

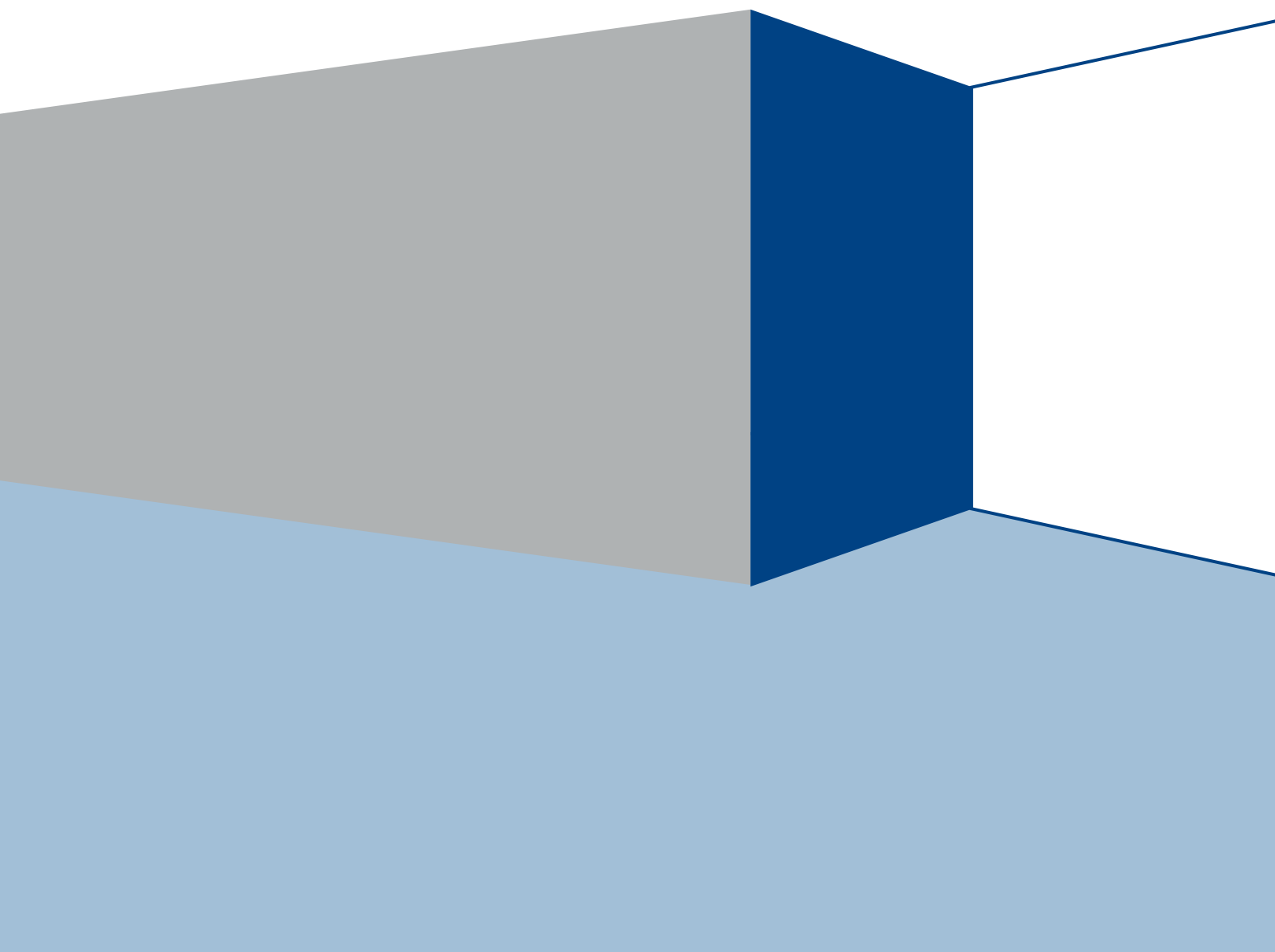


**London**  
Stock Exchange Group

MIT205 – EuroTLX - MILLENNIUM EXCHANGE

# Drop Copy Gateway (FIX 5.0)

Issue 4.2 September



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## **Disclaimer**

EuroTLX has taken reasonable effort to ensure that the information contained in this publication is correct at the time of going to press, but shall not be liable for decisions made in reliance on it. EuroTLX will always endeavour to provide notice to customers of changes being made to this document, but this notice cannot always be guaranteed. Therefore, please note that this publication may be updated at any time. The information contained is therefore for guidance only.

# 1 Introduction

EuroTLX has provided a drop copy gateway to enable member firms to receive additional copies of the Execution Reports generated by Millennium Exchange. This interface may also be used by clients to download the current status of all their active orders in the event of a failure. The drop copy gateway cannot be used to submit orders or receive market data.

The interface is a point-to-point service based on the technology and industry standards TCP/IP, FIXT and FIX. The session and application event models and messages are based on versions 1.1 and 5.0 (Service Pack 2) of the FIXT and FIX protocols respectively.

The encryption of messages between the client and server is not supported.

## 1.1 Purpose

The purpose of this document is to provide a technical description of the drop copy gateway available on the Millennium Exchange platform.

All the technical documents should be read in conjunction with the Rules and Guide to Parameters of EuroTLX Market.

### **Rules of EuroTLX**

The Rules Book of EuroTLX Market is available at the following links:

Italian Version:

<http://www.eurotlx.com/documenti/regolamentazione/regolamento>

English Version

<http://www.eurotlx.com/en/documenti/regolamentazione/regolamento>

### **Trading Services webpage**

More details of the Exchange's Trading Systems, including where this document and the *Millennium Exchange Business Parameters for BIT* document will be found following go-live can be seen at:

Italian Version:

<http://www.eurotlx.com/it/documentazionetecnica>

English Version:

<http://www.eurotlx.com/en/technicaldocumentation>

## 1.2 Readership

This document is particularly relevant to technical staff within EuroTLX's member firms. This document outlines how to connect to the drop copy gateway and the detailed message types and fields used.

When read in conjunction with the other Millennium Exchange guides, it is intended that these documents provide all of the details directly connected EuroTLX customers require to develop to the new services.

### 1.3 Document series

This document is part of a series of documents which provide a holistic view of the trading and information services available from the EuroTLX post the migration to Millennium Exchange. For reference the full range of documents is outlined below:

- **Trading**
  - MIT201 EuroTLX – Guide to New Trading System
  - MIT202 EuroTLX – FIX Trading Gateway (FIX 5.0)
  - MIT203 EuroTLX – Native Trading Gateway Specification
  - MIT204 EuroTLX – Post Trade Gateway (FIX 5.0) Specification
  - **MIT205 EuroTLX – Drop Copy Gateway (FIX 5.0) Specification (this document)**
  
- **Market Data Services**
  - MIT301 EuroTLX – Guide to Market Data Services
  - MIT303 EuroTLX – MITCH Specification
  - MIT305 EuroTLX – Markets Reference Data
  - MIT306 EuroTLX – Instrument Currency
  - MIT308 EuroTLX - Trading Calendars
  - MIT309 EuroTLX - RFQ Market Maker Reference Data
  - EuroTLX – ANA File Service – Basic
  - EuroTLX – ANA File Service – Enriched
  
- **Report Reconciliation Service**
  - MIT601 EuroTLX – Report Reconciliation Service
  
- **Other**
  - MIT501 EuroTLX- Guide to Testing Services
  - MIT701 EuroTLX – Connectivity Specification
  - EuroTLX – Members File Service
  - EuroTLX – RCG File Service
  - EuroTLX – Market Statistics - TLX\_Listino.txt File Service

This series principally covers non-regulatory information.

The latest version of this document series can be found at the following links:

<http://www.eurotlx.com/it/documentazionetecnica>

<http://www.eurotlx.com/en/technicaldocumentation>

### 1.4 Document history

This document has been through the follow iterations:

Issue	Date	Description
1.0	January 2014	First issue of this document published via the EuroTLX's website and distributed to customers.
1.1	February 2014	Updated version of this document published via the EuroTLX's website and distributed to customers.  The changes are applied at the following sections: - 6.5.1
1.2	November 2014	Updated version of this document published via the EuroTLX's website and distributed to customers.  The changes are applied at the following sections: -2.5, 3.3, 4.1, 6, 6.5.1, 7.1, 7.2.
2.0	July 2016	Updated version of this document published via the EuroTLX's website and distributed to customers.  The changes are applied at the following sections:  - Changed Sections: 1.1, 1.3, 1.5, 2.5.3, 3.3, 3.4, 4.1, 4.2.2, 6.5.1, 7.3.  - Added Sections: 2.3.2.
2.1	August 2016	Updated version of this document published via the EuroTLX's website and distributed to customers.  The changes are applied at the following sections:  - 4.1
3.0	March 2017	Updated version of this document published via the EuroTLX's website and distributed to customers.  The changes are applied at the following sections:  2.3.1, 2.5, 2.5.2, 2.5.4, 2.5.6, 2.6, 2.7, 2.8, 2.9, 2.10, 2.11, 3.1.1, 3.3, 3.4, 4.1, 4.2, 4.2.1, 4.2.2, 4.3, 4.4., 4.4.1.1, 5.3, 5.3.1, 5.3.2, 5.4, 6.1.2.2, 6.3.1, 6.3.2, 6.3.6, 6.5.1, 6.6.1,
3.1	June 2017	Updated version of this document published via the EuroTLX's website and distributed to customers.  The changes are applied at the following sections:



		6.5.1.
3.2	July 2017	Updated version of this document published via the EuroTLX's website and distributed to customers.  The changes are applied at the following sections:  2.7, 6.5.1.
3.3	September 2017	Updated version of this document published via the EuroTLX's website and distributed to customers.  The changes are applied at the following sections:  2.11, 6.5.1.
4.0	June 2018	Updated version of this document published via the EuroTLX's website and distributed to customers.  The changes are applied at the following sections:  2.5, 2.6, 3.3.1, 6.5.1.
4.1	August 2018	Updated version of this document published via the EuroTLX's website and distributed to customers.  The changes are applied at the following sections:  6.5.1
4.2	September 2018	Updated version of this document published via the EuroTLX's website and distributed to customers.  The changes are applied at the following sections:  2.11, 6.5.1, 8

In subsequent issues, where amendments have been made to the previous version, these changes will be identified using a series of red side bars as illustrated opposite.

In subsequent issues, where amendments have been made to the version 4.0, these changes will be identified using a series of side bars as illustrated opposite.

## 1.5 Enquiries

Please contact either Client Technology Services or your Technical Account Manager if you have any functional questions about the Millennium Exchange

services outlined in this document. Client Technology Services (ITA) can be contacted at:

- Telephone: +39 0272426409 – 348 – 606 – 647
- Service Desk Free Toll Number: 00800 26772000
- Email: [service-desk@borsaitaliana.it](mailto:service-desk@borsaitaliana.it); [clients-services@borsaitaliana.it](mailto:clients-services@borsaitaliana.it)

## 2 Service description

### 2.1 Services supported by Trading Gateway

A description of the services (e.g. order types, quotes, notification of Market Supervision actions, etc.) available via the Trading Gateway is provided in the FIX specification for this interface which Clients are encouraged to read together with this specification.

### 2.2 Connection configuration

#### 2.2.1 Real-Time connections

A real-time client enabled for the 'Copy To' functionality will receive a copy of each eligible Execution Report immediately after it is published.

A participant connection will be configured to receive a copy of all the Execution Report messages generated for the firm for the events outlined in [Section 2.3](#). If required, a firm connection could be configured to only receive copies for selected Trader Groups.

For the purpose of redundancy, the service supports the configuration of multiple 'Copy To' connections to send the same information on the activity of the selected firms/Trader Groups.

The identity of the CompID that transmitted the order a particular drop copy relates to will be specified in the header field OnBehalfOfCompID (115).

Please refer to [Sections 5.4](#) and [5.5](#) for a description of how the Execution Reports published during the time a real-time client is disconnected from the server may be recovered.

A real-time client may also use the Own Order Book Download (OOBD) service (outlined in [Section 2.4](#)) to recover the status of all active orders in the event of a system failure.

#### 2.2.2 Non Real-Time connections

Execution Reports will not be streamed to non-real time clients. Such a client may only connect to the server to use the Own Order Book Download service outlined in [Section 2.4](#).

### 2.3 Supported events

Clients will receive drop copies of the Execution Reports generated for the following events:

- (i) Order accepted
- (ii) Order rejected
- (iii) Order executed
- (iv) Quote executed
- (v) Order expired

- (vi) Order cancelled
- (vii) Order cancel/replaced
- (viii) Trade cancellation

### 2.3.1 Quotes

The Execution Reports sent when quotes are executed are available as drop copies.

The following messages sent by the Trading Gateway are not available via the drop copy service:

- Quote Status Report
- Mass Quote Acknowledgement
- Execution Reports generated to acknowledge quotes submitted via Native Trading gateway

## 2.4 Own Order Book Download

Any client may use the Mass Order Status Request message to download the current status of each active order for a specified Trader Group (585 = 8, 448 = trader group id), for a specified trader group in a specified instrument (585 = 1, 48 = instrument id, 448 = trader group id) and for a specified trader group in a specified segment (585 = 1, 1300 = segment id, 448 = trader group id). The total number of Mass Order Status Requests that a client may submit can be found in the Trading Technical Parameters document on the Technical Specifications website. A client may request EuroTLX to reset its request count. This feature is intended to help manage an emergency situation and should not be relied upon as a normal practice.

If a request is successful, the server will respond with an Execution Report for each active order and quote side for the specified Trader Group. If a request for a Trader Group in a specified instrument is successful, the server will respond with an Execution Report for each active order and quote side for the specified Trader Group in the specified instrument. If a request for a Trader Group in a specified segment is successful, the server will respond with an Execution Report for each active order and quote side for the specified Trader Group in the specified segment.

Each such message will include the MassStatus ReqID (584) of the request, an ExecID (17) of "0" and an ExecType (150) of Order Status (I). The last Execution Report sent by each partition in response to the request will include a LastRptRequested (912) of Last Message (Y).

The server will transmit a single Execution Report if the request is rejected or if there are no active orders and quotes for the specified Trader Group or for the specified Trader Group in the specified instrument/segment. Such a message will include the MassStatusReqID (584) of the request, an ExecID (17) of "0", an ExecType (150) of Order Status (I) and an OrdStatus (39) of Rejected (8). The message will not include fields that relate to order-specific information (i.e. OrderID (37), OrderQty (38), LeavesQty (151), CumQty (14), SecurityID (48), SecurityIDSource (22), OrdType (40), Side (54), AccountType (581), OrderCapacity (528), ClOrdID (11),

TransactTime(60)). The reason for the rejection will be specified in the field OrdRejReason (103).

A Business Message Reject will be sent to reject an Order Mass Status Request if the server is unable to process it in the unlikely event of a system outage. If the outage occurs before the server has sent all of the messages in response to an Order Mass Status Request, it will terminate the open order download. An Execution Report will be sent if the open order download is terminated. It will include the MassStatusReqID (584) of the request, an ExecID (17) of "0", an ExecType (150) of Order Status (I) and an OrdStatus (39) of Rejected (8).

If a client specifies an instrument (in 48) as well as a segment (in 1300) in the Order Mass Status Request, results should be given according to the value specified for the MassStatusReqType(585) field. I.e.

- If MassStatusReqType(585) = 1, statuses of the orders belonging to the specified instrument should be given
- If MassStatusReqType(585) = 100, statuses of the orders belonging to the specified segment should be given
- If MassStatusReqType(585) = 8, statuses of all orders belonging to the specified trader group should be given

## 2.5 Execution reports

The Execution Report message is used to communicate many different events to clients. The events are differentiated by the value in the ExecType (150) field as outlined below.

ExecType	Usage	Ord Status
0	<b>Order Accepted</b> Indicates one of the following scenarios: a. An order added to the book. b. A market maker accepting a RFQ via a RFQ quote.	0
8	<b>Order Rejected</b> Indicates that an order or RFQ quote has been rejected. The reason for the rejection is specified in the field	8
F	<b>Order or Quote Executed</b> Indicates one of the following scenarios; a. An order/quote is partially or fully filled. b. A RFQ/ RFQ quote is executed.	1, 2
C	<b>Order Expired</b> This message is sent when an order or RFQ quote is expired. The reason for the expiration is specified in the Text (58) field.	C

4	<b>Order Cancelled</b> This message is sent when an order or RFQ quote is cancelled. Cancellation could have been sent either by the trading party or market operations or initiated automatically by the system.	4
5	<b>Order Cancel/Replaced</b> Indicates that an order cancel/replace request has been accepted and successfully processed.	0, 1
D	<b>Order Cancel/Replace by Market Supervision</b> Sent in the following scenarios: -When an order is amended by market supervision -When an order price/size is changed by the system without being requested by the participants -When market supervision cancels a trade that previously partially filled the order. -When an iceberg order gets replenished only after exhausting the visible quantity and executing a portion of the hidden quantity as well (as opposed to executing hidden quantity after replenishment) - When a quote is amended without being requested by the participants. - When market supervision cancels a trade that previously partially filled the quote	0, 1
H	<b>Trade Cancel</b> Indicates that an execution has been cancelled by Market Supervision. An ExecRefID (19) to identify the execution being cancelled will be included.	0, 1
I	<b>Order Status Response</b> Indicates the current status of an order.	0, 1
I	<b>Order Status Reject</b> Indicates that an order mass status request has been rejected.	8
G	<b>Trade Correct</b> Indicates that the price and/or size of a trade has been amended by the market supervision. An Execution Report Ref ID to identify the execution being amended is included.	1,2

### 2.5.1 Order Status

As specified in the FIX protocol, the OrdStatus (39) field of an Execution Report is used to convey the current state of an order. If an order simultaneously exists in more than one order state, the value with highest precedence is reported as the OrdStatus (39). The relevant order statuses are given below from the highest to lowest precedence.

Value	Meaning
0	New
1	Partially Filled
2	Filled
4	Cancelled
8	Rejected
C	Expired

## 2.5.2 Order/Quote identifiers

ID	Description	Tag ID	Max Allowed Length
CIOrdID	<p>The server does not validate each Client Order ID for uniqueness. However, it is recommended that clients ensure unique Client Order IDs across all messages (e.g. New Order, Order Cancel Request, etc.) per user.</p> <p>Clients must specify the Client Order ID when submitting a New Order, Order Cancel Request, Order Mass Cancel Request or Order Cancel/Replace Request.</p> <p>It may also, under certain circumstance, not include ApplID (1180) and OrderCapacity (528).</p> <p>If an order is cancelled or replaced by Market Supervision, the disseminated Execution Report will not be assigned a new Client Order ID.</p>	11	20
OrigCIOrdID	<p>The server will use the Original Client Order ID to identify the order which needs to be cancelled or replaced when an OrderID(37) is not specified.</p> <p>If an order is cancelled or replaced by Market Supervision, the disseminated Execution Report will not have a Original Client Order ID specified.</p>	41	
ExecID	<p>The server will use the ExecID field to affix a unique identifier for each Execution Report. ExecIDs will be unique across trading days.</p>	17	
Application ID (AppID)	<p>Each application message transmitted by the server will include the identity of the partition that generated the message.</p>	1180	
OrderID	<p>The server will use the Order ID field of the Execution Report to affix the order identification</p>	37	

ID	Description	Tag ID	Max Allowed Length
	numbers of the trading engine. Order IDs will be unique across trading days. Unlike Client Order ID which requires a chaining through cancel/replace requests and cancel requests, the Order ID of an order will remain constant throughout its life. Clients have the option of specifying the Order ID (instead of the OriginalClient Order ID) when submitting an Order Cancel Request or Order Cancel/Replace Request.		
TradeMatchID	The TrdMatchID (880) in the FIX trading gateway matches exactly with the TradeID (1003) on the Trade Capture Report of Post Trade gateway. This also matches the TradeMatchID field from the Native Trading gateway as well as the ITCH gateway which are in binary format. TrdMatchID (880) are unique across trading days. The TrdMatchID (880) is in base 62 and needs converting to an 8 byte integer for comparison.	880	
QuoteMsgID	The clients must specify the QuoteMsgID when submitting a quote or a quote cancel. The server does not validate each QuoteMsgID for uniqueness. However, it is recommended that clients ensure unique ClOrdIDs/QuoteMsgIDs across all messages (e.g. New Order/ Quote, Order/ Quote Cancel Request, etc.) per client.	1166	20
BidID	The unique identifier assigned by the server to the bid side of an RFQ response quote in the quote ack. The BidIDs will be unique across trading days. The BidID of a quote will remain constant throughout its life.	30007	
OfferID	The unique identifier assigned by the server to the offer side of an RFQ response quote in the quote ack. The OfferIDs will be unique across trading days. The OfferID of a quote will remain constant throughout its life.	30008	
QuoteReqID	The clients must specify the QuoteReqID when submitting a quote request. The server validates each QuoteReqID for uniqueness against other RFQs submitted by the same client.	131	10
RFQID	The unique identifier assigned by the server to a quote request in the quote status report. The RFQIDs will be unique across trading days. The RFQID of a quote request will remain	30006	



ID	Description	Tag ID	Max Allowed Length
	constant throughout its life. The clients are required to specify the RFQID when responding to an RFQ (positive/ negative), executing an RFQ or cancelling an RFQ.		

### 2.5.3 Instrument identification

Instruments will be identified using the SecurityID (48) field. It is required to specify SecurityID Source (22) field as well.

### 2.5.4 Identifiers

ID	Description	Relevant FIX Tags
Executing Firm	Identifier (Firm ID) of the firm which submits the order/quote or RFQ	PartyRole (452) = 1 PartyID (448)
Trader Group	The unit of the firm the order was submitted under	PartyRole (452) = 76 PartyID (448)
Trader ID	Trader ID of the trader who executed the trade	PartyRole (452) = 100 PartyID (448)
Counterparty Firm	In an Execution report for a trade, the broker firm which is the contra side of the trade	PartyRole (452) = 17 PartyID (448)
Market Makers	Firm ID of the market maker firm	PartyRole (452) = 66 PartyID (448)
Contra Trader	Identifier of the Trader who is the contra side of the trade	PartyRole (452) = 37 PartyID (448)
Client ID	Identifier of the client of the order/quote or RFQ	PartyRole (452) = 3 PartyIDSource (447) PartyID (448)
Investment Decision Maker	Identifier of the investment decision relevant to the order/quote or RFQ	PartyRole (452) = 122 PartyIDSource (447) PartyID (448)

Executing Trader	Identifier who makes the execution decision of the order/quote or RFQ	PartyRole (452) = 12 PartyIDSource (447) PartyID (448)
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### 2.5.5 Quotation Conventions

The values specified in the fields Price (44,) and LastPx (31) should be interpreted in terms of the applicable quotation convention for the instrument.

The values specified in these fields should be interpreted as the price per share for equity instruments. For a fixed income instrument, they should, depending on the applicable convention, be interpreted as percentage of par or yield.

The value, if any, specified in the field LastParPx (669) should always be interpreted as percentage of par.

### 2.5.6 Fixed Income Instruments

Based on the instrument configurations, for fixed income instruments quoted in yield, the notification of an execution may include the limit price in the field ConvertedYield(30005) and traded price in the field Yield (236).

## 2.6 Timestamps and dates

Following timestamps used in server generated messages should be in UTC and in the YYYYMMDD-HH:MM:SS.uuuuuu format. For client generated messages both YYYYMMDD-HH:MM:SS.uuuuuu and YYYYMMDD-HH:MM:SS.sss formats are accepted.

- SendingTime (52)
- OrigSendingTime (122)
- TransactTime (60)

SendingTime is only validated when processing the Login message.

For all other messages it is not mandatory to enter milliseconds in the SendingTime (52) tag.

Following timestamps used in messages should be in UTC and in the YYYYMMDD-HH:MM:SS format.

- ExpireTime (126)

ExpireDate (432) should be in the YYYYMMDD format and specified in the local date for the server (i.e. not in UTC).

## 2.7 Repeating groups (components/component block)

If a repeating group is used in a message, the NoXXX field (for example NoPartyIDs field in the trading party repeating group) should be specified first before the repeating group starts. This is applicable for both the messages generated by the client and the server.

The messages generated by the server will have the fields within a repeating group in order.

The messages generated by a client should have the first field in a repeating group in order. If the first field in a repeating group is in order, a message generated by a client will be accepted; else the message will be rejected.

When a client initiated message is rejected due to the Party ID (448) corresponding to the Party Role (452) of 76 (Trader Group) being invalid, the party block with the invalid Trader Group (76) will not be included in the Execution Report message which is used to communicate the rejection. In a scenario where the request is submitted with multiple party blocks, only the party block with the invalid Trader Group (76) will be dropped from the rejected Execution Report. The other party blocks will be included in the message.

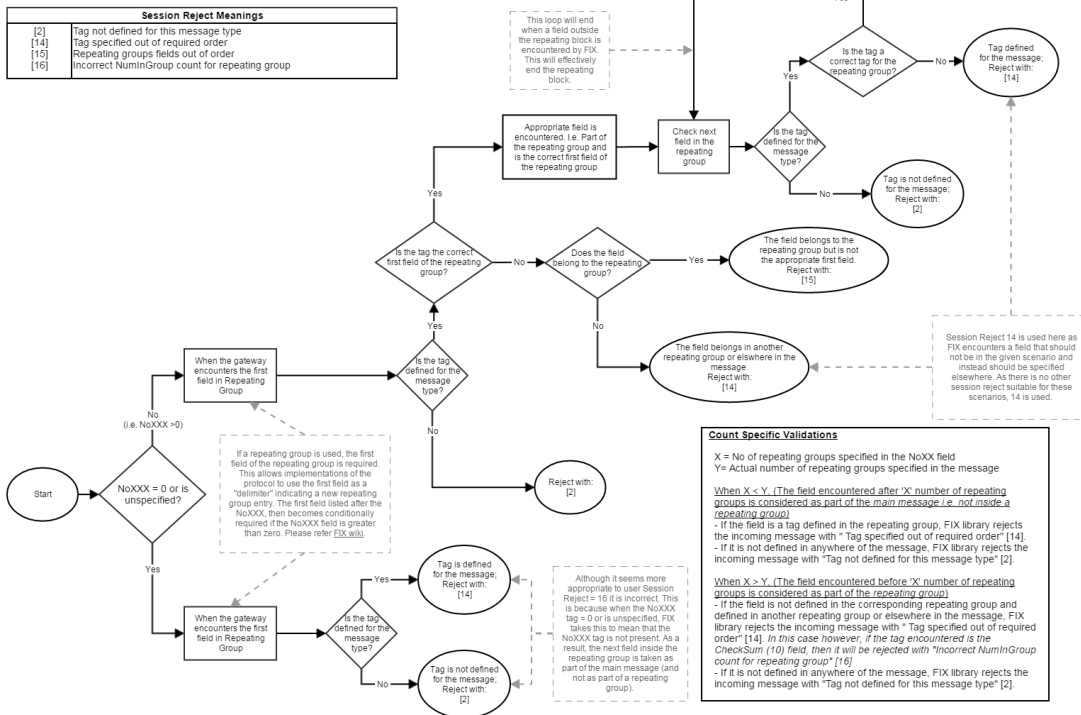
In case the client specifies duplicate repeating groups, only the last entry will be considered by the system. The server will not reject such messages.

## 2.8 Validations of FIX Gateways

- If a required tag is missing in a message sent by a client, the server will send a session reject message for that.
- If a conditionally required tag is missing in a message sent by a client, the server will send a business reject message for that.
- Server will also send a session reject message if the same FIX tag has been repeated within the client request. However, if a client initiated Logon message contains repeated tags; the server may not acknowledge the login request and will not send any reply.
- Also if an unsupported value is sent with a tag, an application reject message is sent by the server.
- Session level validations are done first, and business rejects and application rejects follow in that order.

## 2.9 Repeating Group Field Validations

- If a client sends a message with the NoXXX field equal to 0, the system will ignore the NoXXX field and validate the next field inside the repeating group (if specified) as part of the main message. That is, it will validate the next field as if the field is outside the repeating group. In such cases, the server would reject the message.
- If a client sends a message with the NoXXX field greater than 0, the system will validate the next field inside the repeating group. The next field must be the correct 'first' field of the repeating group. For example, if the NoPartyIDs = 1, then the next field must be PartyID. If this field is not the correct 'first' field inside the repeating group, the system will reject the message. If the 'first' field specified is correct, then the system will not validate the order of the remaining fields in the repeating group. Please refer the below diagram for details.



## 2.10 FIX Trading Gateway

In RFQ functionality, single message can be used in different scenarios as a server generated message as well as a client generated message. In each scenario where a specific message is used, if additional fields which are defined for the message, but not defined for the scenario are received, the system will ignore such fields and process the message. That means if a client specifies a field which is stamped by the server generated version of the message, the message will be accepted. However such fields will still be subjected to session layer validations such as data type and the length.

## 2.11 Functional and Implementation Limitations

### 1. Handling unsupported and undefined tags:

- If an unsupported tag or undefined tag is specified in the header or the body of an Administrative message, the system ignores this tag and process the rest of the message.
- If an unsupported header tag is specified in the header of an Application message, the system ignores this tag and process the rest of the message.
- If an unsupported body tag or an invalid tag is specified in the Application message header or body, the message is rejected with a Session Reject.

### 2. The maximum length supported by the system for the field PartyID (448) is 11. Thus, the value in the PartyID field will be truncated to length 11 prior to the "user" validation. For example, if the value of PartyRole(452) is 76 (Trader

Group), the system will accept the order if there is a corresponding trader group for the value in PartyID (448) field after the truncation. Otherwise, the order will be rejected with reject reason "Unknown user (OwnerID)"

3. When an Order Mass Status Request is rejected at its entirety, an Execution Report is generated but it does not carry a client order id as the rejection is not related to a specific order. Hence this is an exception to the fact that tag 11 is required in the Execution Report.

# 3 Connectivity

## 3.1 ComplIDs

The ComplID of each client must be registered with EuroTLX before FIX communications can begin. A single client may have multiple connections to the server (i.e. multiple FIX sessions, each with its own ComplID).

The ComplID of the server is FGW. The messages sent to the server should contain the ComplID assigned to the client in the field SenderComplID (49) and the Exchange ComplID in the field TargetComplID (56). The messages sent from the server to the client will contain the Exchange ComplID in the field SenderComplID (49) and the ComplID assigned to the client in the field TargetComplID (56).

### 3.1.1 Passwords

Each new ComplID will be assigned a password on registration. Clients are required to change the password to one of their choosing via the Logon message. The status of the new password (i.e. whether it is accepted or rejected) will be specified in the SessionStatus (1409) field of the Logon sent by the server to confirm the establishment of a FIX connection. The new password will, if accepted, be effective for subsequent logins.

In terms of the EuroTLX password policy, the initial password of each username must be changed at least once. If not, the client will be unable to login to the server. In such a case, the client should contact EuroTLX.

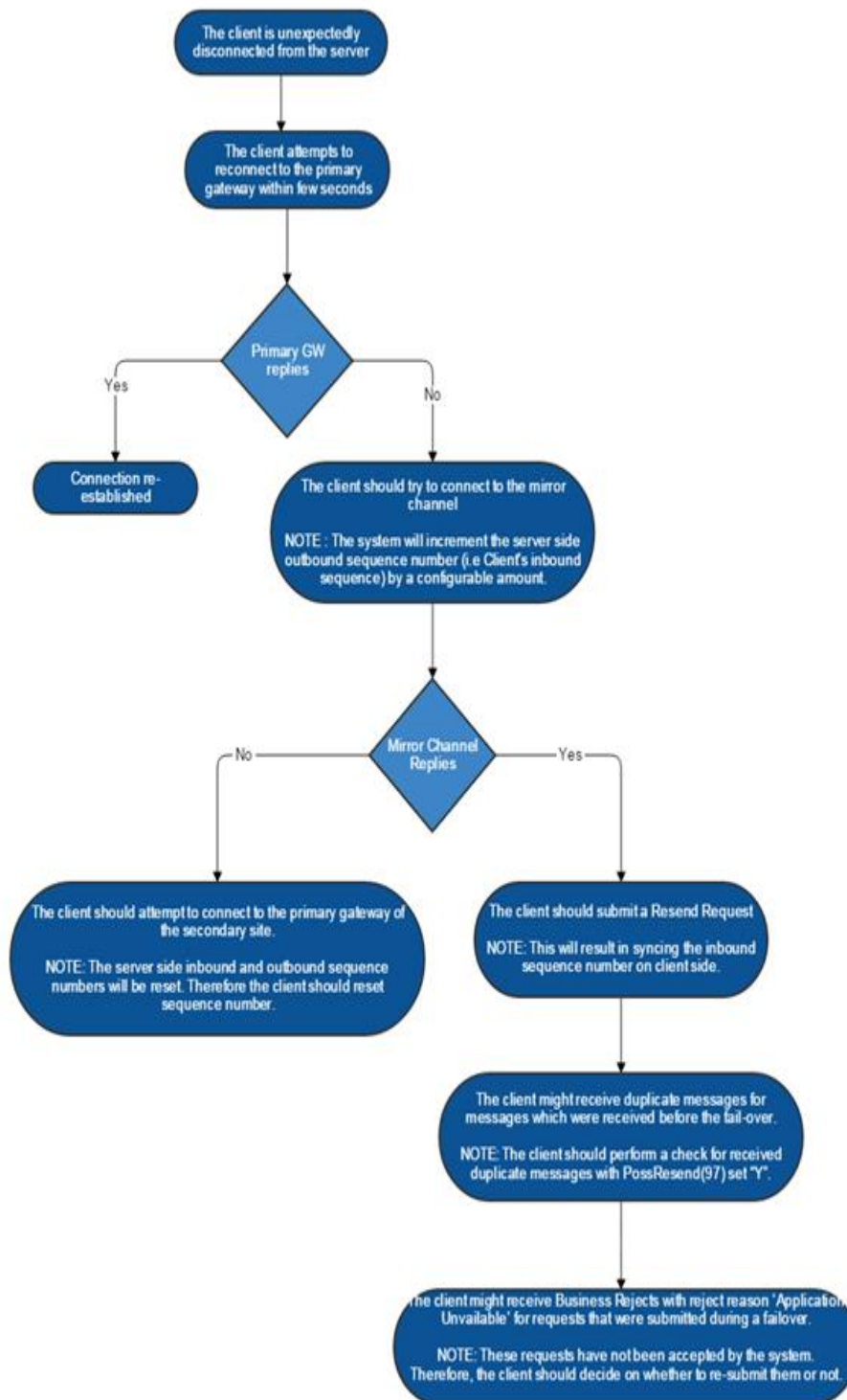
## 3.2 Production IP addresses and ports

The IP addresses and ports for the drop gateway will be published in a separate configuration document.

## 3.3 Failover and recovery

### Connection management after failovers

If the client is unexpectedly disconnected from the server, the client should attempt to re-connect to the primary gateway and follow the below procedure.



If there are messages to be sent to a user, and if the user has not logged in to the gateway within the trading day, the gateway will send all available messages upon login. This behavior is also exhibited on the first login to the secondary site gateway.



### 3.3.1 Slow Consumers

If a consumer is not consuming at all, the history channel subscription will be suspended with the exception for OOB (Own Order Book Download) requests. A slow consumer will be disconnected in the case of OOB requests.

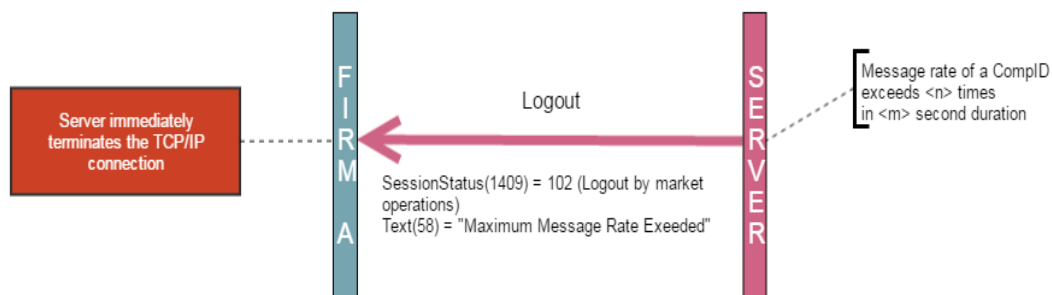
## 3.4 Message Rate Throttling

Message rate throttling is a scheme for throttling message traffic where each CompID is only permitted to submit up to a specified number of messages per second.

Additional information will be provided in a separate configuration document.

Every message that exceeds the maximum rate of a CompID will be rejected via a Business Message Reject. Such a message will include a BusinessRejectReason (380) of Other (0) and an indication that the rejection was due to throttling in the Text (58) field.

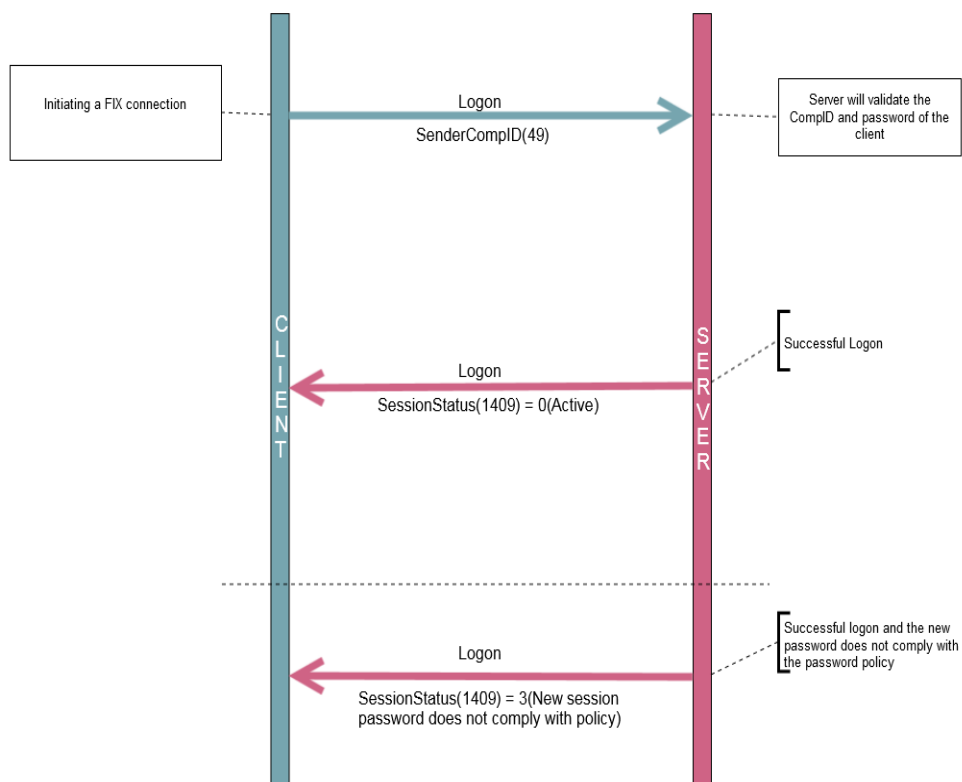
A CompID will be disconnected by the server if its message rate exceeds its maximum rate more than 5 times in any 30 second duration. In such a case, the server will transmit a Logout message. The Logout message will be sent with SessionStatus(1409) = 102 (Logout by market operations) and Text = "Maximum Message Rate Exceeded". After a considerable time (5 seconds) following the Logout message, the server will terminate the TCP/IP connection.



# 4 FIX connections and sessions

## 4.1 Establishing a FIX connection

Each client will use the assigned IP address and port to establish a TCP/IP session with the server.

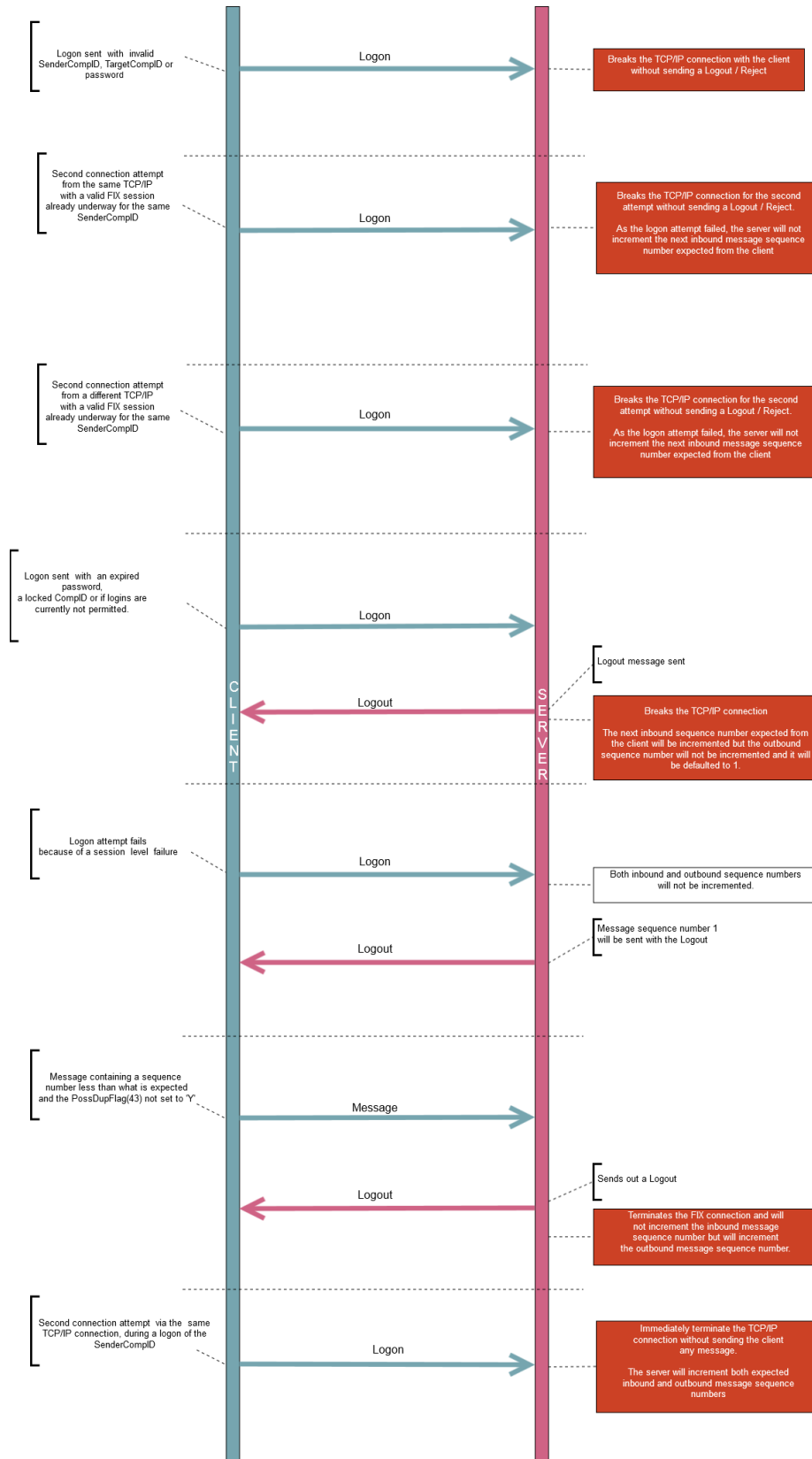


The server will break the TCP/IP connection if messages are received before the exchange of Logons.

When the client sends a logon with a sequence number higher than expected by the FIX Gateway, the FIX gateway will send a Resend Request. Once the response/s to the Resend Request is processed by the FIX Gateway, the FIX Gateway would send a Test Request to make sure both the client and server is in sync before sending out any missed or new application messages.

Once a response to the Logon message has been received, a client can start sending additional messages to the server. System will start sending the client any new or missed Application Messages immediately after the Logon Reply is sent.

## Logon failures and connection terminations



The outbound sequence number will be 1 only if ResetSeqNumFlag (141) is set to 'Y' in the Logon message sent by the client. If the ResetSeqNumFlag is set to 'N', there is no assurance that the MsgSeqNum(34) of the reply message to Logon will be 1.

### Rapid login/logouts

A protection mechanism has been implemented to protect the gateway from rapid login/logouts. Login/logouts happening within a period of 50 ms will be considered as a rapid login/logout. If a user reaches 100 number of rapid login/logouts within 600 seconds, any subsequent login/logouts will be delayed by a variable time period which is computed based on the number of rapid login/logouts. This will reset after 600 seconds given that the user does not perform any rapid login/logouts within this period.

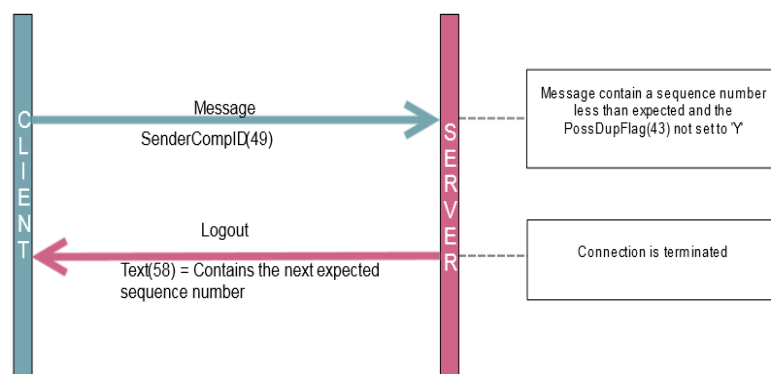
## 4.2 Maintaining a FIX session

A FIX session is maintained using Message Sequence Numbers and Heartbeat messages.

### 4.2.1 Message sequence numbers

As outlined in the FIXT protocol, the client and server will each maintain a separate and independent set of incoming and outgoing message sequence numbers. Sequence numbers should be initialized to 1 (one) at the start of the FIX session and be incremented throughout the session.

Monitoring sequence numbers will enable parties to identify and react to missed messages and to gracefully synchronize applications when reconnecting during a FIX session.



If the server receives a message that cannot be processed (malformed message) it will not respond to that message and will not increment the sequence number maintained. In such a scenario, when the next readable message is received by the server it will detect a sequence gap between the client and server. The server will send a Resend Request to the client requesting for messages from the sequence number the server is maintaining. If the client does not correct the malformed message to a readable one, the above event model will be repeated until there is no sequence gap.

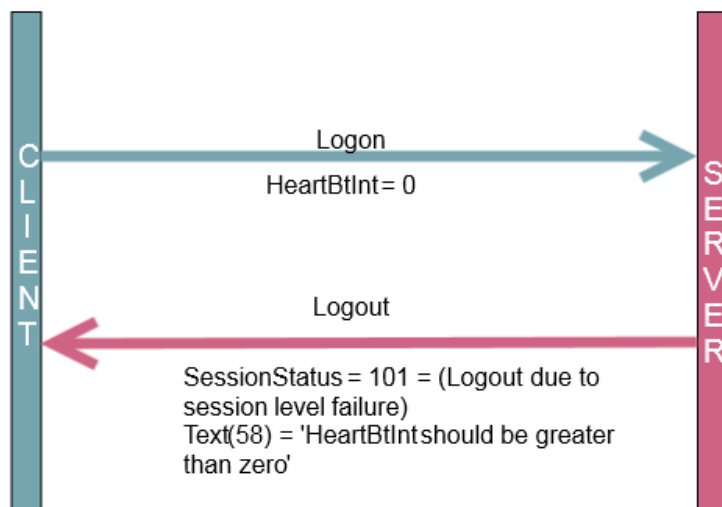
A FIX session will not continue to the next trading day. The server will initialize its sequence numbers at the start of each day. The client is expected to employ the same logic.

#### 4.2.2 Heartbeats

The client and server will use the Heartbeat message to exercise the communication line during periods of inactivity and to verify that the interfaces at each end are available. The heartbeat interval will be the HeartBtInt (108) specified in the client's Logon message.

The server will send a Heartbeat anytime it has not transmitted a message for the heartbeat interval. The client is expected to employ the same logic.

As a safety mechanism, the system will not allow the user to login if the HeartBtInt is set to 0. The following behaviour is expected if the server receives a Logon with the HeartBtInt set to 0.



If the server detects inactivity for a period longer than the heartbeat interval plus a reasonable transmission time (a total inactivity period of three heartbeat intervals), it will send a Test Request message to force a Heartbeat from the client. If a response to the Test Request is not received by a reasonable transmission time (three heartbeat intervals), the server will send a Logout and break the TCP/IP connection with the client.

For the server to reset the heartbeat missed count, the message received in response to the Test Request message should be a heartbeat message. However it's not obligatory for client's heartbeat message to have the same Test Request ID as the respective Test Request message. Even if the value is different or if the field does not contain a value, the heartbeat missed count will be reset.

The client is expected to employ similar logic if inactivity is detected on the part of the server.

### 4.2.3 Increasing expected sequence number

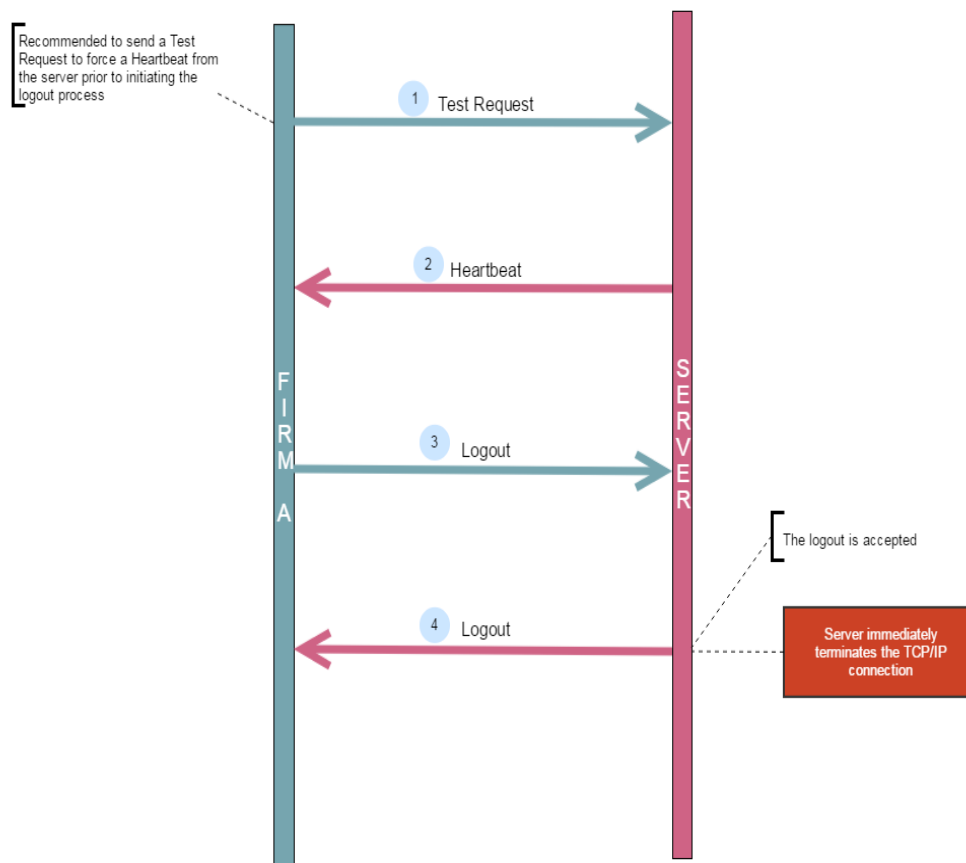
The client or server may use the Sequence Reset message in Gap Fill mode if it wishes to increase the expected incoming sequence number of the other party.

The client or server may also use the Sequence Reset message in Sequence Reset mode if it wishes to increase the expected incoming sequence number of the other party. The Sequence Reset mode should only be used to recover from an emergency situation. It should not be relied upon as a regular practice.

## 4.3 Terminating a FIX connection

The client is expected to terminate each FIX connection at the end of each trading day before the server shuts down. The client will terminate a connection by sending the Logout message. The server will respond with a Logout to confirm the termination. The client will then break the TCP/IP connection with the server.

As recommended in the FIXT protocol, clients are advised to transmit a *Test Request*, to force a *Heartbeat* from the server, before initiating the logout process.



All open TCP/IP connections will be terminated by the server when it shuts down (a Logout will be sent). Under exceptional circumstances the server may initiate the termination of a connection during the trading day by sending the Logout message.

If, during the exchange of Logout messages, the client or server detects a sequence gap, it should send a Resend Request.

## **4.4 Re-establishing a FIX session**

If a FIX connection is terminated during the trading day it may be re-established via an exchange of Logon messages. Once the FIX session is re-established, the message sequence numbers will continue from the last message successfully transmitted prior to the termination.

### **4.4.1.1 Reset initiated by the client**

If the client requires both parties to initialize (i.e. reset to 1) sequence numbers, it may use the ResetSeqNumFlag (141) field of the Logon message. The server will respond with a Logon with the ResetSeqNumFlag (141) field set to “Y” to confirm the initialization of sequence numbers. In such cases, if the MsgSeqNo (34) of the Logon message is not reset to 1, the server will break the TCP/IP connection after sending a Logout. It will include a SessionStatus (1409) of Logout due to session level failure (101) and an indication of the rejection in the Text (58) field.

A client may also manually inform EuroTLX that it would like the server to initialize its sequence numbers prior to the client’s next login attempt.

These features are intended to help a client manage an emergency situation. Initializing sequence numbers on a re-login should not be relied upon as a regular practice.

### **4.4.1.2 Reset initiated by the server**

The system has been designed with fault tolerance and disaster recovery technology that should ensure that the server retains its incoming and outgoing message sequence numbers for each client in the unlikely event of an outage.

However, clients are required to support a manual request by EuroTLX to initialize sequence numbers prior to the next login attempt.

# 5 Recovery

## 5.1 Resend requests

The client may use the Resend Request message to recover any lost messages. As outlined in the FIXT protocol, this message may be used in one of three modes:

- (i) To request a single message. The BeginSeqNo (7) and EndSeqNo (16) should be the same.
- (ii) To request a specific range of messages. The BeginSeqNo (7) should be the first message of the range and the EndSeqNo (16) should be the last of the range.
- (iii) To request all messages after a particular message. The BeginSeqNo (7) should be the sequence number immediately after that of the last processed message and the EndSeqNo (16) should be zero (0).

The server caches a maximum number of messages transmitted to the client. Clients are unable to use a Resend Request to recover messages not in the server's cache (cache size will be confirmed at a later date). If the client requests for a range of messages that have sequence numbers falling outside the cache size, a Sequence Reset message in Gap Fill mode will be sent for the missing messages and will send the available messages as per the request after that.

## 5.2 Possible duplicates

The server handles possible duplicates according to the FIX protocol. The client and server will use the PossDupFlag (43) field to indicate that a message may have been previously transmitted with the same MsgSeqNum (34).

## 5.3 Possible resends

### 5.3.1 Client-initiated messages

The server does not handle possible resends for the client-initiated messages (e.g. New Order – Single, Quote, etc.) and ignores the value in the PossResend (97) field of such messages.

### 5.3.2 Server-initiated messages

The server may, in the circumstances outlined in [Sections 5.4](#), use the PossResend (97) field to indicate that an application message may have already been sent under a different MsgSeqNum (34). The client should validate the contents (e.g. ExecID) of such a message against those of messages already received during the current trading day to determine whether the new message should be ignored or processed.



## **5.4 Transmission of missed messages**

The Execution Reports generated during a period when a client is disconnected from the server will be sent to the client when it next reconnects. In the unlikely event the disconnection was due to an outage of the server, all such messages will include a PossResend (97) of "Y".

If a client is disconnected while an Open Order Download request submitted by the client is being processed by the server, requested Execution Reports will not be transmitted to the client when it next reconnects. In such situations the client is expected send the Open Order Download request to the server once the connection is re-established.

## **5.5 Resending previous execution reports**

A client may manually inform the Service Desk that it would like the server to resend all of the Execution Reports generated during the current trading day that it is eligible to receive when it next logs in. All resent Execution Reports will include a PossResend (97) of "Y".

This feature is intended to help a client manage an emergency situation and it should not be relied upon as a regular practice.

# 6 Message formats

This section provides details on the header and trailer, the seven administrative messages and two application messages utilized by the server. Any message not included in this section will be ignored by the server. Client-initiated messages not included in this section are rejected by the server via a Reject or Business Message Reject. All fields are encoded using printable ASCII.

Customers have to ensure that all “string” fields, for client-initiated messages, contain only ASCII characters from 32 to 126 Decimals included

## 6.1 Supported message types

### 6.1.1 Administrative messages

All administrative messages may be initiated by either the client or the server.

Message	MsgType	Usage
<a href="#">Logon</a>	A	Allows the client and server to establish a FIX session.
<a href="#">Logout</a>	5	Allows the client and server to terminate a FIX session.
<a href="#">Heartbeat</a>	0	Allows the client and server to exercise the communication line during periods of inactivity and verify that the interfaces at each end are available.
<a href="#">Test Request</a>	1	Allows the client or server to request a response from the other party if inactivity is detected.
<a href="#">Resend Request</a>	2	Allows for the recovery of messages lost during a malfunction of the communications layers.
<a href="#">Reject</a>	3	Used to reject a message that does not comply with FIXT.
<a href="#">Sequence Reset</a>	4	Allows the client or server to increase the expected incoming sequence number of the other party.

### 6.1.2 Application messages

#### 6.1.2.1 Client-initiated

Message	MsgType	Usage
<a href="#">Order Mass Status Request</a>	AF	Allows the client to request the status of all active orders for a particular Trader Group.

### 6.1.2.2 Server-Initiated

Message	MsgType	Usage
<a href="#">Execution Report</a>	8	Indicates one of the following: (i) Order or RFQ quote accepted (ii) Order or RFQ quote rejected (iii) Order or quote/RFQ quote executed (iv) Order or RFQ quote expired (v) Order or RFQ quote cancelled (vi) Order or quote cancel/replaced (vii) Trade cancellation (viii) Order status (ix) Order mass status request rejected
Business Message Reject	j	Indicates that an application message could not be processed.

## 6.2 Message header and trailer

### 6.2.1 Message header

Tag	Field Name	Req	Description
8	BeginString	Y	FIXT.1.1
9	BodyLength	Y	Number of characters after this field up to and including the delimiter immediately preceding the CheckSum.
35	MsgType	Y	Message type.
49	SenderCompID	Y	CompID of the party sending the message.
56	TargetCompID	Y	CompID of the party the message is sent to.
115	OnBehalfOf CompID	N	Required for server-initiated application messages. This will be the CompID of the connection that originated the order referenced in the message being drop copied.
34	MsgSeqNum	Y	Sequence number of the message.

43	PossDupFlag	N	<p>Whether the message was previously transmitted under the same MsgSeqNum (34). Absence of this field is interpreted as Original Transmission (N).</p> <table border="1"> <thead> <tr> <th>Value</th> <th>Meaning</th> </tr> </thead> <tbody> <tr> <td>Y</td> <td>Possible Duplicate</td> </tr> <tr> <td>N</td> <td>Original Transmission</td> </tr> </tbody> </table>	Value	Meaning	Y	Possible Duplicate	N	Original Transmission
Value	Meaning								
Y	Possible Duplicate								
N	Original Transmission								
97	PossResend	N	<p>Whether the message was previously transmitted under a different MsgSeqNum (34). Absence of this field is interpreted as Original Transmission (N).</p> <table border="1"> <thead> <tr> <th>Value</th> <th>Meaning</th> </tr> </thead> <tbody> <tr> <td>Y</td> <td>Possible Resend</td> </tr> <tr> <td>N</td> <td>Original Transmission</td> </tr> </tbody> </table>	Value	Meaning	Y	Possible Resend	N	Original Transmission
Value	Meaning								
Y	Possible Resend								
N	Original Transmission								
52	SendingTime	N	Time the message was transmitted. Not required for incoming messages sent by the clients (even if sent by a client, no validation will be done).						
122	OrigSendingTime	N	Time the message was originally transmitted. If the original time is not available, this should be the same value as SendingTime (52). Required if PossDupFlag (43) is Possible Duplicate (Y).						
1128	AppVerID	N	<p>Version of FIX used in the message. Required if the message is generated by the server.</p> <table border="1"> <thead> <tr> <th>Value</th> <th>Meaning</th> </tr> </thead> <tbody> <tr> <td>9</td> <td>FIX50SP2</td> </tr> </tbody> </table>	Value	Meaning	9	FIX50SP2		
Value	Meaning								
9	FIX50SP2								
128	DeliverToCompID	N	The value specified in the OnBehalfOfCompID(115) field. This will only be used in server initiated messages.						

### 6.2.2 Message trailer

Tag	Field Name	Req	Description
10	Checksum	Y	

## 6.3 Administrative messages

### 6.3.1 Logon

Tag	Field Name	Req	Description								
<b>Standard Header</b>											
35	MsgType	Y	A = Logon								
<b>Message Body</b>											
98	EncryptMethod	Y	Method of encryption. <table border="1"> <thead> <tr> <th>Value</th> <th>Meaning</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>None</td> </tr> </tbody> </table>	Value	Meaning	0	None				
Value	Meaning										
0	None										
108	HeartBtInt	Y	Indicates the heartbeat interval in seconds.								
141	ResetSeqNum Flag	N	Indicates whether the client and server should reset sequence numbers. Absence of this field is interpreted as Do Not Reset Sequence Numbers (N). <table border="1"> <thead> <tr> <th>Value</th> <th>Meaning</th> </tr> </thead> <tbody> <tr> <td>Y</td> <td>Reset Sequence Numbers</td> </tr> <tr> <td>N</td> <td>Do Not Reset Sequence Numbers</td> </tr> </tbody> </table>	Value	Meaning	Y	Reset Sequence Numbers	N	Do Not Reset Sequence Numbers		
Value	Meaning										
Y	Reset Sequence Numbers										
N	Do Not Reset Sequence Numbers										
554	Password	N	Password assigned to the CompID. Required if the message is generated by the client. Maximum password length is 20 characters								
925	NewPassword	N	New password for the CompID. Maximum password length is 20 characters								
1409	SessionStatus	N	Status of the FIX session or the request to change the password. Required if the message is generated by the server. <table border="1"> <thead> <tr> <th>Value</th> <th>Meaning</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>Session Active</td> </tr> <tr> <td>2</td> <td>Password Due to Expire</td> </tr> <tr> <td>3</td> <td>New session password does not comply with policy</td> </tr> </tbody> </table>	Value	Meaning	0	Session Active	2	Password Due to Expire	3	New session password does not comply with policy
Value	Meaning										
0	Session Active										
2	Password Due to Expire										
3	New session password does not comply with policy										

1137	DefaultAppVerID	Y	Default version of FIX messages used in this session. This will be validated by the server.				
			<table border="1"> <thead> <tr> <th>Value</th> <th>Meaning</th> </tr> </thead> <tbody> <tr> <td>9</td> <td>FIX50SP2</td> </tr> </tbody> </table>	Value	Meaning	9	FIX50SP2
Value	Meaning						
9	FIX50SP2						
<b>Standard Trailer</b>							

### 6.3.2 Logout

Tag	Field Name	Req	Description																				
<b>Standard Header</b>																							
35	MsgType	Y	5 = Logout																				
<b>Message Body</b>																							
1409	SessionStatus	N	Status of the FIX session. Required if the message is generated by the server.																				
			<table border="1"> <thead> <tr> <th>Value</th> <th>Meaning</th> </tr> </thead> <tbody> <tr> <td>3</td> <td>New session password does not comply with policy</td> </tr> <tr> <td>4</td> <td>Session logout complete</td> </tr> <tr> <td>6</td> <td>Account locked</td> </tr> <tr> <td>7</td> <td>Logons are not allowed at this time</td> </tr> <tr> <td>8</td> <td>Password expired</td> </tr> <tr> <td>100</td> <td>Other</td> </tr> <tr> <td>101</td> <td>Logout due to session level failure</td> </tr> <tr> <td>102</td> <td>Logout by market supervision</td> </tr> <tr> <td>104</td> <td>Application not available</td> </tr> </tbody> </table>	Value	Meaning	3	New session password does not comply with policy	4	Session logout complete	6	Account locked	7	Logons are not allowed at this time	8	Password expired	100	Other	101	Logout due to session level failure	102	Logout by market supervision	104	Application not available
Value	Meaning																						
3	New session password does not comply with policy																						
4	Session logout complete																						
6	Account locked																						
7	Logons are not allowed at this time																						
8	Password expired																						
100	Other																						
101	Logout due to session level failure																						
102	Logout by market supervision																						
104	Application not available																						
58	Text	N	The field will contain the next expected sequence number if the server terminated the connection after receiving a sequence number that was less than what was expected. In other cases the field will contain the reason for the logout.																				
<b>Standard Trailer</b>																							

### 6.3.3 Heartbeat

Tag	Field Name	Req	Description
<b>Standard Header</b>			
35	MsgType	Y	0 = Heartbeat
<b>Message Body</b>			
112	TestReqID	N	Required if the heartbeat is a response to a Test Request. The value in this field should echo the TestReqID (112) received in the Test Request.
<b>Standard Trailer</b>			

### 6.3.4 Test request

Tag	Field Name	Req	Description
<b>Standard Header</b>			
35	MsgType	Y	1 = Test Request
<b>Message Body</b>			
112	TestReqID	Y	Identifier for the request.
<b>Standard Trailer</b>			

### 6.3.5 Resend request

Tag	Field Name	Req	Description
<b>Standard Header</b>			
35	MsgType	Y	2 = Resend Request
<b>Message Body</b>			
7	BeginSeqNo	Y	Sequence number of first message in range.
16	EndSeqNo	Y	Sequence number of last message in range.
<b>Standard Trailer</b>			

### 6.3.6 Reject

Tag	Field Name	Req	Description
<b>Standard Header</b>			

35	MsgType	Y	3 = Reject																														
<b>Message Body</b>																																	
45	RefSeqNum	Y	MsgSeqNum (34) of the rejected message.																														
372	RefMsgType	N	MsgType (35) of the rejected message.																														
371	RefTagID	N	If a message is rejected due to an issue with a particular field its tag number will be indicated.																														
373	SessionReject Reason	N	Code specifying the reason for the reject <table border="1" data-bbox="662 638 1292 1467"> <thead> <tr> <th>Session Reject Reason</th> <th>Meaning</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Required tag missing</td> </tr> <tr> <td>2</td> <td>Tag not defined for this message type</td> </tr> <tr> <td>4</td> <td>Tag specified without a value</td> </tr> <tr> <td>5</td> <td>Value is incorrect (out of range) for this tag</td> </tr> <tr> <td>6</td> <td>Incorrect data format for value</td> </tr> <tr> <td>9</td> <td>CompID problem</td> </tr> <tr> <td>10</td> <td>SendingTime accuracy problem</td> </tr> <tr> <td>11</td> <td>Invalid MsgType</td> </tr> <tr> <td>13</td> <td>Tag appears more than once</td> </tr> <tr> <td>14</td> <td>Tag specified out of required order</td> </tr> <tr> <td>15</td> <td>Repeating group fields out of order</td> </tr> <tr> <td>16</td> <td>Incorrect NumInGroup count for repeating group</td> </tr> <tr> <td>18</td> <td>Invalid or unsupported application version</td> </tr> <tr> <td>99</td> <td>Other</td> </tr> </tbody> </table>	Session Reject Reason	Meaning	1	Required tag missing	2	Tag not defined for this message type	4	Tag specified without a value	5	Value is incorrect (out of range) for this tag	6	Incorrect data format for value	9	CompID problem	10	SendingTime accuracy problem	11	Invalid MsgType	13	Tag appears more than once	14	Tag specified out of required order	15	Repeating group fields out of order	16	Incorrect NumInGroup count for repeating group	18	Invalid or unsupported application version	99	Other
Session Reject Reason	Meaning																																
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16	Incorrect NumInGroup count for repeating group																																
18	Invalid or unsupported application version																																
99	Other																																
58	Text	N	Text specifying the reason for the rejection.																														
<b>Standard Trailer</b>																																	

### 6.3.7 Sequence reset

Tag	Field Name	Req	Description
<b>Standard Header</b>			
35	MsgType	Y	4 = Sequence Reset
<b>Message Body</b>			
36	NewSeqNo	Y	Sequence number of the next message to be transmitted.



123	GapFillFlag	N	<p>Mode in which the message is being used. Absence of this field is interpreted as Sequence Reset (N).</p> <table border="1" data-bbox="662 421 1232 577"> <thead> <tr> <th data-bbox="662 421 770 472">Value</th> <th data-bbox="770 421 1232 472">Meaning</th> </tr> </thead> <tbody> <tr> <td data-bbox="662 472 770 524">Y</td> <td data-bbox="770 472 1232 524">Gap Fill</td> </tr> <tr> <td data-bbox="662 524 770 577">N</td> <td data-bbox="770 524 1232 577">Sequence Reset</td> </tr> </tbody> </table>	Value	Meaning	Y	Gap Fill	N	Sequence Reset
Value	Meaning								
Y	Gap Fill								
N	Sequence Reset								
<b>Standard Trailer</b>									

## 6.4 Application messages (client-initiated)

### 6.4.1 Order mass status request

Tag	Field Name	Req	Description								
<b>Standard Header</b>											
35	MsgType	Y	AF = Order Mass Status Request								
<b>Message Body</b>											
584	MassStatusReqID	Y	Client specified identifier of the mass status request.								
585	MassStatusReqType	Y	Type of mass status request. <table border="1"> <thead> <tr> <th>Value</th> <th>Meaning</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>All open orders for a specified security</td> </tr> <tr> <td>8</td> <td>All open orders of specified PartyID</td> </tr> <tr> <td>100</td> <td>All open orders for a specified segment</td> </tr> </tbody> </table>	Value	Meaning	1	All open orders for a specified security	8	All open orders of specified PartyID	100	All open orders for a specified segment
Value	Meaning										
1	All open orders for a specified security										
8	All open orders of specified PartyID										
100	All open orders for a specified segment										
48	SecurityID	N	Identifier of the instrument the order mass status is requested for. Required if MassStatus ReqType (585) is '1'								
22	SecurityIDSource	N	Identifier of the source of the SecurityID (48) value. <table border="1"> <thead> <tr> <th>Value</th> <th>Meaning</th> </tr> </thead> <tbody> <tr> <td>8</td> <td>Exchange Symbol</td> </tr> </tbody> </table>	Value	Meaning	8	Exchange Symbol				
Value	Meaning										
8	Exchange Symbol										
1300	MarketSegmentID	N	Identifier of the segment the order mass status is requested for. Required if MassStatus ReqType (585) is '100'								
453	NoPartyIDs	Y	Number of party identifiers. The value in this field can be "1"								
➔	448	PartyID	Y	Identifier of the Trader Group.							

➔	447	PartyID Source	Y	<table border="1"> <tr> <th>Value</th> <th>Meaning</th> </tr> <tr> <td>D</td> <td>Proprietary/Custom Code</td> </tr> </table>	Value	Meaning	D	Proprietary/Custom Code
Value	Meaning							
D	Proprietary/Custom Code							
➔	452	Party Role	Y	<p>Role of the PartyID (448).</p> <table border="1"> <tr> <th>Value</th> <th>Meaning</th> </tr> <tr> <td>76</td> <td>Trader Group</td> </tr> </table>	Value	Meaning	76	Trader Group
Value	Meaning							
76	Trader Group							
<b>Standard Trailer</b>								

## 6.5 Application messages (server-initiated)

### 6.5.1 Execution report

Tag	Field Name	Req	Description
<b>Standard Header</b>			
35	MsgType	Y	8 = Execution Report
<b>Message Body</b>			
1180	ApplID	Y	Identity of the partition that generated the message.
17	ExecID	Y	Server specified identifier of the message. This will be a base 62 encoded value in ASCII format. Will be "0" if ExecType (150) is Order Status (I).
11	ClOrdID	Y	Client specified identifier of the order.
41	OrigClOrdID	N	OrigClOrdID (41), if any that was submitted with the order cancel or cancel/replace request. Will be filled with the actual original client order ID of the order irrespective of the fact whether OrigClOrdID was specified (valid or invalid value) or not in the order cancel or cancel/replace request. Note that if the order cancel or cancel/replace was unsolicited, this field will not be stamped.
37	OrderID	Y	Server specified identifier of the order with 11 characters. This will be a base 62 encoded value in ASCII format.

584	MassStatus ReqID	N	Client specified identifier of the Order Mass Status Request. Required is the message in sent in response to such a request.																						
912	LastRpt Requested	N	Indicates the last message sent in response to a mass order status request. This will be set for the last message sent for each partition.																						
			<table border="1"> <thead> <tr> <th>Value</th> <th>Meaning</th> </tr> </thead> <tbody> <tr> <td>Y</td> <td>Last Message</td> </tr> </tbody> </table>	Value	Meaning	Y	Last Message																		
Value	Meaning																								
Y	Last Message																								
150	ExecType	Y	Reason the execution report was generated.																						
			<table border="1"> <thead> <tr> <th>Value</th> <th>Meaning</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>New</td> </tr> <tr> <td>4</td> <td>Cancelled</td> </tr> <tr> <td>5</td> <td>Replaced</td> </tr> <tr> <td>8</td> <td>Rejected</td> </tr> <tr> <td>C</td> <td>Expired</td> </tr> <tr> <td>D</td> <td>Restated</td> </tr> <tr> <td>F</td> <td>Trade</td> </tr> <tr> <td>H</td> <td>Trade Cancel</td> </tr> <tr> <td>I</td> <td>Order Status</td> </tr> <tr> <td>G</td> <td>Trade Correct</td> </tr> </tbody> </table>	Value	Meaning	0	New	4	Cancelled	5	Replaced	8	Rejected	C	Expired	D	Restated	F	Trade	H	Trade Cancel	I	Order Status	G	Trade Correct
Value	Meaning																								
0	New																								
4	Cancelled																								
5	Replaced																								
8	Rejected																								
C	Expired																								
D	Restated																								
F	Trade																								
H	Trade Cancel																								
I	Order Status																								
G	Trade Correct																								
880	TrdMatchID	N	Identifier of the trade. This will be a 62 base encoded value in ASCII format. Since the MITCH trade ID will be disseminated in binary format via the MITCH gateway, this Base 36 value needs to be converted to the binary format to compare against it. Required if ExecType (150) is Trade (F), Trade Correct (G) or Trade Cancel (H).																						
19	ExecRefID	N	Reference to the execution being cancelled. Required if ExecType (150) is Trade Cancel (H) or Trade Correct (G).																						

378	Exec Restatement Reason	N	Reason the order was restated. Required if ExecType (150) is Restated (D) or if the execution report is sent for an unsolicited cancellation	
			<b>Value</b>	<b>Meaning</b>
			8	Market Option
			5	Partial decline of OrderQty
39	OrdStatus	Y	Current status of the order.	
			<b>Value</b>	<b>Meaning</b>
			0	New
			1	Partially Filled
			2	Filled
			4	Cancelled
			8	Rejected
C	Expired			
103	OrdRejReason	N	Code specifying the reason for the reject. Populated always if ExecType (150) is Rejected (8) and in certain cases for expirations (ExecType = C).	
			<b>OrdRej Reason</b>	<b>Meaning</b>
			2	Exchange closed
			5	Unknown order
			6	Duplicate order (ie. Duplicate ClOrdID)
			16	Price exceeds current price band
			18	Invalid price increment
1904	Invalid Order Capacity			
58	Text	N	Text specifying the reason for the rejection, cancellation or expiration	
32	LastQty	N	Quantity executed in this fill. Required if ExecType (150) is Trade (F) or Trade Correct (G).	

31	LastPx	N	Price of this fill. Required if ExecType (150) is Trade (F) or Trade Correct (G). Will not be populated if Exec Type (150) is Restated (D).	
669	LastParPx	N	Price of this fill expressed in price units. Optionally computed if LastPx(31) is specified and the trade is for a fixed income instrument quoted on discount rate or yield.	
30005	ConvertedYield	N	Converted yield value of an order's limit price. If computed, it will be on the Price (44) of an order belonging to a fixed income instrument quoted on percentage-of-par (i.e. on price).	
32021	ParPx	N	Converted clean price of an order's limit price. If computed, it will be on the Price (44) of an order belonging to a fixed income instrument quoted on discount rate or yield.	
236	Yield	N	Implied yield of this Optionally computed if LastPx (31) is specified and the trade is for a fixed income instrument quoted on price.	
151	LeavesQty	Y	Quantity available for further execution. Will be "0" when the order moves to a terminal state.	
14	CumQty	Y	Total cumulative quantity filled. Will always be "0" in the case of a quote.	
48	SecurityID	Y	Identifier of the instrument.	
22	SecurityIDSource	Y	Identifier of the source of the SecurityID (48) value.	
			<b>Value</b>	<b>Meaning</b>
			8	Exchange Symbol
453	NoPartyIDs	Y	Number of party identifiers. The value in this field can be "4" or "5" or "6".	

➔	448	PartyID	Y	<p>Identifier of the party. This could contain a value stated below or a code/identifier (i.e. 4 - 4294967295) provided by the user depending on the value specified in the Party Role (452) field.</p> <table border="1"> <thead> <tr> <th>Value</th> <th>Meaning</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>None</td> </tr> <tr> <td>1</td> <td>AGGR</td> </tr> <tr> <td>2</td> <td>PNAL</td> </tr> <tr> <td>3</td> <td>CLIENT</td> </tr> </tbody> </table>	Value	Meaning	0	None	1	AGGR	2	PNAL	3	CLIENT				
Value	Meaning																	
0	None																	
1	AGGR																	
2	PNAL																	
3	CLIENT																	
➔	447	PartyID Source	Y	<table border="1"> <thead> <tr> <th>Value</th> <th>Meaning</th> </tr> </thead> <tbody> <tr> <td>D</td> <td>Proprietary/Custom Code</td> </tr> <tr> <td>P</td> <td>Short Code</td> </tr> </tbody> </table>	Value	Meaning	D	Proprietary/Custom Code	P	Short Code								
Value	Meaning																	
D	Proprietary/Custom Code																	
P	Short Code																	
➔	452	Party Role	Y	<p>Role of the PartyID (448). It is mandatory to have Party Role Trader Group (76), Client ID (3) Investor ID (122) and Executing Trader (12). Counterparty Firm (17) will only be populated if Exec Type (150) is set to any of the following values:</p> <ul style="list-style-type: none"> <li>Trade (F), Trade Cancel (H) or Trade Correct (G) for any order .</li> </ul> <p>If a trade is cleared, the Counterparty Firm (17) will be populated with CCP</p> <table border="1"> <thead> <tr> <th>Value</th> <th>Meaning</th> </tr> </thead> <tbody> <tr> <td>100</td> <td>Trader ID</td> </tr> <tr> <td>17</td> <td>Counterparty Firm</td> </tr> <tr> <td>76</td> <td>Trader Group</td> </tr> <tr> <td>3</td> <td>Client ID</td> </tr> <tr> <td>122</td> <td>Investment Decision Maker</td> </tr> <tr> <td>12</td> <td>Executing Trader</td> </tr> </tbody> </table>	Value	Meaning	100	Trader ID	17	Counterparty Firm	76	Trader Group	3	Client ID	122	Investment Decision Maker	12	Executing Trader
Value	Meaning																	
100	Trader ID																	
17	Counterparty Firm																	
76	Trader Group																	
3	Client ID																	
122	Investment Decision Maker																	
12	Executing Trader																	

➔	2376	PartyRole Qualifier	N	<p>Provides a further qualification for the value specified in the Party Role (452)</p> <p>Mandatory if Party Role (452) is set to 3, 12 or 122 when the PartyID is a short code (i.e. 4-4294967295)</p> <table border="1"> <thead> <tr> <th>Value</th> <th>Meaning</th> </tr> </thead> <tbody> <tr> <td>22</td> <td>Algorithm</td> </tr> <tr> <td>23</td> <td>Firm or Legal Entity</td> </tr> <tr> <td>24</td> <td>Natural Person</td> </tr> </tbody> </table>	Value	Meaning	22	Algorithm	23	Firm or Legal Entity	24	Natural Person
Value	Meaning											
22	Algorithm											
23	Firm or Legal Entity											
24	Natural Person											
1	Account		N	Client reference information.								
40	OrdType		Y	Value submitted with the order.								
59	TimeInForce		N	Value submitted with the order								
54	Side		Y	Value submitted with the order.								
38	OrderQty		Y	<p>Value submitted with the order.</p> <p>For quotes, the quantity may not always be set to the bid or offer size submitted with the last quote.</p> <p>Refer the <a href="#">appendix f</a> for further details</p>								
1138	DisplayQty		N	Quantity currently displayed in the order book.								
1084	DisplayMethod		N	<p>Whether the order is a reserve order.</p> <table border="1"> <thead> <tr> <th>Value</th> <th>Meaning</th> </tr> </thead> <tbody> <tr> <td>4</td> <td>Undisclosed (Reserve Order)</td> </tr> </tbody> </table>	Value	Meaning	4	Undisclosed (Reserve Order)				
Value	Meaning											
4	Undisclosed (Reserve Order)											
110	MinQty		N	If a value is specified it should be ignored.								
44	Price		N	Value submitted with the order.								
1091	PreTrade Anonymity		N	<p>Value submitted with the order.</p> <p>Absence of this field is interpreted as Anonymous (Y).</p>								
581	AccountType		N	<p>Type of account associated with the order.</p> <table border="1"> <thead> <tr> <th>Value</th> <th>Meaning</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Client</td> </tr> <tr> <td>3</td> <td>House</td> </tr> </tbody> </table>	Value	Meaning	1	Client	3	House		
Value	Meaning											
1	Client											
3	House											



528	OrderCapacity	Y	Capacity of the order.	
			<b>Value</b>	<b>Meaning</b>
			A	Any other trading capacity (AOTC) - Agency
			P	Dealing on own account (DEAL) - Principal
			G	Dealing on own account (DEAL) - Proprietary
			R	Matched Principal (MTCH)
U	Dealing on own account (DEAL) – Unmatched Principal			
60	TransactTime	Y	Time the transaction represented by the Execution Report occurred.	
526	SecondaryCLOrdID	N	Value submitted with the order.	
583	CLOrdLinkID	N	Value submitted with the order.	
9730	TradeLiquidityIndicator	N	Whether the order added or removed liquidity. Required if Exec Type (150) is set to Trade (F) or Trade Cancel (H). For other Exec Types, the value in this field should be ignored. This field will not be populated for RFQ trades. Possible values are:	
			<b>Value</b>	<b>Meaning</b>
			A	Added Liquidity
			R	Removed Liquidity
30004	OrderSource	N	Value submitted with the order.	
6	AvgPx	N	Average price of all fills for an order. Will be updated for trade cancels as well.	
18	Execlnst	N	Value submitted with the order. If not defined on new order message, will be the default applied according to order's owner's user setup.	

30001	OrderBook		Y	Value	Meaning
				1	Regular
				11	RFQ Trades (Not applicable to orders)
278	MDEntryID		Y	Public Order ID	
20000	TypeOfTrade		N	<p>Indicates whether the executed portion is visible or hidden. Required only if ExecType (150) = F - Trade.</p> <p>Value / Meaning</p> <p>0 Visible</p> <p>1 Hidden</p> <p>2 Not specified (ie. Ignore this field)</p>	
30006	RFQID		N	Server specified identifier of a private RFQ.	
694	QuoteRespType		N	<b>Value</b>	<b>Meaning</b>
				3	Expired
				11	Cancelled (This value is only populated when the RFQ quotes are mass cancelled.)
2668	NoTrdRegPublications		N	The number of regulatory publication rules in the repeating group.	
➔	2669	TrdRegPublicationType	N	Specifies the type of regulatory trade publication.	
				<b>Value</b>	<b>Meaning</b>
				0	Pre-trade transparency waiver

➔	2670	TrdRegPublicationReason	N	Additional reason for trade publication type specified in TrdRegPublicationType(2669). Reasons may be specific to regulatory trade publication rules. This field will be populated when ExecType is F and H.						
				<table border="1"> <thead> <tr> <th>Value</th> <th>Meaning</th> </tr> </thead> <tbody> <tr> <td>4</td> <td>Pre-trade ILQD (only valid in the quote ER)</td> </tr> <tr> <td>5</td> <td>Pre-trade SIZE (only valid in the quote ER)</td> </tr> </tbody> </table>	Value	Meaning	4	Pre-trade ILQD (only valid in the quote ER)	5	Pre-trade SIZE (only valid in the quote ER)
Value	Meaning									
4	Pre-trade ILQD (only valid in the quote ER)									
5	Pre-trade SIZE (only valid in the quote ER)									
2593	NoOrderAttributes		N	No of Order Attributes						
➔	2594	OrderAttributeType	N	Indicates if the order was generated via an algorithm.						
				<table border="1"> <thead> <tr> <th>Value</th> <th>Meaning</th> </tr> </thead> <tbody> <tr> <td>4</td> <td>Algorithm</td> </tr> <tr> <td>2</td> <td>Reserved</td> </tr> </tbody> </table>	Value	Meaning	4	Algorithm	2	Reserved
Value	Meaning									
4	Algorithm									
2	Reserved									
➔	2595	OrderAttributeValue	N	Mandatory if OrderAttributeType (2594) is specified						
				<table border="1"> <thead> <tr> <th>Value</th> <th>Meaning</th> </tr> </thead> <tbody> <tr> <td>Y</td> <td>Yes</td> </tr> </tbody> </table>	Value	Meaning	Y	Yes		
Value	Meaning									
Y	Yes									
1724	OrderOrigination		N	Indicates whether the order or quote was generated via Direct Electronic Access (DEA) or not. Only the following values will be accepted.						
				<table border="1"> <thead> <tr> <th>Value</th> <th>Meaning</th> </tr> </thead> <tbody> <tr> <td>5</td> <td>DEA</td> </tr> </tbody> </table>	Value	Meaning	5	DEA		
Value	Meaning									
5	DEA									
<b>Standard Trailer</b>										

## 6.6 Application Messages: Others

### 6.6.1 Business Message Reject

Tag	Field Name	Req	Description
<b>Standard Header</b>			
35	MsgType	Y	j = Business Message Reject
<b>Message Body</b>			
45	RefSeqNum	Y	MsgSeqNum (34) of the rejected message.

371	RefTagID	N	If a message is rejected due to an issue with a particular field its tag number will be indicated.
372	RefMsgType	Y	MsgType (35) of the rejected message.
379	BusinessReject RefID	N	Client specified identifier (e.g. ClOrdID, QuoteMsgID, etc.) of the rejected message if it is available.
380	BusinessReject Reason	Y	Code specifying the reason for the rejection.
58	Text	N	Text specifying the reason for the rejection.
<b>Standard Trailer</b>			

# 7 Reject codes

## 7.1 Reject

Session Reject Reason	Meaning
1	Required tag missing
2	Tag not defined for this message type
4	Tag specified without a value
5	Value is incorrect (out of range) for this tag
6	Incorrect data format for value
9	CompID problem
11	Invalid MsgType
13	Tag appears more than once
14	Tag specified out of required order
15	Repeating group fields out of order
16	Incorrect NumInGroup count for repeating group
18	Invalid or unsupported application version
99	Other

## 7.2 Execution report

OrdRej Reason	Meaning
1	Unknown SecurityID
2	Exchange closed
5	Unknown order
6	Duplicate order (i.e. duplicate ClOrdID)
16	Price exceeds current price band
18	Invalid price increment
20	SecurityID/SecurityIDSource not specified
10000	No open orders for specified Party ID
10001	Request limit for day reached
10003	Order download not permitted for specified Party ID
10004	Not authorised to request an open order download

10005	Open order download not permitted at this time
10006	Unknown Party ID
10008	No open orders for specified instrument
10009	Segment not Specified
10010	Unknown Segment
10011	No open orders for specified segment

### 7.3 Business Message Reject

OrdRej Reason	Meaning
0	Other
3	Unsupported Message Type
4	Application unavailable

# 8 Appendix

## 8.1 Quantity Calculation for Quotes

The quantity of a partially executed quote is calculated differently to an order when the quote is amended. When amending a quote, the bid/ offer quantity of the latest quote amendment is considered as the leaves quantity. Then the quantity of the relevant side of the quote is derived by adding this leaves quantity and the total executed quantity of the quote (for the corresponding side).

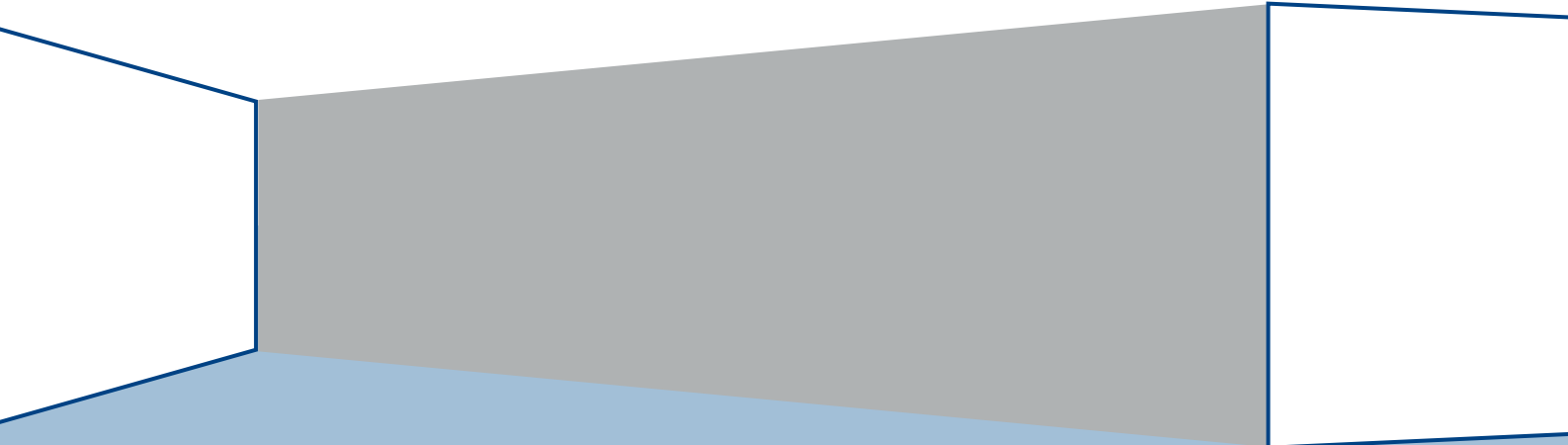
Note that the Cumulative Executed Size is sent as 0 in the Execution Report for Quotes.

For example:

- Submit a dual sided quote - Bid 2000@10.25 and Offer 1800@10.28
- The bid executes partially for 300@10.25. The Execution Report sent out for the partial execution will have;
  - Order Quantity = 2000
  - Leaves Quantity = 1700
  - Executed Quantity = 300
- Submit another quote by the same user for the same instrument - Bid 2000@10.23 and Offer 1800@10.28
- The bid executes partially for 225@10.23. The Execution Report sent out for the partial execution will have;
  - Order Quantity = 2300 (New Leaves Qty + Total Executed Size = 2000 + 300 = 2300)
  - Leaves Quantity = 1775 (New Leaves Qty - Executed Size = 2000 - 225 = 1775)
  - Executed Quantity = 225
- Submit a dual sided quote - Bid 2000@10.25 and Offer 1800@10.28
- The bid executes partially for 300@10.25. The Execution Report sent out for the partial execution will have;
  - Order Quantity = 2000
  - Leaves Quantity = 1700
  - Executed Quantity = 300
- Submit another quote by the same user for the same instrument - Bid 1500@10.23 and Offer 1800@10.28
- The bid executes partially for 225@10.23. The Execution Report sent out for the partial execution will have;

- Order Quantity = 1800 (New Leaves Qty + Total Executed Size = 1500 + 300 = 1800)
- Leaves Quantity = 1275 (New Leaves Qty - Executed Size = 1500 - 225 = 1275)
- Executed Quantity = 225





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