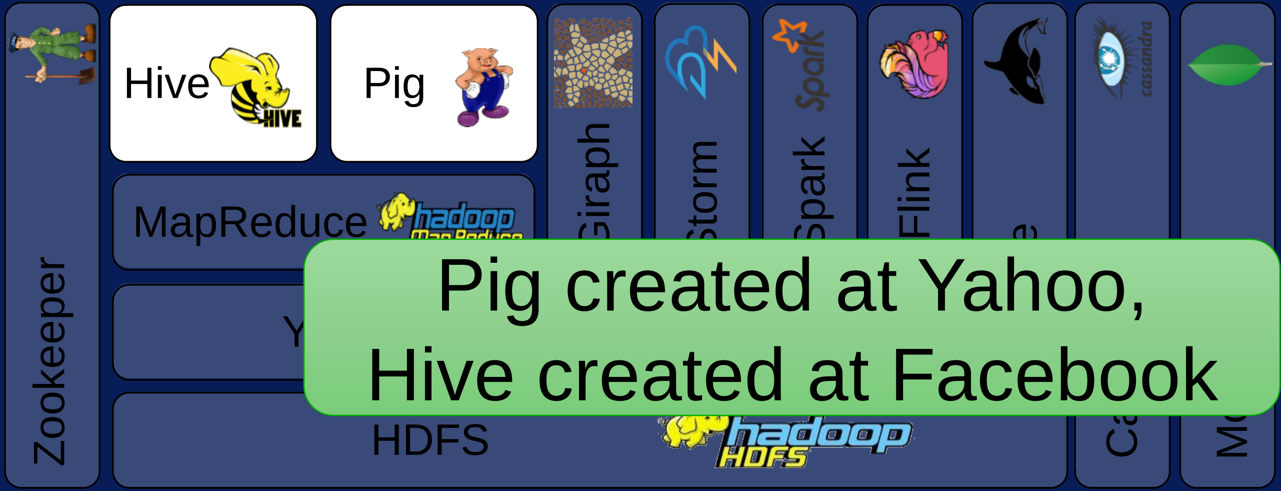


Google used MapReduce for indexing web sites

Higher-level programming models

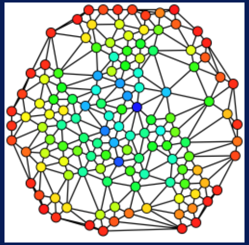
Pig = dataflow scripting

Hive = SQL-like queries

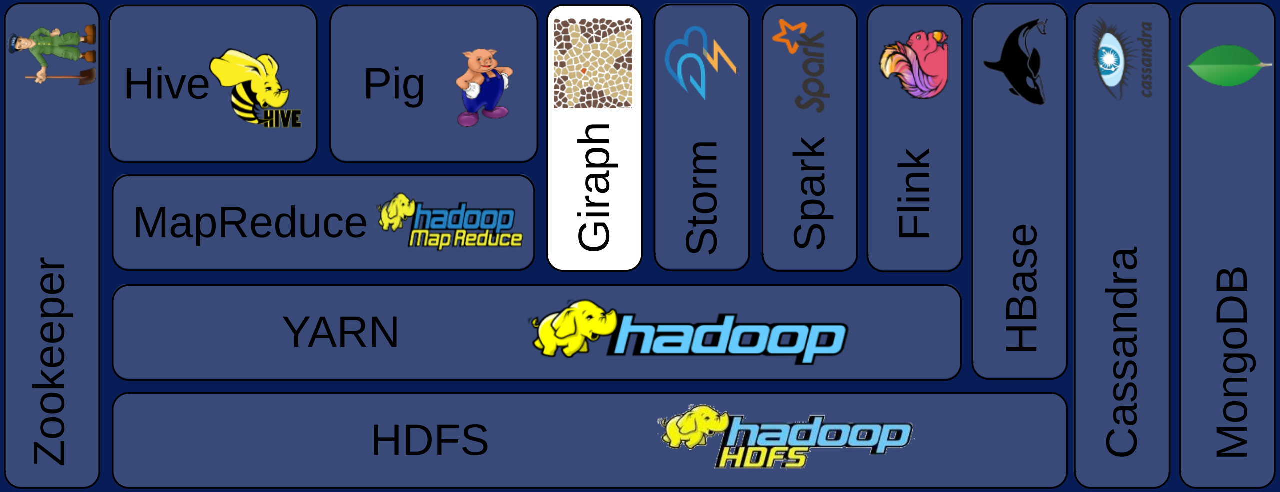


Pig created at Yahoo,
Hive created at Facebook

Specialized models for graph processing



Giraph used by Facebook to analyze social graphs



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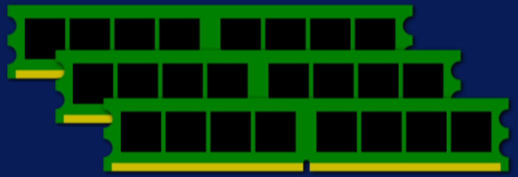
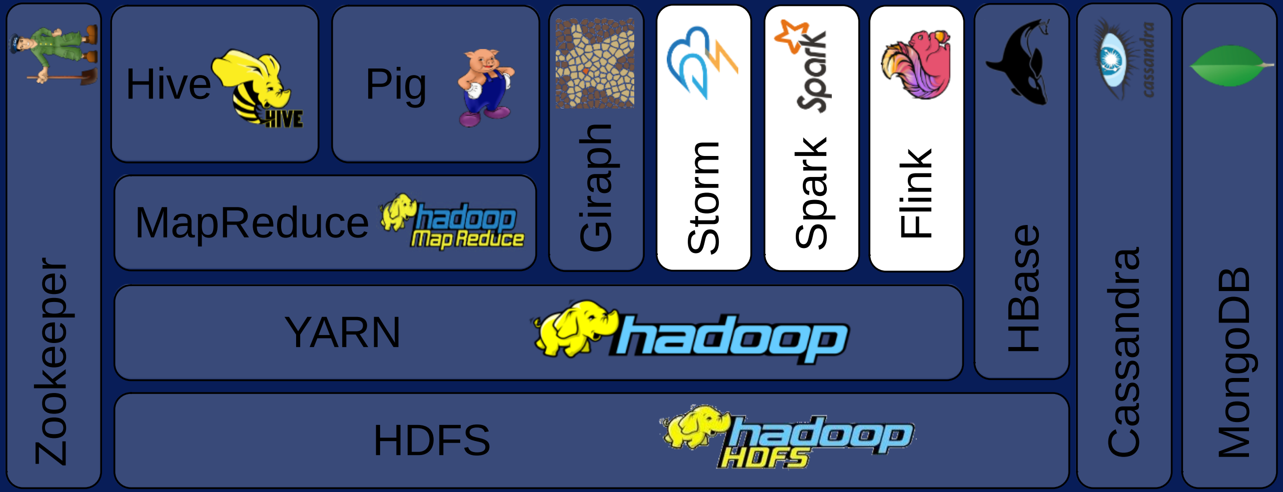
Real-time and in-memory processing



In-memory → 100x faster for some tasks



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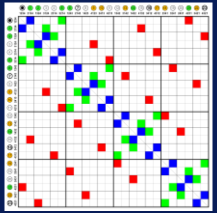
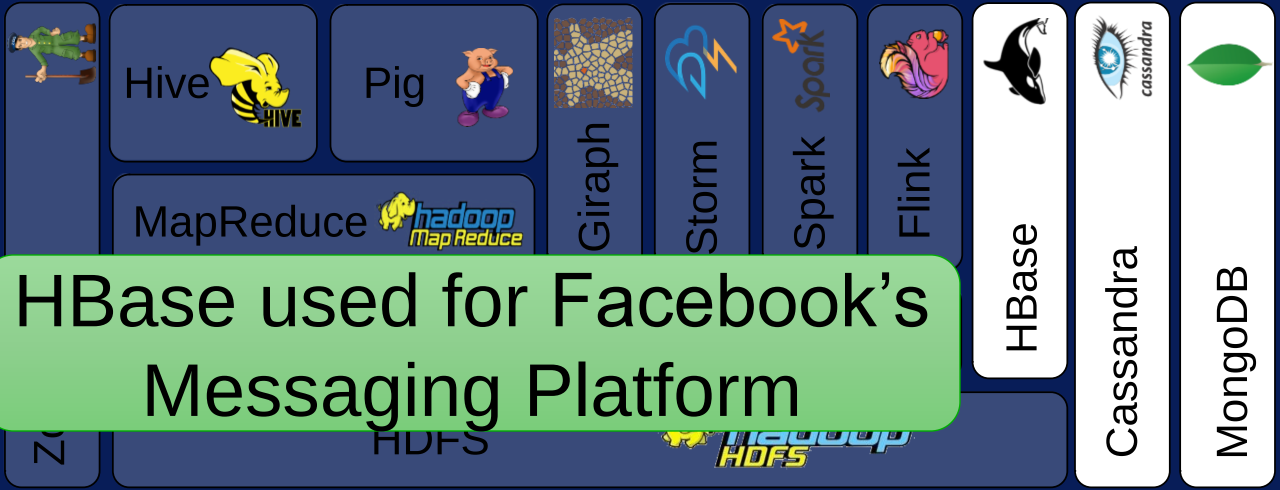
NoSQL for non-files

Key-values

Sparse tables





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HDFS

Z

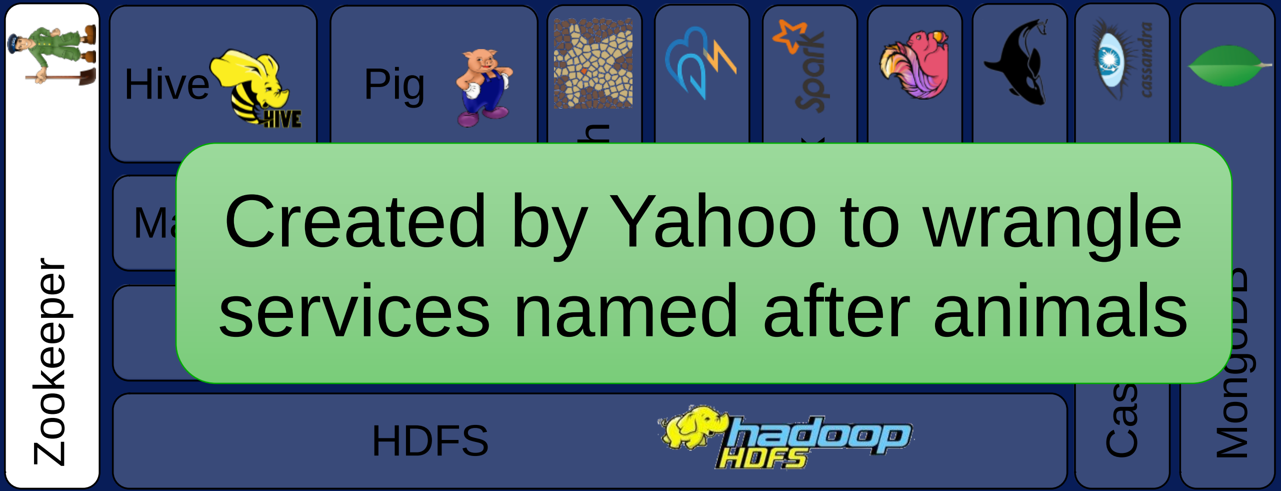
HBase used for Facebook’s Messaging Platform

Zookeeper for management

Synchronization

Configuration

High-availability



Created by Yahoo to wrangle services named after animals

All these tools are open-source

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Large community
for support

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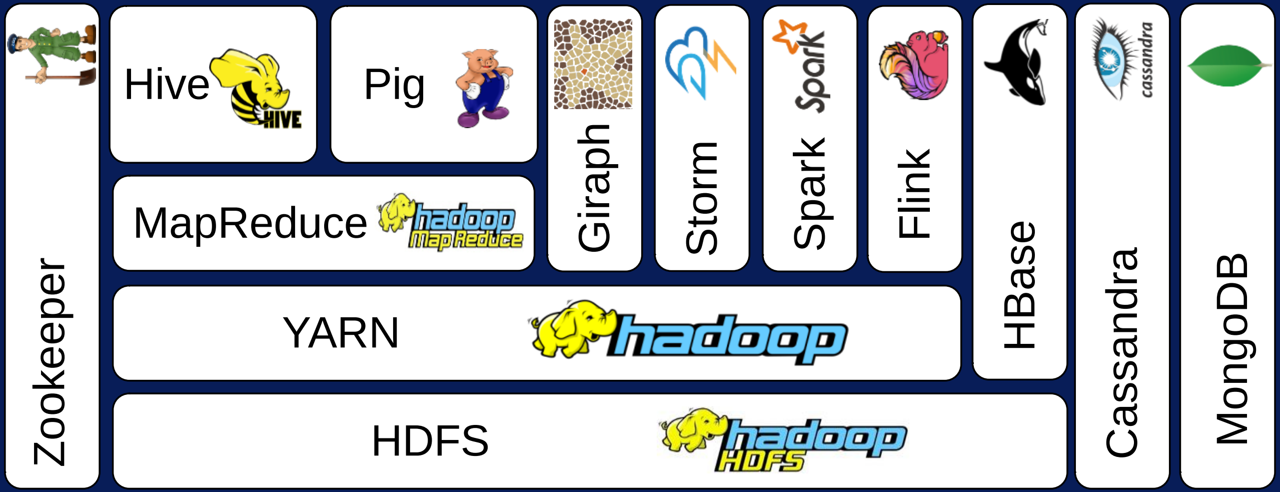

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Growing number of open-source tools