The Hadoop Ecosystem:

So much free stuff!

Yahoo created
Hadoop in 2005

More Big Data frameworks released

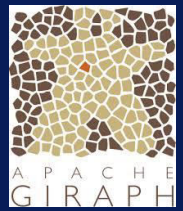






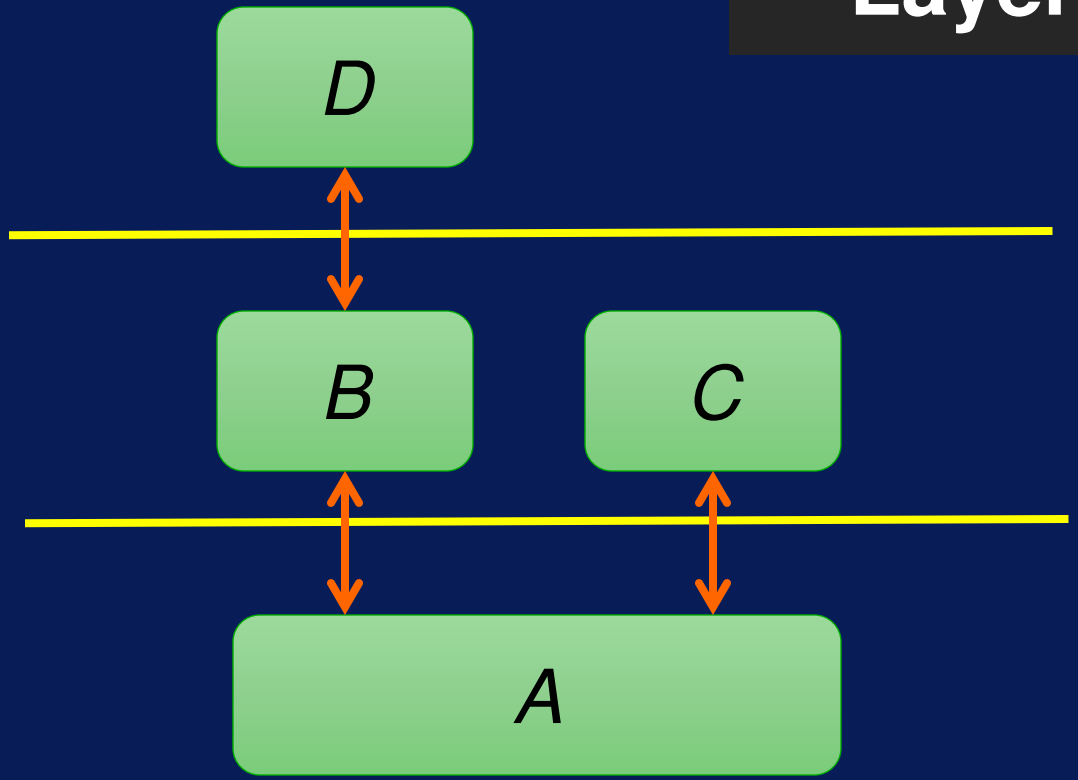




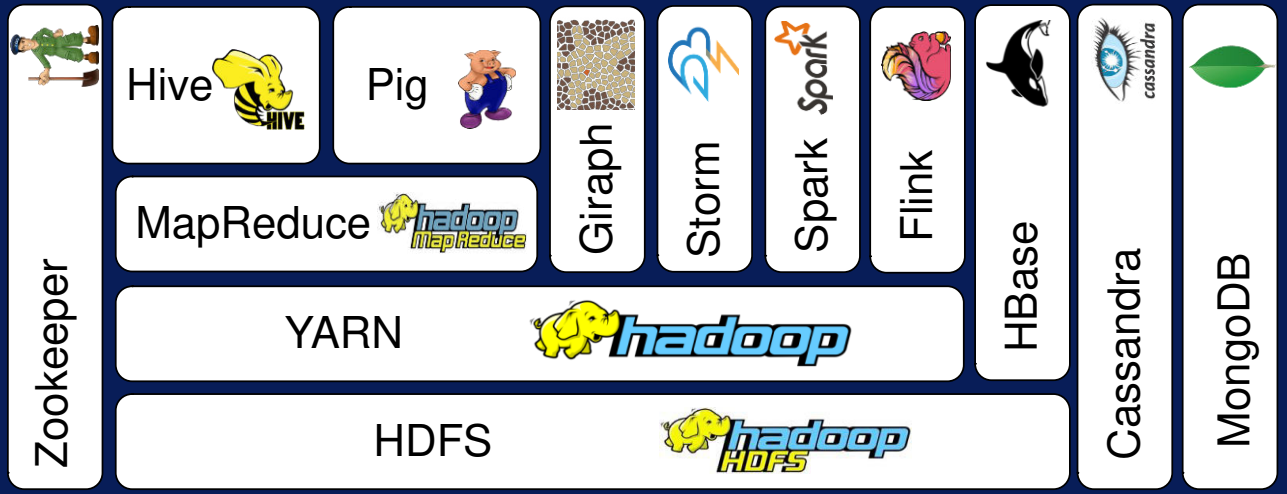


Now there's over a 100!

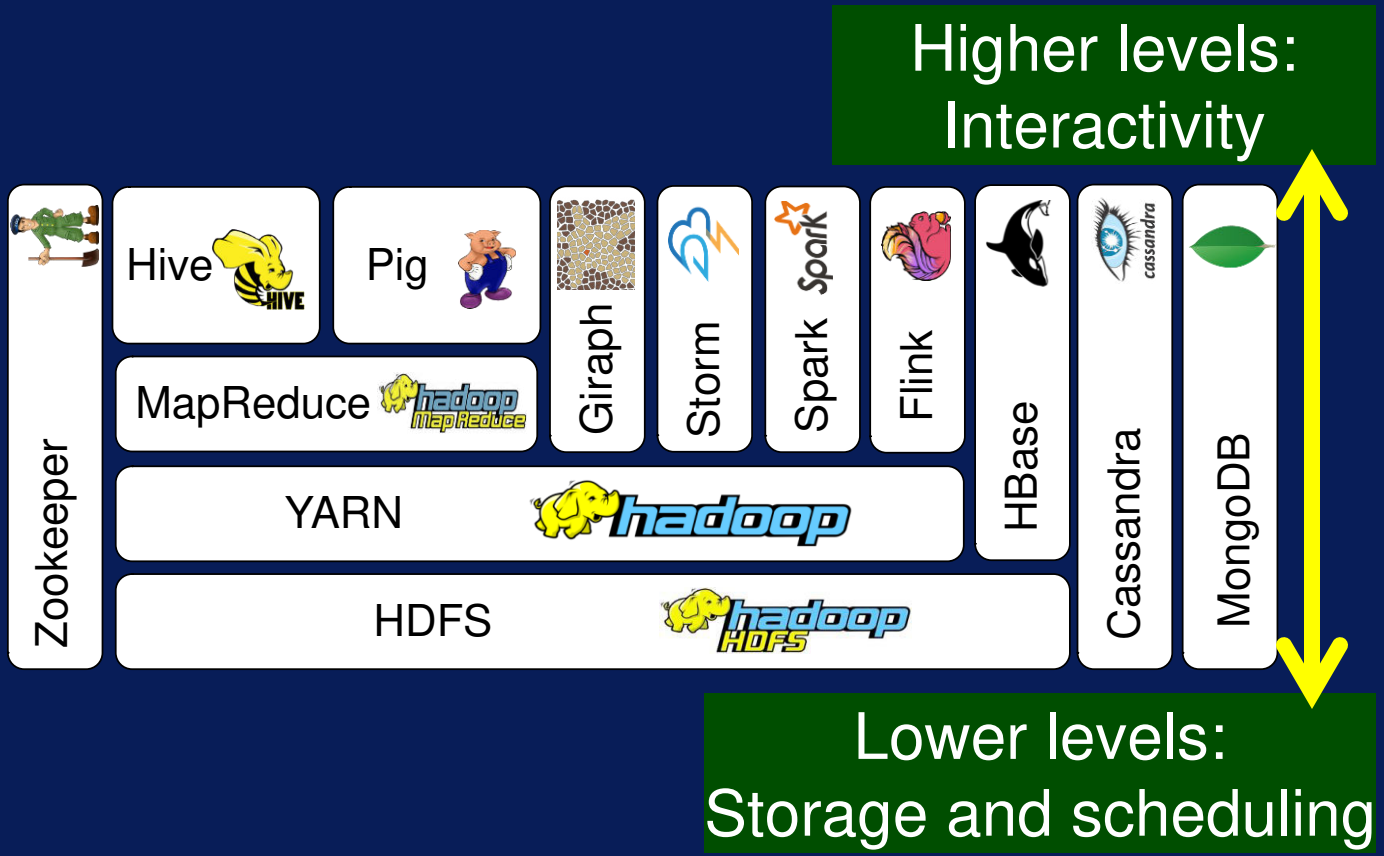
Layer Diagram



One possible layer diagram for Hadoop



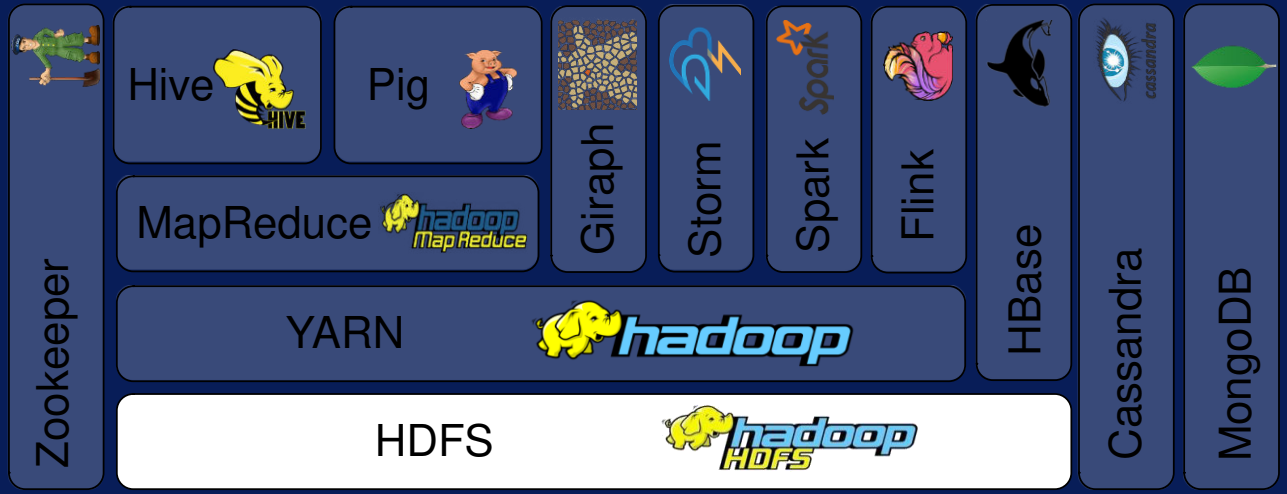
One possible layer diagram for Hadoop



Distributed file system as foundation

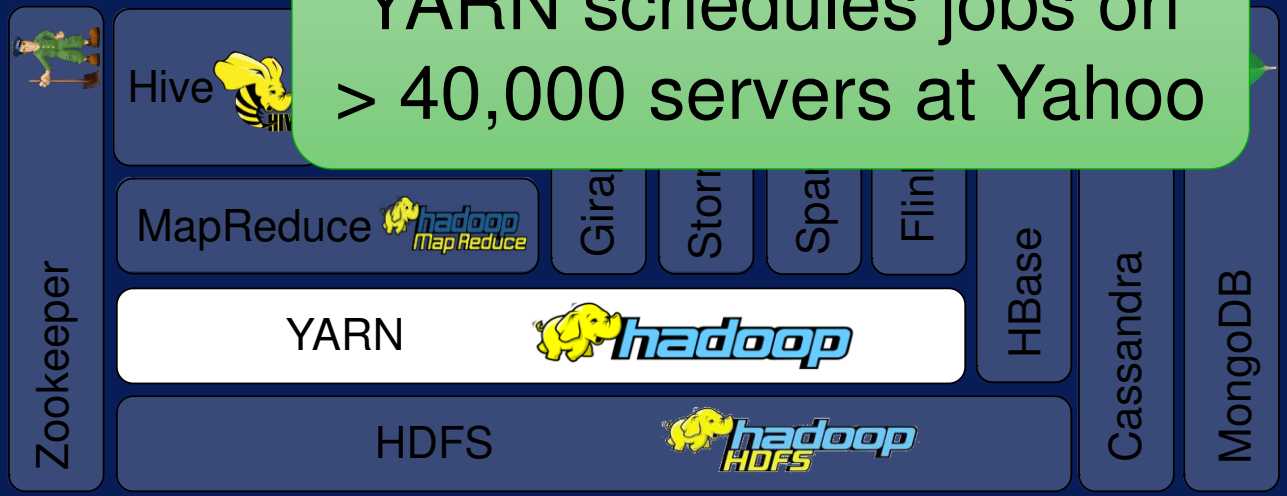
Scalable storage

Fault tolerance



Flexible scheduling and resource management

YARN schedules jobs on
> 40,000 servers at Yahoo



Simplified programming model

Map → apply()

Reduce → summarize()

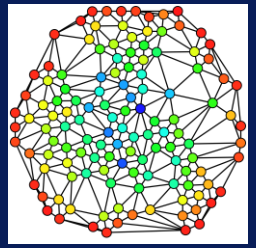
Higher-level programming models

Pig = dataflow scripting

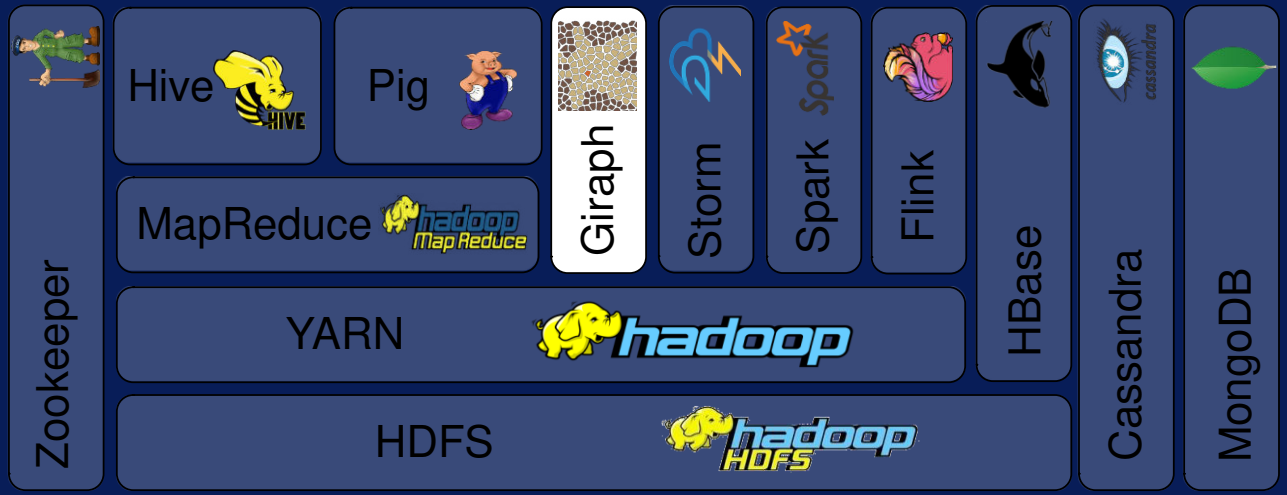
Hive = SQL-like queries

Pig created at Yahoo,
Hive created at Facebook

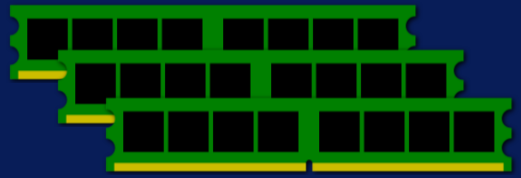
Specialized models for graph processing



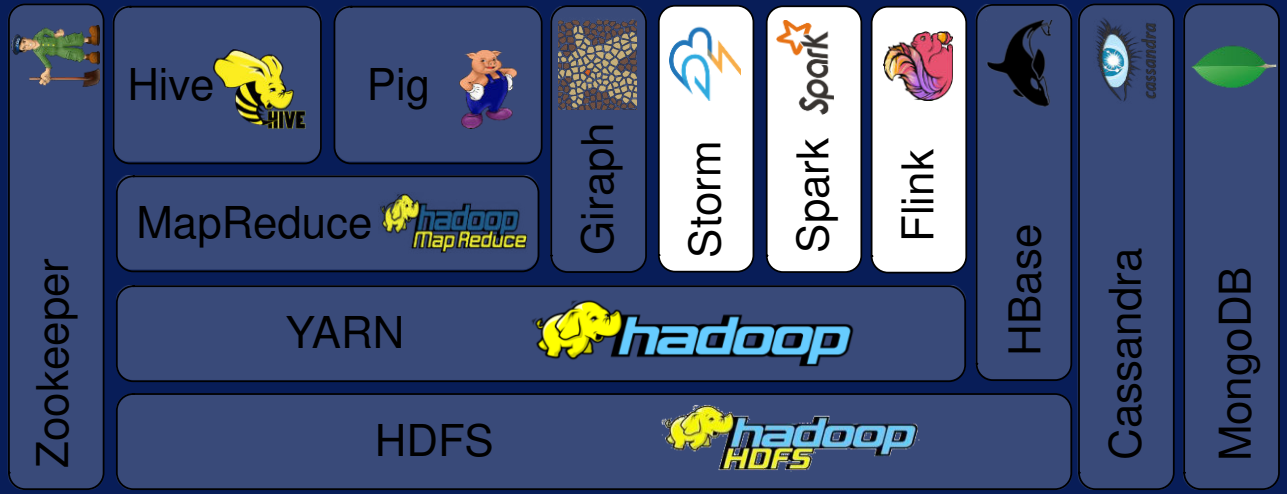
Giraph used by Facebook to analyze social graphs



Real-time and in-memory processing

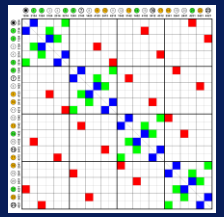


In-memory → 100x faster for some tasks



NoSQL for non-files

Key-values



Sparse tables

HBase used for Facebook's Messaging Platform

Zookeeper for management

Synchronization

Configuration

High-availability

Created by Yahoo to wrangle services named after animals

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Large community
for support

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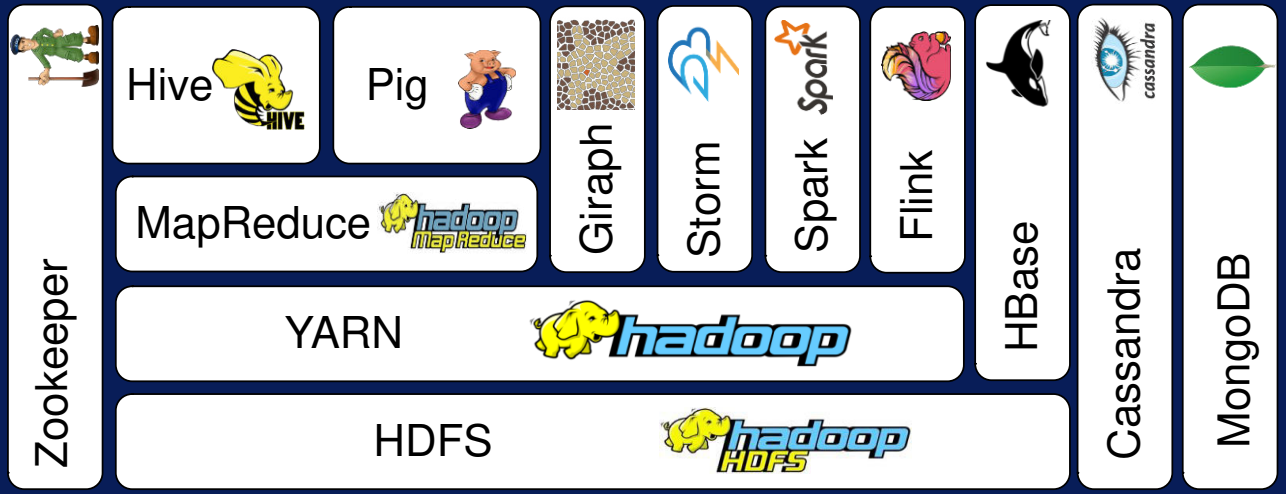

Growing number of open-source tools