

MigratoryData Client API for JavaScript

Developer's Guide and Reference Manual

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Chapter 1

Developer's Guide

This guide includes the following sections:

- [Overview](#)
- [Creating JavaScript clients for MigratoryData Server](#)
- [Examples](#)

1.1 Overview

This application programming interface (API) contains all the necessary operations for connecting to a cluster of one or more MigratoryData servers, subscribing to subjects, getting real-time messages for the subscribed subjects, and publishing real-time messages.

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

1.2 Creating JavaScript clients for MigratoryData Server

A typical API usage is as follows:

1.2.1 Step 1 - Include the library

For using this API please reference in your web application the file `migratorydata-client.js` which is located in the folder `lib` of this API package.

1.2.2 Step 2 - Specify the cluster of MigratoryData servers where to connect to

Use the API method [MigratoryDataClient.setServers\(\)](#) to specify one or more MigratoryData servers to which your JavaScript client will connect to. In fact, the JavaScript client will connect to only one of the MigratoryData servers in this list. But, defining two or more MigratoryData servers is recommended to achieve fail-over. Supposing the MigratoryData server to which the JavaScript client connected goes down, then the API will automatically reconnect to another MigratoryData server in the list.

If you define two or more MigratoryData servers, then all the MigratoryData servers should provide the same level of data redundancy, by making available for subscription the same set of subjects.

1.2.3 Step 3 - Define the handler function for real-time messages

Use the API method [MigratoryDataClient.setMessageHandler\(\)](#) to define the *message handler*, a function defined by your web application that will handle the real-time messages received from a MigratoryData server. The *message handler* must have the following signature:

```
function <messageHandlerFunction>(Object messages);
```

where *<messageHandlerFunction>* can be any function name of your choice. Its *messages* argument is an array of messages, where each message in the array is an object having the following properties:

- *subject* - the subject of the message
- *content* - the content of the message
- *fields* - an array of fields where each field is an object with two properties: *name* (the name of the field) and *value* (the value of the field)
- *isSnapshot* - indicate whether the message is an initial snapshot message or not

1.2.4 Step 4 - Define the handler function for status notifications

Use the API method [MigratoryDataClient.setStatusHandler\(\)](#) to define the *status handler*, a function defined by your web application that will handle the status notifications. The *status handler* must have the following signature:

```
function <statusHandlerFunction>(Object status);
```

where *<statusHandlerFunction>* can be any function name of your choice. Its *status* argument is an object having two properties:

- *type* - the type of the status notification
- *info* - the detail information of the status notification

1.2.5 Step 5 - Subscribe to subjects and publish messages

Use the API method [MigratoryDataClient.subscribe\(\)](#) to specify interest in receiving real-time messages having as subjects the strings provided in the parameter of this API method. You can call the API method [MigratoryDataClient.subscribe\(\)](#) at any time to subscribe to further subjects. To unsubscribe from subscribed subjects, use the API method [MigratoryDataClient.unsubscribe\(\)](#).

Use the API method [MigratoryDataClient.publish\(\)](#) to publish messages.

1.2.6 Step 6 - Handle the real-time messages and status notifications

Handle the received messages in your *message handler* defined above, and, optionally, handle the status notifications in your *status handler* defined above (you may choose to ignore the status notifications by not defining a *status handler*).

1.3 Examples

Examples built with this API are available in the folder `examples` of this API package; start with the README file which explains how to run them.

Chapter 2

Deprecated List

Member [MigratoryDataClient.NOTIFY_PUBLISH_NO_SUBSCRIBER](#)
no more in use.

Chapter 3

Class Index

3.1 Class List

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

MigratoryDataClient	This class implements all the necessary operations for connecting to a cluster of one or more MigratoryData servers, subscribing to subjects, getting real-time messages for the subscribed subjects, and publishing real-time messages	9
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Chapter 4

Class Documentation

4.1 MigratoryDataClient Class Reference

This class implements all the necessary operations for connecting to a cluster of one or more MigratoryData servers, subscribing to subjects, getting real-time messages for the subscribed subjects, and publishing real-time messages.

Public Member Functions

- void [setServers](#) (string[] servers, boolean connect)
Specify a cluster of one or more MigratoryData servers to which the client will connect to.
- void [setMessageHandler](#) (function messageHandler)
Specify a custom function name used to process the real-time messages received from a MigratoryData server.
- void [setStatusHandler](#) (function statusHandler)
Specify a custom function name used to process the status notifications.
- void [setEntitlementToken](#) (string token)
Assign an authorization token to the client.
- void [subscribe](#) (string[] subjects)
Subscribe to one or more subjects.
- void [subscribeWithHistory](#) (string[] subjects, int numberOfHistoricalMessages)
Subscribe to one or more subjects after getting historical messages for those subjects.
- void [subscribeWithConflation](#) (string[] subjects, int conflationMillis)
Subscribe to one or more subjects with conflation.
- void [unsubscribe](#) (string[] subjects)
Unsubscribe from one or more subjects.
- void [publish](#) (Object message)
Publish a message.
- string[] [getSubjects](#) ()
Return the list of subscribed subjects.
- void [notifyAfterReconnectRetries](#) (int retries)
Define the number of failed attempts to connect to one or more MigratoryData servers before triggering a status notification `MigratoryDataClient.NOTIFY_SERVER_DOWN`.
- void [setQuickReconnectInitialDelay](#) (int seconds)
Define the number of seconds to wait before attempting to reconnect to the cluster after a connection failure is detected.
- void [setQuickReconnectMaxRetries](#) (int retries)

- Define the maximum number of retries for the Quick Reconnect failover phase.*

 - void `setReconnectPolicy` (string policy)
- Define the reconnect policy to be used after the Quick Reconnect phase.*

 - void `setReconnectTimeInterval` (int seconds)
- Define the time interval used for the reconnect schedule after the Quick Reconnect phase.*

 - void `setReconnectMaxDelay` (int seconds)
- Define the maximum reconnect delay for the `MigratoryDataClient.TRUNCATED_EXPONENTIAL_BACKOFF` policy.*

 - void `disconnect` ()
- Disconnect from the connected MigratoryData server and dispose the resources used by the connection.*

 - string `getInfo` ()
- Return various statistical information.*

Public Attributes

- string `NOTIFY_SERVER_UP`

Indicate that the client successfully connected to a MigratoryData server.
- string `NOTIFY_SERVER_DOWN`

Indicate that the client failed to connect to a MigratoryData server.
- string `NOTIFY_DATA_SYNC`

After a failover reconnection, the client synchronized a subscribed subject with the latest message available for that subject, as well as with all messages published during the failover for that subject.
- string `NOTIFY_DATA_RESYNC`

After a failover reconnection, the client synchronized a subscribed subject with the latest message available for that subject, but not with the potential messages published during the failover, therefore behaving as a new client.
- string `NOTIFY_SUBSCRIBE_ALLOW`

Indicate that the client was authorized to subscribe to a subject.
- string `NOTIFY_SUBSCRIBE_DENY`

Indicate that the client was not authorized to subscribe to a subject.
- string `NOTIFY_SUBSCRIBE_TIMEOUT`
- string `NOTIFY_PUBLISH_OK`

Indicate that the client successfully published a message.
- string `NOTIFY_PUBLISH_FAILED`

Indicate that the client was unable to publish a message.
- string `NOTIFY_PUBLISH_DENIED`

Indicate that the client was unable to publish a message because it is not allowed by the entitlement rules you defined.
- string `NOTIFY_PUBLISH_NO_SUBSCRIBER`

Indicate that the client was unable to publish a message because there is no client subscribed to the subject of the message.
- string `NOTIFY_UNSUPPORTED_BROWSER`

Indicate that the client runs in a browser which is not supported by the API.
- string `CONSTANT_WINDOW_BACKOFF`

A constant used to define the reconnect policy.
- string `TRUNCATED_EXPONENTIAL_BACKOFF`

A constant used to define the reconnect policy.

4.1.1 Detailed Description

This class implements all the necessary operations for connecting to a cluster of one or more MigratoryData servers, subscribing to subjects, getting real-time messages for the subscribed subjects, and publishing real-time messages.

In this reference manual, the following type notations are used: `int`, `string`, `bool`, `void`, and the notation `string[]` (indicating an array of strings) to better characterize the API. JavaScript is a dynamic language that doesn't have declared types, the type notations used in this document are only included to enhance the documentation.

4.1.2 Member Function Documentation

4.1.2.1 void MigratoryDataClient.setServers (string[] servers, boolean connect)

Specify a cluster of one or more MigratoryData servers to which the client will connect to.

If you specify two or more MigratoryData servers, then all these MigratoryData servers should provide the same level of data redundancy, by making available for subscription the same set of subjects. This is required for achieving (weighted) load balancing, failover, and guaranteed message delivery of the system. In this way, the MigratoryData servers of the `servers` list form a *cluster*.

For example, to connect to a cluster formed of two MigratoryData servers installed at the addresses `p1.example.com` and `p2.example.com`, and configured to accept clients on the standard HTTP port 80, the following code can be used:

```
var servers = new Array("http://p1.example.com:80", "http://p2.example.com:80");
MigratoryDataClient.setServers(servers);
```

or, given the fact that the standard HTTP port 80 is used by default for URLs and using the JavaScript square bracket notation for arrays, a more concise JavaScript code can be used:

```
MigratoryDataClient.setServers(["http://p1.example.com", "http://p2.example.com"]);
```

To achieve load-balancing, the API connects the client to a MigratoryData server chosen randomly from the `servers` list. In this way, the load is balanced among all the members of the cluster.

Moreover, the API supports weighted load-balancing. This feature is especially useful if the MigratoryData servers in the cluster are installed on machines with different capacities. You can assign to each member of the cluster a *weight* ranging from 0 to 100. This weight assignment is a hint provided to the API to select with a higher probability a MigratoryData server with a higher weight either initially when the client connects to the cluster or later during a failover reconnection.

Supposing the address `p1.example.com` corresponds to a machine that is twice more powerful than the machine having the address `p2.example.com`, then you can assign to `p1.example.com` a weight 100 and to `p2.example.com` a weight 50 by prefixing each address with the assigned weight as follows:

```
MigratoryDataClient.setServers(["100 http://p1.example.com", "50 http://p2.example.com"]);
```

The API assigns a default weight 100 to the addresses not prefixed with a specific weight.

To achieve failover, if the connection between the client and a MigratoryData server is broken, then the API will automatically detect the failure and will select another MigratoryData server from the `servers` list. If the client fails to connect to the new selected server, a status notification `MigratoryDataClient.NOTIFY_SERVER_DOWN` will be triggered (unless you modify the number of failed attempts with `MigratoryDataClient.notifyAfterReconnectRetries()`), and a new MigratoryData server in the cluster will be selected again and again until the client will be able to connect to one of the MigratoryData servers in the cluster. When successfully connected, the API will trigger a status notification `MigratoryDataClient.NOTIFY_SERVER_UP`.

Furthermore, if guaranteed message delivery is enabled, then the potential messages published for a subscribed subject during the failover period, will be automatically retrieved from the cache of the MigratoryData server to which the client reconnects to and a status notification `MigratoryDataClient.NOTIFY_DATA_SYNC` will be triggered for that subject.

If, for example, the failover period is abnormally long, and the client is not able to retrieve, after a failover reconnection, the messages published during the failover period for one of its subscribed subjects, then the API will retrieve only the most recent message available for that subject and will trigger a `MigratoryDataClient.NOTIFY_DATA_RESYNC` status notification for that subject, the client behaving as a new client which connects to the cluster at the moment of the failover reconnection.

For a complete discussion related to load balancing, failover, and guaranteed message delivery features see the *MigratoryData Architecture Guide* ([PDF](#), [HTML](#)).

Parameters

<i>servers</i>	An array of strings where each string represents the network address (IP address or DNS domain name and its corresponding port) of a MigratoryData server, optionally prefixed by a weight ranging from 0 to 100. If the weight prefix is not provided to an address, then the API will automatically assign to that address a default weight 100.
<i>connect</i>	An optional parameter which defaults to <code>false</code> . In order to optimize the communication with the server (especially for old browsers), the library can postpone connecting to the server until the first subscribe or publish operation is performed, and therefore NOTIFY_SERVER_UP is not received until the first subscribe or publish operation is performed. In order to connect to the server immediately, without needing to subscribe or publish, set this optional parameter on <code>true</code> .

4.1.2.2 void MigratoryDataClient.setMessageHandler (function *messageHandler*)

Specify a custom function name used to process the real-time messages received from a MigratoryData server.

This API call is used to define the *message handler* which is a function defined by your application that will handle the real-time messages received from a MigratoryData server. Your message handler must have the following signature:

```
function <messageHandlerFunction>(Object messages);
```

where *<messageHandlerFunction>* can be any function name of your choice. Its *messages* argument is an array of messages, where each message in the array is an object having the following properties:

- *subject* - the subject of the message
- *content* - the content of the message
- *fields* - an array of fields where each field is an object with two properties: *name* (the name of the field) and *value* (the value of the field)
- *isSnapshot* - indicate whether the message is an initial snapshot message or not
- *replyToSubject* - the subject used to reply to this message

This is a code example:

```
MigratoryDataClient.setMessageHandler(messageHandler);

function messageHandler(messages) {
    var out = "Got message(s): [ ";
    for (var i = 0; i < messages.length; i++) {
        out += messages[i].subject + " = " + messages[i].content + ", fields = [";
        for (var j = 0; j < messages[i].fields.length; j++) {
            out += messages[i].fields[j].name + " = " + messages[i].fields[j].value + " ";
        }
        out += " ]";
    }
    out += " ]";
    alert(out);
}
```


Parameters

<code>messageHandler</code>	The name of a custom function used to handle the real-time messages.
-----------------------------	--

4.1.2.3 void MigratoryDataClient.setStatusHandler (function *statusHandler*)

Specify a custom function name used to process the status notifications.

This API call is used to define the *status handler* which is a function defined by your application that will handle the status notifications. Your status handler must have the following signature:

```
function <statusHandlerFunction>(Object status);
```

where `<statusHandlerFunction>` can be any function name of your choice. Its `status` argument is an object having two properties:

- `type` - the type of the status notification
- `info` - the detail information of the status notification

The possible values for the type of the status notifications are:

- `MigratoryDataClient.NOTIFY_SERVER_UP` indicates that the client successfully connected to the MigratoryData server provided in the detail information of the status notification
- `MigratoryDataClient.NOTIFY_SERVER_DOWN` indicates that the client was not able to connect to the MigratoryData server provided in the detail information of the status notification
- `MigratoryDataClient.NOTIFY_DATA_SYNC` indicates that, after a failover reconnection, the client successfully synchronized the subject given in the detail information of the status notification. Moreover, the client received the messages published during the failover period for this subject.
- `MigratoryDataClient.NOTIFY_DATA_RESYNC` indicates that, after a failover reconnection, the client successfully synchronized the subject given in the detail information of the status notification. However, the client have not received the potential messages published during the failover period for this subject, the client behaving like a new client which just connected to the MigratoryData server.
- `MigratoryDataClient.NOTIFY_SUBSCRIBE_ALLOW` indicates that the client – identified with the token given in the argument of `MigratoryDataClient.setEntitlementToken()` – is allowed to subscribe to the subject provided in the detail information of the status notification
- `MigratoryDataClient.NOTIFY_SUBSCRIBE_DENY` indicates that the client – identified with the token given in the argument of `MigratoryDataClient.setEntitlementToken()` – is not allowed to subscribe to the subject provided in the detail information of the status notification
- `MigratoryDataClient.NOTIFY_PUBLISH_OK` indicates that the client successfully published the message having the closure data provided in the detail information of the status notification

- `MigratoryDataClient.NOTIFY_PUBLISH_FAILED` indicates that the client was unable to publish the message having the closure data provided in the detail information of the status notification
- `MigratoryDataClient.NOTIFY_PUBLISH_DENIED` indicates that the client was unable to publish the message having the closure data provided in the detail information of the status notification because the client – identified with the token given in the argument of `MigratoryDataClient.setEntitlementToken()` – is not allowed to publish on the subject of the message
- `MigratoryDataClient.NOTIFY_PUBLISH_NO_SUBSCRIBER` indicates that the client was unable to publish the message having the closure data provided in the detail information of the status notification because there is no client subscribed to the subject of the message

This is a code example:

```
MigratoryDataClient.setStatusHandler(statusHandler);

function statusHandler(status) {
    alert("Got status notification, type = " + status.type + ", info = " + status.info);
}
```

Parameters

<code>statusHandler</code>	The name of a custom function used to handle the status notifications.
----------------------------	--

4.1.2.4 void MigratoryDataClient.setEntitlementToken (string token)

Assign an authorization token to the client.

To define which users of your application have access to which subjects, you will first have to set the parameter `Entitlement` on `true` in the configuration file of the MigratoryData server — see the parameter `Entitlement` in the *MigratoryData Configuration Guide* ([PDF](#), [HTML](#)).

Then, you will have to use the entitlement-related part of the MigratoryData Extension API to allow or deny certain users to subscribe / publish to certain subjects.

Parameters

<code>token</code>	A string representing an authorization token.
--------------------	---

4.1.2.5 void MigratoryDataClient.subscribe (string[] subjects)

Subscribe to one or more subjects.

Subscribe for real-time messages having as subjects the strings provided in the `subjects` parameter.

As an example, supposing messages are market data updates having as subjects stock names. Then, to subscribe for the messages having as subjects `/stocks/NYSE/IBM` and `/stocks/Nasdaq/MSFT` the following code will be used:

```
var subjects = new Array("/stocks/NYSE/IBM", "/stocks/Nasdaq/MSFT");
MigratoryDataClient.subscribe(subjects);
```

or more simple, using the JavaScript square bracket notation for arrays:

```
MigratoryDataClient.subscribe(["/stocks/NYSE/IBM", "/stocks/Nasdaq/MSFT"]);
```

The subjects are strings having a particular syntax. See the Chapter "Concepts" in the *MigratoryData Architecture Guide* ([PDF](#), [HTML](#)) to learn about the syntax of the subjects.

Parameters

<i>subjects</i>	An array of strings representing subjects.
-----------------	--

4.1.2.6 void MigratoryDataClient.subscribeWithHistory (string[] subjects, int numberOfHistoricalMessages)

Subscribe to one or more subjects after getting historical messages for those subjects.

Attempt to get the number of historical messages as defined by the argument `numberOfHistoricalMessages`, for each subject in the argument `subjects`, then subscribe for real-time messages having as subjects the strings provided in the `subjects` parameter.

When Guaranteed Message Delivery is enabled, each MigratoryData server in the cluster maintains an in-memory cache with historical messages for each subject. The cache of each subject is available in all servers of the cluster. The maximum number of messages held in cache is defined by the parameter `MaxCachedMessagesPerSubject` of the MigratoryData server which defaults to 1,000 messages. The historical messages are continuously removed from the cache, but it is guaranteed that they are available in the cache at least the number of seconds defined by the parameter `CacheExpireTime` which defaults to 180 seconds.

If the value of `numberOfHistoricalMessages` is higher then the number of historical messages available in the cache, then the client will receive only the messages available in the cache. As a consequence, if you use a value higher than the value of the parameter `MaxCachedMessagesPerSubject` of the MigratoryData server (which defaults to 1000), then you will get the entire cache before subscribing for real-time messages for the subjects specified with the API call.

```
var subjects = new Array("/stocks/NYSE/IBM", "/stocks/Nasdaq/MSFT");
MigratoryDataClient.subscribeWithHistory(subjects, 10);
```

or more simple, using the JavaScript square bracket notation for arrays:

```
MigratoryDataClient.subscribeWithHistory(["/stocks/NYSE/IBM", "/stocks/Nasdaq/MSFT"], 10);
```

The subjects are strings having a particular syntax. See the Chapter "Concepts" in the *MigratoryData Architecture Guide* ([PDF](#), [HTML](#)) to learn about the syntax of the subjects.

Parameters

<i>subjects</i>	An array of strings representing subjects.
<i>numberOfHistoricalMessages</i>	The number of historical messages to be retrieved from the cache of the MigratoryData server. A value 0 means that no historical messages has to be retrieved and, in this case, this API method is equivalent to the API method MigratoryDataClient.subscribe() . A value larger that the value of the parameter <code>MaxCachedMessagesPerSubject</code> means the entire cache is retrieved.
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4.1.2.7 void MigratoryDataClient.subscribeWithConflation (string[] subjects, int conflationMillis)

Subscribe to one or more subjects with conflation.

Subscribe for real-time messages having as subjects the strings provided in the `subjects` parameter.

If the optional parameter `conflationMillis` is used, then for each subject in the `subjects` list given in argument, its messages will be aggregated in the MigratoryData server and published every `conflationMillis` milliseconds as aggregated data (containing only the latest value for that subject and its latest field values). The value of `conflationMillis` should be a multiple of 100 milliseconds, otherwise the MigratoryData server will round it to the nearest value multiple of 100 milliseconds (e.g. 76 will be rounded to 0, 130 will be rounded to 100, 789 will be rounded to 700, ...). If the value of `conflationMillis` is 0 (or is rounded to 0), then no conflation will apply, and data publication will be message-by-message with no message aggregation.

As an example, supposing the messages are market data updates having as subjects stock names. Then, to subscribe for the messages having as subjects `/stocks/NYSE/IBM` and `/stocks/Nasdaq/MSFT` using 1-second conflation the following code will be used:

```
var subjects = new Array("/stocks/NYSE/IBM", "/stocks/Nasdaq/MSFT");
MigratoryDataClient.subscribeWithConflation(subjects, 1000);
```

or more simple, using the JavaScript square bracket notation for arrays:

```
MigratoryDataClient.subscribeWithConflation(["/stocks/NYSE/IBM", "/stocks/Nasdaq/MSFT"], 1000);
```

The subjects are strings having a particular particular syntax. See the Chapter "Concepts" in the *MigratoryData Architecture Guide* ([PDF](#), [HTML](#)) to learn about the syntax of the subjects.

Parameters

<i>subjects</i>	An array of strings representing subjects.
<i>conflationMillis</i>	An optional argument defining the number of milliseconds used to aggregate ("conflate") the messages for each subject in the <code>subjects</code> list; default value is 0 meaning that no conflation will apply, and data publication will be message-by-message with no message aggregation.

4.1.2.8 void MigratoryDataClient.unsubscribe (string[] subjects)

Unsubscribe from one or more subjects.

Unsubscribe from the subscribed subjects provided in the `subjects` parameter.

Parameters

<i>subjects</i>	An array of strings representing subjects.
-----------------	--

4.1.2.9 void MigratoryDataClient.publish (Object message)

Publish a message.

The message format is as follows:

```
{ subject: "some-subject",
  content: "some-content",
  fields: [
    {field-name-1: "field-value-1"},
    {field-name-2: "field-value-2"},
    ...
  ],
  replyToSubject: "some-reply-subject",
  closure: "some-message-id"
}
```

If the message includes a `replyToSubject`, then it acts as a request. The clients which receive the message, will be able to reply by sending a message having as subject the reply subject defined by `replyToSubject`.

If the message includes a `closure`, then a status notification will be provided to inform whether the message publication has been successful or failed.

Parameters

<i>message</i>	A JavaScript object having the structure defined above.
----------------	---

4.1.2.10 `string [] MigratoryDataClient.getSubjects ()`

Return the list of subscribed subjects.

Returns

An array of strings representing the subscribed subjects.

4.1.2.11 `void MigratoryDataClient.notifyAfterReconnectRetries (int retries)`

Define the number of failed attempts to connect to one or more MigratoryData servers before triggering a status notification [MigratoryDataClient.NOTIFY_SERVER_DOWN](#).

Parameters

<i>retries</i>	The number of the failed attempts to connect to one or more MigratoryData servers before triggering a status notification MigratoryDataClient.NOTIFY_SERVER_DOWN ; default value is 1.
----------------	--

4.1.2.12 `void MigratoryDataClient.setQuickReconnectInitialDelay (int seconds)`

Define the number of seconds to wait before attempting to reconnect to the cluster after a connection failure is detected.

Connection Failure Detection

Connection failure is detected immediately for almost all users running modern browsers. For a few users running modern browsers (and being subject to temporary, atypical network conditions) as well as for all users running older browsers without WebSocket support, connection failure is detected after 30-40 seconds.

Reconnection Phases and Policies

When a connection failure is detected, the API will attempt to reconnect to the servers of the MigratoryData cluster as follows: First, it will attempt to reconnect up to a number of times as defined by `MigratoryDataClient.setQuickReconnectMaxRetries()` using small delays between retries (Quick Reconnection Phase). If the connection cannot be established after the Quick Reconnection Phase, then the API will attempt to reconnect less frequently according to the policy defined by `MigratoryDataClient.setReconnectPolicy()`.

The delays between retries are computed according to the following algorithm where the values of the variables involved are defined by the API methods having substantially the same names:

```
Quick Reconnect Phase (retries <= quickReconnectMaxRetries)
-----
```

```
(retries starts with 1 and increment by 1 at each quick reconnect)
```

```
reconnectDelay = quickReconnectInitialDelay * retries - random(0, quickReconnectInitialDelay)
```

```
After Quick Reconnect Phase (retries > quickReconnectMaxRetries)
-----
```

```
(reset retries to start with 1 and increment by 1 at each reconnect)
```

```
If reconnectPolicy is CONSTANT_WINDOW_BACKOFF, then
```

```
reconnectDelay = reconnectTimeInterval
```

```
else if reconnectPolicy is TRUNCATED_EXPONENTIAL_BACKOFF, then
```

```
reconnectDelay = min(reconnectTimeInterval * (2 ^ retries) - random(0, reconnectTimeInter
```

For a few users running modern browsers (and being subject to temporary, atypical network conditions) as well as for all users running older browsers without WebSocket support, if `reconnectDelay` computed with the algorithm above is less than 10 seconds, then it is rounded to 10 seconds.

Parameters

<i>seconds</i>	The number of seconds to wait before attempting to reconnect to the cluster; default value is 5 seconds.
----------------	--

4.1.2.13 void MigratoryDataClient.setQuickReconnectMaxRetries (int *retries*)

Define the maximum number of retries for the Quick Reconnect failover phase.

Parameters

<i>retries</i>	The maximum number of quick reconnect retries; default value is 3.
----------------	--

4.1.2.14 void MigratoryDataClient.setReconnectPolicy (string *policy*)

Define the reconnect policy to be used after the Quick Reconnect phase.

See [MigratoryDataClient.setQuickReconnectInitialDelay\(\)](#) to learn about the Quick Reconnect phase and the reconnect schedule for the policy defined by this method.

Parameters

<i>policy</i>	The reconnect policy to be used after the Quick Reconnect phase. The possible values are MigratoryDataClient.CONSTANT_WINDOW_BACKOFF and MigratoryDataClient.TRUNCATED_EXPONENTIAL_BACKOFF ; the default value is MigratoryDataClient.TRUNCATED_EXPONENTIAL_BACKOFF .
---------------	---

4.1.2.15 void MigratoryDataClient.setReconnectTimeInterval (int *seconds*)

Define the time interval used for the reconnect schedule after the Quick Reconnect phase.

See [MigratoryDataClient.setQuickReconnectInitialDelay\(\)](#) to learn about the Quick Reconnect phase and how the value defined by this API method is used for the reconnect schedule.

Parameters

<i>seconds</i>	A time interval expressed in seconds used for reconnect schedule; default is 20 seconds.
----------------	--

4.1.2.16 void MigratoryDataClient.setReconnectMaxDelay (int *seconds*)

Define the maximum reconnect delay for the [MigratoryDataClient.TRUNCATED_EXPONENTIAL_BACKOFF](#) policy.

See [MigratoryDataClient.setQuickReconnectInitialDelay\(\)](#) to learn how the value defined by this API method is used.

Parameters

<i>seconds</i>	The maximum reconnect delay when the policy MigratoryDataClient.TRUNCATED_EXPONENTIAL_BACKOFF is used; default value is 360 seconds.
----------------	--

4.1.2.17 void MigratoryDataClient.disconnect ()

Disconnect from the connected MigratoryData server and dispose the resources used by the connection.

This method should be called when the connection is no longer necessary.

4.1.2.18 string MigratoryDataClient.getInfo ()

Return various statistical information.

Returns

A string with various statistical information useful for debugging or logging.

4.1.3 Member Data Documentation

4.1.3.1 string MigratoryDataClient.NOTIFY_SERVER_UP

Indicate that the client successfully connected to a MigratoryData server.

This constant indicates that the client successfully connected to one of the MigratoryData servers defined with the API method [MigratoryDataClient.setServers\(\)](#).

4.1.3.2 string MigratoryDataClient.NOTIFY_SERVER_DOWN

Indicate that the client failed to connect to a MigratoryData server.

This constant indicates that the client failed to connect to one of the MigratoryData servers defined with the API method [MigratoryDataClient.setServers\(\)](#).

4.1.3.3 string MigratoryDataClient.NOTIFY_DATA_SYNC

After a failover reconnection, the client synchronized a subscribed subject with the latest message available for that subject, as well as with all messages published during the failover for that subject.

This constant indicates that the client successfully synchronized the subject provided in the detail information of the status notification. Also, the potential messages published for that subject during the failover period have been successfully retrieved at the moment of the reconnection.

4.1.3.4 string MigratoryDataClient.NOTIFY_DATA_RESYNC

After a failover reconnection, the client synchronized a subscribed subject with the latest message available for that subject, but not with the potential messages published during the failover, therefore behaving as a new client.

This constant indicates that the client successfully synchronized the subject provided in the detail information of the status notification. However, the client was unable to get the messages published during the failover. Therefore, it behaves like a new client which connects to the MigratoryData server at the moment of the failover reconnection.

4.1.3.5 string MigratoryDataClient.NOTIFY_SUBSCRIBE_ALLOW

Indicate that the client was authorized to subscribe to a subject.

This constant indicates that the client – identified with the token defined with the API method [MigratoryDataClient.setEntitlementToken\(\)](#) – is allowed to subscribe to the subject provided in the detail information of the status notification.

4.1.3.6 string MigratoryDataClient.NOTIFY_SUBSCRIBE_DENY

Indicate that the client was not authorized to subscribe to a subject.

This constant indicates that the client – identified with the token defined with the API method [MigratoryDataClient.setEntitlementToken\(\)](#) – is not allowed to subscribe to the subject provided in the detail information of the status notification.

4.1.3.7 string MigratoryDataClient.NOTIFY_PUBLISH_OK

Indicate that the client successfully published a message.

This constant is used to indicate that the publication of the message, having the closure provided in the detail information of the status notification, has succeeded.

4.1.3.8 string MigratoryDataClient.NOTIFY_PUBLISH_FAILED

Indicate that the client was unable to publish a message.

This constant is used to indicate that the publication of the message, having the closure provided in the detail information of the status notification, has failed.

4.1.3.9 string MigratoryDataClient.NOTIFY_PUBLISH_DENIED

Indicate that the client was unable to publish a message because it is not allowed by the entitlement rules you defined.

This constant is used to indicate that the publication of the message, having the closure provided in the detail information of the status notification, has failed. The publication failed because the client – identified with the token defined with the API method [MigratoryDataClient.setEntitlementToken\(\)](#) – is not allowed to publish on the subject of the message.

4.1.3.10 string MigratoryDataClient.NOTIFY_PUBLISH_NO_SUBSCRIBER

Indicate that the client was unable to publish a message because there is no client subscribed to the subject of the message.

This constant is used to indicate that the publication of the message, having the closure provided in the detail information of the status notification, has failed. The publication failed because there is no client then subscribed to the subject of the message.

Deprecated no more in use.

4.1.3.11 `string MigratoryDataClient.NOTIFY_UNSUPPORTED_BROWSER`

Indicate that the client runs in a browser which is not supported by the API.

This constant indicates that the client tries to run in a browser which is not supported by the API.

The API has support for all standard browsers for desktops and mobile devices. It has support for all recent versions of these standard browsers as well as for older versions — as old as Internet Explorer version 6 (released in 2001). However browsers older than IE6 or non-standard browsers might not be supported by the API.

4.1.3.12 `string MigratoryDataClient.CONSTANT_WINDOW_BACKOFF`

A constant used to define the reconnect policy.

See [MigratoryDataClient.setQuickReconnectInitialDelay\(\)](#) for more details about this policy.

4.1.3.13 `string MigratoryDataClient.TRUNCATED_EXPONENTIAL_BACKOFF`

A constant used to define the reconnect policy.

See [MigratoryDataClient.setQuickReconnectInitialDelay\(\)](#) for more details about this policy.

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