

NSX BLADE FIX Specification

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Version 1.8

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Revision History

Version	Description	Date
1.0	<ul style="list-style-type: none">➤ Introduced document versioning to the NSX FIX specifications➤ Added last market value for routed Trades (Appendix 3 – Routing Destinations)	12/2/08
1.1	<ul style="list-style-type: none">➤ Added Appendix 4 (Extranet Connectivity Options) & Appendix 5 (Direct Carrier Options)	2/11/10
1.3	<ul style="list-style-type: none">➤ Self Trade Modifier	4/22/10
1.4	<ul style="list-style-type: none">➤ Exchange Access Fee/Rebate (Execution Report)	7/22/10
1.5	<ul style="list-style-type: none">➤ Extended Hours to 8pm	7/30/10
1.6	<ul style="list-style-type: none">➤ Update Routing Destinations / Reg SHO Short Sell Exempt	9/16/10
1.7	<ul style="list-style-type: none">➤ Reg SHO Updates / Appendix 4 Update	2/11/11
1.8	<ul style="list-style-type: none">➤ General Review/Update	7/11/11

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 ETP Holders 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 8:00AM ET and 8:00 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 8:000 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 (8:00 PM ET) will be cancelled.

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 throughout 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.*, OnBehalfOfCompld) 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.)
143	TargetLocationId	N	<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	HeartbeatInt	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, which 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 cancelled 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 cancelled 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 cancelled 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 or equal to 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 cancelled 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 cancelled 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.
 - I. Pegged orders may be capped to prevent it from following the NBBO past a certain price. A limit will be set in tag 44, providing a ceiling price (for zero display buy orders)/ floor price (for zero display sell orders). All pegged orders: Market, Mid-Point and Primary are eligible to have a limit price.
 - II. Mid-point & Market Pegged orders may include a minimum quantity execution instruction “MinQty” (Tag 110). If a “MinQty” is defined, the valid zero display order may only be filled the quantity greater than or equal to that minimum quantity defined. The only exception is for residual shares of the order that is less than a minimum quantity. In this case, the fill amount can be less than the “MinQty”.
- g) The Self Trade Prevention modifier is available to all NSX ETP holders and can be added to any NSX order type. Users of this modifier will be granted the option to choose whether the incoming order, the resting order or both orders will be cancelled when certain criteria is met.

Tag	Description	Valid Value(s)
8000	Self Trade Prevention (STP) Instruction	N = New Order Rejected O = Old (Resting) Order Cancelled B = Both Orders Rejected/Cancelled
8001	Activation Mode	S = By FIX Session ID P = By Party ID M = By MPID
8002	Party ID	Unique ID - Required if tag 8001 = P

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 cancelled or cancel replaced. Sweep Orders have 2 modifiers:

1. Sweep and Cancel (ExecInst (18) = “s”) – if the execution of the sweep to the order price, results in open shares on the order, then those shares will be cancelled. This will be the default behavior of a Sweep order. These orders are not eligible to be cancelled or cancel replaced.
 2. Sweep and Post (ExecInst (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 cancelled or cancel replaced.
- b) Intermarket Sweep Orders (ExecInst (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 cancelled or cancel replaced.
- c) Post Intermarket Sweep Orders (Post ISO) (ExecInst (18) = “f” and HandlInst = “P” or “4”). Limit order that will post to the NSX Book regardless of the PBBO. These orders can be marked as Post-only or NSX-only. These orders are eligible to be cancelled or cancel/ replaced. Reserve quantities are eligible. Note a “post-only” Post ISO will reject if marketable at NSX upon entry. An “NSX Only” will execute if marketable within the NSX upon entry.
- d) Destination Sweep Order (ExecInst (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 8:00AM ET – 8:00 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 – 8:00	X	Rejected	X

All Day / GTC orders in the book at 4:00 PM ET will Expire. *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 8:00 PM ET will be Cancelled. Orders received prior to 8:00 AM ET or after 8:00 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 cancelled or cancel replaced, as upon system processing any open shares will be cancelled.

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).

New Order

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

Tag	Field Name	Required	Comments
54	Side	Y	Valid Value(s): 1 = Buy 2 = Sell 5 = Sell Short 6 = Sell Short Exempt <i>*Sell Short Exempt orders will be accepted after the rollout of the REG SHO Short Sale Circuit Breaker release –scheduled for February 28, 2011.</i>
1688	ShortSaleExemptionReason	N	Optional when Side (54) = 6 (short sale exempt)
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 Note: IOC is not a valid TIF for “Post ISO” orders. If 18=f and 21=4 or P the IOC value will be rejected.
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

Tag	Field Name	Required	Comments
110	MinQty	N	<p>If OrdType is 'Zero Display' (40 = Z) and Execlnst (18) is set to 'P' (Market Peg) or 'M' (Mid-point Peg) this value will represent the Minumim execution quantity.</p> <p>MinQty be \leq Order Quantity MinQty must be \geq Round Lot</p> <p>If OrdType = 1 then 0 (zero) is allowed, all other values will be Rejected.</p> <p>NOTE: If a minimum execution instruction is defined, the valid zero display order may only be filled the quantity greater than or equal the minimum quantity defined. The only exception is for residual shares of the order that is less than a minimum quantity. In this case, the fill amount can be less than the minimum quantity.</p>
111	MaxFloor	N	<p>Required for Reserve and Zero Display Orders, indicates the "Display/Replenishment" qty – only Round Lots allowed;</p> <p>For Reserve orders must be less than or equal to the OrderQty and greater than zero.</p> <p>For Zero Display Orders must be equal to zero.</p>
114	LocateReqd	N	Required for Sell Short and Sell Short Exempt Orders, valid value(s): N = NO
439	ClearingFirm	N	If different than Clearing Broker defined in the ETP Holder setup
8000	STP Instruction	N	<p>Valid Value(s):</p> <p>N = New Incoming Order Rejected O = Old (Resting) Order Cancelled B = Both Orders Rejected/Cancelled</p>
8001	STP Activation Mode	N	<p>Valid Value(s):</p> <p>S = By Session ID M = By Client MPID P = By Party ID</p>
8002	STP Party ID (Required if 8001 = P)	N	Unique ID
	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 cancelled.

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 cancelled), or fully cancelled 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 cancelled 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
1688	ShortSaleExemptionReason	N	Optional when Side (54)=6 (Short Sale Exempt)
44	Price	Y	Required when OrdType = 2; or OrdType is 'Zero Display' (40 = Z) and ExecInst (18) is not in 'P' (Market Peg), 'R' (Primary Peg) or 'M' (Mid-point Peg); If the OrdType is 'Zero Display' (40 = Z) and ExecInst (18) is set to 'P' (Market Peg), 'R'

			(Primary Peg) or 'M' (Mid-point Peg) tag 44 will be optional. When present the value will represent the Cap Price. If not present, the order will be processed as a standard peg. If OrdType = 1 then 0 (zero) is allowed, all other values 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	
110	MinQty	N	If OrdType is 'Zero Display' (40=Z) and ExecInst (18) is set to 'P' (Market Peg), 'R' or 'M' (Mid-point Peg) this value will represent the Minimum execution quantity. MinQty be \leq Order Quantity MinQty must be \geq Round Lot If OrdType=1 then 0 (zero) is allowed, all other values will be Rejected.
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 cancelled 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

Tag	Field Name	NSX Sends	Comments
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
- j. Exchange Access Fee/Rebate (Available upon request)

Order Status (Tag 39)

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

FIX Value	Order Status	FIX Precedence	FIX Definition	NSX Definition
				= 0)
4	Cancelled	5	Cancelled order with or without executions	Completed Order, has been Cancelled, OrderQty >= Cum Qty; 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 CANCELLED.	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 cancelled 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 “Cancelled” 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 8:00 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 = Cancelled 5 = Replace 6 = Pending Cancel 8 = Rejected C = Expired E = Pending Replace
39	OrdStatus	Y		Valid Value(s): 0 = New 1 = Partially filled 2 = Filled 4 = Cancelled 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		

Tag	Field Name	Always Sends	May Send	Comments
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	See supported values in Appendix 3
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	
110	MinQty		Y	
58	Text		Y	
439	ClearingFirm		Y	
8000	STP Instruction		Y	Valid Value(s): N = New Incoming Order Rejected O = Old (Resting) Order Cancelled B = Both Orders Rejected/Cancelled
8001	STP Activation Mode		Y	Valid Values(s): S = By FIX Session ID M = By Client MPID P = By Party ID
8002	STP Party ID		Y	Unique ID
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)

Tag	Field Name	Always Sends	May Send	Comments
132	BidPx		Y	Configurable upon client request for receipt in full and partial executions.
133	OfferPx		Y	Configurable upon client request for receipt in full and partial executions.
9731	Exchange Access Fee		Y	<p>Configurable for Sub Dollar fees/rebates upon client request.</p> <p>Exchange fees/rebates only present on complete and partial fill execution reports.</p> <p>Exchange fees/rebates displayed up to 5 decimal places.</p> <p>Negative value denotes rebate. Positive value denotes fee.</p>
	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 <i>*Sell Short Exempt orders will be accepted after the rollout of the REG SHO Short Sale Circuit Breaker release – scheduled for February 28, 2011.</i>
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	May be applicable for Sell Short and Sell Short Exempt Orders, valid value(s): N = NO
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 Holder 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 cancelled.

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 cancelled.

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 = Cancelled 8 = Rejected
39	OrdStatus	Y	Valid Value(s): 1 = Partially filled 2 = Filled 4 = Cancelled 8 = Rejected
103	OrdRejReason	N	Required if ExecType = 8 (Rejected)

Tag	Field Name	Required	Comments
54	Side	Y	
55	Symbol	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	

Tag	Field Name	NSX Sends	Comments
55	Symbol	Y	
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 cannot be Cancelled 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

Tag 373	Tag 58 (Session Reject Reason) - Generated by system
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
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

Character	Security Categorization
A	Class A
B	Class B
D	New (Temporary Suffix Used for Corporate Reorganizations)
E	Delinquent in Regulatory Filings
F	Foreign
G	First Convertible Bond
H	Second Convertible Bond, Same Company
I	Third Convertible Bond, Same Company
J	Voting
K	Non-Voting
L	Miscellaneous, such as Certificates of Participation, Preferred Participation, Stubs
M	Fourth Preferred, Same Company
N	Third Preferred, Same Company
O	Second Preferred, Same Company
P	First Preferred
Q	Bankrupt
R	Rights
S	Shares of Beneficial Interest (SBI)
T	With Warrants or With Rights
U	Units
V	When Issued and When Distributed
W	Warrants
X	Priced via Mutual Fund Quotation Services
Y	American Depository Receipts (ADRs)
Z	Miscellaneous Situations, such as Certificates of Preferred 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	Last Market Value
AMERICAN STOCK EXCHANGE	A	AMEX
Archipelago ECN	39	ARCA
Chicago Board of Exchange	W	CBOE
Chicago Stock Exchange	MW	CHXX
OMX BX (Boston)	B	BEX
OMX PSX (Philadelphia)	PH	PHLX
NASDAQ	O	NSDQ
New York Stock Exchange	N	NYSE
NSX Broker Dealer		NSXS
BATS Exchange	Z	BATS
BATS – Y Exchange	BY	BATY
DirectEdge	J	EDGA
DirectEdge	K	EDGX

Appendix 4 – Extranet Connectivity Options

Carlstadt NJ and Philadelphia PA

Available Extranets:

Sidera Networks (Formerly RCN)

SFTI

BT Radianz

Reliance Globalcom (Formerly Yipes)

Verizon Financial Network

SAVVIS

TNS

Appendix 5 – Direct Connect Carrier Options

Carlstadt NJ

777 Central Blvd

Carlstadt, NJ 07072

NPA/NXX: 201/729

Available Carriers:

4 Connections

AT&T Local Services

Level 3

RCN

Verizon

Reliance Globalcom (Formerly Yipes)

Abovenet

Fibertech

Optimum Lightpath

Time Warner

Verizon Business (Legacy MCI)

Philadelphia PA

401 North Broad Street

Philadelphia PA 19108

NPA/NXX:215/351

Available Carriers:

AT&T Local Services

Verizon

Reliance Globalcom (Formerly Yipes)

Telcove

Cross Connect Solutions

Qwest

On Fiber

Cogent

Verizon Business (Legacy MCI)

Sunesys

Abovenet

Global Crossing

Level 3

Neon/RCN

Note: The carriers set forth above are those which NSX believes are available as of the publishing date of the date of this document. Reference to such carriers is neither an endorsement nor a recommendation of such carriers or their offered services. Each DOB subscriber shall be solely responsible for establishing its respective relationship with any such carrier.