



US Equities DROP Specification

Version 1.7.0

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1 Introduction

1.1 Overview

BATS uses a variation of the DROP protocol to provide real-time information about executions.

DROP cannot be used to enter orders. Full order information is not available via DROP, but is available via Order by Order FIX Drop. For order entry or Order by Order FIX Drop, refer to the appropriate (BYX or BZX) BATS FIX Specification.

Note that the field layout is slightly different than similar protocols used by other Market Centers.

1.2 Configuration

DROP is typically used by clearing firms or members to monitor their trading activity.

With proper authorization, a single DROP session can be used to obtain execution information about multiple BATS members.

For redundancy, multiple DROP hosts can be configured to send the same information about the same set of members.

1.3 Data Types

- **Numeric** fields are a string of ASCII digits, right justified and zero filled on the left.
- **Alphanumeric** fields are a string of ASCII characters (33-126), left justified and space padded on the right.
- **Base 36 Numeric** (*Order Id* and *Execution Id*) fields are base 36 (0-9A-Z) numbers, right justified and zero filled on the left. Note that these fields are longer than on some other Market Centers.
- **Alpha** fields are left justified and space padded on the right.
- **Prices** are decimal with x whole number digits followed by y decimal digits. The whole number portion is zero filled on the left; the decimal portion is zero filled on the right. The decimal point explicitly appears inside the price field. Note that this is slightly different from implementations on some other Market Centers.
- **Timestamp** fields are seconds past midnight Eastern Time of the trade date with millisecond precision.

2 Protocol

2.1 Message Format

DROP is a CR/LF terminated protocol.

Trade execution information is sent to the client via fixed length, comma delimited messages.

An empty line containing only a CR/LF represents a logout request from the client.

The protocol can be used manually with a standard Telnet client. Using a Telnet client, a user could log into a DROP port, download execution information, log out, and then directly import the comma separated execution information into a spreadsheet or database application.

3 Sessions

The client connects to an assigned host and port using a TCP/IP socket.

3.1 Connectivity

IP Address	Address to connect to.	Supplied by BATS.
TCP Port	Port to connect to.	Supplied by BATS.
Password	Sent upon initial successful connection.	Supplied by BATS.

For information on connectivity options to BATS, refer to the BATS US Equity/Options Connectivity Manual at:

http://www.batstrading.com/resources/membership/BATS_Connectivity_Manual.pdf

3.2 Logon

After a successful connection, the client sends an assigned password followed by a CR/LF.

The DROP host authenticates the password and begins sending fixed length, comma delimited execution information to the client. Each line reflects a single execution and is terminated with a CR/LF pair.

3.3 Session Activity

Once the DROP host has sent all previous executions the connection remain open but idle until the next new execution is sent by the host. After initial replay, each execution is sent as quickly as possible in real time. If the client is slow in reading executions, the executions are queued and delivered in sequence as fast as the client can read them.

3.4 Heartbeat

A heartbeat message should be sent from the DROP client to the server every 10 seconds. This will ensure the client is notified of connectivity interruptions and avoid unnecessary network timeouts. The heartbeat sent to the DROP server must have the following format:

H\r\n

3.5 Logout

An empty line containing only a CR/LF represents a logout request from the client. The DROP host will close the connection and wait for a new connection when the client logs out.

4 Trade Message Format

After login, the client will receive a series of Trade Message lines from the host in real time. Each Trade Message line is fixed format, comma delimited, and CR/LF terminated ASCII text.

Trade Message					
Field Name	Offset	Length	Type	Sample	Description
Timestamp	0	9	Timestamp	12345.123	The time the trade occurred on BATS accurate to the nearest millisecond.
Sender Comp Id	10	4	Alphanumeric	ABCD	Sending Firm
Sender Sub Id	15	4	Alphanumeric	0001	The firm port identifier where the order originated.
Clearing Firm	20	4	Alphanumeric	WXYZ	The clearing MPID.
User	25	4	Alphanumeric	A001	User defined pass through value to distinguish trading activity. Matches FIX ClearingAccount (tag 440) or onBehalfOfSubId (tag 116) field.
Client Order Id	30	24	Alphanumeric	j4Ig000T00	The client order identifier specified on order entry.
Order Id	55	15	(12 char) Base	1CW7A0000001.02	Day-unique order

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			36 Numeric + '.' + (2 char) Base 36 Numeric		identifier assigned by BATS to this order. The first 12 characters match the Order Id seen in FIX & PITCH. The two character base 36 number after the dot indicates the number of times the order was modified. The full 15 character Order Id matches the Order Id used for trade reporting and OATS.
Execution Id	71	12	Base 36 Numeric	12W7A0000001	Day-unique execution identifier assigned by BATS to this execution.
Symbol	84	8	Alpha	MSFT	The stock symbol.
Side	93	1	Alpha	B	The side of the execution. B=Bought, S=Sold, T=Sold Short (member affirmed ability to borrow).
Price	95	11	Price 6.4	000025.5100	Execution price.
Shares	107	6	Numeric	100000	Number of shares executed.
Capacity	114	1	Alpha	P	FIX 4.2 OrderCapacity (Tag 47) value (e.g. "P"=Principal).
Liquidity	116	1	Alpha	A	"A"=Added, "R"=Removed, "X"=Routed.
Clearing Method	118	1	Alpha	Q	Deprecated.

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					Always filled with 'Q'.
Exchange Access Fee	120	12	+/-Price 5.5	+99999.99999 -99999.99999	(+) Fee or (-) rebate for the entire execution based on BATS access fee policies.
Member Id	133	4	Alphanumeric	ABCD	BATS Assigned Member Id (the MPID which will clear the trade is found in the "Clearing Firm" field above).
Account (Adding effective 2/11/11)	138	16	Alphanumeric	ABCdef012	Value preserved from original order except in the case of Market Maker Quoter fills, where value will equal <i>Max Number of Hits</i> (refer to Section on <i>Max Number of Hits</i> in the FIX specification for more information).

5 Implementation Issues

5.1 Replaying from a Specified Line Number

If a connection is lost between a DROP host and its client, the client can reconnect and request the host begin transmitting with a specific line number using the following login format:

password[,line number]

"password" is the assigned client password and line number is the optional line number the client would like the host to begin transmission with. The login line must be terminated with a CR/LF pair. If the optional line number is unspecified, the DROP host will begin transmission with the first trade for the current day (line #1).

The client application can count incoming lines and request the next expected line on reconnect to avoid duplicate transmission of execution data.

6 References

For more information on BATS Symbology, please refer to the BATS Symbology Reference document at http://www.batstrading.com/resources/membership/BATS_Symbology.pdf.

7 Support

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

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Revision History

Document Version	Date	Description
1.0	12/01/05	Initial Version 1.0.
1.1	01/09/06	Added two character (base 36) modifier to the end of Order Id.
1.2	05/11/06	Added heartbeat from client to server.
1.2.1	07/31/06	Changed "On Behalf Of" to "Subscriber Id" to avoid confusion.
1.2.2	08/09/06	Added "C" as valid liquidity flag.
1.2.3	08/21/06	Added Symbology section.
1.2.4	06/26/08	Corrected BATS suffix in symbology table for Convertible Called.
1.3.0	10/06/08	Revised wording to reflect transition to BATS Exchange.
1.3.1	12/03/08	Moved Symbology reference to a separate document.
1.4.0	07/02/09	Removed end of trading day marker reference.
1.5.0	11/12/09	Converted to new technical specification template. Removed various flag references no longer applicable.
1.6.0	01/12/10	Added new Long Trade message format to allow for longer symbol sizes.
1.6.1	04/06/10	8 character symbology support implemented. Short Trade message format has been deprecated.
1.6.2	04/15/10	Updated to include BYX reference for FIX spec.
1.7.0	12/09/10	Added Account to Trade message to be activated effective 2/11/11.