

MigratoryData Audit Extension API

Developer's Guide and Reference Manual

July 12, 2018



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Chapter 1

Developer's Guide

This guide includes the following sections:

- [Overview](#)
- [Creating an Audit Extension for MigratoryData Server](#)
- [Examples](#)

1.1 Overview

This Audit Application Programming Interface (API) contains all the necessary operations for building audit extensions for MigratoryData Server.

Before reading this manual, it is recommended to read *MigratoryData Architecture Guide* ([PDF](#), [HTML](#)).

1.2 Creating an Audit Extension for MigratoryData Server

A typical API usage is as follows:

1.2.1 Step 1 - Implement one or more audit interfaces

The interfaces [MigratoryDataAccessListener](#), [MigratoryDataPublishListener](#), [MigratoryDataCacheListener](#), and [MigratoryDataStatsListener](#) are available as part of the audit library which can be found under the folder `doc/↔Extension/libs/audit` of this package.

1.2.2 Step 2 - Build the jar of the extension

Build the JAR consisting of the object code of the classes defined at Step 1. The JAR must also include a folder named `services` in its `META-INF` folder. Moreover, the folder `services` must include a file for each implemented interface at Step 1 named as the fully qualified name of the interface and having as content the fully qualified name of the class which implements the interface.

1.2.3 Step 3 - Install the extension

Rename the JAR built at Step 2 to `audit.jar` and deploy it to the folder `extensions` of the root folder of your MigratoryData server installation. If you installed MigratoryData Server using the `deb/rpm` packages, then deploy the JAR to the folder `/usr/share/migratorydata/extensions`.

1.2.4 Step 4 - Configure the audit

In the configuration file of the MigratoryData server, set on `true` the parameters `Audit.Access`, `Audit.Publish`, `Audit.Cache`, and `Audit.Stats` provided that you implemented its corresponding interface at Step 1.

1.2.5 Step 5 - Restart the MigratoryData server

1.3 Examples

An example built with this API is available in the folder `doc/Extension/examples/audit` of this package; start with the `README` file which explains how to compile and deploy the example audit extension.

Chapter 2

Hierarchical Index

2.1 Class Hierarchy

This inheritance list is sorted roughly, but not completely, alphabetically:

- MigratoryDataCacheListener.CacheEntry 11
- MigratoryDataAccessListener 18
- MigratoryDataAuditEvent 20
 - MigratoryDataAccessListener.ConnectEvent 15
 - MigratoryDataAccessListener.DisconnectEvent 17
 - MigratoryDataAccessListener.SubscribeEvent 29
 - MigratoryDataAccessListener.SubscribeWithHistoryEvent 30
 - MigratoryDataAccessListener.SubscribeWithRecoveryEvent 31
 - MigratoryDataAccessListener.UnsubscribeEvent 32
- MigratoryDataCacheListener.CacheAddEvent 9
- MigratoryDataCacheListener.CacheCleanEvent 10
- MigratoryDataCacheListener.CacheHistoryEvent 12
- MigratoryDataCacheListener.CacheRecoveryEvent 13
- MigratoryDataCacheListener.CacheStartEvent 15
- MigratoryDataPublishListener.PublishEvent 25
- MigratoryDataStatsListener.StatsEvent 26
- MigratoryDataCacheListener 22
- MigratoryDataPublishListener 23
- MigratoryDataStatsListener 24

Chapter 3

Class Index

3.1 Class List

Here are the classes, structs, unions and interfaces with brief descriptions:

MigratoryDataCacheListener.CacheAddEvent	Provide information about a cache entry creation	9
MigratoryDataCacheListener.CacheCleanEvent	Provide information about a cache entry deletion	10
MigratoryDataCacheListener.CacheEntry	Provide information about a cache entry	11
MigratoryDataCacheListener.CacheHistoryEvent	Provide information about a cache access by history	12
MigratoryDataCacheListener.CacheRecoveryEvent	Provide information about a cache access by recovery	13
MigratoryDataCacheListener.CacheStartEvent	Provide information about the cache creation / initialization	15
MigratoryDataAccessListener.ConnectEvent	Provide information about the client which connects to the server	15
MigratoryDataAccessListener.DisconnectEvent	Provide information about the client which disconnects from the server	17
MigratoryDataAccessListener	Notify various access events such as connect, disconnect, subscribe, and unsubscribe	18
MigratoryDataAuditEvent	Provide information about an audit event	20
MigratoryDataCacheListener	Notify various cache related events	22
MigratoryDataPublishListener	Notify message publications	23
MigratoryDataStatsListener	Notify various statistics information	24
MigratoryDataPublishListener.PublishEvent	Provide information about a new message	25
MigratoryDataStatsListener.StatsEvent	Provide information about a stats event	26
MigratoryDataAccessListener.SubscribeEvent	Provide information about a subscription	29
MigratoryDataAccessListener.SubscribeWithHistoryEvent	Provide information about a subscription with history	30
MigratoryDataAccessListener.SubscribeWithRecoveryEvent	Provide information about a subscription with recovery	31
MigratoryDataAccessListener.UnsubscribeEvent	32

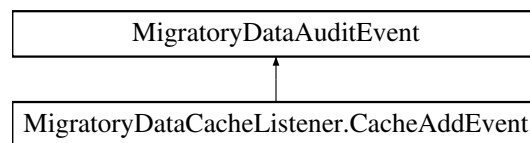
Chapter 4

Class Documentation

4.1 MigratoryDataCacheListener.CacheAddEvent Interface Reference

Provide information about a cache entry creation.

Inheritance diagram for MigratoryDataCacheListener.CacheAddEvent:



Public Member Functions

- String [getTopic \(\)](#)
- int [getSeqNo \(\)](#)
- int [getEpochNo \(\)](#)

4.1.1 Detailed Description

Provide information about a cache entry creation.

4.1.2 Member Function Documentation

4.1.2.1 String MigratoryDataCacheListener.CacheAddEvent.getTopic ()

Provides the topic of the cached message.

Returns

the topic of the cached message.

4.1.2.2 int MigratoryDataCacheListener.CacheAddEvent.getSeqNo ()

Provides the sequence number of the cached message.

Returns

the sequence number of the cached message.

4.1.2.3 int MigratoryDataCacheListener.CacheAddEvent.getEpochNo ()

Provides the epoch number of the cached message.

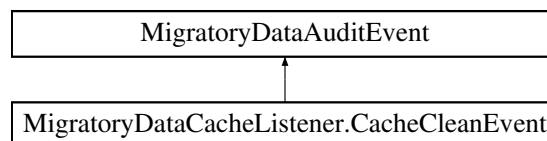
Returns

the epoch number of the cached message.

4.2 MigratoryDataCacheListener.CacheCleanEvent Interface Reference

Provide information about a cache entry deletion.

Inheritance diagram for MigratoryDataCacheListener.CacheCleanEvent:



Public Member Functions

- String [getTopic](#) ()
- int [getSeqNo](#) ()
- int [getEpochNo](#) ()

4.2.1 Detailed Description

Provide information about a cache entry deletion.

4.2.2 Member Function Documentation

4.2.2.1 String MigratoryDataCacheListener.CacheCleanEvent.getTopic ()

Provides the topic of the message deleted from the cache.

Returns

the topic of the deleted message.

4.2.2.2 int MigratoryDataCacheListener.CacheCleanEvent.getSeqNo ()

Provides the sequence number of the deleted message.

Returns

the sequence number of the deleted message.

4.2.2.3 int MigratoryDataCacheListener.CacheCleanEvent.getEpochNo ()

Provides the epoch number of the deleted message.

Returns

the epoch number of the deleted message.

4.3 MigratoryDataCacheListener.CacheEntry Interface Reference

Provide information about a cache entry.

Public Member Functions

- String [getTopic](#) ()
- byte[] [getData](#) ()
- int [getSeqNo](#) ()
- int [getEpochNo](#) ()

4.3.1 Detailed Description

Provide information about a cache entry.

4.3.2 Member Function Documentation

4.3.2.1 String MigratoryDataCacheListener.CacheEntry.getTopic ()

Provides the topic of the cached message.

Returns

the topic of the cached message.

4.3.2.2 `byte [] MigratoryDataCacheListener.CacheEntry.getData ()`

Provides the content of the cached message.

Returns

the content of the cached message.

4.3.2.3 `int MigratoryDataCacheListener.CacheEntry.getSeqNo ()`

Provides the sequence number of the cached message.

Returns

the sequence number of the cached message.

4.3.2.4 `int MigratoryDataCacheListener.CacheEntry.getEpochNo ()`

Provides the epoch number of the cached message.

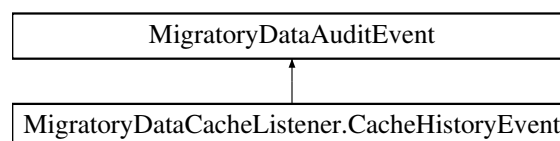
Returns

the epoch number of the cached message.

4.4 MigratoryDataCacheListener.CacheHistoryEvent Interface Reference

Provide information about a cache access by history.

Inheritance diagram for `MigratoryDataCacheListener.CacheHistoryEvent`:



Public Member Functions

- String [getTopic \(\)](#)
- String [getRemoteAddress \(\)](#)
- int [getHistoryNo \(\)](#)
- List< [CacheEntry](#) > [getMessages \(\)](#)

4.4.1 Detailed Description

Provide information about a cache access by history.

4.4.2 Member Function Documentation

4.4.2.1 String MigratoryDataCacheListener.CacheHistoryEvent.getTopic ()

Provides the topic of the historical messages to be retrieved.

Returns

the topic of the historical messages to be retrieved.

4.4.2.2 String MigratoryDataCacheListener.CacheHistoryEvent.getRemoteAddress ()

Provides the address of the client which accessed the cache.

Returns

the address of the client which accessed the cache.

4.4.2.3 int MigratoryDataCacheListener.CacheHistoryEvent.getHistoryNo ()

Provides the number of historical messages to be retrieved from the cache.

Returns

the number of the most recent messages to be retrieved from the cache.

4.4.2.4 List<CacheEntry> MigratoryDataCacheListener.CacheHistoryEvent.getMessages ()

Provides the list of the retrieved historical messages.

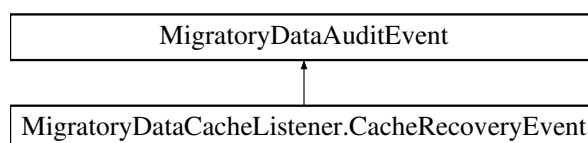
Returns

the list of the retrieved historical messages.

4.5 MigratoryDataCacheListener.CacheRecoveryEvent Interface Reference

Provide information about a cache access by recovery.

Inheritance diagram for MigratoryDataCacheListener.CacheRecoveryEvent:



Public Member Functions

- String [getTopic](#) ()
- String [getRemoteAddress](#) ()
- int [getSeqNo](#) ()
- int [getEpochNo](#) ()
- List< [CacheEntry](#) > [getMessages](#) ()

4.5.1 Detailed Description

Provide information about a cache access by recovery.

4.5.2 Member Function Documentation

4.5.2.1 String MigratoryDataCacheListener.CacheRecoveryEvent.getTopic ()

Provides the topic of the historical messages to be retrieved.

Returns

the topic of the historical messages to be retrieved.

4.5.2.2 String MigratoryDataCacheListener.CacheRecoveryEvent.getRemoteAddress ()

Provides the address of the client which accessed the cache.

Returns

the address of the client which accessed the cache.

4.5.2.3 int MigratoryDataCacheListener.CacheRecoveryEvent.getSeqNo ()

Provides the sequence number used to retrieve historical messages.

All messages with the topic provided by [getTopic\(\)](#) and the epoch number provided by [getEpochNo\(\)](#) and having a sequence number higher than the value provided by this method are retrieved.

Returns

the sequence number for retrieving historical messages from the cache.

4.5.2.4 int MigratoryDataCacheListener.CacheRecoveryEvent.getEpochNo ()

Provides the epoch number used to retrieve historical messages.

Returns

the epoch number for retrieving historical messages from the cache.

4.5.2.5 List<CacheEntry> MigratoryDataCacheListener.CacheRecoveryEvent.getMessages ()

Provides the list of the retrieved historical messages.

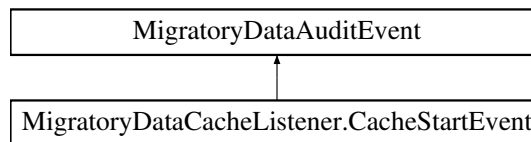
Returns

the list of the retrieved historical messages.

4.6 MigratoryDataCacheListener.CacheStartEvent Interface Reference

Provide information about the cache creation / initialization.

Inheritance diagram for MigratoryDataCacheListener.CacheStartEvent:



Additional Inherited Members

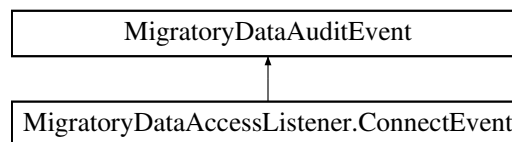
4.6.1 Detailed Description

Provide information about the cache creation / initialization.

4.7 MigratoryDataAccessListener.ConnectEvent Interface Reference

Provide information about the client which connects to the server.

Inheritance diagram for MigratoryDataAccessListener.ConnectEvent:



Public Member Functions

- String [getUserName](#) ()
- byte[] [getPassword](#) ()
- int [getClientId](#) ()
- String [getClientAddress](#) ()
- String [getUserAgent](#) ()

4.7.1 Detailed Description

Provide information about the client which connects to the server.

4.7.2 Member Function Documentation

4.7.2.1 String MigratoryDataAccessListener.ConnectEvent.getUserName ()

Provides the user name of the client.

This methods applies for the clients using the MQTT protocol. For the clients using MigratoryData's Push Protocol, this method will return an empty string.

Returns

the user name of the client.

4.7.2.2 byte [] MigratoryDataAccessListener.ConnectEvent.getPassword ()

Provides the password of the client.

If the client which makes the authorization request uses the MigratoryData's Push Protocol, then the value returned by this method will be the entitlement token assigned to the client on the client-side with the client API method `MigratoryDataClient.setEntitlementToken(String token)`.

Returns

the password of the client.

4.7.2.3 int MigratoryDataAccessListener.ConnectEvent.getClientId ()

Provides the identifier of the client.

This methods applies for the clients using the MQTT protocol. For the clients using MigratoryData's Push Protocol, this method will return an empty string.

Returns

the identifier of the client

4.7.2.4 String MigratoryDataAccessListener.ConnectEvent.getClientAddress ()

Provides the IP address of the client.

Returns

the IP address of the client.

4.7.2.5 String MigratoryDataAccessListener.ConnectEvent.getUserAgent ()

Provides the user agent of the client.

An user agent is a string which is provided by the client about the client's environment (e.g. the browser and the operating system used by the client).

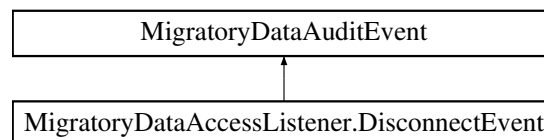
Returns

the user agent of the client.

4.8 MigratoryDataAccessListener.DisconnectEvent Interface Reference

Provide information about the client which disconnects from the server.

Inheritance diagram for MigratoryDataAccessListener.DisconnectEvent:



Public Member Functions

- int [getClientId](#) ()
- String [getClientAddress](#) ()
- String [getDisconnectReason](#) ()

4.8.1 Detailed Description

Provide information about the client which disconnects from the server.

4.8.2 Member Function Documentation

4.8.2.1 int MigratoryDataAccessListener.DisconnectEvent.getClientId ()

Provides the identifier of the client.

This methods applies for the clients using the MQTT protocol. For the clients using MigratoryData's Push Protocol, this method will return an empty string.

Returns

the identifier of the client

4.8.2.2 String MigratoryDataAccessListener.DisconnectEvent.getClientAddress ()

Provides the IP address of the client.

Returns

the IP address of the client.

4.8.2.3 String MigratoryDataAccessListener.DisconnectEvent.getDisconnectReason ()

Provides the reason for disconnection.

The typical reasons of disconnections are as follows:

- `connection_passive_close` - triggered when the client closes the connection
- `connection_active_close` - the connection is actively closed by the server because no keep-alive is received from the client
- `connection_error` - the details about the error are provided

Returns

the reason of disconnection.

4.9 MigratoryDataAccessListener Interface Reference

Notify various access events such as connect, disconnect, subscribe, and unsubscribe.

Classes

- interface [ConnectEvent](#)
Provide information about the client which connects to the server.
- interface [DisconnectEvent](#)
Provide information about the client which disconnects from the server.
- interface [SubscribeEvent](#)
Provide information about a subscription.
- interface [SubscribeWithHistoryEvent](#)
Provide information about a subscription with history.
- interface [SubscribeWithRecoveryEvent](#)
Provide information about a subscription with recovery.
- interface [UnsubscribeEvent](#)

Public Member Functions

- void [onConnect](#) ([ConnectEvent](#) event)
- void [onSubscribe](#) ([SubscribeEvent](#) event)
- void [onSubscribeWithHistory](#) ([SubscribeWithHistoryEvent](#) event)
- void [onSubscribeWithRecovery](#) ([SubscribeWithRecoveryEvent](#) event)
- void [onUnsubscribe](#) ([UnsubscribeEvent](#) event)
- void [onDisconnect](#) ([DisconnectEvent](#) event)

4.9.1 Detailed Description

Notify various access events such as connect, disconnect, subscribe, and unsubscribe.

Thread safety

The methods exposed by this interface are always called from the same thread.

4.9.2 Member Function Documentation

4.9.2.1 void MigratoryDataAccessListener.onConnect (**ConnectEvent** *event*)

Notify a connect event.

Parameters

<i>event</i>	the connect event.
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4.9.2.2 void MigratoryDataAccessListener.onSubscribe (**SubscribeEvent** *event*)

Notify a subscribe event.

Parameters

<i>event</i>	the subscribe event.
--------------	----------------------

4.9.2.3 void MigratoryDataAccessListener.onSubscribeWithHistory (**SubscribeWithHistoryEvent** *event*)

Notify a subscribe with history event.

A client using MigratoryData's Push Protocol may ask to receive a certain number of historical messages of a topic, before subscribing to that topic. The MigratoryData server preserves a configurable number of historical messages for each topic.

Parameters

<i>event</i>	the subscribe with history event.
--------------	-----------------------------------

4.9.2.4 void MigratoryDataAccessListener.onSubscribeWithRecovery (**SubscribeWithRecoveryEvent** *event*)

Notify a subscribe with recovery event.

For messages publishes on each topic include a consecutive sequence number and a monotonic epoch number. A client using MigratoryData's Push Protocol may ask to receive a certain number of historical messages starting

with a certain sequence number and epoch number. The MigratoryData server preserves a configurable number of historical messages for each topic.

This subscribe with recovery operation typically occurs when the connection between a client and a MigratoryData server of a cluster is broken. In this case, the client library automatically reconnects the client to another MigratoryData server of the cluster by subscribing to the topics previously subscribed by the client and by providing the last sequence number and epoch number for each subscribed topic. In this way, the client will lose no messages: it will receive the messages potentially published during the reconnection of the client.

Parameters

<i>event</i>	the subscribe with recovery event.
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4.9.2.5 void MigratoryDataAccessListener.onUnsubscribe (UnsubscribeEvent event)

Notify an unsubscribe event.

Parameters

<i>event</i>	the unsubscribe event.
--------------	------------------------

4.9.2.6 void MigratoryDataAccessListener.onDisconnect (DisconnectEvent event)

Notify a disconnect event.

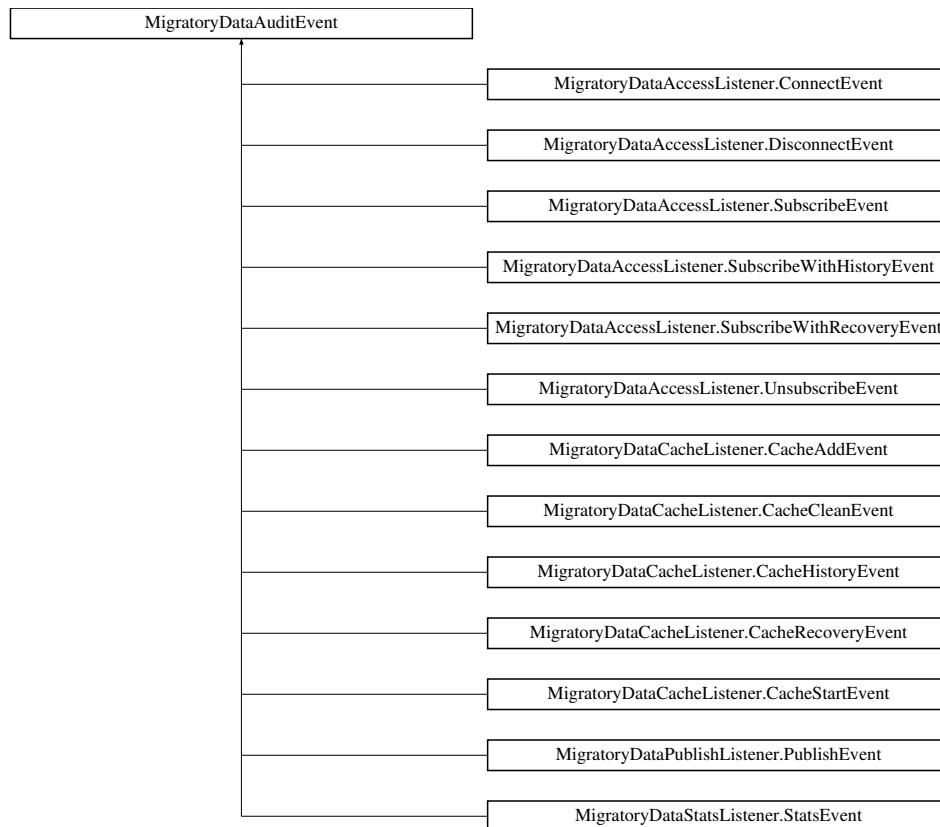
Parameters

<i>event</i>	the disconnect event.
--------------	-----------------------

4.10 MigratoryDataAuditEvent Interface Reference

Provide information about an audit event.

Inheritance diagram for MigratoryDataAuditEvent:



Public Member Functions

- String [getTime](#) ()
- String [toString](#) ()

4.10.1 Detailed Description

Provide information about an audit event.

4.10.2 Member Function Documentation

4.10.2.1 String MigratoryDataAuditEvent.getTime ()

Provide the timestamp of the audit event.

Returns

the timestamp of the audit event.

4.10.2.2 String MigratoryDataAuditEvent.toString ()

Format an audit event as a string.

Returns

a string representation of the audit event.

4.11 MigratoryDataCacheListener Interface Reference

Notify various cache related events.

Classes

- interface [CacheAddEvent](#)
Provide information about a cache entry creation.
- interface [CacheCleanEvent](#)
Provide information about a cache entry deletion.
- interface [CacheEntry](#)
Provide information about a cache entry.
- interface [CacheHistoryEvent](#)
Provide information about a cache access by history.
- interface [CacheRecoveryEvent](#)
Provide information about a cache access by recovery.
- interface [CacheStartEvent](#)
Provide information about the cache creation / initialization.

Public Member Functions

- void [onStart](#) ([CacheStartEvent](#) event)
- void [onAdd](#) ([CacheAddEvent](#) event)
- void [onClean](#) ([CacheCleanEvent](#) event)
- void [onGetHistory](#) ([CacheHistoryEvent](#) event)
- void [onGetRecovery](#) ([CacheRecoveryEvent](#) event)

4.11.1 Detailed Description

Notify various cache related events.

Thread safety

The methods exposed by this interface are always called from the same thread.

4.11.2 Member Function Documentation

4.11.2.1 void MigratoryDataCacheListener.onStart ([CacheStartEvent](#) event)

Notify that the cache has been created.

Parameters

<i>event</i>	the cache creation event.
--------------	---------------------------

4.11.2.2 void MigratoryDataCacheListener.onAdd (CacheAddEvent event)

Notify that a cache entry has been added.

Parameters

<i>event</i>	the cache entry creation event.
--------------	---------------------------------

4.11.2.3 void MigratoryDataCacheListener.onClean (CacheCleanEvent event)

Notify that a cache entry has been deleted.

Parameters

<i>event</i>	the cache entry deletion event.
--------------	---------------------------------

4.11.2.4 void MigratoryDataCacheListener.onGetHistory (CacheHistoryEvent event)

Notify that a cache access by history has been made.

Parameters

<i>event</i>	the cache access by history event.
--------------	------------------------------------

4.11.2.5 void MigratoryDataCacheListener.onGetRecovery (CacheRecoveryEvent event)

Notify that a cache access by recovery has been made.

Parameters

<i>event</i>	the cache access by recovery event.
--------------	-------------------------------------

4.12 MigratoryDataPublishListener Interface Reference

Notify message publications.

Classes

- interface [PublishEvent](#)

Provide information about a new message.

Public Member Functions

- void [onPublish](#) ([PublishEvent](#) event)

4.12.1 Detailed Description

Notify message publications.

Thread safety

The methods exposed by this interface are always called from the same thread.

4.12.2 Member Function Documentation

4.12.2.1 void [MigratoryDataPublishListener.onPublish](#) ([PublishEvent](#) *event*)

Notify that a new message is available for publication.

Parameters

<i>event</i>	the message to be published.
--------------	------------------------------

4.13 MigratoryDataStatsListener Interface Reference

Notify various statistics information.

Classes

- interface [StatsEvent](#)
Provide information about a stats event.

Public Member Functions

- void [onStats](#) ([StatsEvent](#) event)

4.13.1 Detailed Description

Notify various statistics information.

Thread safety

The methods exposed by this interface are always called from the same thread.

4.13.2 Member Function Documentation

4.13.2.1 void [MigratoryDataStatsListener.onStats](#) ([StatsEvent](#) *event*)

Notify that a new statics event is available.

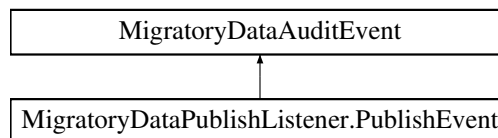
Parameters

<i>event</i>	the stats event.
--------------	------------------

4.14 MigratoryDataPublishListener.PublishEvent Interface Reference

Provide information about a new message.

Inheritance diagram for MigratoryDataPublishListener.PublishEvent:



Public Member Functions

- String [getTopic](#) ()
- String [getData](#) ()
- int [getSeqNo](#) ()
- int [getEpochNo](#) ()
- String [getStatus](#) ()

4.14.1 Detailed Description

Provide information about a new message.

4.14.2 Member Function Documentation

4.14.2.1 String MigratoryDataPublishListener.PublishEvent.getTopic ()

Provides the topic of the new message.

Returns

the topic of the new message.

4.14.2.2 String MigratoryDataPublishListener.PublishEvent.getData ()

Provides the content of the new message.

Returns

the content of the new message.

4.14.2.3 `int MigratoryDataPublishListener.PublishEvent.getSeqNo ()`

Provides the sequence number of the new message.

Returns

the sequence number of the new message.

4.14.2.4 `int MigratoryDataPublishListener.PublishEvent.getEpochNo ()`

Provides the epoch number of the new message.

Returns

the epoch number of the new message.

4.14.2.5 `String MigratoryDataPublishListener.PublishEvent.getStatus ()`

Provides the publication status of the new messages.

The typical status values are as follows:

- OK - the publication has been successful
- DENY - the publication has failed as the client is not allowed to publish on the subject of the message
- FAILED - the publication has failed (the publisher is notified about this failure, and it has the option to republish the message)

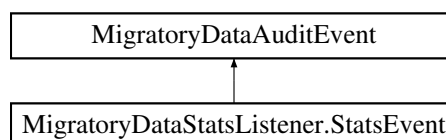
Returns

the publication status of the new messages.

4.15 MigratoryDataStatsListener.StatsEvent Interface Reference

Provide information about a stats event.

Inheritance diagram for `MigratoryDataStatsListener.StatsEvent`:



Public Member Functions

- long [getTotalConnectionCount](#) ()
- long [getWebConnectionCount](#) ()
- long [getMobileConnectionCount](#) ()
- long [getDesktopConnectionCount](#) ()
- long [getMqttConnectionCount](#) ()
- double [getConnectionRate](#) ()
- double [getDisconnectionRate](#) ()
- double [getIncomingMessageRate](#) ()
- double [getIncomingClientMessageRate](#) ()
- double [getOutgoingMessageRate](#) ()
- double [getIncomingByteRate](#) ()
- double [getOutgoingByteRate](#) ()

4.15.1 Detailed Description

Provide information about a stats event.

4.15.2 Member Function Documentation

4.15.2.1 long MigratoryDataStatsListener.StatsEvent.getTotalConnectionCount ()

Provides the total number of connected clients.

Returns

the total number of connected clients.

4.15.2.2 long MigratoryDataStatsListener.StatsEvent.getWebConnectionCount ()

Provides the number of connected clients using a web browser.

Note that this applies only for clients using MigratoryData's Push Protocol.

Returns

the number of connected clients using a web browser.

4.15.2.3 long MigratoryDataStatsListener.StatsEvent.getMobileConnectionCount ()

Provides the number of connected clients using a mobile environment.

Note that this applies only for clients using MigratoryData's Push Protocol.

Returns

the number of connected clients using a mobile environment.

4.15.2.4 `long MigratoryDataStatsListener.StatsEvent.getDesktopConnectionCount ()`

Provides the number of connected clients using a desktop environment.

Note that this applies only for clients using MigratoryData's Push Protocol.

Returns

the number of connected clients using a desktop environment.

4.15.2.5 `long MigratoryDataStatsListener.StatsEvent.getMqttConnectionCount ()`

Provides the number of connected clients using the MQTT protocol.

Note that this applies to all MQTT clients either from web, mobile, etc.

Returns

the number of connected clients using the MQTT protocol.

4.15.2.6 `double MigratoryDataStatsListener.StatsEvent.getConnectionRate ()`

Provides the number of client connections per second.

Returns

the number of client connections per second.

4.15.2.7 `double MigratoryDataStatsListener.StatsEvent.getDisconnectionRate ()`

Provides the number of client disconnections per second.

Returns

the number of client disconnections per second.

4.15.2.8 `double MigratoryDataStatsListener.StatsEvent.getIncomingMessageRate ()`

Provides the total number of incoming messages per second.

Returns

the total number of incoming messages per second.

4.15.2.9 `double MigratoryDataStatsListener.StatsEvent.getIncomingClientMessageRate ()`

Provides the number of incoming messages per second received from publishers.

Returns

the number of incoming messages per second received from publishers.

4.15.2.10 `double MigratoryDataStatsListener.StatsEvent.getOutgoingMessageRate ()`

Provides the total number of outgoing messages per second.

Returns

the total number of outgoing messages per second.

4.15.2.11 `double MigratoryDataStatsListener.StatsEvent.getIncomingByteRate ()`

Provides the total number of incoming bytes per second.

Returns

the total number of incoming bytes per second.

4.15.2.12 `double MigratoryDataStatsListener.StatsEvent.getOutgoingByteRate ()`

Provides the total number of outgoing bytes per second.

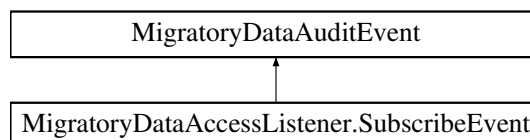
Returns

the total number of outgoing bytes per second.

4.16 MigratoryDataAccessListener.SubscribeEvent Interface Reference

Provide information about a subscription.

Inheritance diagram for MigratoryDataAccessListener.SubscribeEvent:



Public Member Functions

- int [getClientId](#) ()
- String [getClientAddress](#) ()
- List< String > [getTopics](#) ()

4.16.1 Detailed Description

Provide information about a subscription.

4.16.2 Member Function Documentation

4.16.2.1 int MigratoryDataAccessListener.SubscribeEvent.getClientId ()

Provides the identifier of the client.

This methods applies for the clients using the MQTT protocol. For the clients using MigratoryData's Push Protocol, this method will return an empty string.

Returns

the identifier of the client

4.16.2.2 String MigratoryDataAccessListener.SubscribeEvent.getClientAddress ()

Provides the IP address of the client.

Returns

the IP address of the client.

4.16.2.3 List<String> MigratoryDataAccessListener.SubscribeEvent.getTopics ()

Provides the subscribed topics.

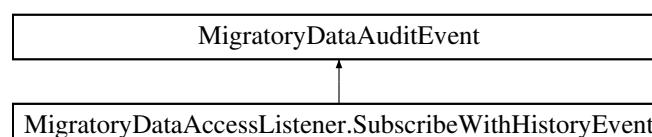
Returns

the subscribed topics.

4.17 MigratoryDataAccessListener.SubscribeWithHistoryEvent Interface Reference

Provide information about a subscription with history.

Inheritance diagram for MigratoryDataAccessListener.SubscribeWithHistoryEvent:



Public Member Functions

- int [getClientId](#) ()
- String [getClientAddress](#) ()
- List< String > [getTopics](#) ()

4.17.1 Detailed Description

Provide information about a subscription with history.

4.17.2 Member Function Documentation

4.17.2.1 int MigratoryDataAccessListener.SubscribeWithHistoryEvent.getClientId ()

Provides the identifier of the client.

This methods applies for the clients using the MQTT protocol. For the clients using MigratoryData's Push Protocol, this method will return an empty string.

Returns

the identifier of the client

4.17.2.2 String MigratoryDataAccessListener.SubscribeWithHistoryEvent.getClientAddress ()

Provides the IP address of the client.

Returns

the IP address of the client.

4.17.2.3 List<String> MigratoryDataAccessListener.SubscribeWithHistoryEvent.getTopics ()

Provides the subscribed topics.

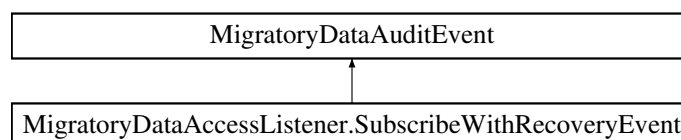
Returns

the subscribed topics.

4.18 MigratoryDataAccessListener.SubscribeWithRecoveryEvent Interface Reference

Provide information about a subscription with recovery.

Inheritance diagram for MigratoryDataAccessListener.SubscribeWithRecoveryEvent:



Public Member Functions

- int [getClientId](#) ()
- String [getClientAddress](#) ()
- List< String > [getTopics](#) ()

4.18.1 Detailed Description

Provide information about a subscription with recovery.

4.18.2 Member Function Documentation

4.18.2.1 int MigratoryDataAccessListener.SubscribeWithRecoveryEvent.getClientId ()

Provides the identifier of the client.

This methods applies for the clients using the MQTT protocol. For the clients using MigratoryData's Push Protocol, this method will return an empty string.

Returns

the identifier of the client

4.18.2.2 String MigratoryDataAccessListener.SubscribeWithRecoveryEvent.getClientAddress ()

Provides the IP address of the client.

Returns

the IP address of the client.

4.18.2.3 List<String> MigratoryDataAccessListener.SubscribeWithRecoveryEvent.getTopics ()

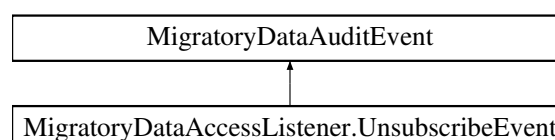
Provides the subscribed topics.

Returns

the subscribed topics.

4.19 MigratoryDataAccessListener.UnsubscribeEvent Interface Reference

Inheritance diagram for MigratoryDataAccessListener.UnsubscribeEvent:



Public Member Functions

- int [getClientId](#) ()
- String [getClientAddress](#) ()
- List< String > [getTopics](#) ()

4.19.1 Member Function Documentation

4.19.1.1 int MigratoryDataAccessListener.UnsubscribeEvent.getClientId ()

Provides the identifier of the client.

This methods applies for the clients using the MQTT protocol. For the clients using MigratoryData's Push Protocol, this method will return an empty string.

Returns

the identifier of the client

4.19.1.2 String MigratoryDataAccessListener.UnsubscribeEvent.getClientAddress ()

Provides the IP address of the client.

Returns

the IP address of the client.

4.19.1.3 List<String> MigratoryDataAccessListener.UnsubscribeEvent.getTopics ()

Provides the unsubscribed topics.

Returns

the unsubscribed topics.

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