Nairobi Securities Exchange

Drop Copy Gateway

FIX 5.0SP2 Specification

Version	1.22
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1 DOCUMENT CONTROL

1.1 Table of Contents

1.2 Document Information

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1.3 Revision History

Date	Ver	Sections	Description
07 Mar 2016			1.22 7.5.4 Added 'Party Risk Limits Update Report' (CR) and and included the field 'RiskReductionMode(32033)'
		7.5.5	Added 'Party Risk Limit Report' messages (CM) message
09 Feb 2016			1.21 3.4 Added a foot note to provide more clarity on the Execution Reports sent by the system when serving.
05 Nov 2015			1.20 7.5.1 Added LastOptPx (32022) and Volatility (1188) to Execution Report
		3.2.3, 3.4, 3.5.6, 3.7, 4.3, 5.1, 5.4.1, 5.4.2, 7.5.1, 8.3, 8.4	Added clarity/ new content to reflect the changes made in Millennium Exchange Product versions 7.26 and 7.27.
05 Oct 2015	1.19	7.5.1	Included the field AllocAccount(79) to the execution report
27 May 2015			1.18 7.5.1 Included the field Secondary Trade ID (1040) to the Execution Report.
18 Mar 2015	1.17	7.5.1	Included new fields related to block trade order book
11 Feb 2015			1.16 Overall Document has been updated to reflect 'Millennium Exchange 7 10 - Drop Copy Gateway (FIX 5 0)_v1.24.doc' which is based on the product platform version 7.10.25.
19 Nov 2014			1.15 7.5.1 Added the new field 'Secondary Trade ID ' after the field 'TrdMatchID'.
		3.5.2.5	Added a description for 'Secondary Trade ID'.
03 Sep 2014			1.14 5.1 Removed the reference which mentioned the outbound sequence number of Logout message transmitted by the server in reply to a Logon request will always be 1.
		1.4	Updated links for FIXT 1.1 Specification and FIX 5.0 (Service Pack 2) Specification
		7.5.1	Behaviour of AvgPx(6) modified.
		7.5.1	Added behavior to OrderQty(38) and Price(44) fields where said fields will not be stamped if RFQ quote is rejected.
		8.2	Removed reject reason 'Invalid Price Increment' (18) as it is not currently utilized by Millennium Exchange.
09 Jul 2014	1.13	7.5.1	Updated the 'Execution Report' message
09 Nov 2013	1.12	3.3.2	Private RFQ section added to explain the events under which the drop copy users will receive ERs.
		3.5.5	Market Maker (66) and Contra Trader (37) added to the Party Identifications.

		7.5.1	QuoteReqID (131), MinQty (110), CoverPrice (1917), QuoteRespType (694), QuoteAckStatus (1865) and QuoteRejectReason (300) fields added to Execution Report (8) message.
			PartyRole (452) field of the Execution Report (8) message is updated with the new values, Market Makers (66) and Contra Trader (37).
			Negotiated Trades (11) added to the OrderBook (30001) field of the Execution Report (8) message.
			A new enumeration added to support the new order type Market If Touched orders in the Execution Report PegOffsetValue (211) field added to the Execution Report.
15 Jul 2013	1.11	3.5	Description for ExecType(150)=Restated updated with Corporate Action related details
		3.5.2.1	Exceptions for the absence of ClOrdID(11) in ER included
		3.5.8	Description for Corporate Actions added
		7.4.1	Value for Executing Firm(1) added to PartRole(452) tag
		7.5.1	Description of Text(58) field updated; ExecRestatementReason(378) and ExecInst(18) tags updated with Corporate Action related values
07 Jun 2013	1.10	3.5.1	Removed the footnote
		3.5.2.3	Added the description of Public Order ID
		5.1	Removed the footnotes
		7.5.1	Added the field MDEntryID(278) to the Execution Report Removed the duplicated field OrderBook(30001) from the Execution Report
		5.1 5.4.3.1	Typo corrected
11 Mar 13	1.09	3.2.1 6.3	Typos corrected.
		3.3.1, 0	CumQty (14) will be 0 in Execution Reports for leg trades
		3.4	Footnote added for Open Order Download.
		3.5	ExecType (150) of D will be sent when an order/quote is automatically re-priced Conditions for stamping ExecType (150) with Suspended(9) altered.

		3.5.7	AccruedInterestAmt(159) will be negative when settlement occurs on or after the ex-coupon date. Fixed income information will be republished at market start.

		5.1	Footnote added on Logon messages with higher sequence numbers than expected Handling client initiated application messages when the session is not in sync introduced. Outbound sequence number always will be 1 when replying to a Logon request.
		5.4.3.1	Termination of the connection when MsgSeqNum (34) is not 1 when ResetSeqNumFlag(141) set to Y introduced.
		6.1	Behaviour when a client requests for messages not in cache
		6.4	Execution Reports for an Open Order Download request are not re-transmitted when the client connection is reestablished
		7.5.1	OrderBook(30001) field included Description of AccruedInterestAmt(159) corrected
		7.5.2	RefTagID(371) added to the Business Message Reject message.
		7.5.3	Order Mass Cancel Report message added
		8.1	Reject Reason '16' included
		8.1&8.3	Footnotes added for Reject Reasons
		8.3	Reject Reason '30' included (Handling client initiated application messages when the session is not in sync introduced)
07 Feb 12	1.08	3.4, 7.4.1	Ability to specify an instrument or segment in an open order download request introduced.
		3.5.4	Updated Instrument Identification section. Removed identification of derivatives instruments based on Underlying, Maturity and CFI Code.
		3.5.7	Description on Fixed Income instruments updated
		7.5.1	ExecInst(18) and AvgPx (6) added to Execution Report.
		7.5.1	ParPx(32021) and ConvertedYield(30005) added to Execution Report
		7.5.1	Description of AccruedInterestAmt(159) changed
		7.5.1	New enum added for ExecRestatementReason(378)
		7.5.1	Added the Early Settlement Book to the OrderBook (30001) field
		8.2	Additional Reject codes added to the Execution Report
06 Aug 11	1.07	5.1	Test Request based mechanism of identifying if the client is in sync with the server's outgoing Sequence Number
		7.5.1	Order Cancellation by Market Operations
		7.5.1	TIF(59) value for GFA orders included

31 May 11	1.06	**Error! Reference source not found.**, 7.5.1	ClientText (30001) in Execution Report replaced by OrderSource (30004).
26 May 11	1.05	6	Reference to the ability for a client to manually request that all messages be retransmitted removed.
		Error! Reference source not found., 7.5.1	ClientText (30001)field added to Execution Report.
		7.5.1	Support for closing price cross introduced.
		7.5.1	Support for market to limit orders introduced.
18 Apr 11	1.04	3.4	TransactTime (60) not included in Execution Report if Order Mass Status Request is rejected.
08 Mar 11	1.03	3.4	Last message sent by each partition in response to a mass status request will include a LastRptRequested (912) of Y.
		3.5, 7.5.1	Support for ATC and GFA orders introduced.
		7.5.1	ApplID (1180) added to Execution Report.
24 Jan 11	1.02	3.4	Quotes included in a response to an open order download. Active order downloads will be terminated during an outage.
		3.5.2.5, 7.5.1	TrdMatchID (880) included in Execution Report.
		5.1	Client disconnected if message sent before logon response.
		7.5.1	AvgPx (6) removed from Execution Report.
		0	Unsupported order characteristic removed as an OrdRejReason.
19 Oct 10	1.01	3.5.6, 7.5.1	Support for PriceType (423) field removed.
		5.3	Connection terminated if buffered messages exceed limit.
		7.5.1	Identifier of the trading firm is included in an Execution Report.
		7, 7.5.2	Unsupported message types are rejected by the server.
5 Jul 10	1.00	3.5.5, 7.5.1	Account (1) field used to specify investor account. Support for AccountType (581) introduced.
		7.5.1	Support for the odd lot and block trade order books introduced.

1.4 References

1.5 Definitions, Acronyms and Abbreviations

Client	A participant or service bureau connected to the drop copygateway.
FIX	Version 5.0 (Service Pack 2) of the Financial Information Exchange Protocol.
FIX Connection	A bi-directional stream of ordered messages between the client and server within a particular login. A FIX connection ends when the client logs out or if the TCP/IP connection is terminated.
FIX Session	A bi-directional stream of ordered messages between the client and server within a continuous sequence number series. A single FIX session can exist across multiple FIX connections.
FIXT	Version 1.1 of the Financial Information Exchange Session Protocol.
Order	Executable interest which may be an order or a quote.
Order Book	Each instrument is traded across multiple separate and distinct order books (e.g. regular, odd lot, etc.). Each Execution Report includes an indication of the instrument and order book to which it relates.
Trading Gateway	The interface of *NSE* that allows participants and service bureaus to submit and manage their trading interest.
Server	The drop copy gateway of *NSE*.
Trading Mnemonic	Each order must include the trading mnemonic it is submitted under. Trading privileges are assigned at the level of trading mnemonics.

2 OVERVIEW

NSE[1] offers a drop copy gateway that will enable participants and service bureaus to receive additional copies of the Execution Reportsgenerated by the matching system.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 servicecannot 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.

2.1 Hours of Operation

The server will operate from *<Start Time>* to *<End Time>*each trading day.

2.2 Support

<Insert support information for clients (e.g. contact details and hours of operation for the support desk)>

[1] Insert name of market here and press Ctrl A and then F9 to update all other reference to the market.

3 SERVICE DESCRIPTION

3.1 Services Supported by Trading Gateway

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

3.2 Connection Configuration

3.2.1 Real-Time Connections

A real-time client will receive a drop copy of each eligible Execution Report immediately after it is published.

A participant connection will be configured to receive a drop copy of all the Execution Report messages generated for the firm for the events outlined in Section 3.3. The connection of a service bureau will be configured to receive drop copies for all the firms it serves. If required, a firm or service bureau connection could be configured to only receive drop copies for selected trading mnemonics.

For the purpose of redundancy, the service supports the configuration of multiple drop copy connections to send the same information on the activity of the selected firms/mnemonics.

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 Section 6.4 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 open order download service (outlined in Section 3.4) to recover the status of all active orders in the event of a system failure.

3.2.2 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 order download service outlined in Section 3.4.

3.2.3 Sponsored Access – Monitoring Users

A Sponsoring Firm who wants to have control over its Sponsored Users have the option of setting up a monitoring Drop Copy user by having the exchange to set the user parameter 'MONITORING SPONSORED USERS' to 'YES'. A sponsoring firm having at least one monitoring drop copy user can assign this user under the configuration 'MONITORED BY' for sponsored users the firm desires to have tight control over.

In order for a 'Sponsored User' to place orders, the firm's assigned 'Monitoring User' will need to have established a successful connection to the Drop Copy Gateway.

When a Member Firm's 'Monitoring User' lose the ability to monitor their 'Sponsored Users' (e.g. Disconnect or lose connection) and not reconnect within the configurable amount of time, their 'Sponsored Users' will be restricted from submitting new orders, and all their existing orders will be expired.

3.3 Supported Events

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

(i) Order accepted
(ii) Order pending
(iii) Order rejected
(iv) Orderexecuted
(v) Quote executed
(vi) Order expired
(vii) Order cancelled
(viii) Order cancel/replaced
(ix) Order cancel/replace pending
(x) Trade cancellation
(xi) Trade correction

3.3.1 Quotes

The Quote Status Report and Mass Quote Acknowledgement messages sent by the Trading Gateway to acknowledge or reject Quotes, Mass Quotes and Quote Cancel messages are not available via the drop copy service.

However, the Execution Reportssent when quotes are executed are available as drop copies.The ClOrdID (11) of such a message will contain the QuoteMsgID (1166) of the last Quote message or QuoteID (117) of the last Mass Quote message that updated the executed quote. The side, quantity and price fields (i.e. Side (54), LastQty (32), LastPx (31), LeavesQty (151), OrderQty (38), Price (44), etc.) will contain information for the executed side. As the matching system does not keep track of cumulative quantity for quotes, the value in the field CumQty (14) will be "0".The CumQty(14) will be zero in the Execution Reports that correspond to leg instrument trades when a quote for a multi-legged instrument executes.

3.3.2 Private Request for Quotes

In the process of privately negotiated RFQs, the requester requests for quotes using the Quote Request message. The Quote Request will then be directed to an intended set of market makers. The market maker can respond to the RFQ via submitting a Quote or reject it via a Quote Request Reject message. The requester can then accept a Quote submitted by one of the market makers, which matches his interests.

During the private RFQ negotiation process the Execution Reports generated due to following events will be available via drop copy gateway.

(i) Quote Acceptance

(ii) Quote Rejection

(iii) Quote Cancellation

(iv) Quote Expiration

(v) Quote Execution

The Execution Reports generated due to executions will be available via drop copy users of requester's firm as well as the market maker's firm. The Execution Reports generated due to the rest of the events above will be available only via drop copy users of the market maker's firm.

3.4 Open Order Download

Any client may use the Mass Order Status Request message to download the current status of each active order and quote side for a specified trading mnemonic.The request may apply

to all active orders for the trading mnemonic or be limited to only orders for a specified instrument or segment.

The total number of Mass Order Status Requests that a client may submit is limited to *<20>* each day. A client may request *NSE* 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[2]for the specified trading mnemonic and instrument/segment. Each such message will include the MassStatusReqID (584) of the request,an ExecID (17) of "0" and an ExecType (150) of Order Status (I). The last Execution Report sentby 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 trading mnemonic and instrument/segment[3]. 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 (e.g. ClOrdID (11), OrderID (37), OrderQty (38), LeavesQty (151), CumQty (14), AvgPx (6), OrdType (40), etc.), ApplID (1180)and TransactTime (60). The reason for the rejection will be specified in the field OrdRejReason (103).

A Business Message Reject will be sent to reject a Mass Order 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 a Mass Order 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 as well as a segment in the Mass Order Status Request, results should be given according to the value specified for the MassStatusReqType(585) field. I.e.

- If MassStatusReqType(585) = Open orders for specified instrument and PartyID combination (1), statuses of the orders belonging to the specified instrument should be given.
- If MassStatusReqType(585) = Open orders for specified segment and PartyID combination (100), statuses of the orders belonging to the specified segment should be given.
- If MassStatusReqType(585) = Open orders for specified PartyID (8), statuses of all orders belonging to the specified user should be given.

3.5 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.

Exec	Usage	Ord Type	Status
0	**Order Accepted** Indicates that a new order has been accepted.		0

[2] Active market interests include new/partially filled orders and quotes, market interests that are in the pending queue due to risk management controls, un-elected stop and stop limit orders and parked orders

[3] The system will publish the latest Execution Report generated by the system for each of the active order or quote side.

A	**Order Pending** Indicates that a new order has been forwarded to the risk management system for validation.	A
8	**Order Rejected** Indicates that an order has been rejected. The reason for the rejection is specified in the field OrdRejReason (103).	8
F	**Order or Quote Executed** Indicates that an order or quote has been partially or fully filled. The execution details (e.g. price and quantity) are specified.	1, 2
C	**Order Expired** This may indicate one of the following: • An order has expired in terms of its time qualifier. • An order has expired due to an execution limit breach. • When any remaining orders (except GTC and GTD) are expired at market close. • When orders are expired based on the cancel on disconnect/log out feature. • Orders expired due to triggering of circuit breakers.	C
4	**Order Cancelled** Indicates that an order cancel request has been accepted and successfully processed. This message is also sent if the order is cancelled by market operations. In such a case the message will include an ExecRestatementReason (378) of Market Option (8). It will not include an OrigClOrdID (41).	4
5	**Order Cancel/Replaced** Indicates that an order cancel/replace request has been accepted and successfully processed.	0, 1
L	**Triggered** Indicates that a parked ATC, GFA or stop order has been activated and is available for execution.	0, 1, A
9	**Suspended** Indicates that an order that was active and was available for execution has been parked and is no longer available for execution.	0, 1, A
D	**Order Cancel/Replace by Market Operations or has been impacted by an Automatic Event** Indicates that an order has been amended by market operations or automatic event in the system. The message will include an ExecRestatementReason (378) of Market Option (8), when amended by market operations. It will include an ExecRestatementReason (378) of GT Renewal/Restatement (1) or OrderRe-Priced(3) when automatically re-priced by the system.When an order has been amended due to a corporate action the ExecRestatementReason (387) will be GT Corporate Action (0). It will not include an OrigClOrdID (41).	0, 1
E	**Order Cancel/Replace Pending** Indicates that an order cancel/replace request has been forwarded to the risk management system for validation.	E
H	**Trade Cancel** Indicates that an execution has been cancelled. An ExecRefID (19) to identify the execution being cancelled will be included.	0, 1, E

Exec Type	Usage	Ord Status
G	**Trade Correct** Indicates that an execution has been corrected. The message will include an ExecRefID (19) to identify the execution being corrected and the updated execution details (e.g. price and quantity).	1, 2, E
I	**Order Status Response** Indicates the current status of an order.	0, 1, A, E
I	**Order Status Reject** Indicates that an order mass status request has been rejected.	8

3.5.1 Order Status

As specified in the FIX protocol, the OrdStatus (39) field of an Execution Reportis 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
E	Pending Replace
2	Filled
9	Suspended
4	Cancelled
C	Expired
1	Partially Filled
0	New
8	Rejected
A	Pending New

3.5.2 Order and Execution Identifiers

3.5.2.1 Client Order IDs

In the case of orders, the ClOrdID (11) included in each Execution Report will be that specified when the order was submitted. An order's ClOrdID (11) will be updated each time an Order Cancel/Replace Request or an Order Cancel Request is accepted.

The ClOrdID(11) is always expected to be present in the Execution Report unless the order happens to be an Implied order that has an Owner ID assigned. *<Delete if the market does not use Implied order functionality>*

In the case of quotes, the ClOrdID (11) included in each Execution Report will be either the QuoteMsgID (1166) of the last Quote message or QuoteID (117) of the last Mass Quote message that updated the executed quote.

3.5.2.2 Order IDs

The server uses the OrderID (37) field to affix the order identification numbers of the matching system. Order IDs are unique across trading days.

In terms of the FIX protocol, unlike ClOrdID (11) which requires a chaining through Cancel/Replace Requests and Cancel Requests, the OrderID (37) of an order will remain constant throughout its life.

3.5.2.3 Public Order IDs

The server uses MDEntryID (278) field of the Execution Report to affix the Public Order ID of an order which is an order identification number that will be stamped for each order that has an OrderID (37). MDEntryID (278) will be the same as the OrderID (37) for all orders that are not iceberg orders. For iceberg orders, the MDEntryID (278) will renew with each replenishment to the visible order size. Participants should identify their orders on the market data feeds using the MDEntryID (278) that is the identification number that will be disseminated for order book updates on market data feeds.

3.5.2.4 Execution IDs

The server uses the ExecID (17) field to affix the execution identification numbers of the matching system. Execution IDs are unique across trading days.

3.5.2.5 Trade IDs

The server uses the TrdMatchID (880) field to affix a unique identifier for each trade. This identifier is referenced in the Trade Capture Reports published by the post trade system and the trade messages of the FAST and MITCH market data feed. Trade IDs are unique across trading days.

An Execution Report published to notify a client of a trade cancellation or correction includes the TradeID of the trade.

3.5.3 Strategies

The values specified in the fields Price (44), StopPx (99) andLastPx (31) for Execution Reports relating to multi-legged instruments may contain negative prices.

If an order for a strategy receives an execution, it will receive an Execution Report for the multi-legged instrument as well as separate Execution Reports for each of the associated leg instruments. The field MultiLegReportingType (442) should be used to determine whether a particular Execution Report relates to the multi-legged instrument or a leg instrument.

While the ClOrdID (11) of an Execution Report for a leg trade will be the same as the ClOrdID (11),QuoteMsgID (1166) or QuoteID (117) of the order or quote for the multi-legged instrument, the OrderID (37) will not. The SecondaryOrderID (198) for a leg trade will contain the OrderID (37) of the associated order or quote for the multi-legged instrument.

Execution Reports corresponding to the leg tradeswill have a CumQty (14) of zero(0) when a quote for a multi-legged instrument executes,

3.5.4 Instrument Identification

Instruments may be identified using either the Symbol (55) or SecurityID (48) field.

The instrument identification included in an Execution Report will be that specified in the order or quote the message relates to.

3.5.5 Party Identification

ID	Description	Relevant FIX Tags
Trading Mnemonic	Identifier of the trading mnemonic the message is submitted under. Trading privileges are assigned at the level of trading mnemonics.	PartyRole (452) = 53 PartyID (448)

Executing Firm	Identifier of the trading firm the interest is submitted under.	PartyRole (452) = 1 PartyID (448)
Clearing Mnemonic	Identifier of the mnemonic through which the trade should clear.	PartyRole (452) = 83 PartyID (448)
Investor Account	Identifier of the investor account on whose behalf the order is submitted.	Account (1) AccountType (581)
Contra Firm	Identifier of the counterparty trading firm in the case of a block trade or the firm on the contra-side of a privately negotiated RFQ.	PartyRole (452) = 17 PartyID (448)
Market Makers	Identifier of the market maker firms to whom a private RFQ is directed at.	PartyRole (452) = 66 PartyID (448)
Contra Trader	The trading mnemonic of the contra-side of a privately negotiated RFQ.	PartyRole (452) = 37 PartyID (448)

<Insert/delete party identifiers as required by the market>

3.5.6 Quotation Conventions

The values specified in the fields Price (44), StopPx (99),LastPx (31) and AvgPx (6) 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. They should be interpreted as price per contract for futures and derivative strategies. For a fixed income instrument and options, they should, depending on the applicable convention, be interpreted as percentage of par, discount rate or yield.

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

3.5.7 Fixed Income Instruments

If an order for a fixed income instrument[4] is partially or fully filled, the accrued interest associated with the trade will be included in the field AccruedInterestAmt (159) of the Execution Report. The value in this field will generally be positive indicating the total accrued interest due from the buyer to the seller. However, in the case of trades settled on or after the ex-coupon date of an instrument, this value will be negative to indicate the accrued interest due from the seller to the buyer.

Based on the instrument configurations, for fixed income instruments quoted in discount rate or yield, the notification of an execution may include the limit price expressed as a percentage of par in the field ParPx(32032) and traded price expressed as a percentage of par in the field LastParPx (669).The Execution Reportmay include the implied yield of the order in the ConvertedYield(30005) and trade in the Yield (236) field in the case of instruments quoted in percentage of par.

Fixed Income information will be republished for carried forward orders at the start of the Market. The Execution Report will include an ExecType(150) of Restated(D) and ExecRestatementReason(378) of GT Renewal/Restatement(1) to indicate the automatic repricing.

[4] Among Fixed Income instruments, only Regular Coupon Bonds and TIPS have accrued interest associated with them

3.5.8 Corporate Actions

When a carried forward order is adjusted, cancelled or expired as a result of a corporate action, the Execution Report transmitted at the start of the market will include an ExecType(150) of Restated(D) and ExecRestatementReason(378) of GT Corporate Action(0) to indicate the order adjustment or expiration.

If a user wishes, an order can be exempted from price reductions due to corporate actions by including an ExecInst (18) ofDo Not Reduce (F) when submitting the order. Similarly, an order can be exempted from size increments due to corporate actions by including an ExecInst (18) of Do Not Increase (E)

3.6 Timestamps and Dates

The timestamps SendingTime (52), OrigSendingTime (122) and TransactTime (60) are in UTC and in the YYYYMMDD-HH:MM:SS.sss format. ExpireTime (126) is in UTC and in the YYYYMMDD-HH:MM:SS format.

All dates (i.e. MaturityDate (541) and ExpireDate (432)) are in the YYYYMMDD format and specified in the local date for the server (i.e. not in UTC)).

3.7 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.

If the same FIX tag is repeated with different values in the client generated message outside of a repeating group, the server takes the value in the last tag. The server will not reject such messages.

However, if a client initiated Logon message contains repeated tags; the server may not acknowledge the login request and will not send any reply. If client initiated other administrative messages or application messages contain repeated tags outside component blocks, such requests will be rejected by the server.

4 CONNECTIVITY

4.1 CompIDs

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

The CompID of the server will be *<insert CompID of market>*. The messages sent to the server should contain the CompID assigned to the client in the field SenderCompID (49) and *<insert CompID of market>*in the field TargetCompID (56). The messages sent from the server to the client will contain*<insert CompID of market>*in the field SenderCompID (49) and the CompID assigned to the client in the field TargetCompID (56).

4.1.1 Passwords

Each new CompID will be assigned a password on registration. Clients are strongly encouraged to change the password to one of their choosing via the Logon message. The acceptance of a login request indicates that the new password has been accepted. The new password will, if accepted, be effective for subsequent logins. *<Delete this paragraph if password validation is disabled>*

In terms of the password policy of *NSE*, the password of each CompID should be changed at least every *<30>* days. If not, the password will expire and the client will be unable to login to the server. In such a case, the client should contact *<insert CompID of market>*to have its password reset. The SessionStatus (1409) of the server's Logon message will be Password Due to Expire (2) for the last *<5>* days of a password's validity period. *<Delete this paragraph if this aspect of the password policy is disabled>*

4.2 Production IP Addresses and Ports

The IP address of each client must be registered with *<insert CompID of market>*before FIX communications can begin. The IP addresses and ports of the production servers are given below.

Server	Primary		Backup	
	IP Address	Port	IP Address	Port
1	*xxx.xxx.xx.xx*	*xxxxx*	*xxx.xxx.xx.xx*	*xxxxx*
2	*xxx.xxx.xx.xx*	*xxxxx*	*xxx.xxx.xx.xx*	*xxxxx*
3	*xxx.xxx.xx.xx*	*xxxxx*	*xxx.xxx.xx.xx*	*xxxxx*
4	*xxx.xxx.xx.xx*	*xxxxx*	*xxx.xxx.xx.xx*	*xxxxx*

<insert CompID of market> will assign each registered client to one of the above primary IP addresses and ports and one of the above secondary IP addresses and ports.

4.3 Failover and Recovery

The system has been designed with fault tolerance and disaster recovery technology that ensures that trading should continue in the unlikely event of a process or site outage.

If the client is unexpectedly disconnected from the server, it should attempt to re-connect to primary site within a few seconds. The client should only attempt to connect to the secondary IP address and port if so requested by *NSE*.

If a service interruption (e.g. due to Order Cache failing over to its mirror or both Order

Cache processes fail) occurs in the Drop Copy Gateway while it is servicing an Order Mass Status Request, the gateway will send an unsolicited Execution Report with a 'Rejected' state. It would include the MassStatusReqID (584) of the request, an ExecID (17) of '0' an ExecType (150) of Order Status (I) an OrdStatus (39) of Rejected (8) and an OrdRejReason (103) of '10005' – Application Unavailable. When the client receives this, he is expected to try and re-request.

If a client requests an open order book download when the service is unavailable, (e.g. both Order Cache instances down) the request will be rejected with a business reject, with reason 4 – Application Unavailable.

In the unlikely event of a site outage disaster on the *NSE* system, all orders will be cancelled and all unicast and multicast connectivity will be unavailable until the secondary site is invoked.

5 FIX CONNECTIONS AND SESSIONS

5.1 Establishing a FIX Connection

FIX connections and sessions between the client and server are maintained as specified in the FIX protocol.

Each client will use the assigned IP address and port to establish a TCP/IP session with the server. The client will initiate a FIX session at the start of each trading day by sending the Logon message. The client will identify itself using the SenderCompID (49) field. The server will validate the CompID, password and IP address of the client.

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

System can be configured in such a way that the test request at logon is either disabled or enabled[5]. A test request will not be sent along with the logon reply if the test request switch is set to its default 'Off' mode. Depending on the System Configuration, the client's logon message will be responded in two ways:

If during a logon of a SenderCompID, the server receives a second connection attempt via the same TCP/IP connection while a valid FIX session is already underway for that same SenderCompID, the server will immediately break the TCP/IP connection with the client without sending any messages. If the server receives another connection attempt from the same SenderCompID, while a session is already established, the connection attempt will be rejected via a Reject message without breaking the existing TCP/IP connection with the client. The server will increment the next inbound message sequence number expected from the client as well as its own outbound message sequence number.

5.1.1 Test Request at logon Disabled (default)

Once the client is authenticated, the server will respond with a Logon message. The SessionStatus (1409) of this message will be Session Active (0). If the client's Logon message included the field NewPassword (925) and the client is authenticated, the SessionStatus (1409) of the Logon sent by the server will be Session Active (0).

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.

The client must wait for the server's Logon before sending additional messages. If additional messages are received from the client before the exchange of Logon messages, the TCP/IP connection with the client will be disconnected.

5.1.2 Test Request at logon Enabled

<Delete this section if client session confirmation is disabled>

Once the client is authenticated, the server will respond with a Logon message, followed by a Test Request. The Logon message will confirm the logon status and the Test Request's purpose is to sync the Sequence numbers before sending any Missed Messages if any. The SessionStatus (1409) of this message will be Session Active (0). If the client's Logon message included the field NewPassword (925) and the client is authenticated, the SessionStatus (1409) of the Logon sent by the server will be Session Active (0). The client must wait for the server's Logon before sending additional messages. If additional messages are received from

[5] This is done via the process configuration CLIENT SESSION CONFIRMATION.

the client before the exchange of Logon messages, the TCP/IP connection with the client will be disconnected.
A successful logon response will be followed by a Test Request message. If the client responds to the Test Request with a Heartbeat message containing the appropriate Test Request ID and message sequence number, the server can start transmitting the missed messages or new messages in the Gateway.

The client would not receive any responses to application messages sent until sequence numbers are synchronized by responding to the Test Request via Heartbeat or Resend Request message. However, these messages will be processed by the system.

If the client ignores the Test Request because the sequence number in the message is higher than the expected sequence number, the Client is expected to send a Resend Request asking for the missed messages. After responding to the Resend Request the FIX Gateway would send another Test Request to make sure both the client and server is in sync before sending out any missed or new application messages.

If the client sends a Resend Request before the FIX Gateway send a Test Request, then the FIX Gateway will serve the Resend Request first. After responding to the Resend Request the FIX Gateway would send a Test Request to make sure both the client and server are in sync before sending out any missed or new application messages.

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 followed by the Test Request. The client is expected to serve the Resend Request and respond to the Server's Test Request via a Heartbeat message.

5.1.3 Behaviour common to both configurations

If a logon attempt fails because of an invalid SenderCompID, invalid TargetCompID or invalid IP address, invalid password or not having the appropriate privileges to login to the gateway the server will break the TCP/IP connection with the client without sending a Logout or Reject message. If the server receives a second connection attempt from the same TCP/IP while a valid FIX session is already underway for that same SenderCompID the system will reject the second attempt with a reject message while maintaining the original connection. If the server receives a second connection attempt from a different TCP/IP while a valid FIX session is already underway for that same SenderCompID, the server will break the TCP/IP connection for the second attempt without sending a Logout or Reject message. As the logon attempt failed, the server will not increment the next inbound message sequence number expected from the client.

If a logon attempt fails because of an expired password a locked CompID or if logins are not currently permitted, the server will send a Logout message and then break the TCP/IP connection with the client. The server will increment the next inbound message sequence number expected from the client as well as its own outbound message sequence number.

If a logon attempt fails because of a session level failure (e.g. due to invalid EncryptMethod or DefaultApplVerID…etc) the inbound sequence number and the outbound sequence number both will not be incremented**.** In this scenario the message sequence number 1 will be sent with the **Error! Reference source not found.** message.

However if a session level failure occurs due to a message sent by a client which contains a sequence number that is less than what is expected and the PossDupFlag (43) is not set to 'Y', then the server will send a Logout message and terminate the FIX connection. In this scenario the inbound sequence number will not be incremented but the outbound sequence number will be incremented.

If during a logon of a SenderCompID, the server receives a second connection attempt via the same TCP/IP connection while a valid FIX session is already underway for that same SenderCompID, the server will send a Reject message and then break the TCP/IP connection

with the client. The server will increment the next inbound message sequence number expected from the client as well as its own outbound message sequence number

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

5.2 Maintaining a FIX Session

5.2.1 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 any message sent by the client contains a sequence number that is less than what is expected and the PossDupFlag (43) is not set to “Y”, the server will send a Logout message and terminate the FIX connection. The Logout will contain the next expected sequence number in the Text (58) field.

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.

5.2.2 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.

If the server detects inactivity for a period longer than the heartbeat interval plus a reasonable transmission time, 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, the server will send a Logout and break the TCP/IP connection. The client is expected to employ similar logic if inactivity is detected on the part of the server.

5.2.3 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 MsgSeqNum (34) in the header of such a message will be ignored. The Sequence Reset mode should only be used to recover from an emergency situation. It should not be relied upon as a regular practice.

5.3 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 not be sent). Under exceptional circumstances the server may initiate the termination of a connection during the trading day by sending the Logout message. The server will terminate the TCP/IP connection (a Logout will not be sent) if the number of messages that are buffered for a client exceeds *<1,000>*.

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

5.4 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.

5.4.1 Test Request at logon Disabled (default)

Once the client is authenticated, the server will respond with a Logon message. The SessionStatus (1409) of this message will be Session Active (0). If the client's Logon message included the field NewPassword (925) and the client is authenticated, the SessionStatus (1409) of the Logon sent by the server will be Session Active (0).

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 and 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.

The client must wait for the server's Logon before sending additional messages. If additional messages are received from the client before the exchange of Logon messages, the TCP/IP connection with the client will be disconnected.

5.4.2 Test Request at logon Enabled

Once the client is authenticated, the server will respond with a Logon message, followed by a Test Request. The Logon message will confirm the logon status and the Test Request's purpose is to sync the Sequence numbers before sending any Missed Messages if any. The SessionStatus (1409) of this message will be Session Active (0). If the client's Logon message included the field NewPassword (925) and the client is authenticated, the SessionStatus (1409) of the Logon sent by the server will be Session Active (0).

If the client responds to the Test Request with a Heartbeat message containing the appropriate Test Request ID and message sequence number, the server can start transmitting the missed messages or new messages in the Gateway. The client would not receive any responses to application messages sent until sequence numbers are synchronized by responding to the Test Request via Heartbeat or Resend Request message. However, these messages will be processed by the system. If the client does not respond to the Test Request during the heartbeat interval, the gateway will disconnect the client.

If the client ignores the Test Request because the sequence number in the message is higher than the expected sequence number, the client is expected to send a Resend Request asking for the missed messages. After responding to the Resend Request the FIX Gateway would send another Test Request to make sure both the client and server is in sync before sending out any missed or new application messages.

If the client sends a Resend Request before the FIX Gateway send a Test Request, then the FIX Gateway will serve the Resend Request first. After responding to the Resend Request the FIX Gateway would send a Test Request to make sure both the client and server are in sync before sending out any missed or new application messages.

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 followed by the Test Request. The client is expected to serve the Resend Request and respond to the Server's Test Request via a Heartbeat message.

Once the FIX session is re-established successfully, the message sequence numbers will continue from the last message successfully transmitted prior to the termination.

5.4.3 Resetting Sequence Numbers: Starting a New FIX Session

5.4.3.1 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. Such a message will include a SessionStatus(1409) of Logout due to session level failure(101) and an indication of the same in the Text(58) field.

A client may also manually inform market operations 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.

5.4.3.2 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 *NSE* to initialize sequence numbers prior to the next login attempt.

6 RECOVERY

6.1 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 theEndSeqNo (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 the last *<1,000>* messages transmitted to each CompID. Clients are unable to use a Resend Request to recover messages not in the server's cache.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.

6.2 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 sameMsgSeqNum (34).

6.3 Possible Resends

The server does not handle possible resends for client-initiated messages and ignores the value in the PossResend (97) field of such messages.

The server may, in the circumstances outlined in Section 6.4and **Error! Reference source not found.**, use the PossResend (97) field to indicate that an Execution Report may have already been sent under a different MsgSeqNum (34). The client should validate the ExecID (17) of such a message against those of Execution Reports already received during the current trading day.

If an Execution Report with same ExecID (17) had been processed, the resent messageshould be ignored.If the same ExecID (17) had not been processed, the Execution Report should be processed.

6.4 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. *<Delete the above two paragraphs if the feature to send missed messages is disabled>*

The Execution Reports generated during a period when a client is disconnected from the server will not be sent to the client when it next reconnects. *<Delete if the feature to send missed messages is enabled>*

7 MESSAGE FORMATS

This section provides details on the header and trailer, the seven administrative messages and three application messages utilized by the server. Client-initiated messages not included in this section arerejected by the server via a Reject or Business Message Reject.

7.1 Supported Message Types

7.1.1 Administrative Messages

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

Message	MsgType	Usage
Logon	A	Allows the client and server to establish a FIX session.
Logout	5	Allows the client and server to terminate a FIX session.
Heartbeat	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.
Test Request	1	Allows the client or server to request a response from the other party if inactivity is detected.
Resend Request	2	Allows for the recovery of messages lost during a malfunction of the communications layers.
Reject	3	Used to reject a message that does not comply with FIXT.
Sequence Reset	4	Allows the client or server to increase the expected incoming sequence number of the other party.

7.1.2 Application Messages

7.1.2.1 Client-Initiated

Message	MsgType	Usage
Order Mass Status Request	AF	Allows the client to request the status of all active orders for a particular trading mnemonic.

7.1.2.2 Server-Initiated

Message	MsgType	Usage

Execution Report	8	Indicates one of the following: (i) Order accepted (ii) Order pending (iii) Order rejected (iv) Orderor quote executed (v) Order expired (vi) Order cancelled (vii) Order cancel/replaced (viii) Order cancel/replace pending (ix) Trade cancellation or correction (x) Order status (xi) Order mass status request rejected

Message	MsgType	Usage
Business Message Reject	j	Indicates that an application message could not be processed.

7.2 Message Header and Trailer

7.2.1 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	OnBehalfOfCompID	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	Whether the message was previously transmitted under the same MsgSeqNum (34). Absence of this field is interpreted as Original Transmission (N). **Value Meaning** Y Possible Duplicate N Original Transmission
97	PossResend	N	Whether the message was previously transmitted under a different MsgSeqNum (34). Absence of this field is interpreted as Original Transmission (N). **Value Meaning** Y Possible Resend N Original Transmission
52	SendingTime	Y	Time the message was transmitted.
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	ApplVerID	N	Version of FIX used in the message. Required if the message is generated by the server. **Value Meaning** 9 FIX50SP2

7.2.2 Message Trailer

Tag	Field Name	Req	Description

10	CheckSum	Y	

7.3 Administrative Messages

7.3.1 Logon

Tag	Field Name	Req	Description
Standard Header			
35	MsgType	Y	A = Logon
Message Body			
98	EncryptMethod	Y	Method of encryption. **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). **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.*<Delete this field if password validation is disabled>*
925	NewPassword	N	New password for the CompID.*<Delete this field if password validation is disabled>*
1409	SessionStatus	N	Status of the FIX session. Required if the message is generated by the server. **Value Meaning** 0 Session Active 2 Password Due to Expire *<Delete if password expiration is disabled>*
1137	DefaultApplVerID	Y	Default version of FIX messages used in this session. **Value Meaning** 9 FIX50SP2
Standard Trailer			

7.3.2 Logout

Tag	Field Name	Req	Description

Standard Header			
35	MsgType	Y	5 = Logout
Message Body			
1409	SessionStatus	N	Status of the FIX session. Required if the message is generated by the server. **Value Meaning** 4 Session logout complete 6 Account locked 7 Logons are not allowed at this time 8 Password expired *<Delete if password validation is disabled>* 100 Other 101 Logout due to session level failure 102 Logout by market operations
58	Text	N	Text specifying reason for the logout.
Standard Trailer			

7.3.3 Heartbeat

Tag	Field Name	Req	Description
Standard Header			
35	MsgType	Y	0 = Heartbeat
Message Body			
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.
Standard Trailer			

7.3.4 Test Request

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

7.3.5 Resend Request

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

7.3.6 Reject

Tag	Field Name	Req	Description
Standard Header			
35	MsgType	Y	3 = Reject
Message Body			
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. Please refer to Section 8.1 for a list of reject codes.
58	Text	N	Text specifying the reason for the rejection.
Standard Trailer			

7.3.7 Sequence Reset

Tag	Field Name	Req	Description
Standard Header			
35	MsgType	Y	4 = Sequence Reset
Message Body			
36	NewSeqNo	Y	Sequence number of the next message to be transmitted.
123	GapFillFlag	N	Mode in which the message is being used. Absence of this field is interpreted as Sequence Reset (N). **Value Meaning** Y Gap Fill N Sequence Reset

Standard Trailer

7.4 Application Messages (Client-Initiated)

7.4.1 Order Mass Status Request

Tag	Field Name		Req	Description
Standard Header				
35	MsgType		Y	AF = Order Mass Status Request
Message Body				
584	MassStatusReqID		Y	Client specified identifier of the mass status request.
585	MassStatusReqType		Y	Type of mass status request. **Value Meaning** 1 Open orders for specified instrument and PartyID combination 8 Open orders for specified PartyID 100 Open orders for specified segment and PartyID combination
453	NoPartyIDs		Y	Number of party identifiers. The value in this field should always be “1”.
➡	448	PartyID	Y	Identifier of the trading mnemonic.
➡	447	PartyID Source	Y	**Value Meaning** D Proprietary/Custom Code
➡	452	Party Role	Y	Role of the PartyID (448). **Value Meaning** 1 Executing Firm 53 Trading Mnemonic
55	Symbol		N	Identifier of the instrument. Required if MassStatusReq Type (585) is “1”.
1300	MarketSegmentID		N	Identifier of the segment. Required if MassStatusReq Type (585) is “100”.
Standard Trailer				

7.5 Application Messages (Server-Initiated)

7.5.1 Execution Report

Tag	Field Name	Req	Description

Standard Header			
35	MsgType	Y	8 = Execution Report
Message Body			
1180	ApplID	Y	Identity of the partition that generated the message.
17	ExecID	Y	Server specified identifier of the message.Will be “0” if ExecType (150) is Order Status (I).
11	ClOrdID	Y	Client specified identifier of the order. In the case of a quote, the QuoteMsgID (1166) or QuoteID (117) of the message last used to update the quote.
278	MDEntryID	Y	Server specified public order identified or the order.
41	OrigClOrdID	N	OrigClOrdID (41), if any, that was submitted with the order cancel or cancel/replace request.
37	OrderID	Y	Server specified identifier of the order. In the case of a quote, the server specified identifier of the executed side.
584	MassStatusReqID	N	Client specified identifier of the 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. **Value Meaning** Y Last Message
442	MultiLegReportingType	N	Type of trade. Absence of this field is interpreted as Trade of Single Instrument (1). **Value Meaning** 1 Trade of Single Instrument 2 Leg Trade of a Multi-Leg Instrument Trade 3 Trade of a Multi-Leg Instrument
198	Secondary OrderID	N	Server specified identifier of the order or quote side for the multi-legged instrument. Required if MultiLegReportingType (442) is Leg Trade of a Multi-Leg Instrument Trade (2).

150	ExecType	Y	Reason the execution report was generated. **Value Meaning** 0 New 4 Cancelled 5 Replaced 8 Rejected 9 Suspended A Pending New C Expired D Restated E Pending Replace F Trade G Trade Correct H Trade Cancel I Order Status L Triggered
880	TrdMatchID	N	Identifier of the trade. This will be a 62 base encoded value in ASCII format. Required if ExecType (150) is Trade (F), Trade Correct (G) or Trade Cancel (H).
1040	Secondary Trade ID	N	Numeric trade ID assigned for the trade. Required if ExecType (150) is Trade (F), Trade Correct (G) or Trade Cancel (H).
19	ExecRefID	N	Reference to the execution being cancelled or corrected. Required if ExecType (150) is Trade Cancel (H) or Trade Correct (G).

<table>
<tr><td>378</td><td>Exec Restatement Reason</td><td>N</td><td>Reason the order was restatedor cancelled by Market Operations. Required if ExecType (150) is Restated (D)or if the execution report is sent for an unsolicited cancellation.

If the ‘Fixed Income Info on ER’ field is set to ‘Pre and Post Trade’, at the time the system is brought up for the day[6], it will re-compute the applicable Accrued Interest and converted Yield or Price for carried forward GTD and GTC orders based on the new settlement date. Thereafter it will republish the execution reports to the clients only for Fixed Income instruments [7]. The ExecType(150) of the Execution Report will be Restated(D) with ExecRestatementReason(378) of GT Renewal/Restatement (1). These execution reports will be received by the respective clients when they log in to the system for the first time for the day.

Value Meaning
0 GT Corporate Action
1 GT Renewal/Restatement
3 Order Re-Priced
8 Market Option</td></tr>
<tr><td>39</td><td>OrdStatus</td><td>Y</td><td>Current status of the order.

Value Meaning
0 New
1 Partially Filled
2 Filled
4 Cancelled
8 Rejected
9 Suspended
A Pending New
C Expired
E Pending Replace</td></tr>
</table>

[6] This happens at the matching engine cold start

[7] There is no Accrued Interest for Bills and Zero Coupon Bonds

636	Working Indicator	N	Whether the order is currently being worked. **Value Meaning** N Order is Not in a Working State (Order has been accepted and is in an unelected state/parked queue.) Y Order is Being Worked (Order has been elected and has been added to the normal order book)
103	OrdRejReason	N	Code specifying the reason for the reject. Please refer to Section 0 for a list of reject codes. Required if ExecType (150) is Rejected (8).

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).
110	MinQty	N	Minimum quantity that must be filled.
31	LastPx	N	Price of this fill. Required if ExecType (150) is Trade (F) or Trade Correct (G).
669	LastParPx	N	Price of this fill expressed as percentage of par. Required if LastPx (31) is specified and the trade is for a fixed income instrument quoted on discount rate or yield.
236	Yield	N	Implied yield of this fill. Required if LastPx (31) is specified and the trade is for a fixed income instrument quoted on percentage of par.
159	AccruedInterestAmt	N	Accrued Interest for a unit trade if executed on the current trading day. Multiplying this by the LastQty(32), if available, gives the Total accrued interest. May only apply for a Regular Coupon Bond or TIPS.
151	LeavesQty	N	Quantity available for further execution. Will be “0” if OrdStatus (39) is Filled (2), Cancelled (4), Rejected (8) or Expired (C). Will not be stamped if RFQ is rejected.
14	CumQty	Y	Total cumulative quantity filled. Will always be “0” in the case of a quote.
6	AvgPx	N	Average price of all fills for the order or quote side.

55	Symbol	Y	Identifier of the instrument.

1917	CoverPrice		N	The price that was the best available in the quote negotiation. Required if the execution report is sent to other market makers denoting a successful execution during a negotiation via RFQs with another market maker. Cover price will not be stamped in case if the ER is sent for the side which did not receive the execution in a dual sided quote (i.e. the dual sided quote did not receive the execution at all or one side receives the execution during the negotiation. In both cases the side which was not involved in the negotiation process will not have cover price stamped)
32021	ParPx		N	Converted clean price of an order's limit price. If computed, it will be on the Price (44) ofan order belonging to 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) ofan order belonging to a fixed income instrument quoted on percentage-of-par (i.e. on price).
453	NoPartyIDs		N	Number of party identifiers.
➡	448	PartyID	N	Identifier of the party.
➡	447	PartyID Source	N	Required if PartyID (448) is specified. **Value Meaning** D Proprietary/Custom Code
➡	452	Party Role	N	Role of the PartyID (448). Required if PartyID (448) is specified. **Value Meaning** 1 Executing Firm 17 Contra Firm 37 Contra Trader 53 Trading Mnemonic 66 Market Makers(Firm IDs) 83 Clearing Mnemonic
1	Account		N	Identifier of the investor account on whose behalf the interest is submitted.

581	AccountType	N	Type of the investor account. **Value Meaning** 1 Client 3 House 100 Custodian

40	OrdType	Y	Type of the order. **Value Meaning** 1 Market 2 Limit 3 Stop 4 K Market to Limit Stop Limit J Market If Touched
59	TimeInForce	N	Time qualifier of the order. Absence of this field is interpreted as Day (0). **Value Meaning** 0 Day 1 Good Till Cancel (GTC) 2 At the Opening (OPG) 3 Immediate or Cancel (IOC) 4 Fill or Kill (FOK) 6 Good Till Date (GTD) 7 At the Close (ATC) 9 Good for Auction (GFA)
126	ExpireTime	N	Time the order expires which must be a time during the current trading day. Required if TimeInForce (59) is GTD (6) and ExpireDate (432) is not specified.
432	ExpireDate	N	Date the order expires. Required if TimeInForce (59) is GTD (6) and ExpireTime (126) is not specified.
336	Trading SessionID	N	Session the order is valid for. **Value Meaning** a Closing Price Cross

18	ExecInst	N	Execution instructions submitted with the order. Space separated field. **Value** **Meaning** n Do Not Cancel on Disconnect/Logout E Do Not Increase F Do Not Reduce
54	Side	N	Side of the order or quote that was executed. Will not be stamped if RFQ quote is rejected. **Value Meaning** 1 Buy 2 Sell

38	OrderQty	N	Total order quantity.In the case of a quote, the executed side's size submitted with the last quote update. In the case of RFQ quotes, this will not be stamped if sent for a rejection. Order Quantity = Leaves Quantity + Cumulative Executed Quantity
1138	DisplayQty	N	Quantity currently displayed in the order book.
1084	DisplayMethod	N	Whether the order is a reserve order. **Value Meaning** 4 Undisclosed (Reserve Order)
44	Price	N	Limit price. Required if OrderType (40) is Limit (2) or Stop Limit (4).In the case of a quote, the executed side's price submitted with the last quote update.In the case of RFQ quotes, this will not be stamped if sent for a rejection.
694	QuoteRespType	N	**Value Meaning** 1 Hit/Lift 3 Expired 4 Cover 5 Done Away 7 End Trade 8 Timed Out 9 Tied

			10 Tied Cover 12 Contra Side
99	StopPx	N	Stop price/Trigger price. Required if OrderType (40) is Stop (3), Stop Limit (4) or Market If Touched (J).
211	PegOffsetValue	N	Trailing Offset added to trailing stop/stop limit orders. Only positive values are allowed with the value zero.
1091	PreTrade Anonymity	N	Whether the order is anonymous or named. Absence of this field is interpreted as Anonymous (Y). **Value Meaning** Y Anonymous N Named
528	OrderCapacity	Y	Capacity of the order. **Value Meaning** Agency A P Principal

583	ClOrdLinkID	N	Deal identifier of a block trade.
60	TransactTime	Y	Time the transaction represented by the Execution Report occurred.
30001	OrderBook	Y	**Value Meaning** 1 Regular 3 Odd Lot 4 Block Trade 5 All or None 6 Early Settlement 7 Auction 9 Bulletin Board 11 Negotiated Trades
30006	RFQID	N	Server specified identifier of a private RFQ.

63	Settle Type		N	Settlement Cycle applicable for the order. Only valid when Order Book is Block Trade (4). **Value** **Meaning** 0 Regular (T+3) 1 Cash (T) ~~2 Early Settle (T+1)~~ 3 (T+2) If the user does not send the settlement cycle and if the settlement type is required, the normal settlement cycle will be stamped. If the user sends the settlement cycle when the settlement cycle is not required for matching, then the field will be reset to null.
232	NoStipulations		N	Number of stipulations.
➡	233	StipulationType	N	Stipulation Type **Value** **Meaning** TERM Term of the repo trade RATE Rate of the repo trade
➡	234	StipulationValue	N	Value of the stipulation.
79	AllocAccount		N	Sub-account mnemonic. The CP Code of the Client ID will be mentioned here.
32022	LastOptPx		N	Converted price of the executed volatility of the options instrument.
1188	Volatility		N	Converted volatility of the executed price of the options instrument.

Standard Trailer

7.5.2 Business Message Reject

Tag	Field Name	Req	Description
Standard Header			
35	MsgType	Y	j = Business Message Reject
Message Body			
45	RefSeqNum	Y	MsgSeqNum (34) of the rejected message.
371	RefTagID	N	If aOrder Mass Status Request 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.
380	BusinessReject Reason	Y	Code specifying the reason for the rejection. Please refer to Section 8.3 for a list of reject codes.
58	Text	N	Text specifying the reason for the rejection.
Standard Trailer			

7.5.3 Order Mass Cancel Report

Tag	Field Name	Req	Description
Standard Header			
35	MsgType	Y	r = Order Mass Cancel Report
Message Body			
1180	ApplID	Y	Identity of the partition.
1369	MassActionReportID	Y	Server specified identifier of the message.
11	ClOrdID	Y	When mass cancellation is performed due to a partition failover, this will be the same value as MassActionReportID (1369).
530	MassCancelRequestType	Y	This field will be 'z' to indicate 'Partition Suspended'
531	MassCancel Response	Y	Action taken by server. **Value Meaning** z Cancelled All Orders for Partition
Standard Trailer			

7.5.4 Party Risk Limits Update Report

Tag	Field Name	Req	Description
Standard Header			
35	MsgType	Y	CR = Party Risk Limits Update Report
Message Body			
1667	RiskLimitReportID	Y	The unique identifier of the Party Risk Limits Update Report message.
79	AllocAccount	N	Sub-account mnemonic. The CP Code of the Client ID will be mentioned here.
<Party Risk Limits Group>			
1677	NoPartyRiskLimits	N	The number of party risk limits. If specified, the value should always be 1.
➡	1324 ListUpdateAction	N	The source of the PartyID value. **Value Meaning** S Snapshot Required if NoPartyRiskLimits (1677) > 0.
	<Parties Group>		
➡	1671 NoPartyDetails	N	Number of Party IDs. When PartyDetailRole (1693) is Client ID (3) with Executing Firm (1), value should be 2, in all other scenarios the value should be 1.
➡	➡ 1691 PartyDetailID	N	The identifier of the party. Required if NoPartyDetails (1671) > 0.
➡	➡ 1692 PartyDetailIDSource	N	The source of the PartyID value. Value Meaning D Proprietary/Custom Code Required if NoPartyDetails (1671) > 0.
➡	➡ 1693 PartyDetailRole	N	**Value Meaning** 1 Executing Firm 3 Client ID 4 Clearing Firm 53 Trader Mnemonic

					Required if NoPartyDetails (1671) > 0.
	<Risk Limits Group>				
➡	1669	NoRiskLimits		N	The number of risk limits. If specified, the value should always be 1.
➡	➡	1529	NoRiskLimitTypes	N	The number of risk limit types. If specified, the value should always be 1. Required if NoRiskLimits (1669) > 0.
➡	➡	➡	1530 RiskLimitType	N	The type of risk limit. **Value Meaning** 8 Total margin 1000 Position Required if NoRiskLimitTypes (1592) > 0.
➡	➡	➡	1767 RiskLimitAction	N	The action to be taken due to the update. **Value Meaning** 4 Warning 5 Square-Off 10 Suspend 100 Re-instate Required if NoRiskLimitTypes (1529) > 0.
➡	➡	➡	1766 RiskLimitUtilizationAmount	N	Absolute amount of utilization of a party's RiskLimitType (1530) specified.
➡	➡	➡	1765 RiskLimitUtilizationPercent	N	Percentage of utilization of a party's RiskLimitType (1530) specified.
		<Instrument Scope Group>			
➡	➡	1534	NoRiskInstrumentScopes	N	The number of instrument scopes. The value will always be 1 if specified. Required if RiskLimitType (1530) = Position (1000).

➡	➡	➡	1536	InstrumentScope Symbol	N	The symbol of the futures instrument the position limit applies to.
➡	➡	➡	1544	InstrumentScope ProductComplex	N	The base underlying the position limit applies to.
➡	➡	➡	1545	InstrumentScope Security Group	N	The base underlying to which the near month position limit applies to
➡	➡	➡	711	NoUnderlyings	N	Number of underlyings. If present, the value in this field should always be “1”.
➡	➡	➡	➡	Underlying Symbol (311)	N	Symbol of the underlying. Required if NoUnderlyings (711) is specified.
58	Text				N	Free format text string
32024	ServiceDeskUserID				N	User ID of the market operation user performing the manual status update Required if MemberUpdateSource is Service Desk User ID (1)
32025	MemberUpdateSource				Y	Identifies the source of RiskLimitAction (1767). **Value Meaning** 0 RMS 1 Service Desk User ID
32033	RiskReductionMode				N	Determines whether the risk reduction mode is enabled. **Value Meaning** 0 Off 1 On
Standard Trailer						

7.5.5 Party Risk Limit Report

Tag	Field Name	Req	Description
Standard Header			
35	MsgType	Y	CM = Party Risk Limits Report

Message Body					
1667	RiskLimitReportID			Y	The unique identifier of the Party Risk Limits Report message.
<Party Risk Limits Group>					
1677	NoPartyRiskLimits			N	The number of party risk limits. If specified, the value should always be 1.
➡	1324	ListUpdateAction		N	The source of the PartyID value. **Value Meaning** S Snapshot Required if NoPartyRiskLimits (1677) > 0.
	<Parties Group>				
➡	1671	NoPartyDetails		N	Number of Party IDs. If specified the value should always be 1.
➡	➡	1691	PartyDetailID	N	The identifier of the party. Required if NoPartyDetails (1671) > 0.
➡	➡	1692	PartyDetailIDSource	N	The source of the PartyID value. Value Meaning D Proprietary/Custom Code Required if NoPartyDetails (1671) > 0.
➡	➡	1693	PartyDetailRole	N	Value Meaning 1 Executing Firm 53 Trader Mnemonic Required if NoPartyDetails (1671) > 0.
	<Risk Limits Group>				
➡	1669	NoRiskLimits		N	The number of risk limits. If specified, the value should always be 1.
➡	➡	1529	NoRiskLimitTypes	N	The number of risk limit types. If specified, the value should always be 1. Required if NoRiskLimits (1669) > 0.

➡	➡	➡	1530	RiskLimit Type	N	The type of risk limit. Value Meaning 0 Total Collateral 2 MTM Margin 9 Initial Margin 99 MTM PL Required if NoRiskLimitTypes (1592) > 0.
➡	➡	➡	1766	RiskLimit UtilizationAmount	N	Absolute amount of utilization of a party's RiskLimitType (1530) specified.
➡	➡	➡	1765	RiskLimit UtilizationPercent	N	Percentage of utilization of a party's RiskLimitType (1530) specified.
58	Text				N	Free format text string
Standard Trailer						

8 REJECT CODES

8.1 Reject

Session Reject Reason	Meaning
1	Required tag missing[8]
2	Tag not defined for this message type[9]
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[10]
13	Tag appears more than once
14	Tag specified out of required order

[8] This reject reason is sent when all the required tags for the message are not present in a message that is recognized by the gateway

[9] Delete this reject reason if the configuration to reject unknown fieldsin application messages is disabled.

[10] This reject reason is sent when a message that is not defined in the FIX data dictionary is received by the gateway

15	Repeating group fields out of order
16	Incorrect NumInGroup count for repeating group
18	Invalid or unsupported application version
99	Other

8.2 Execution Report

OrdRej Reason	Meaning
1	Unknown instrument
2	Exchange closed
3	Order exceeds limit (i.e. rejected by risk management system)
5	Unknown order
6	Duplicate order (i.e. duplicate ClOrdID)
16	Price exceeds current price band
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
10007	Instrument not specified

10008	No open orders for specified instrument and Party ID combination
10009	Segment not specified
10010	Unknown segment
10011	No open orders for specified segment and Party ID combination

Please refer to the *<Reject Code Specification>* for the list of reject codes and meanings specific to *NSE*.

8.3 Business Message Reject

Business Reject Reason	Meaning
0	Other
2	Unknown Symbol
3	Unsupported message type[11]
4	Application not available
5	Conditionally required field missing
30	Session not in sync

8.4 Functional and Implementation Limitations

8.4.1.1 All the FIX gateways (FIX Trading, FIX Drop Copy and FIX Post Trade) currently use a common library. The system hence accepts all FIX messages defined for all three gateways, and cannot distinguish between them per gateway.

It will validate the incoming messages in the following sequence:

1. The system initially does a FIX library level validation
2. The system does a validation for required fields
3. The system finally does the Gateway level validation

Hence;

If a message is sent which does not comply with the specific gateway being used (but is defined in a different FIX gateway), it will validate the required fields. If any of the required tags are missing, it will give out a session reject with message "Required tag missing").

If a message is sent which does not comply with the specific gateway being used (but is defined in a different FIX gateway), it will validate the required fields. If all required fields are available, a gateway validation gives out a business reject message "Unsupported Message Type".

If a message is sent which does not comply with any of the FIX gateways used it will then give out a session reject message "Invalid Msg Type".

8.4.1.2 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 there is an exception to the fact that tag 11 is required in the Execution Report.

[11] This reject reason is sent when the received message is not defined as a valid message for the Drop Copy Gateway

8.4.1.3 If an undefined tag is sent along with any of the Administrative messages, then the system will ignore the undefined tags and process the rest of the message. This is a limitation exists in the FIX library**.**

8.4.1.4 The maximum length of the PartyID (448) field is 11. The value will be truncated to length 11 prior to the “user” validation. The system will accept the order if there is a corresponding trader group for the value after the truncation. Otherwise, the order will be rejected with reject reason "Unknown user (OwnerID)".

Example: Order with PartyID FT05TR011123 is entered to the system. (PartyID FT05TR011123 has more than 11 characters and not a configured user in the system). However, the system will truncate the trader group to 11 characters; FT05TR01112. If there is a corresponding trader for FT05TR01112 the system will accept the order. Otherwise, the system will reject the order stating “Unknown User”.