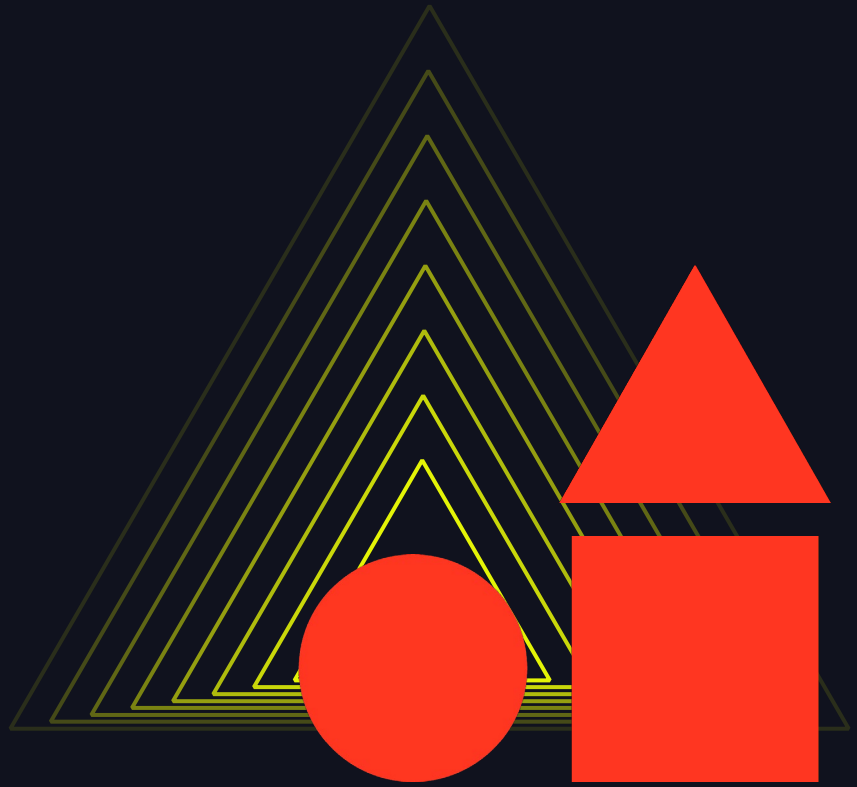
DATA+AI SUMMIT BY databricks

State Reader API



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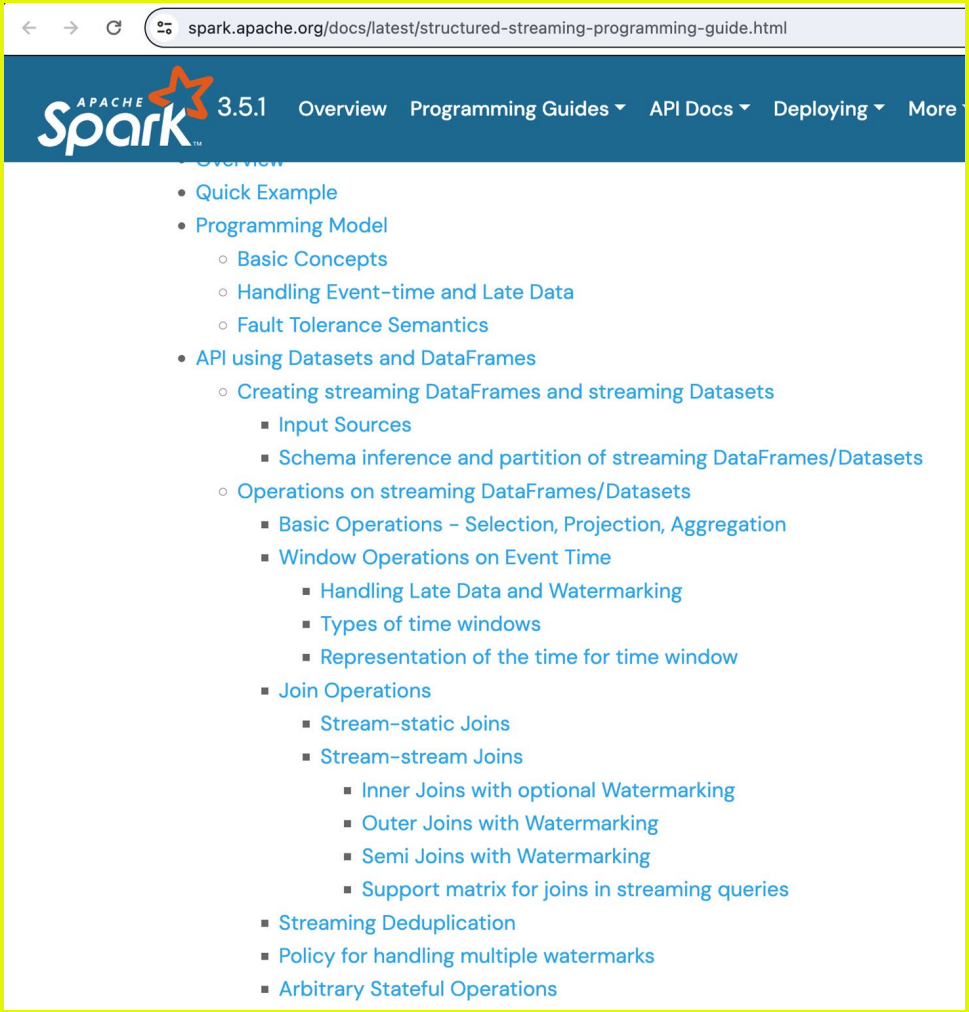
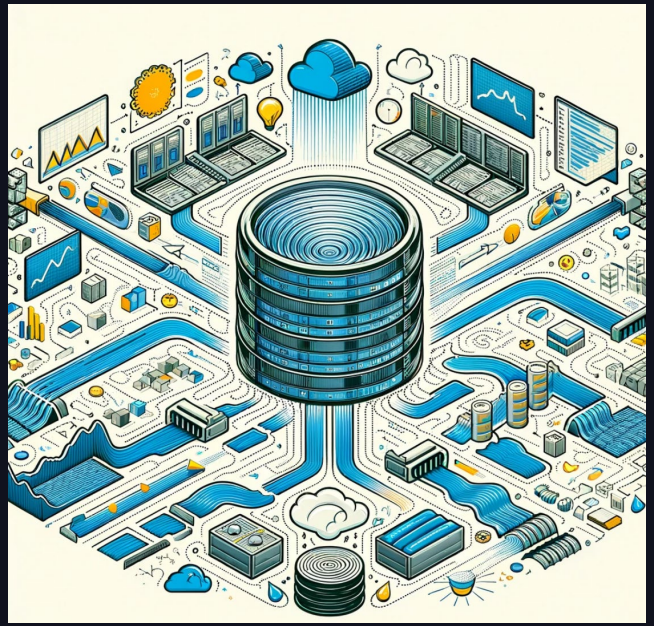


State Reader API - DBR 14.3+

`spark.read.format("state-metadata")` and `spark.read.format("statestore")`

- New capability to access and analyze Structured Streaming's internal state data.
- Aimed at facilitating development, debugging, and troubleshooting of stateful Structured Streaming workloads.
- To be included in Apache Spark 4.0.0, expected later this year.



Demo

Development Challenges Addressed

Debugging complexity & difficulty properly (unit) testing

- Excessive logging for debugging due to challenges in understanding the state store.
- Slower project progress from difficulties in development.
- Complexity in handling event time leads to unreliable tests.
- Bypassing crucial unit tests due to testing challenges.

Production Challenges Addressed

Troubleshooting complexity, slowing down issue resolution

- Analysts face data inconsistencies and access limitations.
- Time-consuming coding workarounds needed to resolve urgent issues.

state-metadata

High-level API

High-level statestore info

```
display(spark.read.format("state-metadata").load(ad_clicks_checkpoint))
```

Table + New result table: ON Search

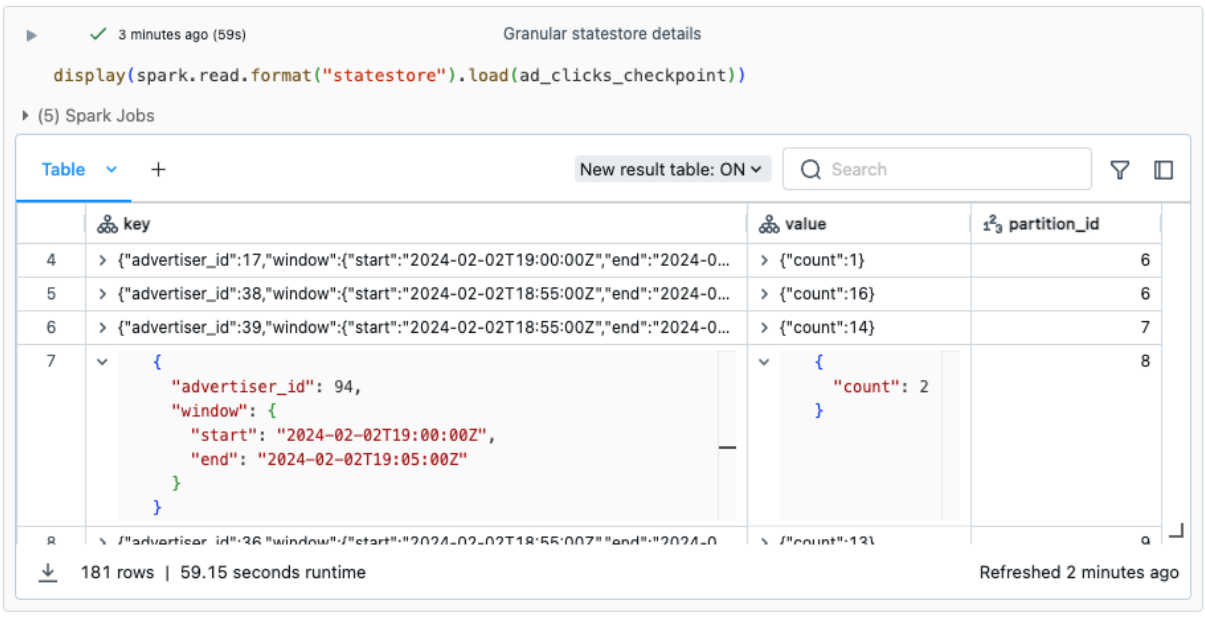
	operatorId	operatorName	stateStoreName	numPartitions	minBatchId	maxBatchId
1	0	stateStoreSave	default	200	0	13
2	1	dedupeWithinWatermark	default	200	0	13

2 rows

Column	Description
operatorId	The integer ID of the stateful streaming operator.
operatorName	Name of the stateful streaming operator.
stateStoreName	Name of the state store of the operator.
numPartitions	Number of partitions of the state store.
minBatchId	The minimum batch ID available for querying state.
maxBatchId	The maximum batch ID available for querying state.

statestore

Granular API



Column	Type	Description
key	Struct (further type derived from the state key)	The key for a stateful operator record in the state checkpoint.
value	Struct (further type derived from the state value)	The value for a stateful operator record in the state checkpoint.
partition_id	Integer	The partition of the state checkpoint that contains the stateful operator record.

When to use the State Reader API

Development, debugging, and production investigations

Dev & test

- View state-level details to validate business logic during development.
- Write unit tests and improve CI/CD for stateful code.
- Verify state clean up.

Parallelism & skew

- Query the API to look for skew across state store instances.
- Understand the operators and the number of partitions used for the operator.

Issue investigation

- Trace state values across batches.
- Pinpoint current state values.