Document title

TAQ NYSE OPENBOOK ULTRA CLIENT SPECIFICATION

Version	Date
1.1	10 Apr 2013

PREFACE

DOCUMENT HISTORY

The following table provides a description of all changes to this document.

VERSION NO.	DATE	CHANGE DESCRIPTION
1.0	01/31/2012	Approved version for release
1.1	06/15/2012	Corrected FTP and file format sections and added Section 1.5.1.
	08/01/2012	Document rebranded with new NYSE Technologies template

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FURTHER INFORMATION

- For additional product information, visit the TAQ NYSE OpenBook Ultra Product Page
- For updated capacity figures, visit our capacity pages at: http://www.nyxdata.com/capacity
- For details of IP addresses, visit our IP address pages at: http://www.nyxdata.com/ipaddresses
- For a full glossary, visit: http://www.nyxdata.com/glossary/

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1. INTRODUCTION

The TAQ NYSE OpenBook Ultra file feed provides users with FTP access to all the NYSE OpenBook Ultra messages disseminated by the real-time feed in the previous trading day. Each TAQ NYSE OpenBook Ultra message is an enhanced with the source microsecond timestamp, symbol index mapping and transaction LinkIDs for executions that will allow customers of NYSE InfoTools to match each NYSE OpenBook Ultra execution message with the tape print, NYSE ProTrac and NYSE ReTrac. The data is available as of 6/2/2008 – present.

1.1 MARKETS COVERED

The TAQ NYSE OpenBook Ultra product covers the NYSE market.

1.2 INSTRUMENTS COVERED

The TAQ NYSE OpenBook Ultra product covers Equities instruments.

1.3 PRICES

All prices included in TAQ NYSE OpenBook Ultra data files are distributed as real prices, rather than the integer tick representation used by some exchanges.

1.4 FTP DETAILS

Files are available from:

FTP2.NYXDATA.COM/EQY_US_NYSE_BOOK/EQY_US_NYSE_BOOK_YYYY/EQY_US_NYSE_BOOK_YYYYMM/EQY_US_NYSE_BOOK_YYYYMMDD.zip

1.5 FILE FORMAT

All TAQ NYSE OpenBook Ultra data files are delivered in fixed-length price point format and are compressed using GZIP. Each message is 69 bytes in length. There are no delimiters and so the format is

```
<69 bytes fields><69 bytes fields>……<69 bytes fields>
```

1.5.1 Example Hexdump

Here is an example hexdump of TAQ NYSE OpenBook Ultra data. The example shows two complete (69-byte) messages and the start of a third; the second message is shaded in gray to indicate where it begins and ends.

```
00 00 00 02 00 e6 01 20 77 db 42 52 46 53 00 00
00 00 00 00 00 00 50 0c c7 01 20 77 da 03 8a 20
50 00 00 00 01 01 04 00 01 a6 a8 00 00 01 f4 00
00 00 00 00 01 42 00 00 00 00 00 00 00 00 00 00
00 00 00 00 00 00 00 00 02 00 e6 01 20 77 db 42
52 46 53 00 00 00 00 00 00 00 00 50 0c c7 01 20
77 da 03 8a 20 50 00 00 00 01 01 04 00 01 b9 cc
00 00 00 64 00 00 00 00 00 01 42 00 00 00 00 00
00 00 00 00 00 00 00 00 00 00 00 00 00 02 00 e6
```

Table 1 provides the decimal or ASCII conversion details for the *first* 69-byte message in the example shown above. Refer to **Table 2 TAQ NYSE OpenBook Ultra Field Layouts** for details of the meaning of the message fields.

Table 1 Example Hexdump Explanation

BYTE (TOTAL LENGTH)	HEXADECIMAL	DECIMAL (ASCII)	FIELD NAME
1-4 (4)	00 00 00 02	2	MsgSeqNum (See Table 2)
5-6 (2)	00 e6	230	MsgType (See Table 2)
7-10 (4)	01 20 77 db	18905051	SendTime (See Table 2)
11- 21 (11)	42 52 46 53 00 00 00 00 00 00 00	66 82 70 83 (BRFS)	Symbol (See Table 2)
22-23 (2)	00 50	80	MsgSize (See Table 2)
24-25 (2)	0c c7	3271	SecurityIndex (See Table 2)
26-29 (4)	01 20 77 da	18905050	SourceTime (See Table 2)
30-31 (2)	03 8a	906	SourceTimeMicroSecs (See Table 2)
32 (1)	20	32	QuoteCondition (See Table 2)
33 (1)	50	80 (P)	TradingStatus (See Table 2)
34-37 (4)	00 00 00 01	1	SourceSeqNum (See Table 2)
38 (1)	01	1	SourceSessionID (See Table 2)
39 (1)	04	4	PriceScaleCode (See Table 2)
40-43 (4)	00 01 a6 a8	108200	PriceNumerator (See Table 2)
44-47 (4)	00 00 01 f4	500	Volume (See Table 2)
48-51 (4)	00 00 00 00	0	ChgQty (See Table 2)
52-53 (2)	00 01	1	NumOrders (See Table 2)
54 (1)	42	66 (B)	Side (See Table 2)
55 (1)	00	0 (null)	Filler (See Table 2)
56 (1)	00	0 (null)	ReasonCode (See Table 2)
57 (1)	00	0 (null)	Filler (See Table 2)
58-61 (4)	00 00 00 00	0	LinkID1 (See Table 2)
62-65 (4)	00 00 00 00	0	LinkID2 (See Table 2)
66-69 (4)	00 00 00 00	0	LinkID3 (See Table 2)

1.6 HOURS OF OPERATION

The TAQ NYSE OpenBook Ultra data files are available for client download on a daily basis (trading days only) at 1:00 AM. All file-generation times are defined according to Eastern Standard Time (EST).

1.7 ALTERNATIVE PRODUCTS

For details of related TAQ products and the full range of TAQ offerings, please refer to the Historical Data Products section of NYXData at: http://www.nyxdata.com/Data-Products/Historical-Data.

2. TAQ NYSE OPENBOOK ULTRA FIELD LAYOUTS

Table 2 describes the fields in the TAQ NYSE OpenBook Ultra files. In the 'Format' column, the number shown in parentheses indicates the size of the field in bytes.

Table 2 TAQ NYSE OpenBook Ultra Field Layouts

FIELD	FORMAT	DESCRIPTION
MsgSeqNum	Binary Integer (4)	This field contains the message sequence number assigned by PDP for each product. It is used for gap detection. Also known as Line Sequence Number (LSN).
MsgType	Binary Integer (2)	■ '230' – OpenBook Full Update Message ■ '231' – OpenBook Delta Update Message
SendTime	Binary Integer (4)	This field specifies the time that the message was created by PDP. It the number of milliseconds since midnight of the same day.
Symbol	ASCII String (11)	This field contains the full symbol in NYSE Symbology. A sequence of characters representing the symbol, padded with NULLs. See NYSE Stock Symbol Suffixes.
MsgSize	Binary Integer (2)	This field indicates the number of bytes in this message including this field. MsgSize=sum(fixed fields) + number of price Points*sum (price point fields for 1 price point).
SecurityIndex	Binary Integer (2)	This field identifies the numerical representation of the symbol.
SourceTime	Binary Integer (4)	This field specifies the time when the full update was generated in the order book. The number represents the number of milliseconds since midnight of the same day. For example, if the time is 13:12 56 seconds, 170 milliseconds and 30 microseconds, this field will contain the value 47576170.
SourceTimeMicroSecs	Binary Integer (2)	This field indicates the number of microseconds that have elapsed within the millisecond the full update message was generated in the book. For example, if the sourcetime is 13:12:56 secs, 170ms and 30microsecs, this field will contain value 30.
QuoteCondition	Binary Integer (1)	This field contains the current quote condition for the symbol. The quote condition will be blank if no quote condition exists (for example when the Book is fast). Valid Values: ■ 'E' = Slow on the Bid due to LRP or GAP Quote ■ 'F' = Slow on the Ask due to LRP or GAP Quote ■ 'U' = Slow on the Bid and Ask due to LRP or GAP Quote

FIELD	FORMAT	DESCRIPTION
		■ 'W' = Slow Quote due to a Set Slow list on both the bid and offer sides
TradingStatus	ASCII Char (1)	The current trading status of the equity. Valid Values: ■ 'P' = Pre-Opening for messages sent before the stock is opened on a trade or quote ■ 'O' = The stock has opened or re-opened ■ 'C' = The stock was closed from the Closing template ■ 'H' = The stock is halted during a trading halt and has not resumed
SourceSeqNum	Binary Integer (4)	This field contains the sequence number assigned by the source system to this message. The sequence number is unique only to a given stock, hence orders for two different stocks may share the same source sequence number.
SourceSessionID	Binary Integer (1)	This field contains the source-session identifier. This number is incremented with every new source-session during the day. The SymbolSeqNums may restart at a lower number with every new session.
PriceScaleCode	Binary Integer (1)	The denominator code for the price fields in this message. Represents the number of digits after the decimal place in the price. Examples: For a price of 12.1, the denomcode is 1. For a price of 13, the code is 0.
PriceNumerator	Binary Integer (4)	This field contains the price (numerator) of this price point. Note: The price is represented by the PriceScaleCode and the PriceNumerator. For example, a price of 12.1 has a "price numerator" of 12 and a scalecode of 1.
Volume	Binary Integer (4)	This field contains the total interest quantity at a price point.
ChgQty	Binary Integer (4)	The volume of the event taking place (that is, the size of the order, cancel or execution).
NumOrders	Binary Integer (2)	This field contains the number of orders at the current price point.
Side	ASCII Char (1)	This field indicates the side of the order Buy/sell. Valid Values: ■ 'B' – Buy ■ 'S' – Sell
Filler	ASCII Char	This is a filler, reserved for future use.

FIELD	FORMAT	DESCRIPTION
	(1)	
ReasonCode	ASCII Char (1)	This field identifies why the volume at the price point was modified. Valid Values: ■ 'O' – New order/additional interest added ■ 'C' – Cancel ■ 'E'– Execution ■ 'X' – Multiple events
Filler	ASCII Char (1)	This is a filler, reserved for future use.
LinkID1	Binary Integer (4)	The LinkID identifies a unique transaction in the matching and allows you to correlate execution reports and quotes to the last sale. This field is populated only when an execution occurs. (Optional)
LinkID2	Binary Integer (4)	The LinkID identifies a unique transaction in the matching and allows you to correlate execution reports and quotes to the last sale. This field is populated only when an execution occurs. (Optional)
LinkID3	Binary Integer (4)	The LinkID identifies a unique transaction in the matching and allows you to correlate execution reports and quotes to the last sale. This field is populated only when an execution occurs. (Optional)

APPENDIX A: NYSE STOCK SYMBOL SUFFIXES

Table 3 describes the NYSE stock symbol suffixes.

Table 3 NYSE Stock Symbol Suffixes

SUFFIX	DESCRIPTION
<v>	<v> represents a character; Series (or Class) A-T & V-Z; Examples include the following: ZZZ A is the same as ZZZ/A ZZZ T is the same as ZZZ/T
<v>CL	Series (or Class) A-T & V-Z Called. Examples include the following: ZZZ ACL is the same as ZZZ/A/CL
<v>CV	Series (or Class) A-T & V-Z Convertible. Examples include the following: ZZZ ACV is the same as ZZZ/A/CV
<v>WI	Series (or Class) A-T & V-Z When Issued. Examples include the following: ZZZ AWI is the same as ZZZ/Aw
CL	Called. Examples include the following: ZZZ CL is the same as ZZZ/CL
CT	Certificates. Examples include the following: ZZZ CT is the same as ZZZ/CT
CV	Convertible. Examples include the following: ZZZ CV is the same as ZZZ/CV (ZZZ/CV)
CVR	Contingent Value Right. Examples include the following: ZZZ CVR is the same as ZZZ/CVR
CVCL	Convertible Called. Examples include the following: ZZZ CVCL is the same as ZZZ/CV/CL
DP	Amount of most-recent dividend to go “ex-distribution”. Examples include the following: ZZZ DP is the same as ZZZ/DP
DV	Accumulated dividend per share, net of expenses, through and including the previous day’s close of trading. Examples include the following: ZZZ DV is the same as ZZZ/DV
EC	Emerging Company Marketplace. Examples include the following: ZZZ EC is the same as ZZZ/EC
EU	Estimated cash amount for creation unit. Examples include the following: ZZZ EU is the same as ZZZ/EU
FN	Foreign News. Examples include the following: ZZZ FN is the same as ZZZ/F/N
ID	Index – differentiates an index from a stock with the same root symbol. Examples include the following: III ID is the same as III/ID
IV	Intra-day Net Asset Value per share. Examples include the following: ZZZ IV is the same as ZZZ/IV
NV	Net Asset Value per share, as of the close on the previous trading day. Examples include the following: ZZZ NV is the same as ZZZ/NV

SUFFIX	DESCRIPTION
PP	Partial Paid. Examples include the following: ZZZ PP is the same as ZZZ/PP
PTCL	Part Called. Examples include the following: ZZZ PTCL is the same as ZZZ/PT/CL
PR	Preferred. Examples include the following: ZZZ PR is the same as ZZZp
PR<v>	<v> represents a character; Preferred Series A-T & V-Z. Examples include the following: ZZZ PRA is the same as ZZZpA ZZZ, PRB is the same as ZZZpB
PR<v>CL	<v> represents a character; Preferred Series A-T & V-Z Called. Examples include the following: ZZZ PRACL is the same as ZZZpA/CL ZZZ, PRBCL is the same as ZZZpB/CL
PR<v>CV	<v> represents a character; Preferred Series A-T & V-Z Convertible. Examples include the following: ZZZ PRACV is the same as ZZZpA/CV ZZZ, PRBCV is the same as ZZZpB/CV
PR<v>WI	<v> represents a character; Preferred Series A-T & V-Z When Issued. Examples include the following: ZZZ PRAWI is the same as ZZZpAw ZZZ, PRBWI is the same as ZZZpBw
PRWI	Preferred When Issued. Examples include the following: ZZZ PRWI is the same as ZZZpw
PRCL	Preferred Called. Examples include the following: ZZZ PRCL is the same as ZZZp/CL
PRCV	Preferred Convertible. Examples include the following: ZZZ PRCV is the same as ZZZp/CV
PRWD	Preferred When Distributed. Examples include the following: ZZZ PRWD is the same as ZZZp/WD
PRC<v>	Indicates Class A; could also be B-K and M-S; Second Category of Preferred. Examples include the following: ZZZ PRCA is the same as ZZZpCA ZZZ, PRCB is the same as ZZpCB
RT	Rights. Examples include: ZZZ R is the same as ZZZr
RWI	Rights When Issued. Examples include: ZZZ RWI is the same as ZZZrw
SC	Small Corporate Offering Registration. Examples include the following: ZZZ SC is the same as ZZZ/SC
SP	Special. Examples include the following: ZZZ SP is the same as ZZZ/SP
SD	Stamped. Examples include the following: ZZZ SD is the same as ZZZ/SD
SO	Current Shares Outstanding, in thousands. Examples include the following: ZZZ SO is the same as ZZZ/SO
TC	Total cash amount per creation unit, in thousands. Examples include the following: ZZZ TC is the same as ZZZ/TC
TEST	Exclusive suffix used for intraday test message. Examples include the following: ZZZ TEST is the same as ZZZ/TEST

SUFFIX	DESCRIPTION
TT	Tier II Securities. Examples include the following: ZZZ TT is the same as ZZZ/TT
U	Units (a combination of securities composed of two or more of warrants, common stocks, preferred stocks and/or bonds). Examples include the following: ZZZ U is the same as ZZZ/U
VR	Variable Common Rights. Examples include the following: ZZZ VR is the same as ZZZ/VR
WD	When Distributed. Examples include the following: ZZZ WD is the same as ZZZ/WD
WI	When Issued. Examples include the following: ZZZ WI is the same as ZZZw
WS	Warrants. Examples include the following: ZZZ WS is the same as ZZZ/WS
WWS	With Warrants. Examples include the following: ZZZ WWS is the same as ZZZ/W/WS
WS<v>	Warrants Series <v>; Series A-T & V-Z. Examples include the following: ZZZ WSA is the same as ZZZ/WSA
WSWI	Warrants When Issued

Table 4 Suffix Definitions

SUFFIX	DEFINITION
Called	An issue being redeemed by its issuing corporation under definite conditions before maturity.
Certificate	Refers to a negotiable certificate representing deposit of stock with a pending change in its condition.
Convertible	A preferred share which its owner may convert into common stock or another security, usually in the same company, in accordance with the terms of issue.
Preferred	A class of stock with priority over common stock in regard to earnings and/or liquidations.
Rights	Represent the privilege to subscribe (in proportion to the number of shares owned) to new or additional securities, usually at or below the current market price. Rights ordinarily have market values of their own and are traded actively. In most cases they must be exercised within a relatively short period of time.
Stamped	Indicates rights and privileges different from securities of the same issue, class, or series not stamped.
Warrant	Indicates a certificate giving its holder the right to purchase securities at a stipulated price, either within a specified time limit or in perpetuity.
When Distributed	Signifies a short form of “when, as, and if distributed” (see ‘When Issued’).
When Issued	Means a short form of “when, as, and if issued”; indicates a transaction in

SUFFIX	DEFINITION
	a security authorized for issuance, but not yet issued. All “When Issued” transactions are on an “if” basis, to be settled if and when the actual security is issued.
With Warrants	A security with a warrant attached that entitles the holder to purchase another security at stipulated price(s), either within a specified time or in perpetuity. Warrants may be immediately detachable from their underlying securities or detachable after specified periods.
Without Warrants	A security from which the warrant(s) has been removed.