

NSX BLADE FIX Specification

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Table of Contents

NSX BLADE FIX Specification	1
FIX Protocol Disclaimer	2
Table of Contents	3
Introduction	4
NSX FIX Certification.....	4
NSX – Information	4
Reg NMS	4
Hours of Operation	5
Supported Messages.....	5
Session Messages	5
Standard Message Header (inbound).....	6
Standard Message Header (outbound).....	7
Standard Message Trailer (inbound/outbound)	8
Logon (inbound)	8
Logout (inbound/outbound).....	8
Heartbeat (inbound/outbound).....	9
Test Request (inbound/outbound)	9
Resend Request (inbound/outbound).....	9
Reject (inbound/outbound)	10
Sequence Reset (inbound/outbound)	10
Application Messages	11
New Order – Single (inbound)	11
Automatic Order Cancellation.....	13
Cancel Request (inbound).....	16
Cancel/Replace Request (inbound).....	17
Order Cancel Reject (outbound).....	18
Execution Report (outbound).....	18
Order Delivery	24
New Order	24
Execution Report	26
DK Message	27
Appendix 1 - Reject Reason Values / Text Messages	29
Appendix 2 – Symbology	32
Tape C Listed Securities.....	32
Tape A & B Listed Securities	33
Appendix 3 – Routing Destinations	34

Introduction

The purpose of this document is to define the implementation of the FIX Protocol by the National Stock Exchange, Inc.SM (“NSXSM”). NSX has implemented FIX version 4.2 with minor modifications, to allow its ETP Holders to send order flow and receive executions from NSX. This document provides the layout of the messages and tags, as well as their interpretations for processing within NSX’s system.

This document should be utilized as an addendum to the Fix 4.2 Specification, provided by www.fixprotocol.org, and not its substitute, as NSX will only support a subset of the full specification.

Notes:

- Messages absent from this document are NOT supported, and if sent will be “Rejected”.
- Tags absent from this document are not supported, and if sent will be handled in this manner:
 - Tags that are defined in the FIX protocol as part of the message being processed but are not supported by this document will not stop the message from being processed but the unsupported tags will be ignored.
 - Tags that are defined in the FIX protocol but are not defined as part of the message being processed will cause the message in its entirety to be rejected.
 - Custom or unknown tags that are not supported by this document will cause the entire message to be rejected.
- Values absent from this document are NOT supported, and if sent will be “Rejected”.
- NSX does NOT support Encryption

NSX FIX Certification

Connectivity and certification to NSX will be performed according to the ETP Holder Certification Specification document.

NSX – Information

NSX, the nation's first all-electronic stock exchange – is *the* low-cost provider of exchange services and a recognized alternative to the primary markets. NSX provides its ETP Holders with the ability to trade Nasdaq, NYSE, and AMEX listed securities.

Note: only equity trading is allowed.

Reg NMS

NSX has configured their systems to be compliant with Regulation NMS (“Reg NMS”). In the event that the compliance date will be extended by the Securities and Exchange Commission (“SEC”), NSX systems will operate in compliance with Reg NMS.

Hours of Operation

NSX allows trading between the hours of 8AM ET and 6:30 PM ET.¹ ETP Holders will utilize the “Time in Force” indicator to define the trading hours for their orders. Any order related message received prior to 8 AM and after 6:30 PM will be rejected.

NSX will not support multi-day orders (*i.e.*, Good Till Cancel / Good Till Date Orders). Any orders in the NSX book at the close of business (6:30 PM ET) will be canceled.

Supported Messages

The FIX Specification differentiates the various message types into 2 categories: Session (Administrative) and Application (Business). NSX will support the following message types:

Session (Administrative):

- Heartbeat
- Test Request
- Resend Request
- Reject
- Sequence Reset
- Logout
- Logon

Application (Business):

- Order - Single
- Order Cancel Request
- Order Cancel/Replace Request
- Execution Report
- Order Cancel Reject
- Don't Know – Order Delivery Only

Note: All other message types are not supported and will be rejected.

Session Messages

NSX will always serve as the “server” in its FIX connections, and expects the ETP Holder’s systems to serve as “clients”. As such, “clients” will establish connectivity by first sending a Logon Message.

NSX recognizes that third party connectivity is common through out the marketplace, and as such supports order flow via an intermediary connection. Per the FIX Specification, connectivity via third parties requires the use of additional tags (*e.g.*, OnBehalfOfCompId) as defined.

¹ All times listed in this specification, unless otherwise indicated, are Eastern Time.

Standard Message Header (inbound)

The Standard Message Header is required on all messages. The table below outlines the Standard Header that NSX will support if received.

Note: in the case of third party transmission of messages, inbound (to NSX) message will require the OnBehalfOfCompld tag.

Tag	Field Name	Required	Comments
8	BeginString	Y	Constant = FIX4.2
9	BodyLength	Y	Required to be field 2
35	MsgType	Y	Required to be field 3. Valid Value(s): 0 = Heartbeat 1 = Test Request 2 = Resend Request 3 = Reject 4 = Reset Sequence 5 = Logout 8 = Execution Report 9 = Order Cancel Reject A = Logon D = New Order Single F = Order Cancel G = Order Cancel/Replace
49	SenderCompld	Y	4 Character
56	TargetCompld	Y	Inbound: Valid Value(s): NSX
34	MsgSeqNo	Y	Previous Message + 1
43	PossDupFlag	N	Required when retransmitting messages either normally or when requested.
97	PossResend	N	Required when message is a resend of a previous message with a different sequence number.
52	SendingTime	Y	Valid Value(s): UTC Date Time
122	OriginalSendingTime	N	Required when PossDupFlag or PossResend flag is set. NSX will populate this field with TransactTime of the previous message.
115	OnBehalfOfCompld	N	Required if message flow is via a third party (e.g., Service Bureau). NSX will respond with Tag 128 – DeliverToCompld
370	OnBehalfOfSendingTime	N	Required if message flow is via a third party (e.g., Service Bureau.)
<u>143</u>	<u>TargetLocationId</u>	<u>N</u>	<u>NSX requires this TAG to be sent, echoing the value sent in SenderLocationID (to be used for OrderDelivery).</u>

Standard Message Header (outbound)

The Standard Message Header is required on all messages. The table below outlines the Standard Header that NSX will send.

Note: in the case of third party transmission of messages outbound (from NSX) will include the DeliverToCompld tags.

Tag	Field Name	Required	Comments
8	BeginString	Y	Constant = FIX4.2
9	BodyLength	Y	Required to be field 2
35	MsgType	Y	Required to be field 3. Valid Value(s): 0 = Heartbeat 1 = Test Request 2 = Resend Request 3 = Reject 4 = Reset Sequence 5 = Logout 8 = Execution Report 9 = Order Cancel Reject A = Logon D = New Order Single F = Order Cancel G = Order Cancel/Replace
49	SenderCompld	Y	Valid Value: NSX
56	TargetCompld	Y	
34	MsgSeqNo	Y	Previous Message + 1
43	PossDupFlag	N	Required when retransmitting messages either normally or when requested.
97	PossResend	N	Required when message is a resend of a previous message with a different sequence number.
52	SendingTime	Y	Valid Value(s): UTC Date Time
122	OriginalSendingTime	N	Required when PossDupFlag or PossResend flag is set. NSX will populate this field with TransactTime of the previous message.
<u>128</u>	<u>DeliverToCompld</u>	<u>N</u>	<u>NSX will send this TAG if it receives Tag 115 OnBehalfOfCompId</u>
<u>142</u>	<u>SenderLocationID</u>	<u>N</u>	<u>NSX may send this tag, and will require it to be returned via 143 TargetLocationID (to be used for OrderDelivery)</u>

Standard Message Trailer (inbound/outbound)

All messages sent to or from NSX will contain the following trailer, which must be the LAST part of the message.

Tag	Field Name	Required	Comments
10	Checksum	Y	Char 3; Required to be LAST field

Logon (inbound)

The Logon message must be the first message sent to NSX at the start of each connection. NSX will NOT send the Logon message.

Tag	Field Name	Required	Comments
	StandardHeader	Y	MsgType = A
98	EncryptMethod	Y	Valid Values: 0 = No Encryption
108	HearbeatInt	Y	Valid Value(s): 30 (seconds)
141	ResetSeqNumFlag	N	Valid Value(s): Y/N
	StandardTrailer	Y	

Logout (inbound/outbound)

The Logoff message will be the last message sent on the connection. Either NSX or an ETP Holder can send the Logoff message.

If there are orders in the book, when the Logoff message is received, then NSX will end the connection and CANCEL all remaining orders. At this stage, NSX will NOT send notifications (cancel execution reports) on these order cancels.

Tag	Field Name	Required	Comments
	StandardHeader	Y	MsgType = 5
58	Text	N	
	StandardTrailer	Y	

Heartbeat (inbound/outbound)

The Heartbeat monitors the status of the communication link. It is sent automatically based on the interval set in the Logon message.

Tag	Field Name	Required	Comments
	StandardHeader	Y	MsgType = 0
112	TestReqId	N	Inserted when responding to a test request.
	StandardTrailer	Y	

Test Request (inbound/outbound)

Per specification, the Test Request message is used to force a heartbeat to verify connectivity status and sequence number generation.

Tag	Field Name	Required	Comments
	StandardHeader	Y	MsgType = 1
112	TestReqId	Y	Unique Identifier echoed in heartbeat response.
	StandardTrailer	Y	

Resend Request (inbound/outbound)

In the event that a sequence number gap is detected, the Resend Request message will notify the opposite party to “resend” messages. The NSX mechanism supports the ability to resend n-n messages, and n-0 (infinity) messages (where n is the Message Sequence Number).

Tag	Field Name	Required	Comments
	StandardHeader	Y	MsgType = 2
7	BeginSeqNo	Y	Start sequence of resend (inclusive)
16	EndSeqNo	Y	End sequence of resend (inclusive)
	StandardTrailer	Y	

Reject (inbound/outbound)

NSX will utilize the Reject message in response to a message that could not be processed. Rejections for invalid message format or field restrictions will also be identified. Where applicable, NSX will send the reason for the reject in the Text (tag 58). See Appendix 1 for all possible Reject reasons above the standard.

Note: Business Reject Message (MsgType=j) is not supported.

Tag	Field Name	Required	Comments
	StandardHeader	Y	MsgType = 3
45	RefSeqNo	Y	Message sequence in error
371	RefTagId	N	Tag in error when applicable
372	RefMsgType	N	Message type in error when applicable
373	RejectReason	N	Reason codes (see Appendix 1)
58	Text	N	Reject Explanation (see Appendix 1)
	StandardTrailer	Y	

Sequence Reset (inbound/outbound)

In the event either system detects an error in Sequence Numbers, this message will be sent to rectify the situation.

Tag	Field Name	Required	Comments
	StandardHeader	Y	MsgType = 4
123	GapFillFlag	N	Valid Value(s): Y = previous messages may be requested. N = no retransmissions will be allowed.
36	NewSeqNo	Y	The sequence number to be used for the current session.
	StandardTrailer	Y	

Application Messages

New Order – Single (inbound)

The new order – single message will be utilized by all ETP Holders to submit orders to NSX. Users may enter proprietary orders and agency orders for the account of a customer. Proprietary orders accepted by the System from Users are subject to the same ranking and execution processes as agency orders. A User that enters a proprietary order into the System shall mark the order with the appropriate designator to identify the order as proprietary. All agency orders shall be designated as such and with each agency order, the User shall include a unique account number or other identifier that enables the User to identify the User's customer on whose behalf the order is being entered. NSX recommends utilizing the Client Order ID (11) as this unique identifier.

Order Types

NSX supports Market, Limit, and Zero Display Orders on Tape-A, Tape-B and Tape-C listed securities. All other "order types" are modifiers/contingencies to these 3 main types, these include:

- a) NSX Only (HandInst (21) = 4) – a market/limit order that can only execute at NSX is not eligible for routing. Limit, NSX Only orders are eligible to be canceled or cancel replaced. If the order is marketable, at time of entry, at an away destination, but not at NSX, then the order will be rejected.
- b) Post Only (HandInst (21) = P) – a limit order that adds liquidity. If the order is marketable, at time of entry, than :
 - I. If it is Pre-RegNMS, **and** OTC symbol, **and** non-marketable on NSX book, than the order will be accepted.
 - II. All other situations (Post RegNMS, **or** Listed symbol, **or** marketable on NSX book) the order will be rejected.These orders are eligible to be canceled or cancel replaced.
- c) Destination / Route Only (HandInst (21) = "d") – a non-IOC market or limit order that is sent through NSX to another destination for execution. For these orders, the ETP Holder must identify the ExDestination (100). NSX will first execute against NSX book, then will convert all Destination orders into Limit IOC orders prior to sending. If IOC is not supported by the destination venue, then NSX will send a Limit order followed by a Cancel. These orders are NOT eligible to be canceled or cancel replaced. NSX supports all destination venues via various systems connectivity.
- d) Reserve Order (MaxFloor > 0) – a limit order with a separate "display quantity", which hides the full order amount. The Display Quantity must be a Round Lot, and an amount less than the Order Quantity. If the order is marketable at the time of entry, at an away destination but not at NSX, then the away market quote quantity will be routed; even if it exceeds the display quantity. These orders are eligible to be canceled or cancel replaced.
- e) Zero Display Reserve Order (OrdType 40=Z, MaxFloor 111=0) – a limit or market order with a separate "display quantity" of zero which hides the amount of the order. Market

orders with the Zero Display contingency must be marked with a pegged Execlnst. Zero Display orders must be explicitly marked as Nsx Only or Post Only. Zero display orders can only execute on the NSX and cannot be routed. Zero Display orders are eligible to be canceled and cancel & replaced.

- f) Pegged Order (Execlnst 18=M, P or R) – Only zero display orders will support pegging; if a displayable order is flagged as pegged, it will be rejected. The only Peg types supported will be market, primary and mid-point; the offset peg type will not be supported by NSX at this time.

REG NMS Compliance

The following additional order types and modifiers are supported in compliance with the Reg NMS requirements.

- a) Sweep Order – This indicator is used to facilitate a Sweep of the NSX book and all the protected market centers, up to the order quantity and limit price. The outbound orders generated by the sweep will be marked as Intermarket Sweep Orders (Execlnst (18) = “f”); such that away markets execute the orders at prices inferior to the NBBO. These orders are NOT eligible to be canceled or cancel replaced. Sweep Orders have 2 modifiers:
 1. Sweep and Cancel (Execlnst (18) = “s”) – if the execution of the sweep to the order price, results in open shares on the order, then those shares will be canceled. This will be the default behavior of a Sweep order. These orders are not eligible to be canceled or cancel replaced.
 2. Sweep and Post (Execlnst (18) = “s” and HandlInst(21) = “P”) – if indicated, then open shares on the order, upon execution of the Sweep, will be posted in the NSX book at the order price. These orders are eligible to be canceled or cancel replaced.
- b) Intermarket Sweep Orders (Execlnst (18) = “f”). NSX will respond to these Limit IOC orders to execute against NSX’s Protected Quote, regardless of the NBBO, and will not route them outbound. These orders are NOT eligible to be canceled or cancel replaced.
- c) Destination Sweep Order (Execlnst (18) = “s”, HandlInst (21) = “d”, and ExDestination (100)) – will allow an NSX ETP Holder to specifically sweep an away market center. NSX will execute this order against its own book first. Then, NSX will route this order as Intermarket Sweep Order to the specified destination.

Time in Force

The NSX business day is 8AM ET – 6:30 PM ET. The following chart identifies the TimeinForce (59) indicators applicable during the various times of the day. Note: NSX does not specify Trading Sessions.

	IOC (59=3)	Day (59 = 0) / GTC (59 = 1)	GTX (59 = 5)
8:00 - 9:30	X	X	X
9:30 - 4:00*	X	X	X

4:00 - 6:30	X	Rejected	X
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All Day / GTC orders in the book at 4:00 PM ET will be Expired. *Close of the regular trading day will be determined on a per symbol basis, to account for those securities (e.g., ETFs) that close at 4:05 or 4:15PM ET.

NSX does not support multi-day orders. All orders in the book at 6:30 PM ET will be Canceled. Orders received prior to 8:00 AM ET or after 6:30 PM ET will be Rejected.

As TimeinForce (59) is not a mandatory field, if not specified on the order, NSX will default Market Orders to IOC, and Limit Orders to Day.

Immediate or Cancel (IOC) orders are not eligible to be canceled or cancel replaced, as upon system processing any open shares will be canceled.

Expiration Time

NSX supports order expiration for new orders. Order expiration time can be specified using optional ExpireTime (126) field. If the ExpireTime field is present and its value is older than the current time, the order is rejected.

Expiration Time can be specified for all order types and all TIF values, including IOC orders.

Expiration Time is only checked upon receiving the order from the client. After the order passes the initial Expiration Time validation and is posted to the NSX book, the Expiration Time is no longer re-evaluated and the order will remain in the NSX book until it is executed or cancelled, regardless of the Expiration Time value.

Price – Sub-Penny Rule

As NSX will be Reg NMS Compliant, it will enforce price validations on orders. There are 3 main consideration factors:

1. Prices greater than or equal to \$1.00, may indicate no more than 2 decimal places
2. Prices less than \$1.00, may indicate no more than 4 decimal places
3. On a per symbol basis, there may exemptions to allow a security to trade at price with up to 4 decimal places (e.g., ETFs)

Automatic Order Cancellation

The NSX FIX engine, upon detection of a failure, will submit cancel request to the NSX Matching Engine for all orders in the NSX Book that were entered by the ETP Holder on the failed line.

NOTE: it is possible for an order in the book to be executed against, prior to the receipt of the cancel message.

Deviations from the FIX 4.2 Specification:

1. OrderQty (38) is Required; CashOrderQty (152) is not supported.
2. ClientID (109) is Required
3. ExpireTime (126) is optional and is supported regardless of TIF.
4. In circumstances where values specified on a New Order are not allowed, then the system will reject the message, and send a Reject Message (MsgType = 3).

Tag	Field Name	Required	Comments
	StandardHeader	Y	MsgType = D
11	ClOrdId	Y	Maximum 25 chars.
18	ExecInst	N	<p>Valid Value(s):</p> <p>s = Sweep Order</p> <p>f = Intermarket Sweep Order</p> <p>P = Market Peg (pegged to the opposite side of NBBO) - for Zero Display orders (40 = Z) only</p> <p>R = Primary Peg (pegged to the same side of NBBO) - for Zero Display orders (40 = Z) only</p> <p>M = Mid-point Peg (pegged to mid-price of inside quote) - for Zero Display orders (40 = Z) only</p> <p>Note: only 1 value allowed</p>
21	HandlInst	Y	<p>Valid values:</p> <p>1 = Automatic Execution, No Broker - Default</p> <p>4 = NSX Only</p> <p>d = Destination / Route Only Order</p> <p>P = Post Only</p>
38	OrderQty	Y	Must be a whole number
40	OrdType	Y	<p>Valid Value(s):</p> <p>1 = At Market</p> <p>2 = Limit</p> <p>Z = Zero Display</p> <p>Note, that if the OrdType is 'Z' (Zero Display) and ExecInst (18) is set to 'P' (Market Peg), 'R' (Primary Peg) or 'M' (Mid-point Peg) the order will be treated as a Zero Display Pegged order. If the Execution Instruction is not set, the order will be treated as a Zero Display Limit order.</p>

Tag	Field Name	Required	Comments
44	Price	N	Required when OrdType = 2; or OrdType is 'Zero Display' (40 = Z) and Execlnst (18) is not in 'P' (Market Peg), 'R' (Primary Peg) or 'M' (Mid-point Peg); If OrdType is 'Zero Display' (40 = Z) and Execlnst (18) is set to 'P' (Market Peg), 'R' (Primary Peg) or 'M' (Mid-point Peg) then only value of 0 (zero) is allowed, all other value will be rejected. If OrdType = 1 then 0 (zero) is allowed, all other values will be Rejected.
47	OrderCapacity (Rule80A)	Y	Valid Value(s): A = Agency single order P = Principal
54	Side	Y	Valid Value(s): 1 = Buy 2 = Sell 5 = Sell Short
55	Symbol	Y	Ticker Symbol and Suffix – See Appendix 2 Note: SymbolSfx (65) is NOT supported.
58	Text	N	
59	TimeInForce	N	Valid Value(s): 0 = Day 1 = GTC (converted to Day) 3 = IOC 5 = GTX
60	TransactTime	Y	UTCTimestamp
126	ExpireTime	N	UTCTimestamp, Specified the time after which the order can no longer be accepted
100	ExDestination	N	Required for "Destination Orders" (21="d") – See Appendix 3.
109	ClientID	Y	MPID or as defined in the ETP Holder setup
111	MaxFloor	N	Required for Reserve and Zero Display Orders, indicates the "Display/Replenishment" qty – only Round Lots allowed; For Reserve orders must be less than OrderQty but greater than zero. For Zero Display Orders must be equal to zero.

Tag	Field Name	Required	Comments
114	LocateReqd	N	Required for Sell Short and Sell Short Exempt Orders, valid value(s): N = NO On October 5, 2007 NSX will no longer be able to accept orders marked "short exempt". Reports with trade dates prior to 10/5/07 will be accepted.
439	ClearingFirm	N	If different than Clearing Broker defined in the ETP Holder setup
	StandardTrailer	Y	

Cancel Request (inbound)

An ETP Holder can submit a Cancel Request to cancel an existing order in the NSX book. Orders, not in the book, e.g., marked Immediate or Cancel, or Destination/Route Only, are not able to be canceled.

A Cancel Request, will be processed upon receipt, however, an order may not be instantaneously cancelable (For example, if an order has been routed to an alternate destination, and a Cancel Request is received, then the order will be placed in a Pending Cancel state. Based upon the alternate destination's response, the order may be filled (order cancel rejected), partially filled (with the remaining open shares canceled), or fully canceled as requested.

Tag	Field Name	Required	Comments
	StandardHeader	Y	MsgType = F
41	OrigClOrdId	Y	Maximum 25 chars.
11	ClOrdId	Y	Maximum 25 chars.
38	OrderQty	Y	
55	Symbol	Y	Must match the original order
54	Side	Y	Must match the original order
60	TransactTime	Y	
37	OrderId	N	
76	ExecBroker	N	
109	ClientId	N	
58	Text	N	
	StandardTrailer	Y	

Cancel/Replace Request (inbound)

NSX supports the ability to Cancel Replace orders for 3 order attributes:

1. Price (44) – on limit orders. Note: a Market order cannot be changed to a Limit order or vice versa.
2. OrderQty(38) – on limit orders.
3. Text (58)

Note: changes to other values are not allowed and will be ignored and/or cause the Cancel Replace message to be rejected.

An ETP Holder can submit a Cancel Replace Request to cancel an existing order in the NSX book. Orders, not in the NSX book (e.g., marked Immediate or Cancel, or Destination/Route Only) are not able to be canceled or cancel replaced.

A Cancel Replace Request, will be processed upon receipt, however, an order may not be instantly replaceable (For example, if an order has been routed to an alternate destination, and a Cancel Replace Request is received, then the order will be placed in a Pending Replace state. Based upon the alternate destination's response, the order may be filled (replace quantity is less than executed quantity), partially filled (replace quantity is greater than the executed quantity) or replaced as requested.

Tag	Field Name	Required	Comments
	StandardHeader	Y	MsgType = G
41	OrigClOrdId	Y	Maximum 25 chars.
11	ClOrdId	Y	Maximum 25 chars.
18	ExecInst	N	Must be present if the original OrdType is 'Zero Display' (40 = Z) and ExecInst (18) is set to 'P' (Market Peg), 'R' (Primary Peg) or 'M' (Mid-point Peg)
38	OrderQty	Y	
55	Symbol	Y	Must match the original order
54	Side	Y	Must match the original order
44	Price	Y	If OrdType is 'Zero Display' (40 = Z) and ExecInst (18) is set to 'P' (Market Peg), 'R' (Primary Peg) or 'M' (Mid-point Peg) then only value of 0 (zero) is allowed, all other value will be rejected.
40	OrdType	Y	Must match the original order
60	TransactTime	Y	
21	HandlInst	Y	Must match the original order
59	TimeInForce	Y	Must match the original order

37	OrderId	N	
76	ExecBroker	N	
109	ClientId	N	
58	Text	N	
	StandardTrailer	Y	

Order Cancel Reject (outbound)

NSX will send an Order Cancel Reject message, upon receipt of a Cancel or Cancel Replace Request, where the Order could not be canceled or cancel replaced (e.g., Too Late To Cancel).

Tag	Field Name	NSX Sends	Comments
	StandardHeader	Y	MsgType = 9
37	OrderID	Y	
11	ClOrderID	Y	
41	OrigClOrderID	Y	
39	OrdStatus	N	Status of original order
434	CxlRejResponseTo	Y	Valid Value(s): 1 = Order Cancel Request 2 = Order Cancel Replace Request
102	CxlRejReason	Y	Valid Value(s): 0 = Too late to cancel 1 = Unknown order 2 = Broker Option 3 = Order already in Pending Cancel or Pending Replace status
58	Text	Y	Text Reject Reason – See Appendix 1
109	ClientId	Y	
60	TransactTime	N	
	StandardTrailer	Y	

Execution Report (outbound)

The Execution Report is the most versatile message, and will be used by NSX to report a multitude of information on an Order to the ETP Holder, including:

- a. Order Acknowledgement
- b. Order Partial Fill
- c. Order Execution
- d. Order Cancel Acknowledgment
- e. Order Cancellation (upon request or system processing)

- f. Order Cancel Replace Acknowledgment
- g. Order Cancel Replacement
- h. Order Expiration
- i. Order Rejection

Order Status

NSX supports the following Order Status values, with their corresponding definitions:

FIX Value	Order Status	FIX Precedence	FIX Definition	NSX Definition
0	New	2	Outstanding order with no executions	Open Order, has been Acknowledged
1	Partially Filled	4	Outstanding order with executions and remaining quantity	Open Order, with at least 1 Partial Execution, OrderQty < CumQty (Leaves Qty > 0)
2	Filled	8	Order completely filled, no remaining quantity	Completed Order, OrderQty=CumQty, (Leaves Qty = 0)
4	Canceled	5	Canceled order with or without executions	Completed Order, has been Cancelled, OrderQty >= CumQty; Leaves Qty=0. See Below
5	Replaced	3	Replaced order with or without executions	Open Order, Leaves Qty > 0,
6	Pending Cancel	12	Order with an Order Cancel Request pending, used to confirm receipt of an Order Cancel Request. DOES NOT INDICATE THAT THE ORDER HAS BEEN CANCELED.	Open Order, Cancel Request has been Acknowledged.
8	Rejected	2	Order has been rejected by broker. NOTE: An order can be rejected subsequent to order acknowledgment, i.e. an order can pass from New to Rejected status.	Completed Order, failed validation/processing (ex. Tick Test). See Below
C	Expired	5	Order has been canceled in broker's system due to time in force instructions.	Completed Order, OrderQty >= CumQty, Leaves Qty = 0, ex. DAY TIF order in the book at 4:00 PM ET.
E	Pending Replace	11	Order with an Order Cancel/Replace Request pending, used to confirm receipt of an Order Cancel/Replace Request. DOES NOT INDICATE THAT THE ORDER HAS BEEN REPLACED	Open Order, Replace Request has been Acknowledged.

FIX Precedence determines which Order Status to apply if more than one is applicable – Order Status will typically use the one with the higher FIX Precedence value.

The “Canceled” order status is utilized when:

- a. An ETP Holder sends a Cancel Request
- b. An order with an IOC Time in Force indicator when no shares are executed. If a partial execution has occurred, then 2 execution reports will be sent:
 1. A Partially Filled for the executed shares, and
 2. A “Cancel” with a “TIF expired” in Text (58) for the remaining shares.
- c. All orders in the NSX book at 6:30 PM ET.

The “Rejected” order status is utilized when:

- a. Order fails validation (e.g., Tick Test)
- b. NBBO is undefined / unavailable
- c. If at time of entry of a non-IOC Market or marketable Limit order when no contra shares are available and the order is not routable to an external Market.

Note: in certain instances, an order message may fail validation, resulting in a Reject message (MsgType=3) to be sent, instead of an Execution Report (MsgType=8).

Tag	Field Name	Always Sends	May Send	Comments
	Standard Header	Y		MsgType = 8
37	OrderID	Y		NSX Order ID
11	ClOrdID	Y		
41	OrigClOrdID		Y	
109	ClientID	Y		
76	ExecBroker		Y	
17	ExecID	Y		
20	ExecTransType	Y		Valid Value(s): 0 = New 3 = Status
150	ExecType	Y		Valid Value(s): 0 = New 1 = Partial fill 2 = Fill 4 = Canceled 5 = Replace 6 = Pending Cancel 8 = Rejected C = Expired E = Pending Replace

Tag	Field Name	Always Sends	May Send	Comments
39	OrdStatus	Y		Valid Value(s): 0 = New 1 = Partially filled 2 = Filled 4 = Canceled 5 = Replaced 6 = Pending Cancel 8 = Rejected C = Expired E = Pending Replace
103	OrdRejReason		Y	For use with ExecType = 8 (Rejected)
55	Symbol	Y		
54	Side	Y		
38	OrderQty	Y		
40	OrdType	Y		
44	Price		Y	Required if specified on the order
59	TimeInForce		Y	
18	ExecInst		Y	
47	Rule80A (OrderCapacity)		Y	
32	LastShares		Y	
31	LastPx		Y	
30	LastMkt		Y	
29	LastCapacity		Y	Valid Value(s): 1 = Agent
151	LeavesQty	Y		
14	CumQty	Y		
6	AvgPx	Y		
60	TransactTime	Y		
21	HandlInst	Y		
111	MaxFloor		Y	
58	Text		Y	
439	ClearingFirm		Y	

Tag	Field Name	Always Sends	May Send	Comments
9730	TradeLiquidityIndicator		Y	Identifies the Liquidity Role. Valid value(s): A - Added Liquidity R - Removes Liquidity X - Routed Only sent if OrderStatus (39) = 1 (Partial filled) or 2 (Filled)
	Standard Trailer	Y		

Order Delivery

NSX will support Order Delivery Functionality. Order Delivery (“OD”) will provide ETP Holders with the ability to post orders in the NSX book, and receive matched order messages for Acknowledgement, prior to execution by NSX.

This feature has to be requested and configured by NSX separately from the regular FIX Order Flow. If you are not an OD participant, or your FIX connection is not configured as an OD connection, you will never receive these outbound messages, and are expected never to send back these inbound messages.

To utilize Order Delivery functionality, an ETP Holder must have 2 FIX connections to NSX, as an order provider and an order acceptor.

Both the ETP Holder and the FIX Connection must be configured for OD functionality. If not configured, the following messages will never be sent, and are not expected to be received.

The original order delivery orders from the ETP Holder will be received and processed as described above, via the order provider FIX connection. Upon a match, NSX will process the following message flow via the order acceptor FIX connection.

New Order

Outbound – from NSX, inbound to OD ETP Holder via order acceptor connection

NSX will send a matched (contra side order) message with the ETP Holder’s order delivery order id via the use of Tag 117 – Quote ID – defined as Required for Previously Quoted Orders.

Example: ETP Holder sends Order Delivery Order 1234, which sits in the NSX Book. NSX receives a contra side order, 5678, which matches 1234. NSX will send the contra side order message with Tag 117 (Quote ID) = 1234, to identify the matched Order Delivery Order.

Note: all submissions by NSX of the matched contra side order will be anonymous.

Tag	Field Name	Always Send	May Send	Comments
	StandardHeader	Y		MsgType = D
11	ClOrdId	Y		NSX Order Id
21	HandlInst	Y		Valid values: 1 = Automatic Execution, No Broker - Default
38	OrderQty	Y		
40	OrdType	Y		Valid Value(s): 2 = Limit

Tag	Field Name	Always Send	May Send	Comments
44	Price	Y		
47	OrderCapacity (Rule80A)		Y	Valid Value(s): A = Agency single order P = Principal
54	Side	Y		Valid Value(s): 1 = Buy 2 = Sell 5 = Sell Short 6 = Sell Short Exempt On October 5, 2007 NSX will no longer be able to accept orders marked "short exempt". Reports with trade dates prior to 10/5/07 will be accepted.
55	Symbol	Y		Ticker Symbol and Suffix – See Appendix 2 Note: SymbolSfx (65) is NOT supported.
58	Text		Y	
59	TimeInForce	Y		Valid Value(s): 3 = IOC
60	TransactTime	Y		UTCTimestamp
76	ExecBroker		Y	
109	ClientID	Y		Valid Values: NSX
114	LocateReqd		Y	Required for Sell Short and Sell Short Exempt Orders, valid value(s): N = NO On October 5, 2007 NSX will no longer be able to accept orders marked "short exempt". Reports with trade dates prior to 10/5/07 will be accepted.
117	QuoteID	Y		Will indicate the Client Order ID of the original Order Delivery Order
575	OddLot	N	Y	Valid Values: Y – Odd or Mixed Lots are allowed N – Round Lots only (If this field is not specified, the default will be "Y")
	StandardTrailer	Y		

Execution Report

Inbound – to NSX, outbound from OD ETP Holder via order acceptor connection

When an Order Delivery ETP Holders receives a matched (contra side) order for acknowledgment, the ETP Holder will respond by sending an Execution Report indicating one of the following:

- Fill
- Partial
- Cancel
- Reject

Note: if the ETP Holder sends any execution report other than a Fill or fails to respond within a configurable time, the outstanding shares on the Order Delivery Order will be canceled.

The ETP Holder should suppress any Acknowledgement messages, to identify receipt of the matched, contra side order message.

In all Execution Reports, the ETP Holder must send Tag 198 – SecondaryOrderID – which must contain the identifier of the Order Delivery Order.

Note: the ETP Holder may not send a different Order Delivery Order Id. If the value of the SecondaryOrderid does not match, then the acknowledgment execution report will be DK'd. Subsequently, the original order delivery order in the NSX book will be canceled.

Tag	Field Name	Required	Comments
	Standard Header	Y	MsgType = 8
37	OrderID	Y	
11	ClOrdID	Y	Identifies the matched (contra side) order
17	ExecID	Y	
20	ExecTransType	Y	Valid Value(s): 0 = New
150	ExecType	Y	Valid Value(s): 1 = Partial fill 2 = Fill 4 = Canceled 8 = Rejected
39	OrdStatus	Y	Valid Value(s): 1 = Partially filled 2 = Filled 4 = Canceled 8 = Rejected
103	OrdRejReason	N	Required if ExecType = 8 (Rejected)
55	Symbol	Y	

Tag	Field Name	Required	Comments
54	Side	Y	
38	OrderQty	Y	
40	OrdType	Y	Valid Value: 2 = Limit
44	Price	Y	
59	TimeInForce	Y	Valid Values: 3 = IOC
18	ExecInst	N	
47	Rule80A (OrderCapacity)	N	
32	LastShares	Y	
31	LastPx	Y	
151	LeavesQty	Y	
14	CumQty	Y	
6	AvgPx	Y	
60	TransactTime	N	
58	Text	N	
198	SecondaryOrderID	Y	Will indicate the Client Order ID of the original Order Delivery Order. This field MUST echo back the value of the Tag 117 (QuoteID) in the New Order.
	Standard Trailer		

DK Message

The Don't Know Trade message notifies the ETP Holder that an execution report message was rejected, as it was received after the expiration of the configurable time parameter, or the SecondaryOrderID did not match. The DK message is only sent to Order Delivery ETP Holders via the order acceptor connection.

Tag	Field Name	NSX Sends	Comments
	StandardHeader	Y	MsgType = Q
37	OrderID	Y	
17	ExecID	Y	
127	DK Reason	Y	
55	Symbol	Y	

Tag	Field Name	NSX Sends	Comments
54	Side	Y	
38	OrderQty	Y	
58	Text	Y	
	StandardTrailer	Y	

Appendix 1 - Reject Reason Values / Text Messages

Session Reject Reason (Tag 373) Values and Text (Tag 58)

Tag 373	Tag 58 (Session Reject Reason) - Generated per FIX
0	Invalid tag number
1	Required tag missing
2	Tag not defined for this message type
3	Undefined Tag
4	Tag specified without a value
5	Value is incorrect (out of range) for this tag
6	Incorrect data format for value
7	Decryption problem
8	Signature problem
9	Compld problem
10	SendingTime accuracy problem
11	Invalid MsgType
	Tag appears more than once
	Tag specified out of required order

Tag 373	Tag 58 (Session Reject Reason) - Generated by system
0	The Quantity must be a whole number
3	Undefined Tag
5	This security is not recognized
5	This Client ID is not recognized
5	A Market order can not be Canceled or Replaced
5	A Cross Order must be of type Limit
5	A Sweep Order must be of type Limit
5	An ISO Order must be of type Limit
5	A Post-Only Order must be of type Limit
5	A Route-Only, Market IOC order is not allowed
5	A Sweep Order must be a Limit IOC Order
5	An ITS Order must be an IOC Order
5	An ISO Order must be a Limit IOC Order
5	A Post-Only, Limit IOC order is not allowed
5	An order can not be ITS and Post-Only
5	An order can not be ITS and Route-Only
5	An order can not be ISO and Route-Only
5	A Reserve Order must be of type Limit
5	A Sweep Order can not have a Reserve
5	An ITS Order can not have a Reserve
5	An ISO Order can not have a Reserve
5	An IOC Limit Order can not have a Reserve
5	A Market Order can not have a Price
5	A Limit Order must have a Price
5	Reserve Order: Display quantity must be less than Order quantity
5	Reserve Order: Display quantity must be Round Lot
5	Reserve Order: Display quantity can not be Zero
5	This security does not allow Odd Lot Orders

Tag 373	Tag 58 (Session Reject Reason) - Generated by system
5	The order Price for this security violate the Sub-Penny Rule
5	Orders are not accepted prior to Start of Day
5	Orders are not accepted after Close of Business
5	Primary Market is closed, Day orders are not allowed
5	Duplicate Client Order ID received
5	Original Client Order ID does not exist
5	NSX requires LocateReqd=N for Short Sell orders
5	NSX requires ExDestination specified for route-only/directed orders
5	Duplicate Trade Report ID received
5	Client ID not available for the given Order FIX Compld
5	Pre-RegNMS SWEEP orders not allowed
5	On Order Delivery channel, Route-only orders not allowed
5	On Order Delivery channel, SWEEP orders not allowed
5	On Order Delivery channel, ISO orders not allowed
5	Block Orders only valid for ITS orders
5	A Route-Only order can not have a Reserve
5	Value is incorrect (out of range) for this tag
5	Service bureau is not authorized to accept order with the given FIX Comp ID
5	Cross order clearing is not allowed for given ClientID or ContraBroker
5	Cross orders are not allowed on BLADE
5	ISO orders are not allowed
5	Cross order reporting is not allowed for given ClientID or ContraBroker
5	Execution Broker is not recognized
5	Clearing Broker is not recognized
5	Client ID does not match Order Client ID
5	Cannot Cancel because Original Order ID not reported today
5	Cannot reverse Cross order reported today

Cancel Reject Reason (Tag 102) Values and Text (Tag 58)

Tag 102	Tag 58 (CxlRejReason) - Generated by system
0	Too late to cancel
0	Too late to replace
0	Post-Only Orders can't be marketable – hidden odd lot
1	Order Unknown
2	Only price and quantity may be Cancel/Replaced
2	Cancel/Replace invalid handling instruction
2	Cancel/Replace invalid side
2	Cancel/Replace invalid order id
2	Can't Cancel/Replace market orders
2	Cancel/Replace invalid order type
2	Can't Cancel/Replace limit IOC orders
2	Can't Cancel/Replace route-only orders
2	Can't Cancel/Replace sweep orders
2	Can't Cancel/Replace ITS orders
2	Can't Cancel/Replace ISO orders
2	Can't Cancel/Replace cross orders
3	Cancel/Replace pending

Order Reject Reason (Tag 103) Values and Text (58)

Tag 103	Tag 58 (OrdRejReason) – Generated by system
0	Out of market
0	No match @ NSX
0	Post-Only Orders can't be marketable
0	Post-Only Orders can't be marketable – hidden odd lot
0	Symbol halted
0	Failed short test
0	Cross Order violates NBBO/NSX best Bid/Offer
0	Order price violates NBBO
0	Client isn't active
0	NBBO unavailable
0	See Text
0	This request could not be handled
2	NSX shutdown
4	TIF expired

Appendix 2 – Symbology

NSX symbology is based upon market data provided by UQDF and CQS. As a result, when trading securities with suffixes, NSX requires the full value to be placed in the Symbol Tag 55.

Tape C Listed Securities

NSX Mapping of Tape-C 5th-Character Modifiers

Security Categorization	Suffix Symbology
Called	*
Class "A" when issued	.A#
Class "A" Called	.A*
Class "A"*	.A
Class "B"*	.B
Class Convertible	.A%
Convertible bond	%
Convertible called	%*
Emerging Company Marketplace	!
Partial Paid	@
Preferred	-
Preferred (class A) Convertible	-A%
Preferred (class A) when Distributed	-A\$
Preferred "A" called	-A*
Preferred "A" when issued	-A#
Preferred called	-*
Preferred Class "A"	-A
Preferred Class "B"	-B
Preferred when distributed	-\$
Preferred when issued	-#
Rights	^
Rights when issued	^#
TEST symbol	~
Units	=
Warrants	+
Warrants Class "A"	+A
Warrants Class "B"	+B
Warrant when issued	+#
When distributed	\$
When issued	#

Tape A & B Listed Securities

The following symbol suffixes are used to identify the security type.

Security Categorization	Suffix Symbology
Preferred	p
Preferred Class "A"	pA
Preferred Class "B"	pB
Class "A"	/A
Class "B"	/B
Preferred when distributed	p/WD
When distributed	/WD
Warrants	/WS
Warrants Class "A"	/WS/A
Warrants Class "B"	/WS/B
Called	/CL
Class "A" Called	/A/CL
Preferred called	p/CL
Preferred "A" called	pA/CL
Preferred "A" when issued	pAw
Emerging Company Marketplace	/EC
Partial Paid	/PP
Convertible called	/CV/CL
Rights	r
Units	/U
When issued	w
Rights when issued	rw
Preferred when issued	pw
Class "A" when issued	/Aw
Warrant when issued	/WSw

Appendix 3 – Routing Destinations

NSX supports routing of the orders to the following Exchanges and ADF participants:

EXECUTION VENUE	ExDestination
AMERICAN STOCK EXCHANGE	A
Archipelago ECN	39
Boston Stock Exchange	B
Chicago Board of Exchange	W
Chicago Stock Exchange	MW
International Securities Exchange	Y
NASDAQ	O
New York Stock Exchange	N
Philadelphia Stock Exchange	PH
Better Alternative Trading System (BATS)	BATS
Bloomberg Tradebook	BTRD
DirectEdge	EDGA
DirectEdge	EDGX
Lava FLOW	FLOW
TrackData	TRAC
TrackData	DATA