

KIP-216: IQ should throw different exceptions for different errors

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Status

Current state: *Under Discussion*

Discussion thread: [here](#)

JIRA: [KAFKA-5876](#) - Getting issue details... STATUS

Please keep the discussion on the mailing list rather than commenting on the wiki (wiki discussions get unwieldy fast).

Motivation

Currently, IQ throws *InvalidStateStoreException* for any types of error, that means a user cannot handle different types of error.

Because of that, we should throw different exceptions for each type.

Proposed Changes

To distinguish different types of error, we need to handle all *InvalidStateStoreExceptions* better during these public methods invoked. The main change is to introduce new exceptions that extend from *InvalidStateStoreException*. *InvalidStateStoreException* is not thrown at all anymore, but only new sub-classes.

```
# Two category exceptions
public class RetryableStateStoreException extends InvalidStateStoreException
public class FatalStateStoreException extends InvalidStateStoreException

# Retryable exceptions
public class StreamThreadNotStartedException extends RetryableStateStoreException
public class StreamThreadRebalancingException extends RetryableStateStoreException
public class StateStoreMigratedException extends RetryableStateStoreException

# Fatal exceptions
public class StreamThreadNotRunningException extends FatalStateStoreException
```

Various state store exceptions can classify into two category exceptions: **RetryableStateStoreException** and **FatalStateStoreException**. The user can use the two exceptions if they only need to distinguish whether it can retry.

- **Retryable exceptions**
 - **StreamThreadNotStartedException**: will be thrown when streams thread state is CREATED, the user can retry until to RUNNING.
 - **StreamThreadRebalancingException**: will be thrown when stream thread is not running and stream state is REBALANCING, the user just retry and wait until rebalance finished (RUNNING).
 - **StateStoreMigratedException**: will be thrown when state store already closed and stream state is REBALANCING.
- **Fatal exceptions**
 - **KafkaStreamsNotRunningException**: will be thrown when stream thread is not running and stream state is PENDING_SHUTDOWN / NOT_RUNNING / ERROR. The user cannot retry when this exception is thrown.
 - **StateStoreNotAvailableException**: will be thrown when state store closed and stream thread is PENDING_SHUTDOWN / NOT_RUNNING / ERROR. The user cannot retry when this exception is thrown.
 - **UnknownStateStoreException**: will be thrown when passing an unknown state store.

The following is the public methods that users will call to get state store instance:

- *KafkaStreams*
 - store(storeName, queryableStoreType)

Throw exceptions: **StreamThreadNotStartedException**, **StreamThreadRebalancingException**, **KafkaStreamsNotRunningException**, **UnknownStateStoreException**

The following is the public methods that users will call to get store values:

- *interface ReadOnlyKeyValueStore(class CompositeReadOnlyKeyValueStore)*
 - get(key)
 - range(from, to)
 - all()
 - approximateNumEntries()
- *interface ReadOnlySessionStore(class CompositeReadOnlySessionStore)*
 - fetch(key)
 - fetch(from, to)
- *interface ReadOnlyWindowStore(class CompositeReadOnlyWindowStore)*
 - fetch(key, time)
 - fetch(key, from, to)
 - fetch(from, to, fromTime, toTime)
 - all()
 - fetchAll(from, to)
 - @Deprecated fetch(key, timeFrom, timeTo)
 - @Deprecated fetch(from, to, timeFrom, timeTo)
 - @Deprecated fetchAll(timeFrom, timeTo)
- *interface KeyValueIterator(class DelegatingPeekingKeyValueIterator)*
 - next()
 - hasNext()
 - peekNextKey()

All the above methods could be throw following exceptions:



StreamThreadRebalancingException, ***StateStoreMigratedException***, ***KafkaStreamsNotRunningException***, ***StateStoreNotAvailableException***

Compatibility, Deprecation, and Migration Plan

- All new exceptions extend from InvalidStateStoreException, this change will be fully backward compatible.

Rejected Alternatives

None.