Streaming Overview

Kafka Immersion Day @ REA

Day 1

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9/7/21

Agenda

- Why streaming
- What is streaming
- Streaming ecosystem
- AWS Services in the Streaming space
- Brief introduction of the AWS streaming services
- Common architectures
- Customer example

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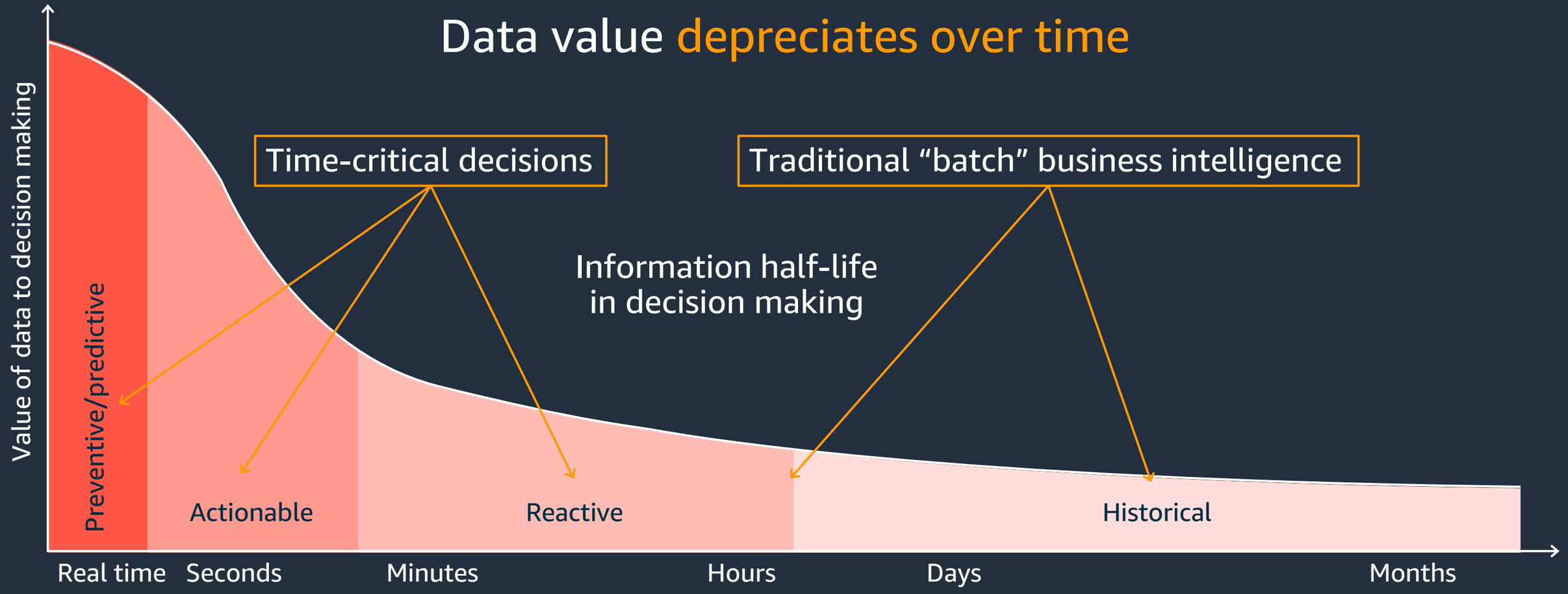
Timely decisions require new data in minutes



Source: Perishable insights, Mike Gualtieri, Forrester

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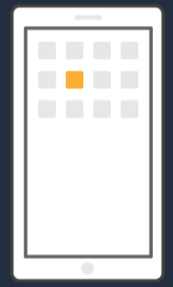
Data is produced continuously from a large variety of sources



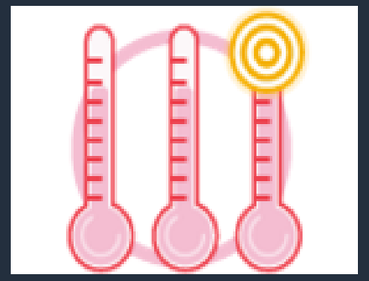
Mobile apps

Web clickstream

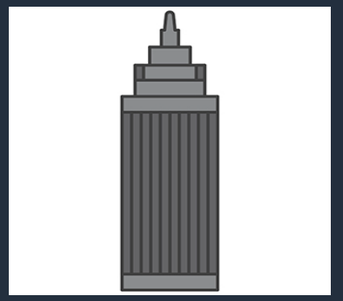
```
[Wed Oct 11 14:32:52
2018] [error] [client
127.0.0.1] client denied
by server configuration:
/export/home/live/ap/htdo
cs/test
```

Application logs

Metering records



IoT sensors



Smart buildings

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Why capture and process data in real time?

Businesses can more easily

- react to customers
- react to threats
- react to environmental changes
- make timely decisions
- innovate down the road

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The foundation of real-time analytics

1. Data is produced, delivered, and processed in milliseconds
2. Data is retained, enabling parallel and independent processing
3. Data must be captured and processed in the order it was generated

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Technology fit for real-time analytics

Technology	Lag	Parallel processing	Ordering guarantees
Relational database	Asynchronous	Yes	No
Message Queues	Milliseconds	No	No
Hadoop	Hours or days	Yes	No
Commit log	Milliseconds	Yes	Yes

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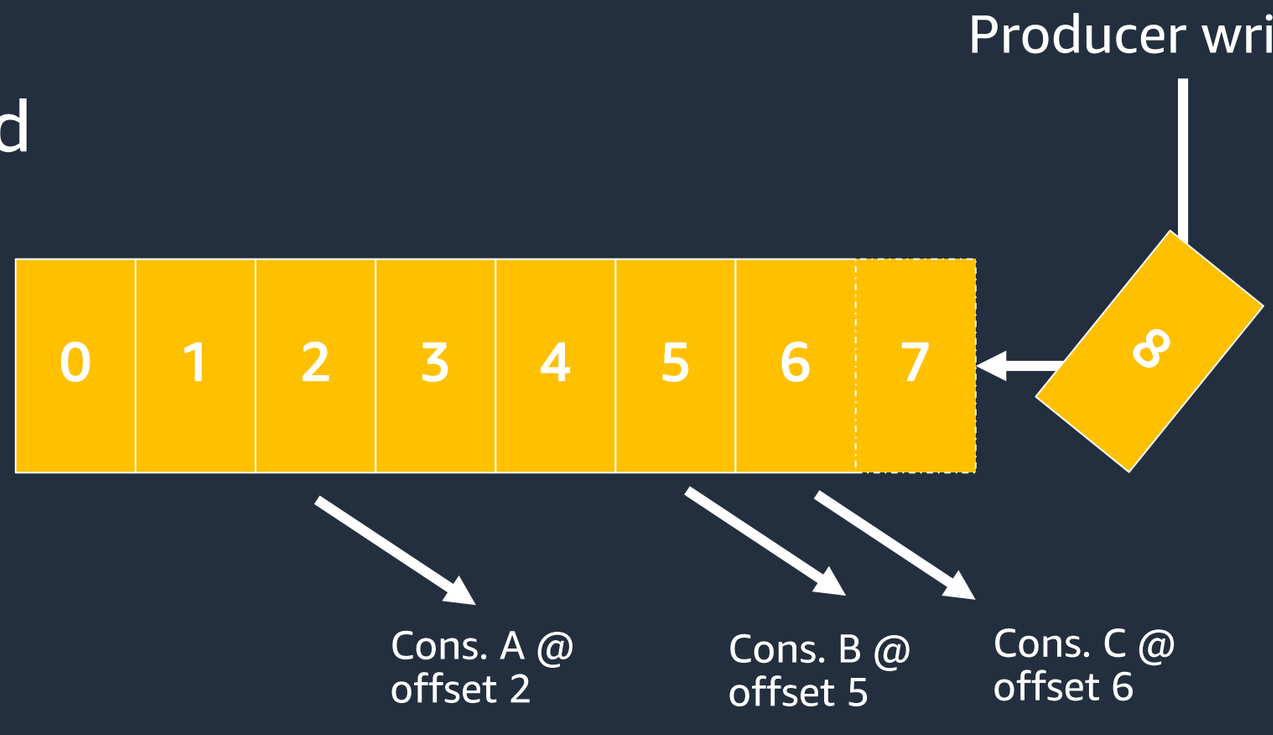
The commit log is the construct for real-time data

Producers and consumers are decoupled

Data is retained, not destroyed

Write order is preserved



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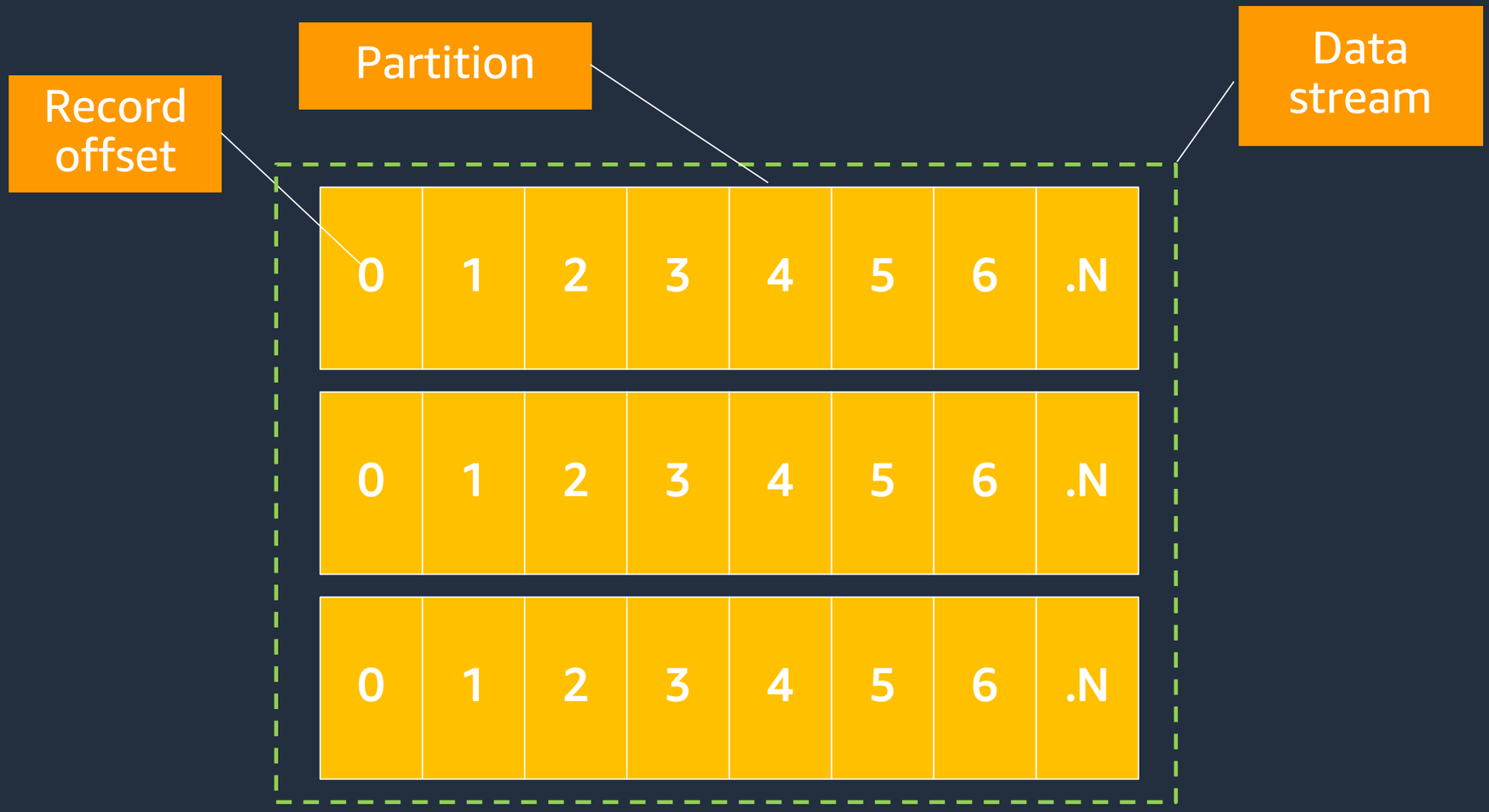
What is a data stream?



A data stream is a logical grouping of at least 1 commit log (aka a “partition” or a “shard”)

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Current trends

Data streams are replacing message queues

Data streams are replacing Hadoop workflows

Data streams are the spinal cord for microservices

Relational database analytics are happening on change streams

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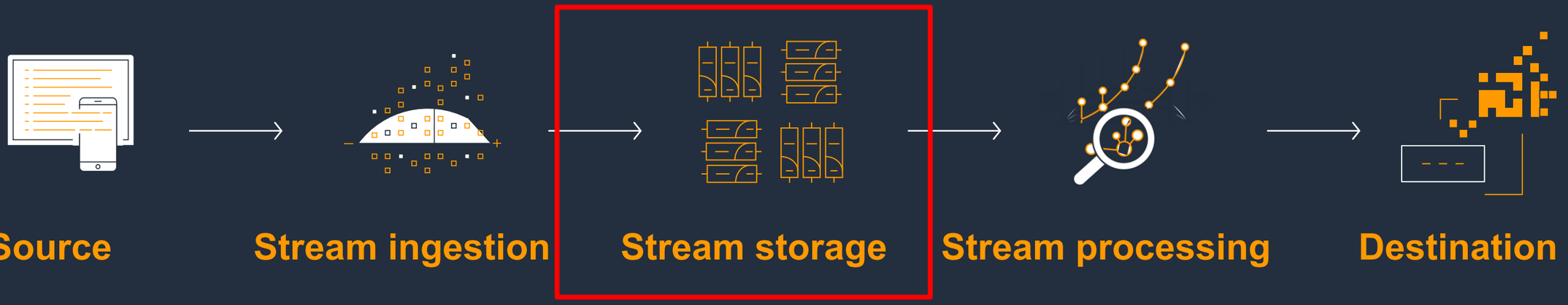
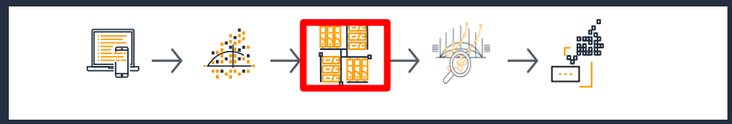
Enabling real-time analytics

Data-streaming technology enables customers to ingest, process, and analyze high volumes of high velocity data from a variety of sources in real time





Stream storage

Data is stored in the order it was received for a set duration. It can be replayed indefinitely during this time.

Amazon Kinesis Data Streams

Amazon Managed Streaming for Apache Kafka

Amazon Kinesis Data Firehose

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Enabling real-time analytics

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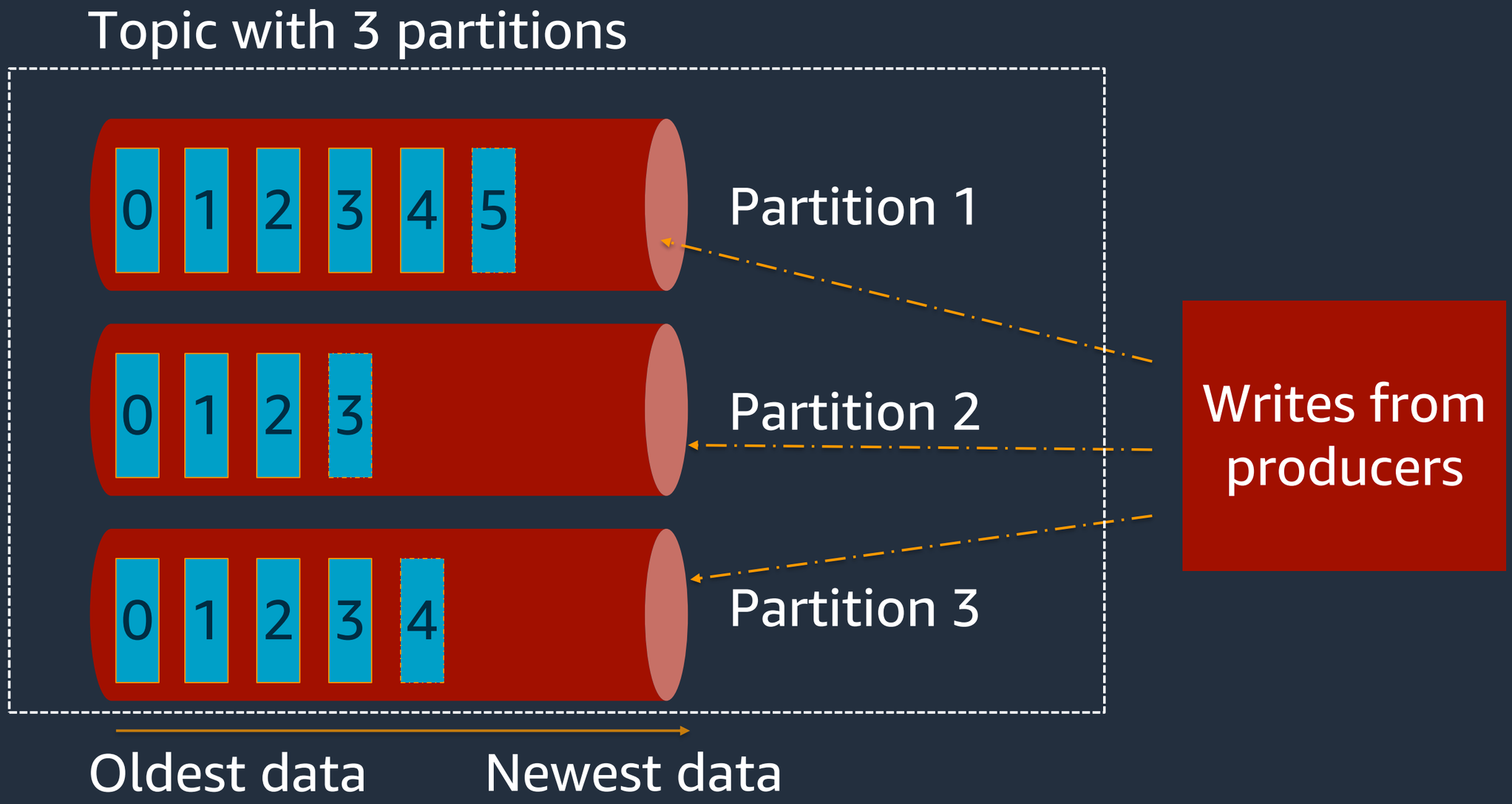
Apache Kafka Ordering & Partitions



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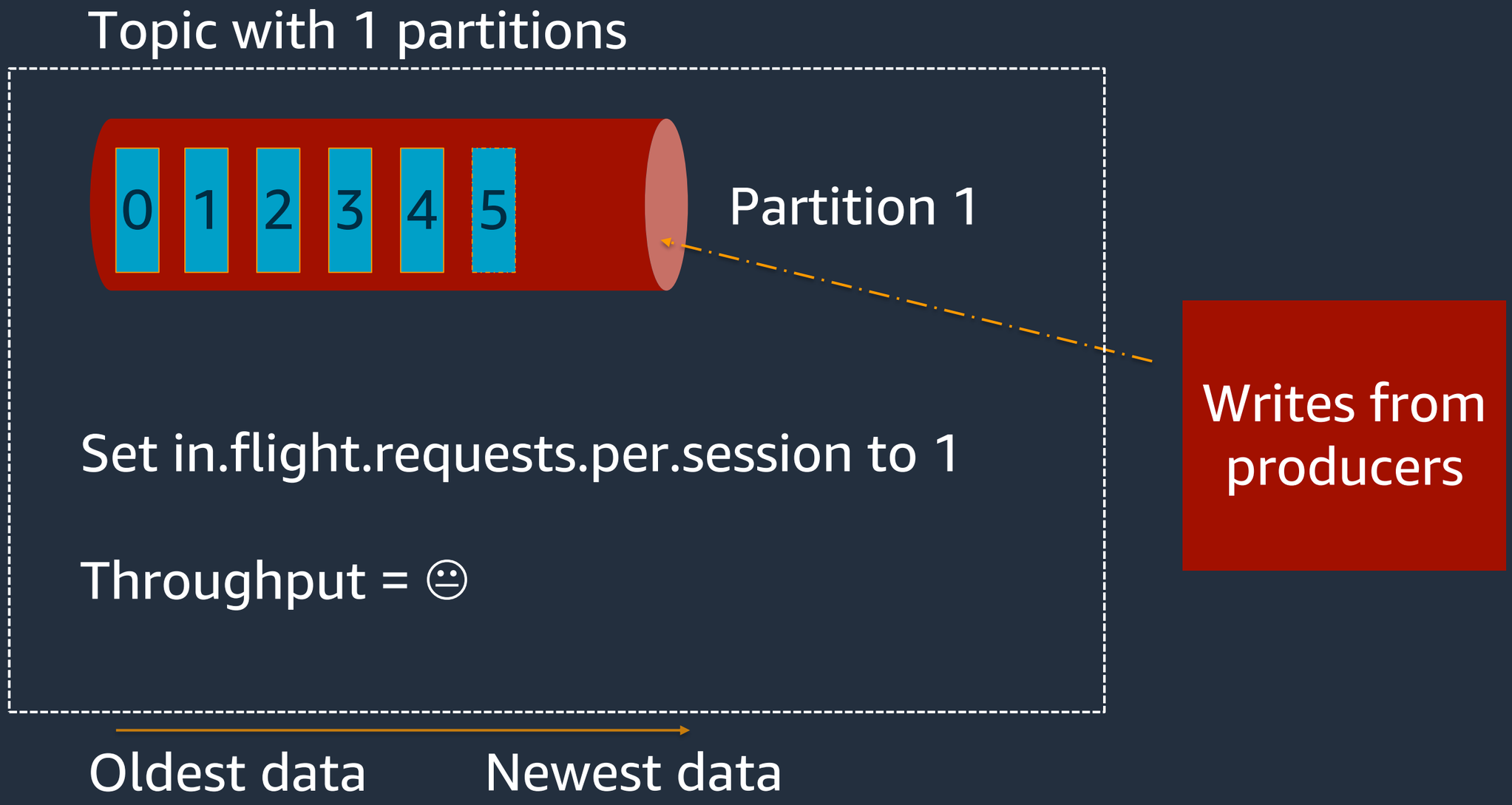
Apache Kafka In-Order Delivery



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