PILLAR OPTIONS TOP CLIENT SPECIFICATION

NYSE ARCA OPTIONS TOP FEED

NYSE AMERICAN OPTIONS TOP FEED

Version	Date
1.1	March 5, 2021

PREFACE

DOCUMENT HISTORY

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

VERSION NO.	DATE	CHANGE DESCRIPTION
1.0	Nov 10, 2020	Added outright series support for NYSE Arca and American Options
1.1	March 5, 2021	Added complex series support for NYSE Arca Options

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:

- IGN Information
- NYSE Symbology
- IP Addresses

CONTACT INFORMATION

- Connectivity connectivity@nyse.com
- Telephone: +1 212 896-2830

FURTHER INFORMATION

- For additional information about the product, visit the PILLAR TOP Feed Product Page
- For updated capacity statistics, visit the Capacity page.

CONTENTS

1. INTRODUCTION

This real-time low latency product provides top of book quote, trades, RFQ and imbalance data for all traded series on the respective NYSE Options exchanges. This data is intended for clients who require a direct, unconsolidated feed and timestamps provided directly from the Exchange matching engines.

- ***BBO*** - This real-time low latency product provides top of book quote data for all traded series on the respective NYSE Options exchanges. This data is intended for clients who require a direct, unconsolidated feed and timestamps provided directly from the Exchange matching engines.
- ***TRADES*** - This real-time high performance product provides trade data for all traded series on respective NYSE Options market. This trade data is intended for trading applications which require a direct feed with timestamps representing matching engine event times.
    - For each market, bundling policy mirrors publications to the OPRA.
        - For continuous trading at NYSE Options markets, each 2-sided execution even in the same event results in the publication of a separate Trade message. All auction prints are unbundled.
- **RFQs** - This real-time time high performance product provides request for quote data for Outright RFQ
- ***IMBALANCES*** - This real-time time high performance product provides imbalance data published during opening and reopening auctions of all traded series on the NYSE Group options exchanges. This data is intended for clients who require a direct feed with timestamps provided directly from the Exchange matching engines.

1.1 PUBLICATION TIMES

Please refer to the market open pre-opening, early trading, core trading and late trading session times on:

https://www.nyse.com/markets/hours-calendars

2. CONTROL MESSAGE TYPES USED IN THE DATA FEEDS

See the Pillar Common Client Specification for details on all control messages.

MSGTYPE	DESCRIPTION
1	Sequence Number Reset
2	Time Reference Message
3	Symbol Index Mapping
10	Retransmission Request Message
11	Request Response Message
12	Heartbeat Response Message
13	Symbol Index Mapping Request Message
15	Refresh Request Message
31	Message Unavailable
32	Symbol Clear
34	Security Status Message
35	Refresh Header Message
50	Outright Series Index Mapping
51	Options Status Message

3. TOP MESSAGES

3.1 Options Quote Message – Msg Type 340

An Options quote message is sent when any event results in a new top of book value on either side of the market.

The values published in Options Quote message to Pillar (prices, quantities, quote conditions) shall be the same as the ones published in Quote message to OPRA

See the Pillar Common Client Specification for details on Symbol/Series Index and Time Reference messages.

FIELD NAME	OFF SET	SIZE (BYTES)	FORMAT	DESCRIPTION
Msg Size	0	2	Binary	Size of the message: 42 bytes
Msg Type	2	2	Binary	The type of message: 340 – Options Quote Message
SourceTimeNS	4	4	Binary	The nanosecond offset (UTC Time) from the Time Reference message.
SeriesIndex	8	4	Binary	The unique ID of this series within this market.
SeriesSeqNum	12	4	Binary	The series sequence number.
Ask Price	16	4	Signed Binary	The Ask price. Use the Price scale from the Series Index message.
Ask Volume	20	4	Binary	Total quantity available at the above Ask price
Bid Price	24	4	Signed Binary	The Bid price. Use the Price scale from the Series Index message.
Bid Volume	28	4	Binary	Total quantity available at the above Bid price.
Quote Condition	32	1	ASCII	**All markets** ▪ 1 – Regular Trading ▪ 2 – Rotation ▪ 3 – Trading Halted
Reserved	33	1	ASCII	Reserved for future use
AskCustomerVolume	34	4	Binary	*Total quantity of customer orders at the Ask price
BidCustomerVolume	38	4	Binary	*Total quantity of customer orders at the Bid price

*For American, customer volume includes non-professional customers only

*For Arca, customer volume includes non-professional and professional customers

3.2 Options Trade Message – Msg Type 320

An Options Trade message is sent when there is an execution on the order book.

All trades are reported to Pillar regardless of quantity, with the following exceptions:

a. Cabinet trades
b. Flex trades
c. Trades at away exchanges for any routed interest; are not reported to Pillar

See the Pillar Common Client Specification for details on Symbol/Series Index Mapping messages.

FIELD NAME	OFFSET	SIZE (BYTES)	FORMAT	DESCRIPTION
Msg Size	0	2	Binary	Size of the message: 36 bytes
Msg Type	2	2	Binary	The type of message: 320 – Options Trade Message
Reserved	4	4	Binary	Reserved for future use
SourceTimeNS	8	4	Binary	The nanosecond offset (UTC Time) from the Time Reference message.
SeriesIndex	12	4	Binary	The unique ID of this series within this market.
SeriesSeqNum	16	4	Binary	The series sequence number.
TradeID	20	4	Binary	Unique identifier for this trade.
Price	24	4	Signed Binary	The price of the Trade. Use the Price scale from the series index mapping.
Volume	28	4	Binary	The volume of the trade in contracts.
TradeCond1	32	1	ASCII	Settlement related conditions. Valid values: • “a” – outright series order/quote trading electronically with a outright series CUBE Exposed order or outright series CUBE Exposed order trading electronically with outright series • “c” – trading of a outright series QCC order • “e” – outright series floor trade • “I” – all outright series electronic trades (excluding away market executions) that were not part of the following transactions: ○ Outright series CUBE ○ Outright series QCC

FIELD NAME	OFFSET	SIZE (BYTES)	FORMAT	DESCRIPTION
				○ Complex order trading electronically with the outright series orders/quotes ○ ISO trade • "S" – all outright series trades that are generated as part of an Intermarket Sweep order • "D" = any of the above published after 90 seconds of occurring • "f" = complex order trades that were not part of the following transactions ○ Complex CUBE ○ Complex QCC ○ Complex order trading electronically with the outright series orders/quotes • "g" = complex order trading electronically with a complex CUBE Exposed order or complex CUBE Exposed order trading electronically with Complex CUBE Covered order • "h" = trading of a complex QCC order • "i" = complex order to complex order floor trade • "j" = complex order trading electronically with the outright series orders/quotes • "m" = complex order to outright series order floor trade • "p" = complex order with stock to complex order with stock floor trade • "s" (lowercase) = complex order with stock to outright series order floor trade
Reserved	33	1	ASCII	Reserved for future use
Reserved	34	1	ASCII	Reserved for future use
Reserved	35	1	ASCII	Reserved for future use

3.3 Options Trade Cancel Message – Msg Type 321

In the event that an earlier trade has been reported in error, an Options Trade Cancel message is sent.

Customers who are building a record of today's trades should remove the cancelled trade from their records and adjust any statistics accordingly.

See the Pillar Common Client Specification for details on Symbol/Series Index Mapping messages.

FIELD NAME	OFFSET	SIZE (BYTES)	FORMAT	DESCRIPTION
Msg Size	0	2	Binary	Size of the message: 24 bytes
Msg Type	2	2	Binary	The type of message: • 321 – Options Trade Cancel Message
Reserved	4	4	Binary	Reserved for future use
SourceTimeNS	8	4	Binary	The nanosecond offset (UTC Time) from the Time Reference message.
SeriesIndex	12	4	Binary	The unique ID of this series within this market
SeriesSeqNum	16	4	Binary	The series sequence number.
OriginalTradeID	20	4	Binary	The original TradeID of the Trade being cancelled.

3.4 Options Trade Correction Message – Msg Type 322

In the event that an earlier trade has been reported with one or multiple fields in error, an Options Trade Correction message is sent.

Customers who are building a record of today's trades should correct the specified trade in their records and adjust any statistics accordingly.

See the Pillar Common Client Specification for details on Symbol/Series Index Mapping messages.

FIELD NAME	OFFSET	SIZE (BYTES)	FORMAT	DESCRIPTION
Msg Size	0	2	Binary	Size of the message: 40 bytes
Msg Type	2	2	Binary	The type of message:

FIELD NAME	OFFSET	SIZE (BYTES)	FORMAT	DESCRIPTION
				▪ 322 – Options Trade Correction Message
Reserved	4	4	Binary	Reserved for future use
SourceTimeNS	8	4	Binary	The nanosecond offset (UTC Time) from the Time Reference message.
SeriesIndex	12	4	Binary	The unique ID of this series within this market.
SeriesSeqNum	16	4	Binary	The series sequence number.
OriginalTradeID	20	4	Binary	The original TradeID of the Trade message being corrected.
TradeID	24	4	Binary	The TradeID of the corrected Trade message.
Price	28	4	Signed Binary	The corrected price of the Trade. Use the Price scale from the series index mapping.
Volume	32	4	Binary	The corrected volume of the trade in contracts.
TradeCond1	36	1	ASCII	Settlement related conditions. Valid values: • "H" = Transaction is a late report of the opening trade, but is in the correct sequence; i.e., no other transactions have been reported for the particular option contract. • "F" = Transaction is a late report of the opening trade and is out of sequence; i.e., other transactions have been reported for the particular option contract. • "D" = Transaction is being reported late, but is in the correct sequence; i.e., no later transactions have been reported for the particular option contract. • "B" = Transaction is being reported late and is out of sequence; i.e., later transactions have been reported for the particular option contract.
Reserved	37	1	ASCII	Reserved for future use
Reserved	38	1	ASCII	Reserved for future use
Reserved	39	1	ASCII	Reserved for future use

3.5 Options Imbalance Message – Msg Type 305

Options Imbalance messages are published once a second during opening and reopening auctions to update price and volume information. If there is no change to the calculated fields, no message will be generated.

See the Pillar Common Client Specification for details on Symbol/Series Index Mapping messages and Price field format.

FIELD NAME	OFFSET	SIZE	FORMAT	DESCRIPTION
Msg Size	0	2	Binary	Size of the message: 65 bytes
Msg Type	2	2	Binary	This field identifies the type of message. 305 – Options Imbalance Message
Reserved	4	4	Binary	Reserved for future use
SourceTimeNS	8	4	Binary	The nanosecond offset (UTC Time) from the Time Reference message.
SeriesIndex	12	4	Binary	The unique ID of this series within this market.
SeriesSeqNum	16	4	Binary	The sequence number of this message in the set of all messages for this series
Reserved	20	4	Binary	Reserved for future use
PairedQty	24	4	Binary	The number of contracts paired off at the Indicative Match Price.
TotalImbalanceQty	28	4	Binary	The total imbalance quantity at the Indicative Match Price.
MarketImbalanceQty	32	4	Binary	The total market order imbalance quantity at the Indicative Match Price.
Reserved	36	2	Binary	Reserved for future use
AuctionType	38	1	ASCII	• M – Core Opening Auction • H – Reopening Auction (Halt resume)
ImbalanceSide	39	1	ASCII	The side of the TotalImbalanceQty • B – Buy side • S – Sell side • Space – No imbalance
ContinuousBook ClearingPrice	40	4	Signed Binary	The price at which all interest on the book can trade, including auction and imbalance offset interest, and disregarding auction collars.
AuctionInterest ClearingPrice	44	4	Signed Binary	The price at which all eligible auction-only interest would trade, subject to auction collars.
Reserved	48	4	Binary	Reserved for future use

IndicativeMatchPrice	52	4	Signed Binary	The price at which the highest number of contracts would trade, subject to auction collars. It includes the non-displayed quantity of Reserve Orders. See Information on Auctions for details.
Upper Collar	56	4	Signed Binary	Legal width bid for option
Lower Collar	60	4	Signed Binary	Legal width offer for option
AuctionStatus	64	1	Binary	Indicates whether the auction will run • 0 - Will run as usual • 4 - Auction will not run because legal width quote does not exist • 5 - Auction will not run because market maker quote is not received

3.6 Series RFQ Message - Msg 307

The Request for Series RFQ message is published for outright series. It is generated by the matching engine to solicit interest in an auction or order.

See the Pillar Common Client Specification for details on Symbol/Series Index Mapping messages and Price field format.

FIELD NAME	SIZE	FORMAT	DESCRIPTION
Msg Size	2	Binary	Size of the message: 44 bytes
Msg Type	2	Binary	The type of message 307 - Series RFQ Msg
Reserved	4	Binary	Reserved for future use
SourceTimeNS	4	Binary	The nanosecond offset (UTC Time) from the Time Reference message.
SeriesIndex	4	Binary	The unique ID of this series within this market.
SeriesSeqNum	4	Binary	The sequence number of this message in the set of all messages for this series
Side	1	ASCII	Side of the RFQ B = Buy S = Sell For Complex series, when a complex instrument is traded, the seller Sells the legs with Side = S and Buys the legs with Side = B The buyer Buys the legs with Side = S and Sells the legs with Side = B
Type	1	ASCII	Order Type of CUBE/Bold/COA P = Price Improvement F = Facilitation S = Solicitation B = Bold (Outright only) C = COA (Complex only)

Capacity	1	Binary	Customer or Firm capacity specified with the order. Values include: • (blank) = information not specified • 0 = Customer • 1 = Firm • 2 = Broker Dealer • 3 = Market Maker • 8 = Professional Customer Note: This field is used for BOLD only
Total quantity	4	Binary	Total quantity
Working Price	4	Signed Binary	RFQ Price
Participant	4	Binary	OCC Number for the Clearing firm specified with the order Blank = No OCC Number was specified Note: This field is only used for BOLD only
AuctionID	8	Binary	Auction ID for CUBE/COA
RFQ Status	1	Binary	O - Start of RFQ Auction Q - End of RFQ Auction Note: This field is only used for CUBE/COA

4. OUTRIGHT SERIES SUMMARY MESSAGE – MSG TYPE 323

The outright series summary message is sent every 60 seconds, on a separate multicast channel from the main feed.

The message is sent regardless of whether there has been a change to the series in the last 60 seconds or not. If no trades are published for a series during a given day, no outright series Summary message is generated.

Note: only outright series will publish the Outright Series Summary message. Outright Series Summary Message (with the exception of the Opening trade) will not include any cancelled trades and routed trades which were not published.

The Series Summary message will provide the following trade statistics per series: high, low, open, close and total volume

a) High shall correspond to the highest trade price of the day
b) Low shall correspond to the lowest trade price of the day
c) Open shall correspond to the first trade price of the day
d) Close shall correspond to the last trade price of the day
e) Total number of contracts traded for the day

If a trade has been corrected, only the corrected value will be taken into account for the Series summary.

The Opening or First trade shall always be considered as the First trade even if it is cancelled later in the session. Furthermore, the Opening trade price published will be used as the First price in the Series summary message.

4.1 Message Structure for Outright Series Summary Message

FIELD NAME	OFFSET	SIZE (BYTES)	FORMAT	DESCRIPTION
Msg Size	0	2	Binary	Size of the message: 36 bytes
Msg Type	2	2	Binary	The type of message: ▪ 323 – Outright Series Summary Message
Reserved	4	4	Binary	Reserved for future use
SourceTimeNS	8	4	Binary	The nanosecond offset (UTC Time) from the Time Reference message.
SeriesIndex	12	4	Binary	The unique ID of this series within this market.
HighPrice	16	4	Signed Binary	The Highest price of the series for the day. Use the Price scale from the series mapping index.
LowPrice	20	4	Signed Binary	The Lowest price of the series for the day. Use the Price scale from the series mapping index.

FIELD NAME	OFFSET	SIZE (BYTES)	FORMAT	DESCRIPTION
Open	24	4	Signed Binary	The First price of the series for the day. Use the Price scale from the series mapping index.
Close	28	4	Signed Binary	The Last price of the series for the day. Use the Price scale from the series index mapping.
TotalVolume	32	4	Binary	The cumulative volume for the outright series throughout the day.