

TGIP-CN 022

Understand Replicated Subscriptions

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StreamNative Cloud Released

<https://streamnative.io/blog/tech/2020-08-18-announcing-streamnative-cloud>

Community Meeting

<https://github.com/streamnative/pulsar-community-loc-cn/issues/1>

Topic Level Policy

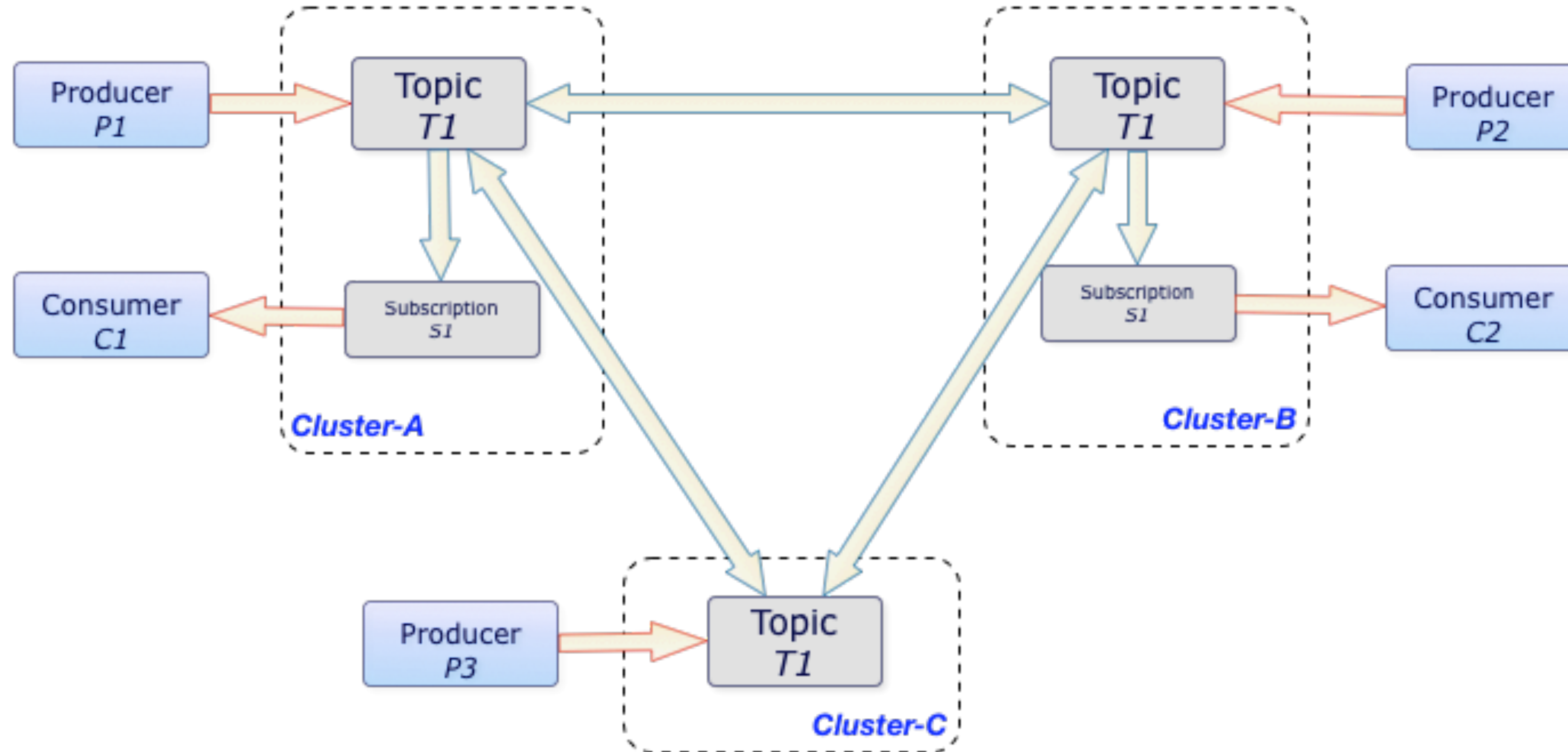
- A. Support MaxUnackedMessagesOnConsumer on topic level
- B. Support Persistence Policies on topic level
- C. Support deduplication on topic level

Transaction Support

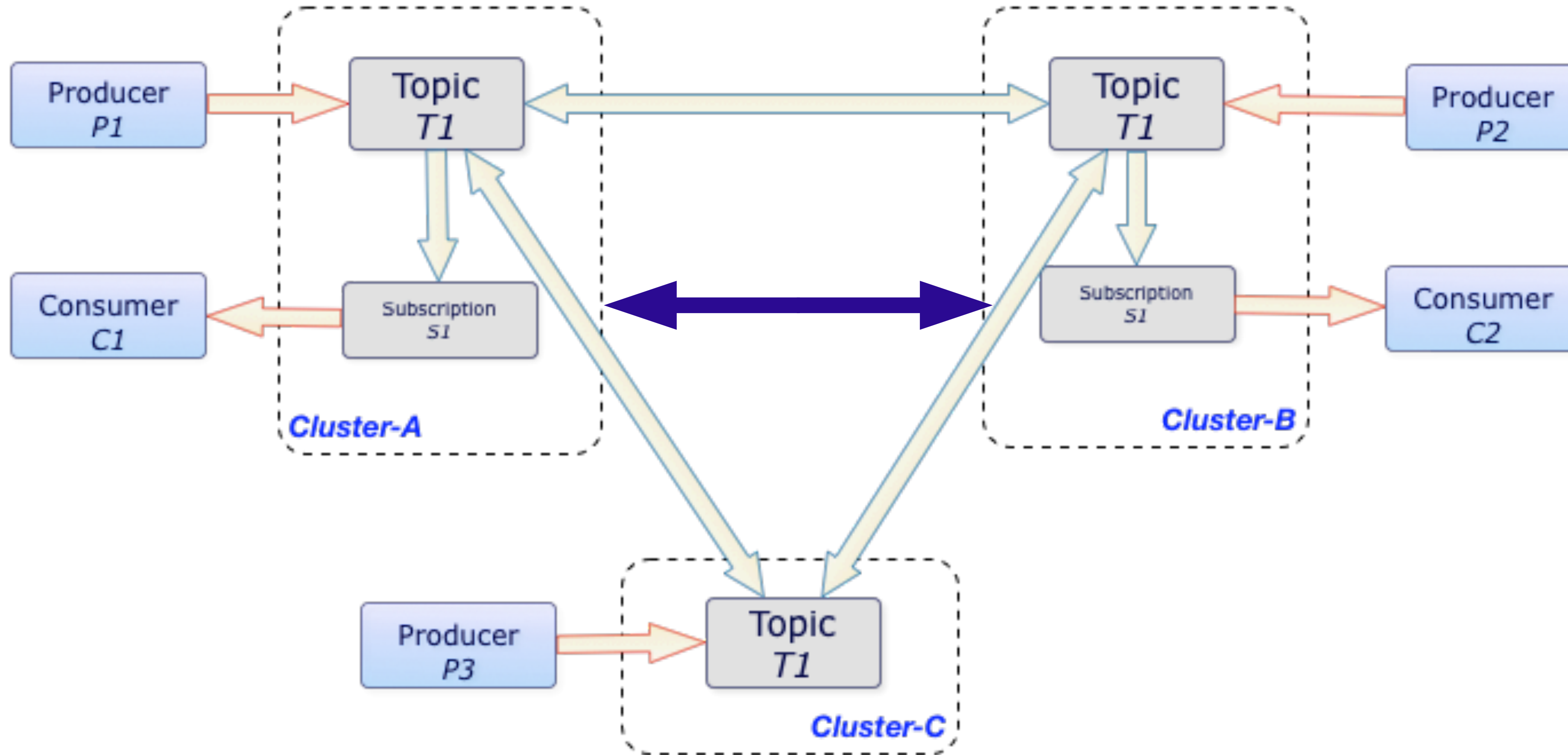
- A. Transaction message consumption
- B. Transaction message acknowledgement



Geo Replication



Replicated Subscription



Message ID

Ledger ID

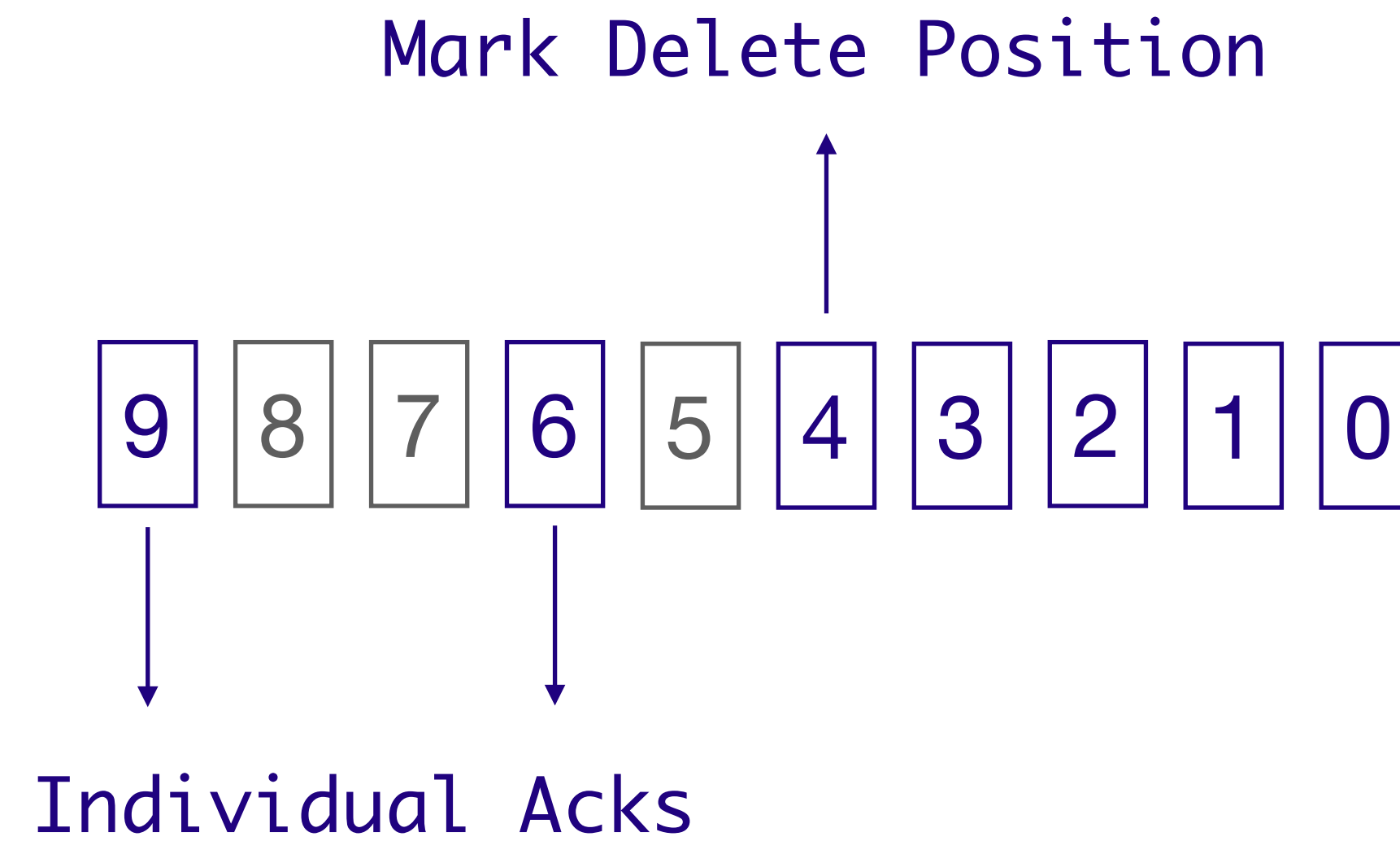
Entry ID

Partition Index

Batch Index



Message Acknowledgment



Message Acknowledgment

| Cluster A | Cluster B |
|-----------|-----------|
| 1:0 | 3:0 |
| 1:1 | 3:1 |
| 1:2 | 3:2 |
| 3:0 | 6:0 |
| 3:1 | 6:1 |
| 3:2 | 6:2 |
| 3:3 | 6:3 |

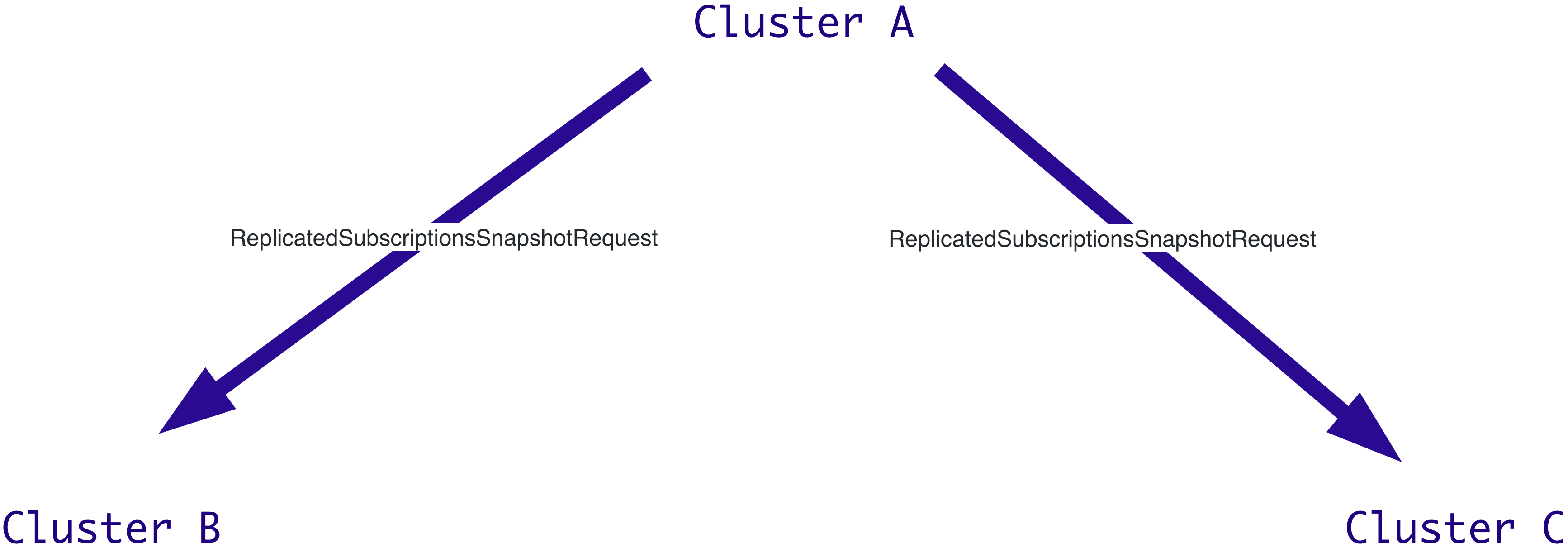


Cursor Snapshot

| Cluster A | Cluster B |
|-----------|-----------|
| 1:0 | 3:0 |
| 3:0 | 6:0 |
| 3:3 | 6:3 |



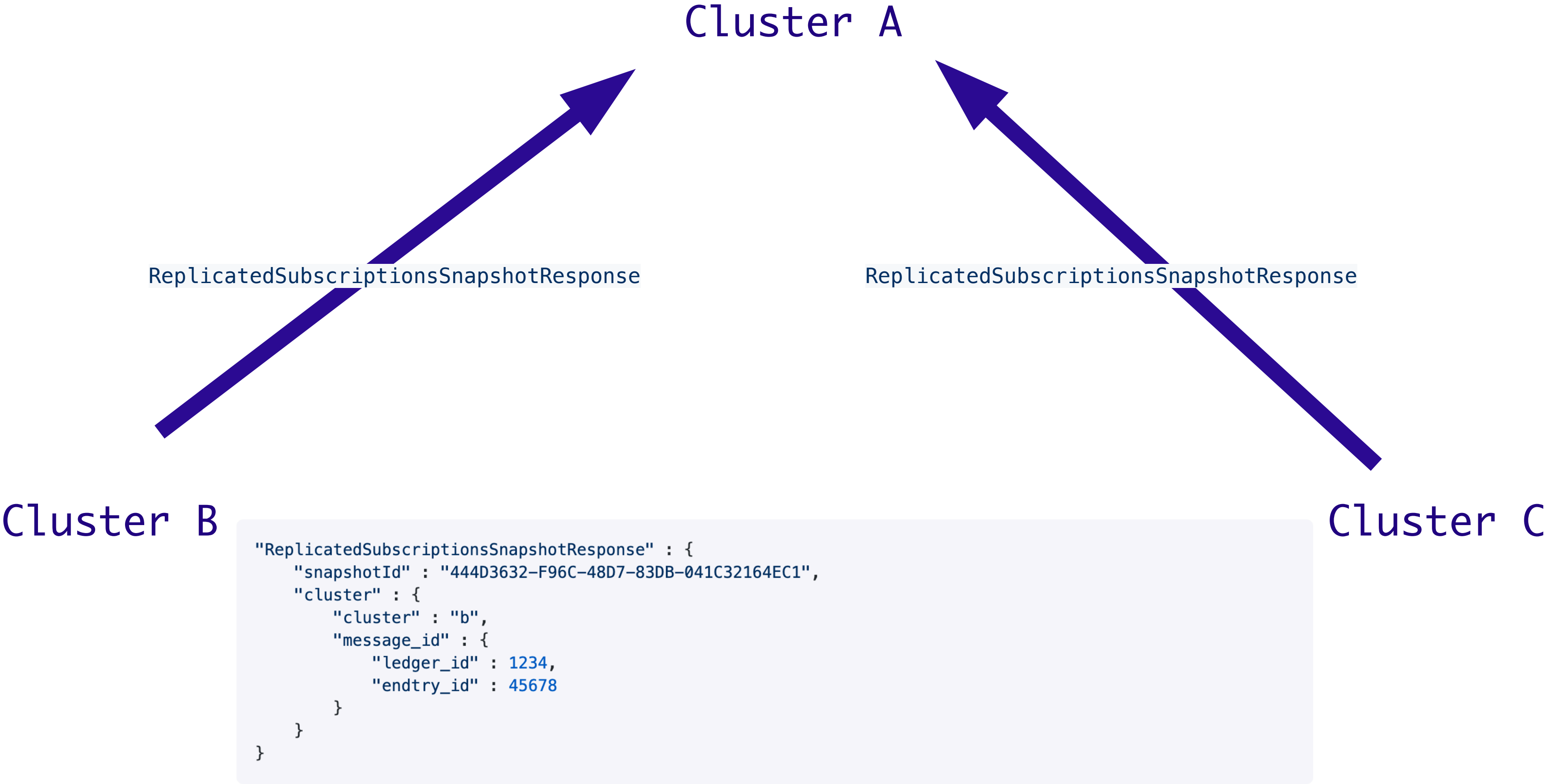
Cursor Snapshot Flow



```
"ReplicatedSubscriptionsSnapshotRequest" : {  
  "snapshot_id" : "444D3632-F96C-48D7-83DB-041C32164EC1",  
  "source_cluster" : "a",  
}
```



Cursor Snapshot Flow



Cursor Snapshot Flow

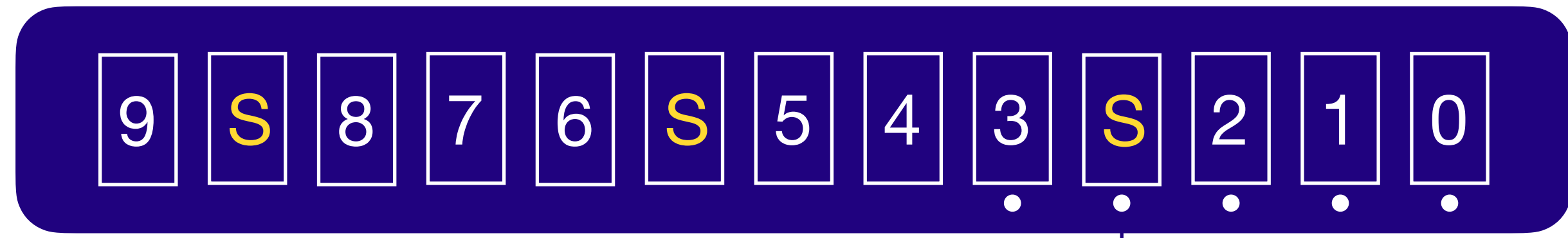
```
{
  "snapshot_id" : "444D3632-F96C-48D7-83DB-041C32164EC1",
  "local_message_id" : {
    "ledger_id" : 192,
    "endtry_id" : 123123
  },
  "clusters" : [
    {
      "cluster" : "b",
      "message_id" : {
        "ledger_id" : 1234,
        "endtry_id" : 45678
      }
    },
    {
      "cluster" : "c",
      "message_id" : {
        "ledger_id" : 7655,
        "endtry_id" : 13421
      }
    }
  ],
}
```



Storing Cursor Snapshot



Update Remote Cursor



```
{
  "subscription_name" : "my-subscription",
  "clusters" : [
    {
      "cluster" : "b",
      "message_id" : {
        "ledger_id" : 1234,
        "endtry_id" : 45678
      }
    },
    {
      "cluster" : "c",
      "message_id" : {
        "ledger_id" : 7655,
        "endtry_id" : 13421
      }
    }
  ],
}
```



Enable Replicated Subscriptions

enableReplicatedSubscriptions=true

```
Consumer<String> consumer = client.newConsumer(Schema.STRING)
    .topic("my-topic")
    .subscriptionName("my-subscription")
    .replicateSubscriptionState(true)
    .subscribe();
```

 Copy



Configure Replicated Subscriptions

```
# Frequency of snapshots for replicated subscriptions tracking.
```

```
replicatedSubscriptionsSnapshotFrequencyMillis=1000
```

```
# Timeout for building a consistent snapshot for tracking replicated subscriptions state.
```

```
replicatedSubscriptionsSnapshotTimeoutSeconds=30
```

```
# Max number of snapshot to be cached per subscription.
```

```
replicatedSubscriptionsSnapshotMaxCachedPerSubscription=10
```



Limitations

- A. The cursor snapshots are taken periodically
- B. Only sync mark delete position
- C. The snapshots can only be taken if all involved clusters are available
- D. Affect the calculation of the backlog





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Thanks