



FIX Specification

October 20, 2008

Overview

BATS members use a subset of the FIX 4.2 protocol for order entry and drop copies. Drop copy ports do not accept orders and only send execution reports where ExecType (tag 150) is Partially Filled (1) or Filled (2). Drop ports for sponsored access may be configured to also send execution reports where ExecType (tag 150) is New (0), Canceled (4) or Replaced (5). Drop copy ports may be configured to send various combinations of member and clearing MPIDs.

It is assumed that the reader is familiar with the FIX 4.2 protocol as described at <http://www.fixprotocol.org>. This document describes the differences between the BATS implementation and the FIX 4.2 standard.

Please refer to www.batstrading.com for updates and further information on BATS policies and procedures.

Implementation Issues

Hours of Operation

Refer to the web site for hours of operation.

All orders are live upon acceptance by BATS. Orders are rejected if they are received outside the hours BATS is available for trading. BATS does not have an opening or closing auction.

All orders remaining after the Extended Session will be cancelled automatically (execution reports will be delivered).

Data Types

All FIX timestamps are GMT as per the FIX standard. Members are expected to synchronize their clocks with an external time source.

Prices - Members should program their systems to allow execution prices to be returned with up to four decimals.

Order prices below \$0.01 will be rejected.

Order prices below \$1.00 may be priced up to four decimal places.

Order prices of \$1.00 or more may be priced up to two decimal places.

Example

0.0001 to 0.0099	Rejected: less than \$0.01
0.0100 to 0.9999	Accepted
1.0010, 1.0001, 12.3456	Rejected – subpenny not allowed above one dollar
1.0000, 1.00, 12.3400, 12.34, etc.	Accepted -- round penny (extra trailing zeroes are fine).

Automatic Cancel On Disconnect or Malfunction

All open orders for a member will be cancelled automatically if no messages have been received from the member for two heartbeat intervals. This is done to prevent orders from being stuck in an unknown state in the event of telecommunications failure. Members should choose their heartbeat interval carefully based on the latency and reliability of their telecommunications channel. The minimum supported interval is 5 seconds, and this is also the recommended interval if the latency and reliability of your telecommunications channel support it. Execution reports for the automatically cancelled orders are available upon reconnection. Members are responsible for rerouting orders to other market centers based on their business needs. This should be rare, but all open orders may also be cancelled in the event of a complete or partial system malfunction.

Access Fees Returned on Execution Reports

The access fee associated with each fill is calculated to 5 decimals and returned on each execution report. Negative numbers indicate liquidity rebates. Members should program their systems to read, validate, and pass along this field in order to avoid making software changes to their systems when BATS fee schedule changes. The sum of the

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access fees received during a month should equal the access fee charged or rebated on a member's monthly bill, rounded to the nearest penny.

Service Bureau Configuration

Service Bureaus require special configuration. *OnBehalfOfCompId* should be set for Order, Cancel and Cancel/Replace messages sent to BATS. Orders with an unknown *OnBehalfOfCompId* will be rejected. *ClOrdId* values are required to be unique only within a given *OnBehalfOfCompId*. Execution Report and Cancel Reject messages sent by BATS will have the *DeliverToCompId* set. **Orders must be cancelled or replaced using the same *OnBehalfOfCompId* as was sent on the Order.**

BATS Specific Fields

The following FIX fields are specific to BATS:

Tag		Values																																								
9303	<i>RoutingInst</i>	<table border="1" style="width: 100%;"> <thead> <tr> <th style="text-align: left;"><i>RoutingInst</i> (9303)</th> <th style="text-align: left;"><i>Destination</i></th> </tr> </thead> <tbody> <tr><td>A</td><td>ARCA</td></tr> <tr><td>B</td><td>BATS Only</td></tr> <tr><td>C</td><td>NSX</td></tr> <tr><td>D</td><td>EDGA</td></tr> <tr><td>E</td><td>ISE</td></tr> <tr><td>G</td><td>EDGX</td></tr> <tr><td>I</td><td>BATS Only ISO (<i>deprecated in favor of 9303=B and 18=f</i>)</td></tr> <tr><td>J</td><td>Boston</td></tr> <tr><td>L</td><td>LavaFlow</td></tr> <tr><td>M</td><td>Chicago</td></tr> <tr><td>N</td><td>NASDAQ</td></tr> <tr><td>P</td><td>BATS Only Post Only (<i>will reject rather than remove liquidity</i>)</td></tr> <tr><td>R (<i>default</i>)</td><td>ALL</td></tr> <tr><td>T</td><td>TRAC</td></tr> <tr><td>U</td><td>AMEX</td></tr> <tr><td>V</td><td>DATA</td></tr> <tr><td>W</td><td>CBOE</td></tr> <tr><td>X</td><td>Philadelphia</td></tr> <tr><td>Y</td><td>NYSE</td></tr> </tbody> </table>	<i>RoutingInst</i> (9303)	<i>Destination</i>	A	ARCA	B	BATS Only	C	NSX	D	EDGA	E	ISE	G	EDGX	I	BATS Only ISO (<i>deprecated in favor of 9303=B and 18=f</i>)	J	Boston	L	LavaFlow	M	Chicago	N	NASDAQ	P	BATS Only Post Only (<i>will reject rather than remove liquidity</i>)	R (<i>default</i>)	ALL	T	TRAC	U	AMEX	V	DATA	W	CBOE	X	Philadelphia	Y	NYSE
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9479	<i>DisplayIndicator</i>	V: (Default) Display Price Sliding L: Display Price Sliding, but reject if order crosses NBBO on entry D: Active Price Sliding E: Active Price Sliding, but reject if order crosses NBBO on entry R: Reject the order if it cannot be booked and displayed without adjustment I =Invisible																																								
9617	<i>ModifySequence</i>	Drop only. Base 36 number of times order has been replaced.																																								
9619	<i>CancelOrigOnReject</i>	N = Leave original order alone Y = Cancel original order if replacement is fails Default is configurable per port (N if not configured)																																								

BATS Specific Fields (Continued)

9621	<i>ExchangeAccessFee</i>	Access fee for this fill (up to 5 decimal places, negative for rebate).
9622	<i>DiscretionAmount</i>	Max discretion to apply to Price (non-negative 0.00 to 99.99)
9687	<i>BypassHidden</i>	N (Default): allow removing liquidity against hidden orders Y: Opt out of removing liquidity against hidden orders
9688	<i>OrigCompID</i>	Drop only. TargetCompID of original FIX exec report Drop port must be configured to send this optional field.
9689	<i>OrigSubID</i>	Drop only. TargetSubID of original FIX exec report Drop port must be configured to send this optional field.
9690	<i>WorkingPrice</i>	Optional. Must be enabled at the Firm or port level. Only present on Accepted or Replaced, and only when order is fully or partially booked. If <i>Price</i> had to be adjusted to a less aggressive value to avoid crossing the NBBO, the adjusted price will be reported here, otherwise equals <i>Price</i>
9691	<i>InitialDisplayPrice</i>	Optional. Must be enabled at the Firm or port level. Only present on Accepted or Replaced, and only when order is fully or partially booked. If order had to be temporarily displayed at a less aggressive value to avoid locking the NBBO, the initial displayed price will be reported here, otherwise equals <i>WorkingPrice</i>
9730	<i>TradeLiquidityIndicator</i>	A=Added Liquidity R=Removed Liquidity X=Routed Q=Added liquidity via delivery from exchange where BATS displays its quote to the consolidated quote (E.g. NSX)

FIX Session Protocol

BATS uses the FIX 4.2 session protocol. The member will be provided with a *SenderCompId* and *SenderSubId* that must be sent on every message. The *TargetCompId* for all messages the member sends will be "BATS". All messages the member receives will have the Sender and Target fields swapped.

The following session messages are supported in both directions:

Message	Type	Comment
Logon	A	Begin session (or resume a broken session)
Heartbeat	0	
Test Request	1	
Resend Request	2	
Reject	3	Malformed message or improper session level handling
Sequence Reset	4	Both Gap Fill (<i>GapFillFlag=Y</i>) and Reset
Logout	5	Used to gracefully close session

Connectivity

IP connectivity will be arranged with the extranet provider (e.g. Savvis, BT Radianz).

IP Address	Address to connect to	Supplied by BATS
TCP Port	Port to connect to	Supplied by BATS
<i>SenderCompID</i>	Sent in every FIX message to BATS	Supplied by BATS
<i>SenderSubID</i>	Sent in every FIX message to BATS	Supplied by BATS
<i>TargetCompID</i>	Sent in every FIX message to BATS	"BATS"
<i>TargetSubID</i>	Sent in every FIX message to BATS	"TEST" for test system. "PROD" for production.

Sequence Numbers

Sequence numbers, both inbound and outbound, will be reset to 1 each night during the down time.

Messages are processed in sequence order. Behind sequence messages (other than Sequence Reset – Reset) cause immediate logout. Ahead of sequence messages (other than a Resend Request) trigger a message recovery via a Resend Request.

Logon

The logon must be the first message sent by the member after the TCP connection is established. EncryptMethod is ignored (FIX level encryption is not supported).

The IP Address of the member, the *SenderCompId*, *SenderSubId* and *TargetCompId* ("BATS") and *TargetSubId* ("TEST"/"PROD") will be validated. If validation fails the connection will be dropped without a reject (to avoid corrupting the members sequence in the case that the member merely mistakenly connected to the wrong port).

If connection is unexpectedly broken, upon reconnection the member may receive a login reply with a sequence number greater than expected. This means that in-flight messages were missed (likely important execution reports). The member should issue a Resend Request to retrieve the missed messages.

Similarly BATS will issue a Resend Request to the member for messages that it missed. The member may wish to send gap fill messages in place of new orders to avoid re-submission of potentially stale orders.

HeartbeatInterval must be specified by the member in the logon message. This value will be clamped between 5 and 300 seconds and returned in the logon reply message. We recommend using as low a value as the reliability and latency of your telecommunications channel will allow.

Heartbeat

A Heartbeat message should be sent if the agreed upon *HeartbeatInterval* has elapsed since the last message sent. If any message has been sent during the preceding *HeartbeatInterval* a Heartbeat message need not be sent.

Test Request

If a *HeartbeatInterval* + 1 seconds have elapsed since the last message received, a Test Request should be issued. If another *HeartbeatInterval* + 1 seconds go by without receiving a message the TCP connection should be dropped. This ensures that a broken TCP connection will be detected even if the TCP stack doesn't notice (this has been observed to happen in WAN environments, particularly when a VPN is involved).

Resend Request

A Resend Request message should be processed even if it is received ahead of sequence. Only after resending the requested range (all marked *PossDup*="Y", including any gap fills) should Resend Request be issued in the opposite direction.

As discussed in the FIX 4.2 specification, it is possible to send an open or closed sequence range in a Resend Request (an open range uses sequence zero as the EndSeqNo). BATS will honor either type of request, but will always issue Resend Requests with a closed sequence range.

Reject

Session level rejects are used to indicate violations of the session protocol, or missing (or bogus) fields. These are to be expected during development and certification, while the member is being adapted for BATS, but should be extremely rare in production. Application layer rejects (like Order Reject and Cancel Reject) are normal.

Sequence Reset

Sequence Reset - Gap Fill messages (*GapFillFlag*="Y") must be received in sequence. Any messages (including any Gap Fills) sent in response to a Resend Request should have *PossDup*="Y".

Sequence Reset - Reset (*GapFillFlag* not "Y") is used only as a last resort, and always by human intervention, to allow an otherwise hopelessly confused session to be resumed. In these cases all chance at automatic message recovery are lost.

Logout

Either side may issue a logout to gracefully close the session. The side that issues the logout should process messages normally until it sees the logout reply, and then break the TCP connection. BATS will typically only request logout after the scheduled end of FIX session.

Standard Message Header

Tag	Field	Description
8	<i>BeginString</i>	FIX4.2 Must be first field in message.
9	<i>BodyLength</i>	Length of message following <i>BodyLength</i> field up to and including the delimiter preceding the <i>Checksum</i> field. Must be second field in message.
35	<i>MsgType</i>	Must be third field in message
49	<i>SenderCompID</i>	ID of sender: Assigned by BATS for messages sent to BATS. (<i>TargetCompID</i> for messages from BATS)
50	<i>SenderSubID</i>	Sub ID of sender: Assigned by BATS for messages sent to BATS. (<i>TargetSubID</i> for messages from BATS)
56	<i>TargetCompID</i>	ID of destination: "BATS" for messages sent to BATS. (<i>SenderCompID</i> for messages from BATS)
57	<i>TargetSubID</i>	Sub ID of destination: "TEST" for messages sent to BATS test system. "PROD" for messages sent to BATS production system. (<i>SenderSubID</i> for messages from BATS)
34	<i>MsgSeqNum</i>	Sequential sequence number for session.
43	<i>PossDupFlag</i>	Indicates a message resent from the admin level (has a duplicate sequence number). Default is "N".
52	<i>SendingTime</i>	GMT date-time that message was sent.
122	<i>OrigSendingTime</i>	For messages with <i>PossDupFlag</i> ="Y", indicates time that message was first sent.
115	<i>OnBehalfOfCompId</i>	Service Bureau use. Identifies end-client on messages to BATS. Must be allowed NSCC MPID. May be used by non-service bureau to specify which clearing arrangement to use if multiple are configured.
116	<i>OnBehalfOfSubID</i>	End-client sub identifier. 4 Characters alphanumeric, otherwise not validated. Recorded and returned in <i>DeliverToSubID</i> . Available via DROP.
128	<i>DeliverToCompId</i>	Service Bureau use. Identifies end-client on messages from BATS. Must be allowed NSCC MPID.
129	<i>DeliverToSubID</i>	Returns <i>OnBehalfOfSubID</i> optionally sent by client.

Standard Message Trailer

Tag	Field	Description
10	<i>Checksum</i>	Modulo 256 checksum of all characters in message up to and including the delimiter preceding the <i>Checksum</i> field. Three digits with leading zeroes if necessary.

Order Protocol – Subscriber to BATS New Order – Single

Tag	Field	Description
	Standard Message Header	<i>MsgType="D"</i>
97	<i>PossResend</i>	<p>“N” (default) indicates a new order. “Y” indicates an application level resend and is NOT SUPPORTED.</p> <p>For reasons of economy, BATS does not track (in primary storage) the <i>ClOrdID</i> values of orders that are no longer live.</p> <p>For reasons of performance, BATS does not access secondary storage to enforce unique <i>ClOrdID</i> values against orders that are no longer live.</p> <p>Without full duplicate <i>ClOrdID</i> value enforcement, it is not possible to safely implement the full behavior specified in the FIX 4.2 Protocol for <i>PossResend="Y"</i>.</p> <p>To remain economical, fast <i>and</i> safe, all New Order messages with <i>PossResend="Y"</i> will be simply ignored.</p>
1	<i>Account</i>	<p>Reflected back on execution reports associated with this order. 16 characters or less (ASCII 33-126) Optional. Not permanently stored by BATS or available via DROP.</p>
11	<i>ClOrdId</i>	<p>Day-unique ID chosen by client. 20 characters or less. Characters in ASCII range 33-126 are allowed, except for comma, semicolon, and pipe.</p> <p>For proper OATS handling, <i>ClOrdId</i> must comply with OATS ‘Routed Order ID’ as defined in Appendix A of the ‘OATS Reporting Technical Specifications’.</p> <p>If the <i>ClOrdId</i> matches a live order it will be rejected as duplicate (unless <i>PossResend="Y"</i>, see above). Note: BATS only enforces the uniqueness of ClOrdID values among currently live orders. However we strongly recommend that you keep your ClOrdID values day unique.</p>
60	<i>TransactTime</i>	Time order initiated/released. Required by FIX 4.2 but not used by BATS.
55	<i>Symbol</i>	<p>Symbol (upper case) Entire BATS format symbol or symbol root if using CQS or CMS format.</p>
65	<i>SymbolSfx</i>	<p>SymbolSfx: CQS or CMS suffix if used Do not send SymbolSfx if using BATS format or if symbol does not have a suffix. (see Appendix A)</p>
54	<i>Side</i>	<p>Buy="1" Sell="2" Sell Short="5" (client affirms ability to borrow) Sell Short Exempt = "6" (obsolete: will cause immediate reject)</p>
114	<i>LocateReqd</i>	<p>Optional, only processed for Sell Short and Sell Short Exempt N = client affirms ability to borrow (Default) Y = client does not affirm ability to borrow (results in a reject)</p>
38	<i>OrderQty</i>	Number of shares for order, 1 to 999,999
111	<i>MaxFloor</i>	<p>Portion of <i>OrderQty</i> to display. The balance is reserve. 0 displays entire quantity (Default). The displayed quantity of each order at a price level is decremented first. When displayed quantity is fully decremented it is reloaded up to <i>MaxFloor</i> from reserve.</p>
40	<i>OrdType</i>	<p>Market="1" Limit="2" Pegged="P"</p>

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		<p>Market implies <i>TimeInForce</i> of IOC</p> <p>Pegged requires <i>ExecInst</i>=L,M,P or R</p> <p>Pegged orders may not be routable.</p>
44	<i>Price</i>	Limit Price. Order rejected if priced finer than the minimum trading increment for the stock.
9622	<i>DiscretionAmount</i>	<p>Discretion is implicitly added to bid prices and subtracted from offer prices.</p> <p>Order will be displayed at <i>Price</i> but can execute in discretionary range.</p> <p>A discretionary order will use the minimum amount of discretion necessary to achieve execution.</p> <p>Zero applies no discretion (Default).</p> <p>Non-zero <i>DiscretionAmount</i> does not mix with IOC and requires <i>RoutingInst</i>="B" (BATS Only).</p>
211	<i>PegDifference</i>	<p>Optional signed dollar value up to 4 decimal places* is added to result of peg calculation.</p> <p>Default is zero</p> <p>Must be >= 0 for Sell orders</p> <p>Must be <= 0 for Buy orders</p> <p>Must be zero (or not specified) for Midpoint peg or non-pegged orders</p> <p>*<i>PegDifference</i> is rounded (down for Buy, up for Sell) if the resulting price is above \$1.00</p>
110	<i>MinQty</i>	<p>Optional minimum* fill quantity for BATS-Only hidden or IOC orders.</p> <p>Ignored if order is not BATS-Only hidden or IOC.</p> <p>Default is zero.</p> <p>*When removing liquidity limits the minimum total fill size, which may be made up of several consecutive smaller fills.</p>
47	<i>Rule80A (aka OrderCapacity)</i>	<p>A = Agency</p> <p>P = Principal (Default)</p> <p>R = Riskless</p> <p>Other values from the FIX 4.2 specification (except for H, I, O, S and T) will be accepted, but are mapped to A, P or R for trade reporting and clearing.</p>
59	<i>TimeInForce</i>	<p>"0" = DAY (expires at end of day)</p> <p>"1" = GTC (allowed, but treated same as Day)</p> <p>"3" = IOC (portion not filled immediately is cancelled. Market orders are implicitly IOC)</p> <p>"6" = GTD (expires at earlier of specified <i>ExpireTime</i> or end of day)</p>
126	<i>ExpireTime</i>	Required for <i>TimeInForce</i> ="6" (GTD) orders, specifies the date-time (in GMT) that the order expires
18	<i>ExecInst</i>	<p>Single value only (with no trailing space)</p> <p>f = Intermarket Sweep (Directed or BATS)</p> <p>z = Dark Scan (quick pre-scan for dark liquidity)</p> <p>P = Market Peg (peg Buy to NBBO Offer, peg Sell to NBBO Bid)</p> <p>R = Primary Peg (peg Buy to NBBO Bid, peg Sell to NBBO Offer)</p> <p>M = Midpoint (peg to NBBO Midpoint)</p> <p>L = Alternate Midpoint (less aggressive of midpoint and 1 tick inside NBBO)</p> <p>NOTE: value L differs in meaning from standard FIX 4.2</p> <p>All other values are ignored.</p> <p>Midpoint Pegged orders (M and L) are implicitly hidden (<i>DisplayIndicator</i>=I)</p> <p>Only Hidden Primary and Market Pegs (<i>DisplayIndicator</i>=I) will be accepted at this time.</p> <p>Dark Scan (z) requires 9303= R (<i>RoutingInst</i> of ALL).</p>

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9303	RoutingInst	RoutingInst (9303)	Destination	ExecInst (18) not present	ExecInst (18) f	ExecInst (18) z	ExecInst (18) M L P R (peg)
		A	ARCA	OK	OK	REJ	REJ
		B	BATS Only	OK	OK	REJ	OK
		C	NSX	OK	OK	REJ	REJ
		D	EDGA	OK	OK	REJ	REJ
		E	ISE	OK	OK	REJ	REJ
		G	EDGX	OK	OK	REJ	REJ
		I	BATS Only ISO <i>(deprecated in favor of 9303=B 18=f)</i>	OK	OK	REJ	REJ
		J	Boston	OK	OK	REJ	REJ
		L	LavaFlow	OK	OK	REJ	REJ
		M	Chicago	OK	OK	REJ	REJ
		N	NASDAQ	OK	OK	REJ	REJ
		P	BATS Only Post Only <i>(will reject rather than remove liquidity)</i>	OK	REJ	REJ	OK
		R (default)	ALL	OK	REJ	OK	REJ
		T	TRAC	OK	OK	REJ	REJ
		U	AMEX	OK	OK	REJ	REJ
		V	DATA	OK	OK	REJ	REJ
		W	CBOE	OK	OK	REJ	REJ
		X	Philadelphia	OK	OK	REJ	REJ
		Y	NYSE	OK	OK	REJ	REJ

Post Only does not mix with *TimeInForce=IOC*.

Note: If ExecInst(18)=f and the order is directed to a market center, the order is sent to the market center as a directed ISO and does not interact with the BATS book. If the order is BATS Only (9303=B) and ExecInst(18)=f, the order is treated as an ISO on the BATS book.

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9479	<i>DisplayIndicator</i>	<p>V: (Default) Display Price Sliding L: Display Price Sliding, but reject if order crosses NBBO on entry D: Active Price Sliding E: Active Price Sliding, but reject if order crosses NBBO on entry R: Reject the order if it cannot be booked and displayed without adjustment I =Invisible</p> <p>If the limit price of the unexecuted remainder of a day order does not lock or cross the NBBO then BATS books it as is. If the limit price does lock or cross the market BATS offers the following options:</p> <p>Display Price Sliding: Permanently adjust the booked price on entry to the strongest price that does not cross the NBBO. Temporarily adjust the displayed price to the strongest price that does not lock the NBBO. When the NBBO widens, the display price will be readjusted to the booked price. The display price may be temporarily weaker than the booked price.</p> <p>Active Price Sliding: Temporarily adjust both the booked and display prices to the strongest price that does not lock the NBBO. When the NBBO widens, both the booked and displayed prices will both be adjusted to the price that would have locked upon entry. The display price and booked price will always be equal. It is possible to remove liquidity during this adjustment.</p>
9687	<i>BypassHidden</i>	<p>N: (Default) allow removing liquidity against a hidden order Y: bypass removing liquidity against hidden order</p>
439	<i>ClearingFirm</i>	<p>Firm that will clear trade. Must be allowed NSCC MPID. 4 characters upper case alphanumeric. NOTE: shares storage with <i>OnBehalfOfCompID</i>. If both fields are sent they must be equal.</p>
440	<i>ClearingAccount</i>	<p>Supplemental identifier (optional) 4 characters alphanumeric, not otherwise validated. Recorded and returned in execution reports. Available via DROP. NOTE: shares storage with <i>OnBehalfOfSubID</i>. If both fields are sent then <i>OnBehalfOfSubID</i> takes precedence for Service Bureau connections, and <i>ClearingAccount</i> takes precedence for other connections.</p>
9617	<i>ModifySequence</i>	Drop only. Base 36 number of times order has been replaced.
9688	<i>OrigCompID</i>	Drop only. TargetCompID of original FIX exec report Drop port must be configured to send this optional field.
9689	<i>OrigSubID</i>	Drop only. TargetSubID of original FIX exec report Drop port must be configured to send this optional field.
	Standard Message Trailer	

The following conventions are used when assigning liquidity add/remove status on fills that involve discretion:

- An IOC order is always charged the remove fee. Whatever order it hits always gets the provider rebate.
- A non IOC order that hits a discretionary order at other than its display price gets the provider rebate. The resting discretion order is charged the remove fee.
- A discretion order that hits a resting discretion order gets the provider rebate. The resting discretion order is charged the remove fee, but uses the minimum necessary amount of reserve.

- An inbound “add liquidity only” order may execute against a discretionary order at its displayed price. In this case the “add liquidity only” order gets the provider rebate and the resting discretionary order pays the remove fee.

Midpoint Pegs (*ExecInst=M* and *L*):

- Implicitly hidden
- May execute at a half-penny price increment above \$1.00
- Will not execute during crossed NBBO
- May not use *PegDifference*

Primary and Market pegs (*ExecInst R* and *P*)

- Must be hidden for now (Visible will be rejected).
- Will be temporarily clipped to the less aggressive side of the NBBO during crossed NBBO
- May use a non-aggressive *PegDifference*

Peg orders are prioritized behind non-pegged orders at each price and display level. With regard to hidden peg orders, regular peg orders (*ExecInst R and P*) have a higher priority than Midpoint peg orders ranked at the same price.

When discretion is used on a pegged order, the *DiscretionAmount* always is applied to the current Pegged price.

A resting peg order may remove liquidity when re-priced by an NBBO movement.

Order Cancel Request

Tag	Field	Description
	Standard Message Header	<i>MsgType="F"</i>
97	<i>PossResend</i>	“Y” Indicates an application level unsolicited resend. If <i>ClOrdID</i> has not yet been seen, the cancel is treated as normal. If <i>ClOrdID</i> already exists, the resent cancel is ignored. “N” (default) indicates a new cancel.
1	<i>Account</i>	Reflected back on Pending Cancel Execution Report or Cancel Reject associated with this cancel. 16 characters or less (ASCII 33-126). Optional.
11	<i>ClOrdID</i>	Day-unique cancel ID chosen by member. 20 characters or less. Characters in ASCII range 33-126 are allowed, except for comma, semicolon, and pipe. Duplicate order <i>ClOrdIDs</i> will be rejected (or ignored if <i>PossResend="Y"</i>).
41	<i>OrigClOrdID</i>	<i>ClOrdID</i> of the order to cancel.
37	<i>OrderID</i>	<i>OrderID</i> supplied by BATS on the order acknowledgement. (Optional but recommended for performance).
60	<i>TransactTime</i>	Time cancel initiated/released. Required by FIX 4.2 but not used by BATS.
55	<i>Symbol</i>	Symbol (upper case). Must match original order
65	<i>SymbolSfx</i>	Must match original order if used
54	<i>Side</i>	Buy="1" Sell="2" Sell Short="5" (client affirmed ability to borrow) Sell Short Exempt = "6" (client affirmed ability to borrow and client is exempt from short sale tests) Must match original order
38	<i>OrderQty</i>	Number of shares for order.

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		Must match original order.
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Order Cancel/Replace Request

Only *Price*, *OrderQty* and *OrdType* may be adjusted. Any change in *Price* or any increase in *OrderQty* will result in the order losing its time priority. *OrdType* may be adjusted from Limit to Market (but not from Limit to Peg or Peg to Limit).

Changes in *OrderQty* result in an adjustment of the current order's *OrderQty*. The new *OrderQty* does **not** directly replace the current order's *LeavesQty*. Rather a delta is computed from the current *OrderQty* and the replacement *OrderQty*. This delta is then applied to the current *LeavesQty*. If the resulting *LeavesQty* is less than or equal to zero the order is cancelled. This results in safer behavior when the replace request overlaps partial fills for the current order, leaving the member in total control of the share exposure of the order.

MaxFloor and *DiscretionAmount* are preserved from the original order and applied to the new size and price.

Tag	Field	Description
	Standard Message Header	<i>MsgType</i> ="G"
97	<i>PossResend</i>	"Y" Indicates an application level resend. If the <i>ClOrdID</i> does not indicate an already pending cancel/replace, the cancel is treated as normal. If <i>ClOrdID</i> does indicate an already pending cancel/replace then the resent cancel/replace is ignored. "N" (default) indicates a new cancel.
1	<i>Account</i>	Reflected back on Pending Replace Execution Report or Cancel Reject associated with this cancel. 16 characters or less (ASCII 33-126) Optional.
11	<i>ClOrdID</i>	Day-unique ID chosen by member. 20 characters or less. Characters in ASCII range 33-126 are allowed, except for comma, semicolon, and pipe. Duplicate order <i>ClOrdIDs</i> will be rejected (or ignored if <i>PossResend</i> ="Y").
41	<i>OrigClOrdID</i>	<i>ClOrdID</i> of the order to replace. In the case of multiple changes to a single order, this will be the <i>ClOrdID</i> of the most recent accepted change.
37	<i>OrderID</i>	<i>OrderID</i> supplied by BATS on the order acknowledgement. In the case of multiple changes to a single order, this will be the <i>OrderID</i> from the most recent acknowledgement.
60	<i>TransactTime</i>	Time cancel/replace initiated/released.
55	<i>Symbol</i>	Symbol (upper case) Must match original order
65	<i>SymbolSfx</i>	Must match original order if used
54	<i>Side</i>	Buy="1" Sell="2" Sell Short="5" (client affirmed ability to borrow) Sell Short Exempt = "6" (client affirmed ability to borrow and client is exempt from short sale tests) Must match original order
38	<i>OrderQty</i>	Number of shares for order. This will modify the <i>OrderQty</i> of the current order; it does not directly set the remaining quantity.
40	<i>OrdType</i>	Market="1", Limit="2", Peg="P" Optional: (defaults to original order if not sent). May replace Limit with Market, but otherwise must match original order (or not sent).

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44	<i>Price</i>	Limit Price. Order rejected if priced finer than the minimum trading increment for the stock.
9619	<i>CancelOrigOnReject</i>	N = Leave original order alone Y = Cancel original order if replacement is fails (an unsolicited cancel report will be sent for original order in this case) Default is configurable per port (N if not configured)
	Standard Message Trailer	

Order Protocol – BATS to Member Execution Report

Tag	Field	Description
	Standard Message Header	<i>MsgType</i> ="8"
52	<i>SendingTime</i>	GMT date-time that execution report was sent by BATS.
20	<i>ExecTransType</i>	"0" = New "1" = Cancel "2" = Correct "3" = Status
17	<i>ExecID</i>	Day-unique id of execution message. Will be zero for <i>ExecTransType</i> of Status (3).
19	<i>ExecRefID</i>	Only present when <i>ExecTransType</i> = Cancel (1) or Correct (2). Refers to the <i>ExecID</i> of the message being cancelled or corrected.
150	<i>ExecType</i>	Reason for this execution report: "0" = New (acknowledgement of new order) "1" = Partial Fill "2" = Fill "3" = Done for Day "4" = Canceled "5" = Replaced "8" = Rejected "C" = Expired For Drop, only "1" or "2" will be sent and will always equal <i>OrdStatus</i> (tag 39)
11	<i>ClOrdID</i>	<i>ClOrdID</i> of the order being accepted, executed or rejected. -or- <i>ClOrdID</i> of the cancel or replace request . -or- <i>ClOrdID</i> of the order subject to unsolicited cancel (<i>OrigClOrdID</i> will not be present).
41	<i>OrigClOrdID</i>	<i>ClOrdID</i> of the order being cancelled or replaced (for a solicited cancel or cancel/replace, otherwise not present).
37	<i>OrderId</i>	<i>OrderId</i> (supplied by BATS).
382	<i>NoContraBrokers</i>	Only present on trades. Always 1.
375	<i>ContraBroker</i>	Only present on trades. BATS = Internally matched INET = Routed to Nasdaq ARCA = Routed to Arca NSX = Order delivery or routed execution from NSX ISE = Order delivery or routed execution from ISE AMEX = Routed to AMEX BEX = Routed to Boston CBSX = Routed to CBOE Stock Exchange CHX = Routed to Chicago DATA = Routed to Track EDGA = Routed to Direct Edge EDGX = Routed to Direct Edge FLOW = Routed to LavaFlow NYSE = Routed to New York PHLX = Routed to Philadelphia TRAC = Routed to Track DARK = Routed to Dark Pool (for <i>ExecInst</i> =Z)

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39	<i>OrdStatus</i>	<p>State of order. "0" = New "1" = Partially Filled "2" = Filled "3" = Done for Day "4" = Canceled "5" = Replaced "6" = Pending Cancel "8" = Rejected "C" = Expired "E" = Pending Replace</p> <p>For Drop, only "1" or "2" will be sent and will always equal ExecType (tag 150)</p>
103	<i>OrdRejReason</i>	<p>Optional when <i>ExecType</i> is Rejected (8). "0" = Broker option "1" = Unknown symbol "2" = Exchange closed "3" = Order exceeds limit "5" = Unknown order "6" = Duplicate order "8" = Stale order</p>
1	<i>Account</i>	Copied from order. (Not available in Drop)
55	<i>Symbol</i>	Copied from order. (Always BATS format in Drop)
65	<i>SymbolSfx</i>	Copied from order. (Not available in Drop)
54	<i>Side</i>	Copied from order.
38	<i>OrderQty</i>	Copied from order.
111	<i>MaxFloor</i>	Copied from order.
44	<i>Price</i>	Copied from order.
9622	<i>DiscretionAmount</i>	Copied from order.
59	<i>TimeInForce</i>	Copied from order.
126	<i>ExpireTime</i>	Copied from order if <i>TimeInForce</i> is GTD (6).
439	<i>ClearingFirm</i>	Copied from order if present.
440	<i>ClearingAccount</i>	Copied from order if present
32	<i>LastShares</i>	Quantity of shares traded on this fill (zero for non-fills).
31	<i>LastPx</i>	Price of this fill (zero for non-fills).
151	<i>LeavesQty</i>	<p>Quantity of shares still open for further execution. Will be zero if order is dead, otherwise will be <i>OrderQty</i> - <i>CumQty</i>.</p> <p>Note: It is possible for <i>LeavesQty</i> to be zero when <i>ExecType</i> = 5 indicating that the order is dead.</p>
14	<i>CumQty</i>	Cumulative quantity of shares executed for this order.
6	<i>AvgPx</i>	Average price of executions for this order weighted by trade size. Zero if <i>CumQty</i> is zero.
9730	<i>TradeLiquidityIndicator</i>	<p>Only present for fills. A = trade added liquidity R = trade removed liquidity X = routed Q = added liquidity via delivery from exchange where BATS quotes to the consolidated quote (E.g. NSX)</p>
9621	<i>ExchangeAccessFee</i>	<p>Only present for fills Access fee for this fill (up to 5 decimal places, negative for rebate).</p>
9690	<i>WorkingPrice</i>	<p>Optional. Must be enabled at the Firm or port level. Only present on Accepted or Replaced, and only when</p>

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		order is fully or partially booked. If <i>Price</i> had to be adjusted to a less aggressive value to avoid crossing the NBBO, the adjusted price will be reported here, otherwise equals <i>Price</i>
9691	<i>InitialDisplayPrice</i>	Optional. Must be enabled at the Firm or port level. Only present on Accepted or Replaced, and only when order is fully or partially booked. If order had to be temporarily displayed at a less aggressive value to avoid locking the NBBO, the initial displayed price will be reported here, otherwise equals <i>WorkingPrice</i>
60	<i>TransactTime</i>	GMT date-time that transaction occurred.
58	<i>Text</i>	Optionally on Fills and only during ECN to Exchange transition (must be enabled by trade desk at port level): “ECN” = ECN Trade “EXCH” = Exchange Trade If present, indicates reason for reject or cancel. Format is one letter reason code followed by colon and space followed by free form text message. (e.g. “N: No Liquidity at price”) Reason codes are one of the following: A = Admin D = Duplicate <i>ClOrdId</i> F = Could not reflect to consolidated quote (SIP/SIAC) H = Halted K = Order Rate Threshold Exceeded L = Order would lock or cross NBBO N = Ran out of liquidity to execute against O = <i>ClOrdId</i> doesn't match a known order P = Can't modify an order that is pending fill Q = Waiting for first trade R = Routing unavailable S = Short-sale price violation T = Fill would trade-through NBBO U = User requested V = Would Wash W = <i>AddLiquidityOnly</i> order would remove X = Order expired Y = Symbol not supported Z = Unforeseen reason
	Standard Message Trailer	

Cancel Reject

Rejects a Cancel or Cancel/Replace request.

When a Cancel/Replace is rejected, by default the original order is left alive. A Cancel Reject should not be used as a sign that the original order has been cancelled. Even if the *CancelOrigOnReject = Y* option is being used a separate “unsolicited” cancel will be sent to close out the original order

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Tag	Field	Description
	Standard Message Header	<i>MsgType="9"</i>
11	<i>ClOrdID</i>	<i>ClOrdID</i> from the Cancel or Cancel/Replace request.
41	<i>OrigClOrdID</i>	<i>ClOrdID</i> of the order that failed to be cancelled or replaced.
37	<i>OrderId</i>	<i>OrderId</i> of order that failed to be cancelled or replaced. "NONE" if <i>CxlRejReason</i> is Unknown (1).
39	<i>OrdStatus</i>	<i>OrdStatus</i> of order that failed to be cancelled or replaced.
1	<i>Account</i>	Copied from Cancel or Cancel/Replace request.
434	<i>CxlRejResponseTo</i>	"1"=Cancel "2"=Cancel/Replace
102	<i>CxlRejReason</i>	"0"=Too late to cancel "1"=Unknown order "3"=Already pending cancel or pending replace
58	<i>Text</i>	Free form text message
	Standard Message Trailer	

Appendix A – Symbology

Send the entire BATS Format symbol including BATS suffix (max 6 characters) in the *Symbol* tag (tag 55)

-OR-

Send the root prefix in *Symbol* and either the CQS or CMS suffix in *SymbolSfx* (tag 65).

Symbology for CQS Symbols			
Type	SIAC/CQS Suffix	Exchange/CMS Suffix	BATS Suffix
Preferred	p	PR	-
Preferred Class "A"	pA	PRA	-A
Preferred Class "B"	pB	PRB	-B
Class "A"	/A	A	.A
Class "B"	/B	B	.B
Warrants	/WS	WS	+
Warrants Class "A"	/WS/A	WSA	+A
Warrants Class "B"	/WS/B	WSB	+B
Preferred when distributed	p/WD	PRWD	-\$
When distributed	/WD	WD	\$
Called	/CL	CL	*
Class "A" called	/A/CL	ACL	.A*
Preferred called	p/CL	PRCL	-*
Preferred "A" called	pA/CL	PRACL	-A*
Preferred "A" when issued	pAw	PRAWI	-A#
Emerging Company Marketplace	/EC	EC	!
Partial Paid	/PP	PP	@
Convertible called	/CV/CL	CVCL	%*
Rights	r	RT	^
Units	/U	U	=
When issued	w	WI	#
Rights when issued	rw	RTWI	^#
Preferred when issued	pw	PRWI	-#
Class "A" when issued	/Aw	AWI	.A#
Warrant when issued	/WSw	WSWI	+#
Test	/TEST	TEST	~

BATS does not require conversion of NASDAQ-listed securities as they are limited to 5 characters.

Support

Please e-mail questions or comments regarding this specification to tradedesk@batstrading.com.

Revision History

<u>Date</u>	<u>Modification</u>
Apr 20, 2007	Added Pegging support
May 2, 2007	Disallowed Visible pegs
May 5, 2007	Made Note on hidden peg priority
Jun 1, 2007	Added support for CMS and CQS symbology with tag 65 (not available in Drop)
Aug 28, 2007	Added BATS+NYSE support
Sep 21, 2007	Added support for Limit-to-Market Cancel/Replace
Oct 9, 2007	Added documentation for Drop copy <i>OrigCompID</i> and <i>OrigSubID</i> fields
Oct 9, 2007	Added note in overview regarding sponsored access Drop copies
Oct 9, 2007	Added documentation for BATS+ISE and ISE+BATS (9303=E and 9303=S)
Nov 5, 2007	Added documentation for Active Price Sliding options on <i>DisplayIndicator</i>
Jan 4, 2008	Added documentation for Directed+BATS ISO (18=s)
Feb 5, 2008	Restored <i>MinQty</i> and added <i>BypassHiddenPeg</i>
Feb 27, 2008	Added <i>ExecInst=z</i> for DarkScan
Mar 12, 2008	Updated <i>RoutInstInst</i> / <i>ExecInst</i> combination table
Mar 13, 2008	Added <i>ExecInst=x</i> for ImproveOnly
Apr 03, 2008	Document Side=ShortExempt as being obsolete.
Apr 03, 2008	Clarify behavior of 9303=S or Z when combined with 18=f.
Apr 14, 2008	Fix Typos in "BATS Specific Fields" table for tags 9619 and 9687
Apr 16, 2008	Updated ContraBroker (375) to include "DARK"
Apr 16, 2008	Added rounding note for PegDifference
Apr 16, 2008	ExecInst=s now also works with ARCA <i>RoutingInst</i> (9303) = A
Apr 30, 2008	Change "Business Level Reject" wording to "Application Layer Reject"
Apr 30, 2008	MinQty now allowed for any BATS-Only hidden (not just peg)
Apr 30, 2008	Tag 9687 renamed to BypassHidden
Jun 13, 2008	Added (optional) AH an RH values to TradeLiquidityIndicator (tag 9730)
Jun 20, 2008	Removed (optional) AH an RH values from TradeLiquidityIndicator (tag 9730)
Jun 26, 2008	Fixed typos (leading caps) in CQS column of Symbology table
Jul 1, 2008	Clarified Sender/Target roles in Standard Header table
Sep 8, 2008	Clarified that OrdRejReason is optional on Rejects and removed nonstandard value 99
Sep 8, 2008	Documented optional Text tag (58) for fills to distinguish ECN from Exchange
Oct 6, 2008	Revised wording to reflect transition to BATS Exchange
Oct 15, 2008	Removed ISE+BATS, NSX+BATS and ExecInst=s
Oct 20, 2008	Removed ImproveOnly (18=x)
Oct 20, 2008	Documented that 18=z requires 9303=R