NYSE Technologies

NYSE ArcaBook FTP Client Specification

Version 1.5a

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PREFACE

DOCUMENT HISTORY

Document Version	Date	Change Description
1.2	9/07	Changed order reference number length from 8 to 10.
1.3	8/09	Changed order reference number length from 10 to 20.
1.4	8/09	Changed the value for Sequence #, Exchange Code, System Code, and Quote ID
1.4a	10/09	Updated System Event message with new System Code and Event Code.
1.5	12/09	Clarified sequence number.
1.5a	06/10/10	Formatted into new template

REFERENCE MATERIAL

The following lists the associated documents, which either should be read in conjunction with this document or which provide other relevant information for the user:

- SFTI US Technical Specification
- SFTI US Customer Guide
- NYSE Symbology

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FURTHER INFORMATION

For additional product information please visit, http://www.nyxdata.com/Data-Products/ArcaBook-FTP

For updated capacity figures please visit our capacity pages at: http://www.nyxdata.com/capacity

For details of IP addresses, please visit our IP address pages at: http://www.nyxdata.com/ipaddresses

For a full glossary, see http://www.nyxdata.com/glossary/

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1 INTRODUCTION

NYSE ArcaBook data is available on a historical/end-of-day basis in flat file format, enabling you to recreate the limit order book for any given time.

Daily historical NYSE ArcaBook files (available from August 2, 2004 forward) contain messages disseminated via NYSE ArcaBook for all subscriptions during the trading day (OTC, Listed, ETF, ArcaEdge Bulletin Board).

Daily historical NYSE ArcaBook files (beginning August 2 2004 through present) are available in flat file ASCII format, zipped using GZip. Each file contains messages disseminated via NYSE ArcaBook for all subscriptions during the trading day (OTC, Listed, ETF and ArcaEdge Bulletin Board). Approximate size of the compressed file is 1.2 GB.

NYSE ArcaBook Historical includes the details of all open orders and order changes (including replaces and cancels) entered into ArcaEx or ArcaEdge. Each file contains messages disseminated via NYSE Arca's real-time ArcaBook data feed and includes information for OTC, exchange-listed, ETF, and OTCBB securities.

NYSE ArcaTrade Historical includes details of all transactions handled by ArcaEx or ArcaEdge.

1.1 ACCESS AND DATA FORMAT

Daily NYSE ArcaBook and NYSE ArcaTrade Historical files are available in several flat files, ASCII format. All files are compressed using GNU Zip. NYSE ArcaBook Historical files are approximately 1 GB compressed and NYSE ArcaTrade Historical files are approximately 50 MB compressed. Files are available via File Transfer Protocol (FTP) or DVD.

Subscribers must execute an NYSE Arca Delayed Data User Agreement. Upon the execution, NYSE Arca staff will work directly with the subscriber to determine the appropriate access procedure.

1.2 DATA TYPES

All numeric fields are composed of a string of ASCII characters (0-9), left justified and NULL padded. All alpha fields are left justified and NULL padded.

Prices are given in decimal format, left justified and NULL padded. The decimal portion of the price can go back up to 6 decimal places. Examples; "25.222", "0.125", "100.6", "2.30".

The Sequence Number (on the order, modify, and delete messages) is a sequential number that identifies the message per symbol. This number will start the trading session at one (1) and increment by one (1) for each new message per symbol.

There are two timestamp fields: one specifying seconds and the other specifying milliseconds associated with that second. The second timestamps are in seconds since midnight (00:00:00) of the trading day.

1.3 SYMBOLOGY

The Comstock symbology is embedded in the Stock field for orders with System Code = "L". Nasdaq symbology will be used for orders with System Code = "O", ETF will use the System Code of "E", and BB will use the System Code of "B".

2 NYSE ARCABOOK MESSAGES

NYSE ArcaBook Historical supports 5 different message types, corresponding to the nature of the message submitted by the NYSE Arca matching engine.

2.1 ADD ORDER MESSAGE

The Add Order message communicates the details of a new order added to NYSE Arca's open order book. The order reference number will be a unique identifier per system code for this order.

Table 1 Add Order Message Format

Name	Size (Bytes)	Format	Description
Message Type	1	"A"	Add new order
Sequence #	10	Numeric	1-9999999999
Order Reference Number	20	Numeric	The unique reference number per symbol assigned to this new order
Exchange Code	1	Alpha	The id of the originating exchange of the quote. Valid values: 'N' – NYSE 'P' – NYSE Arca 'B' – NYSE Arca BB
Buy/Sell Indicator	1	Alpha	B-Buy order, S-Sell order
Shares	9	Numeric	Show size of order
Stock	8	Alpha	Stock symbol
Price	10	Price	The limit price of the order
Seconds	5	Numeric	Seconds Timestamp
Milliseconds	3	Numeric	Milliseconds timestamp
System Code	1	Alpha	The id of the originating system of the quote. Valid values: 'L' – Listed 'O' – OTC 'E' – ETF 'B' – BB
Quote ID	5	Alpha	'A'+MPID if attributed, AARCA if non-attributed
Padding	8	Alpha	Not used

If an order is to be attributed, NYSE ArcaBook Historical will include the appropriate MPID in the Quote ID field of the Add Order message (this is derived from the first four letters of a firm's ETPID). For example, if Broker Dealer XXXX designated an order to be attributed, NYSE ArcaBook will display AXXXX for the order. If the order is not attributed, it will display as ARCAX for ArcaEx symbols and as ARCBB for ArcaEdge (BB) symbols.

2.2 MODIFY ORDER MESSAGE

The Modify Order message is sent when an order on the NYSE Arca book is modified. When an order is modified, the order reference number will reference the original order sent in the add order message. The following events will trigger the inclusion of a modify order message.

- The price of an order changes

- The size of an order changes
- An order is partially filled.

Table 2 Modify Order Message Format

Name	Size (Bytes)	Format	Description
Message Type	1	"M"	Modify order
Sequence #	10	Numeric	1-9999999999
Order Reference Number	20	Numeric	The unique reference number per symbol assigned to the original order
Shares	9	Numeric	Order size
Price	10	Price	The limit price of the order
Seconds	5	Numeric	Seconds timestamp
Milliseconds	3	Numeric	Milliseconds timestamp
Stock	8	Alpha	Stock symbol
Exchange Code	1	Alpha	The id of the originating exchange of the quote. Valid values: 'N' – NYSE 'P' – NYSE Arca 'B' – NYSE Arca BB
System Code	1	Alpha	The id of the originating system of the quote. Valid values: 'L' – Listed 'O' – OTC 'E' – ETF 'B' – BB
Quote ID	5	Alpha	'A'+MPID if attributed, AARCA if non-attributed
Buy/Sell Indicator	1	Alpha	B-Buy order, S-Sell order
Padding	7	Alpha	Not used

2.3 DELETE ORDER MESSAGE

The Delete Order message is sent when an order is taken off of the NYSE Arca open order book. The following events will trigger the transmission of a delete order message.

- An order is cancelled
- An order expires
- An order is filled.

Table 3 Delete Order Message Format

Name	Size (Bytes)	Format	Description
Message Type	1	"D"	Delete the order
Sequence #	10	Numeric	1-9999999999
Order Reference Number	20	Numeric	The unique reference number per symbol assigned to the

Name	Size (Bytes)	Format	Description
			original order
Seconds	5	Numeric	Seconds timestamp
Milliseconds	3	Numeric	Milliseconds timestamp
Stock	8	Alpha	Stock symbol
Exchange Code	1	Alpha	The id of the originating exchange of the quote. Valid values: 'N' – NYSE 'P' – NYSE Arca 'B' – NYSE Arca BB
System Code	1	Alpha	The id of the originating system of the quote. Valid values: 'L' – Listed 'O' – OTC 'E' – ETF 'B' – BB
Quote ID	5	Alpha	'A'+MPID if attributed, AARCA if non-attributed
Buy/Sell Indicator	1	Alpha	B-Buy order, S-Sell order
Padding	7	Alpha	Not used

2.4 IMBALANCE MESSAGE

The Imbalance message is sent in response to orders submitted during pending auctions. The message is sent between 8:00 am ET and the conclusion of the Opening Auction for orders designated for the Opening Auction, and between 8:00 am ET and the conclusion of the Market Order Auction for orders designated for the Market Order Auction. ArcaEx will disseminate Closing Auction messages between 3:00 pm EST and the conclusion of the Closing Auction at 4:00 pm EST (times are subject to change).

NYSE ArcaBook Historical will also include imbalance information for Halt Auctions.

For auctions, the total imbalance volume and market imbalance volume will be negative for a sell imbalance.

Table 4 Imbalance Message Format

Name	Size (Bytes)	Format	Description
Message Type	1	"I"	Imbalance message
Sequence #	10	Numeric	The unique reference number per symbol assigned to the original order
Stock	8	Alpha	The stock symbol
Price	10	Price	The indicative match price
Shares	9	Numeric	The indicative match volume
Total Imbalance	9	Numeric	The total imbalance volume
Seconds	5	Numeric	Seconds timestamp
Milliseconds	3	Numeric	Milliseconds timestamp
Market Imbalance	9	Numeric	The market imbalance volume

Name	Size (Bytes)	Format	Description
Auction Type	1	Alpha	O-Open, M-Market, H-Halt, C-Closing
Auction Time	4	Numeric	Projected Auction Time (hhmm)
Exchange Code	1	Alpha	The id of the originating exchange of the quote. Valid values: ‘N’ – NYSE ‘P’ – NYSE Arca ‘B’ – NYSE Arca BB
System Code	1	Alpha	The id of the originating system of the quote. Valid values: ‘L’ – Listed ‘O’ – OTC ‘E’ – ETF ‘B’ – BB
Padding	8	Alpha	Not used

2.4.1 Market Order Imbalance

The Market Order Imbalance is the imbalance of any remaining Market Orders that are not going to be executed in a Market Order Auction. Calculation of match size and indicative match price remain unchanged.

2.4.2 Total Imbalance

The total imbalance is the net imbalance of orders at the indicative match price for all orders eligible for the next upcoming Auction. This includes Market and Limit Orders. Display of match size and indicative match price remain unchanged.

2.5 SYSTEM EVENT MESSAGE

The system event message is sent by the NYSEArcaBook server to indicate a special system event and corresponding event code.

Table 5 System Event Message Format

Name	Size (Bytes)	Format	Description
Message Type	1	“V”	System Event Message
Sequence #	10	Numeric	1-9999999999
Expected Sequence #	10	Numeric	1-9999999999
Seconds	5	Numeric	Seconds timestamp
Milliseconds	3	Numeric	Milliseconds timestamp
Event Code	1	Alpha	“S” Clear Book by Symbol
System Code	1	Alpha	The id of the originating system of the quote. Valid values: ‘L’ – Listed ‘O’ – OTC ‘E’ – ETF

Name	Size (Bytes)	Format	Description
			‘B’ – BB
Stock	8	Alpha	The stock symbol
Padding	16	Alpha	Not Used

The system event message with Event Code = “S” indicates that all orders in the book for the corresponding Symbol should be cancelled. The message will also include the next expected sequence number. In most cases this will be the Sequence # + 1 although it is possible that the system has been reset and the sequence numbers will restart at 1.

3 NYSE ARCATRADE MESSAGES

NYSE ArcaTrade Historical supports 2 different message types.

3.1 LAST SALE MESSAGE

The Last Sale message communicates details of all executions resulting from orders submitted to ArcaEx or ArcaEdge. Note that both of NYSE Arca's platforms utilize smart routing logic, thus trades can execute within NYSE Arca's order book or with an external market center. In addition, NYSE Arca supports "cross" order types. These orders are immediately executed and not included in the NYSE ArcaBook Historical feed. As a result, some trades will not have a corresponding order message type in the NYSE ArcaBook Historical file. If two orders "match" on the NYSE Arca order book, NYSE ArcaTrade Historical will include execution information for the side of the execution that was distributed via NYSE ArcaBook.

The order reference number will be a unique identifier per system code. A substring of the order reference number can be used to match executions in the NYSE ArcaTrade Historical file to orders in the NYSE ArcaBook Historical file.

Table 6 Last Sale Message Format

Name	Size (Bytes)	Format	Description
Message Type	1	"X"	Executed order
Sequence #	10	Numeric	1-9999999999 (coming soon)
Trade_date		Numeric	Transaction date
Timestamp	5	Numeric	Time the matching engine executes the trade (in seconds)
Order Reference Number	20	Numeric	The unique reference number per system code assigned to this transaction.
Execution Identifier		Alpha -??	Used for trade bust messages (see Trade Bust)
Symbol	8	Alpha	Stock symbol
Volume	9	Numeric	Show size of order
Price	10	Price	The limit price of the order
System code	1	Alpha	P-ArcaEx OTC, E-ArcaEx Listed, and B-BB
Buy/Sell Indicator	1	Alpha	B-Buy order, S-Sell order, X-Sell Short, C-Cross This field represents the buy/sell interest from the perspective of the ArcaEx client entering the order that leads to this execution. Because both sides of a trade executed within the ArcaEx platform are reflected as separate trade events in this file, there should be one buy trade event and one sell trade event for every trade executed within the ArcaEx system. For trades executed with an outside venue (e.g., routed to INET or received via ITS), the buy/sell indicates the action taken by the ArcaEx client. There is not a second trade event in this file for these types of transactions.
Arca_bid_pr	10	Numeric	Arca Bid Price at time of execution
Arca_bid_volume	9	Numeric	Arca Bid Size at time of execution
Arca_ask_pr	10	Numeric	Arca Ask Price at time of execution
Arca_ask_volume	9	Numeric	Arca Ask Size at time of execution
Market_bid_pr	10	Numeric	Consolidated Bid Price at time of execution

Name	Size (Bytes)	Format	Description
Market_bid_volume	9	Numeric	Consolidated Bid Size at time of execution
Market_ask_pr	10	Numeric	Consolidated Ask Price at time of execution
Market_ask_volume	9	Numeric	Consolidated Ask Size at time of exeuction
Type		Alpha	INTERNAL – Order was executed internally (i.e.,contra party is an ArcaEx client); EXTERNAL – Order was and external execution (e.g. order routed to an away destination)
Ab_order_id	1	Numeric	This number (along with symbol) can be used to match the trade back to the original order contained in the NYSE ArcaBook Historical file (field "Order Reference Number").

3.2 TRADE BUST MESSAGE

The Trade Bust message identifies trades that were busted after the execution was reported. These messages can be mapped to the original trade message using the sequence number.

Table 7 Trade Bust Message Format

Name	Size (Bytes)	Format	Description
Message Type	1	"B"	Trade bust
Sequence #	10	Numeric	1-9999999999
Trade_date		Numeric	Transaction date
Timestamp	5	Numeric	Time the matching engine processed the bust
Order Reference Number	20	Numeric	The unique reference number per system code assigned to this transaction.
Execution Identifier		Alpha - ???	Unique identifier mapping a trade bust to the original last sale message. This field can be used to link to the NYSE ArcaTrade file.
Symbol		Alpha	Stock Symbol
Ab_order_id		Numeric	This number (along with symbol) can be used to match the trade back to the original order contained in the NYSE ArcaBook Historical file. This field can be used to link to the NYSE ArcaTrade file and the NYSE ArcaBook file.