Starburst

Exploring Apache Iceberg *Starburst Workshop*

A hands-on webinar
with Lester Martin from DevRel

Connection before content

Lester Martin – https://linktr.ee/lestermartin

- Developer Relations @ Starburst
  - Blogging & forums
  - Webinars & videos
  - User groups & events
  - Training & tutorials
- 30+ years of technology experience
  - Started journey on TRS-80 Model III
  - Played most roles, but a programmer at my core
  - ½ career in OLTP and ½ in data analytics
  - Decade+ of "big data" experience to include
    - Trino/Starburst, Hadoop, Hive, Spark
    - NiFi, Kafka, Storm, Flink
    - HBase, MongoDB

devrel@starburst.io

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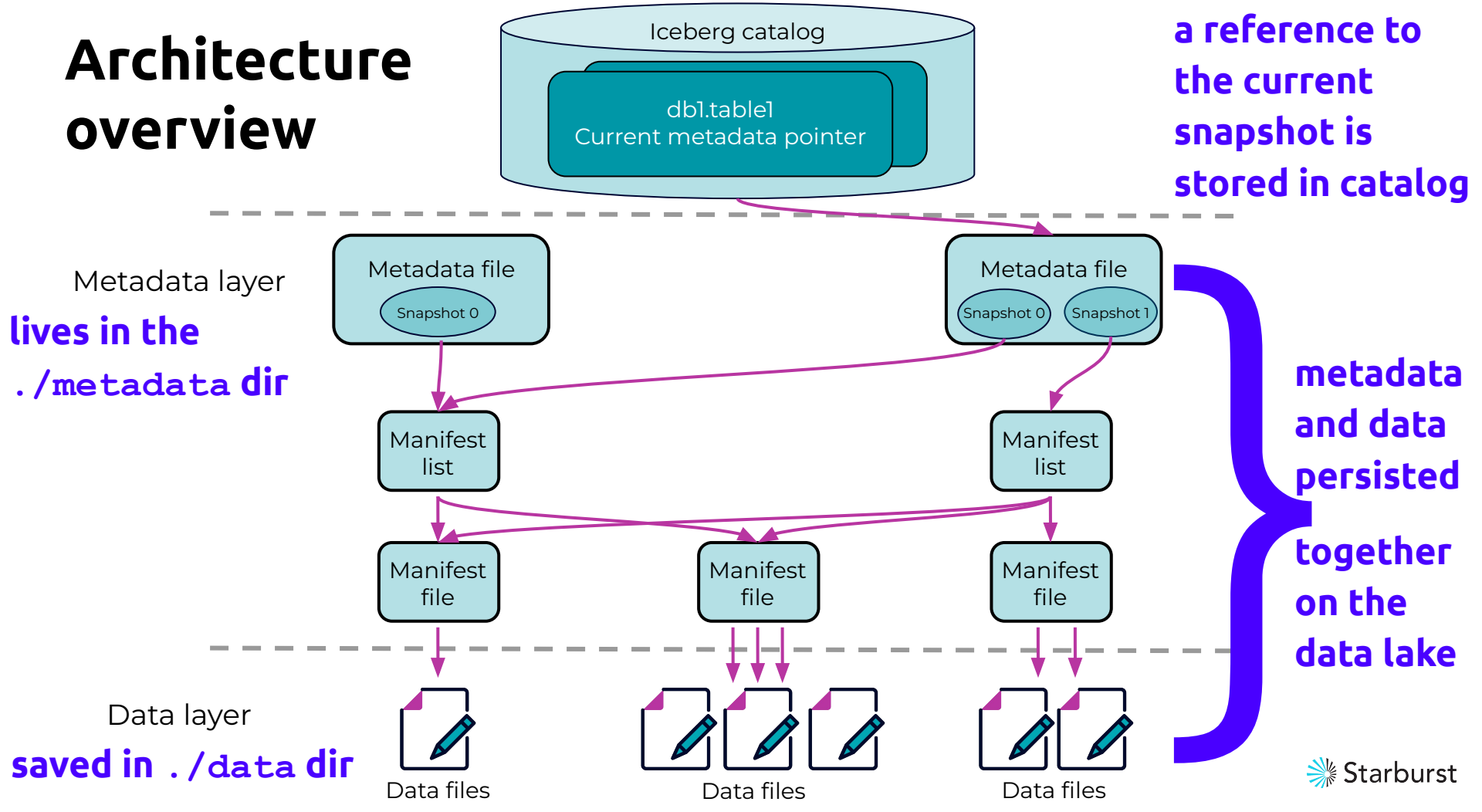
Apache Iceberg

Starburst

Architecture overview



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Access to metadata

Metadata columns

Much like available from the original Hive table format, hidden columns are available on all tables

- `$path` – full file system path name of the file for a given row
- `$file_modified_time` – timestamp of the last modification of the file for a given row

Metadata tables

Metatable tables, including the following, contain information about the internal structure of each Iceberg table

- `$history`
- `$snapshots`
- `$manifests`
- `$partitions`
- `$files`

ACID properties - *A transaction must be…*

A

Atomic

completed in its entirety or not at all

C

Consistent

repeatable by producing the same outcome when using the same initial state

I

Isolated

independent of other concurrent transactions & not queryable while in progress

D

Durable

permanently saved even in the event of a system error

Only single-statement, single-table, transactions supported

Schema evolution

In addition to simple operations such as renaming a table, Iceberg supports:

- **Add** – add a new column
- **Drop** – remove an existing column
- **Rename** – rename an existing column
- **Update** – widen the type of a column
- **Reorder** – change the order of columns

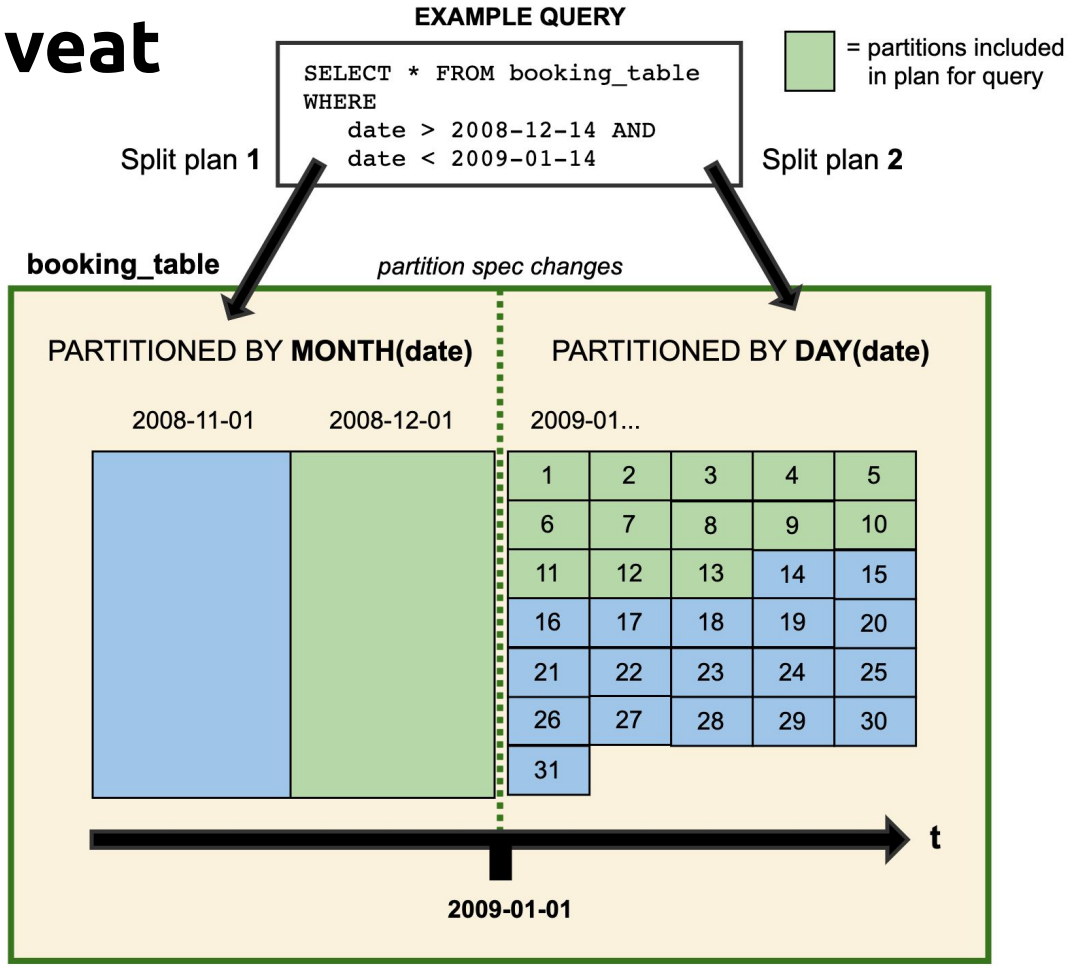
Schema updates are *metadata changes* – no data files are rewritten

Partition change caveat

When you change the partitioning strategy, the existing data is NOT rewritten.

New data is written using the new layout.

Iceberg and Starburst will read only what they need to.



Transactions give us snapshots

Snapshots allow for

- **Time travel queries**
- **Rollback**

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Exercises