Sorted Ordered Column-family Stores

Google's Bigtable, HBase, Hypertable

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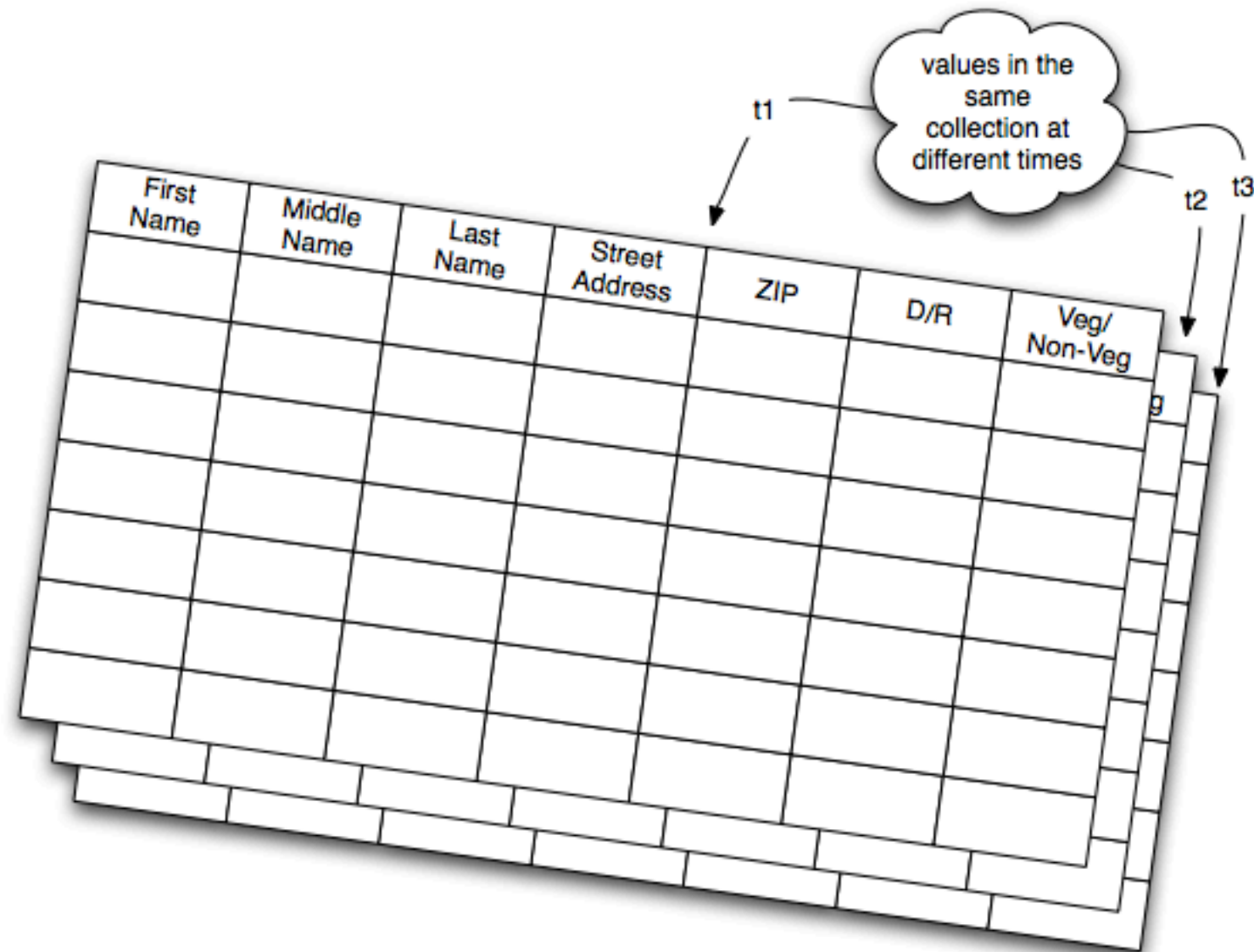
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Definition

- Sorted

- Ordered

- Distributed

- Map

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Essential schema

row key	time	contents	anchor	mime
com.cnn.www	t9		cnnsi.com	
	t8		my.look.ca	
	t6	"<html>..."		"text/html"
	t5	"<html>..."		
	t3	"<html>..."		

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Multi-dimensional View

A Map/Hash View
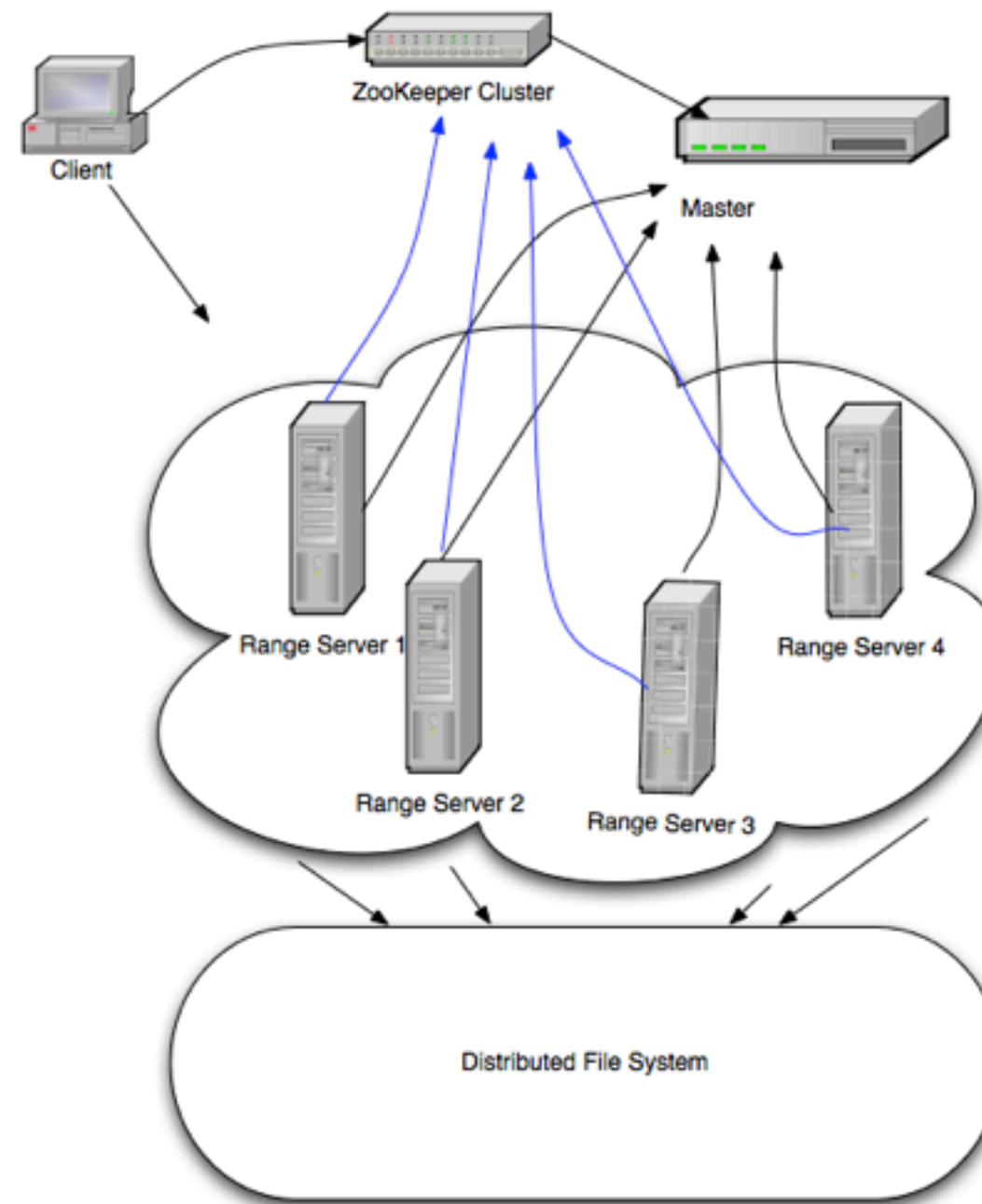
```
{

   "row_key_1" : { "name" : {

      "first_name" : "Jolly", "last_name" : "Goodfellow"

   } } },

   "location" : { "zip": "94301" },
```
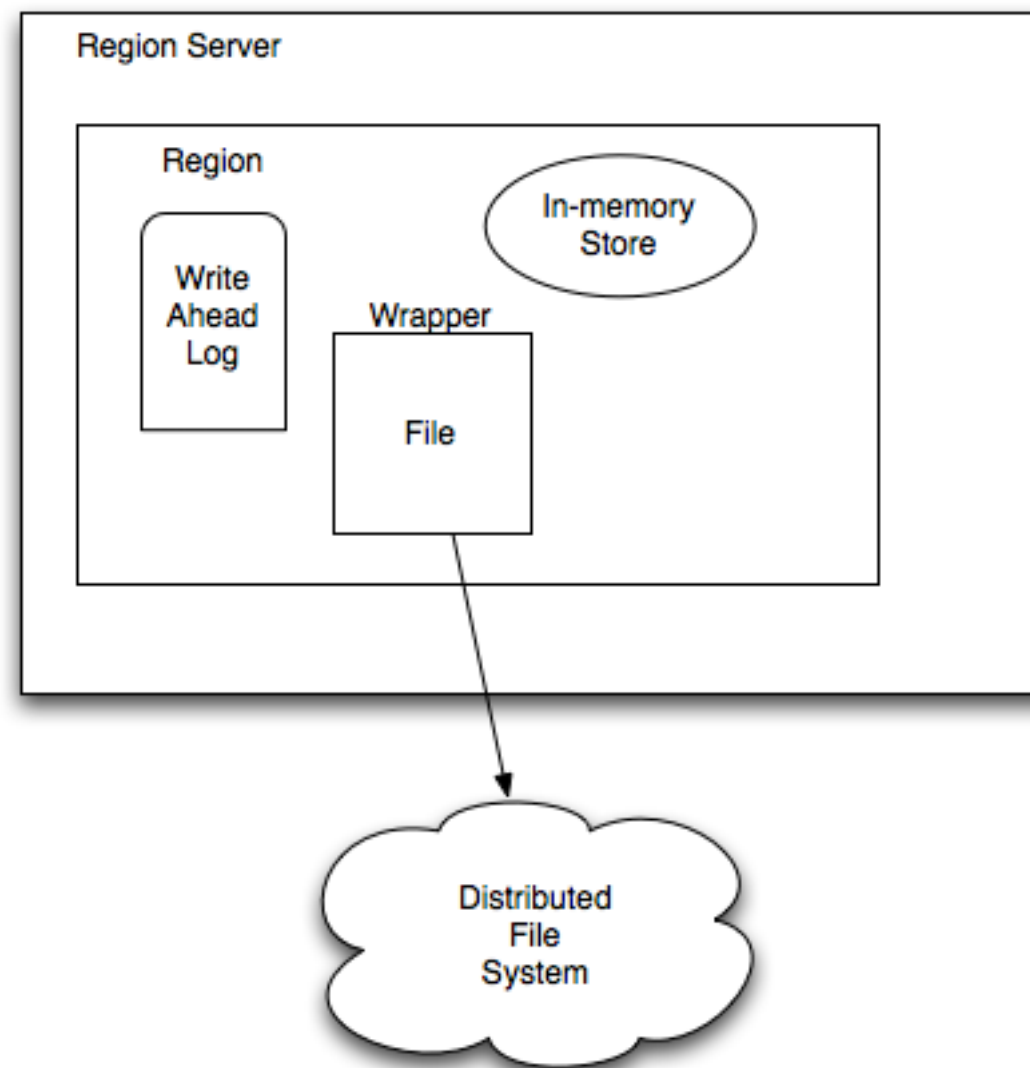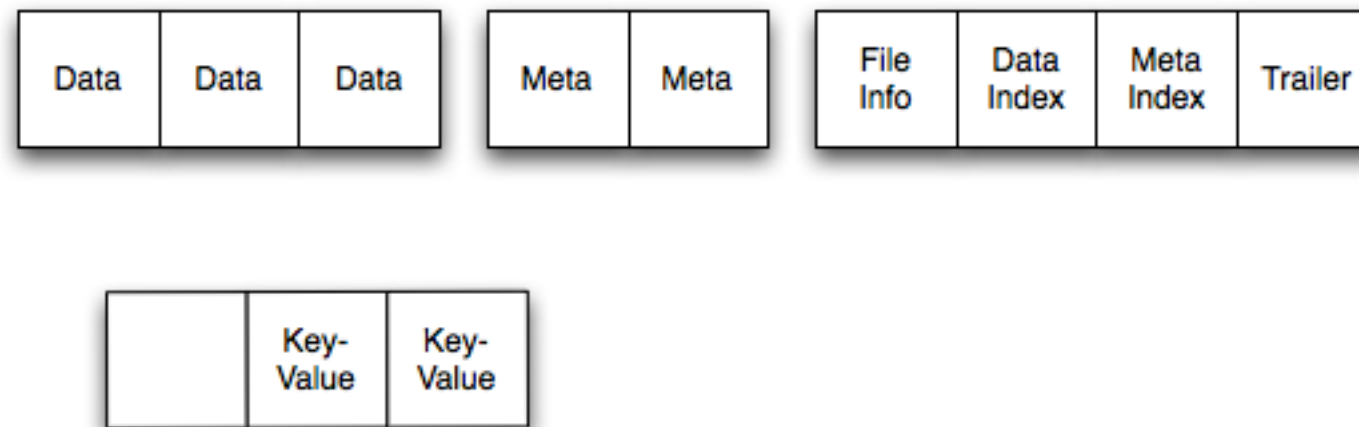
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Architectural View (HBase)

The Persistence Mechanism

The underlying file format

Model Wrappers (The GAE Way)

- Python

    - Model, Expando, PolyModel

- Java

    - JDO, JPA

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HBase Data Access

- Thrift + Avro

- Java API -- HTable, HBaseAdmin

- Hive (SQL like)

- MapReduce -- sink and/or source

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Transactions

- Atomic row level

- GAE Entity Groups

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Indexes

- Row ordered

- Secondary indexes

- GAE style multiple indexes

    - thinking from output to query

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Use cases

- Many Google's Products

- Facebook Messaging

- StumbleUpon

- Open TSDB

- Mahalo, Ning, Meetup, Twitter, Yahoo!

- Lily -- open source CMS built on HBase & Solr

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Questions?

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