



SECURITIES INDUSTRY AUTOMATION CORPORATION

CQS

**CONSOLIDATED QUOTATION SYSTEM
MULTICAST OUTPUT BINARY SPECIFICATION**

**August 14, 2025
Version 2.11a**

CONSOLIDATED QUOTATION SYSTEM (CQS) PILLAR
MULTICAST OUTPUT BINARY SPECIFICATION

CONTENTS

VERSION HISTORY	4
1.0 INTRODUCTION	9
1.1 BACKGROUND	9
1.2 DUAL SITE REDUNDANCY	9
1.3 FAILURE RECOVERY.....	10
1.3.1 NMS Publication Process Failure Recovery.....	10
1.3.2 Input Gateway Failure and Recovery	10
1.3.3 Primary Data Center Failure Recovery.....	10
1.4 SCOPE.....	12
1.5 DATA FEED REFERENCE MATERIAL	12
2.0 GENERAL DESIGN OF DATA DISTRIBUTION NETWORK.....	13
3.0 TRANSMISSION CHARACTERISTICS.....	14
3.1 TRANSMISSION BLOCK	14
3.2 BLOCK DATA	14
3.3 BLOCK PAD BYTE	14
3.4 DATA TYPE	15
3.4.1 Numeric Types	15
3.4.2 Alpha/Alphanumeric/Special/Printable Types.....	15
3.5 BLOCK HEADER	16
3.5.1 Version	16
3.5.2 Block Size.....	16
3.5.3 Block Sequence Number	17
3.5.4 Messages in Block	17
3.5.5 Block Checksum.....	17
3.5.6 Data Feed Indicator	17
3.5.7 Retransmission Indicator	18
3.5.8 SIP Block Timestamp.....	18
3.6 RETRANSMISSION CAPABILITY	19
4.0 MESSAGE HEADER.....	20
4.1 MESSAGE LENGTH	20
4.2 MESSAGE CATEGORY AND MESSAGE TYPE TABLE	21
4.2.1 Message Category.....	22
4.2.2 Message Type.....	22
4.3 PARTICIPANT ID.....	22
4.4 TIMESTAMP 1	23
4.5 PARTICIPANT REFERENCE NUMBER	23
4.6 MESSAGE ID	23
4.7 TRANSACTION ID	23
5.0 MESSAGE ROUTING.....	24
6.0 MESSAGE FORMATS.....	26
6.1 ADMINISTRATIVE MESSAGES – CATEGORY A	26
6.1.1 Symbol Reference Data – Category A Type S	26
6.2 CONTROL MESSAGES – CATEGORY C.....	28
6.2.1 Start of Day – Category C Type A	28
6.2.2 FINRA Close – Category C Type C	28
6.2.3 Reset Block Sequence Number – Category C Type L.....	28
6.2.4 FINRA Open – Category C Type O	28
6.2.5 Disaster Recovery Data Center Activation – Category C Type P	28
6.2.6 Line Integrity – Category C Type T	29
6.2.7 End of Day – Category C Type Z.....	29

CONSOLIDATED QUOTATION SYSTEM (CQS) PILLAR MULTICAST OUTPUT BINARY SPECIFICATION

6.3	MARKET STATUS MESSAGES – CATEGORY M	30
6.3.1	Market-Wide Circuit Breaker Decline Level Status – Category M Type K	30
6.3.2	Market-Wide Circuit Breaker Status – Category M Type L	31
6.4	QUOTE MESSAGES – CATEGORY Q	32
6.4.1	Auction Status – Category Q Type A	34
6.4.2	Round Lot Quote Messages	35
6.4.2.1	Short Quote – Category Q Type Q (will be discontinued)	35
6.4.2.2	Long Quote – Category Q Type L (will be discontinued)	36
6.4.2.3	Special Long Quote (FINRA ADF) with FINRA BBO Information – Category Q Type S (will be discontinued)	37
6.4.2.4	Round Lot Short Quote (with optional Odd Lot information) – Category Q Type P (NEW)	39
6.4.2.5	Round Lot Long Quote (with optional Odd Lot information) – Category Q Type K (NEW)	40
6.4.2.6	Round Lot FINRA ADF quote (with FINRA BBO and optional Odd Lot information) - Category Q Type U (NEW)	42
6.4.3	Odd Lot Quote Messages (NEW)	44
6.4.3.1	Odd Lot Short Quote – Category Q Type R	44
6.4.3.2	Odd Lot Long Quote – Category Q Type M	45
6.4.3.3	Odd Lot Extended Quote – Category Q Type T	46
6.4.4	Message Appendages	47
6.4.4.1	National Best Bid and Offer (NBBO) Appendages	48
6.4.4.2	Odd Lot Quote Appendages (NEW)	50
6.4.4.3	Best Odd Lot Order (BOLO) Appendages (NEW)	51
7.0	FIELD DESCRIPTIONS	52
	APPENDIX A: CQS CONFIGURATION	86
	APPENDIX B: GLOSSARY	87
	APPENDIX C: SUMMARY OF DAILY CQS MULTICAST LINE ACTIVITY	92
	APPENDIX E: CQS CLOSING ROUTINE	94
	APPENDIX F: NATIONAL BEST BID AND OFFER OVERVIEW	95
	APPENDIX G: BEST ODD LOT ORDER (BOLO) OVERVIEW	97
	APPENDIX H: QUOTE CONDITIONS	98
	APPENDIX I: SECURITY STATUS INDICATORS	101
	APPENDIX J: SYMBOL SUFFIXES EXAMPLES	104
	APPENDIX K: ASCII PRINTABLE TABLE (CHARACTER CODE 32-126)	106

CONSOLIDATED QUOTATION SYSTEM (CQS) PILLAR
MULTICAST OUTPUT BINARY SPECIFICATION

VERSION HISTORY

Version	Date	Description
1.0	July 1, 2016	Initial Document
1.1	September 15, 2016	<ul style="list-style-type: none"> Added: New Dedicated Test Symbols.
1.2	February 21, 2017	<p><u>Added:</u></p> <ul style="list-style-type: none"> 'Message Length' field in Message Header and field description. New 'Auction Status Category Q Type A' message and field descriptions. <p><u>Corrected:</u></p> <ul style="list-style-type: none"> 'Start of Day Category C Type A' message typo to reflect 'Category C Type N' End of Test Cycle in Block Sequence Number field description. 'Start of Day Category C Type A' typo message typo to Category 'C' in Start of Test Cycle/End of Test Cycle field descriptions. Description for the transmission at 20:06 to be identified as 'End of Day'. <p><u>Eliminated:</u></p> <ul style="list-style-type: none"> Administrative Message 'Text Length' field (Length is identified in Message Header). 'Temporary Suffix' field/descriptions which are no longer supported. <p><u>Modified:</u></p> <ul style="list-style-type: none"> 'Block Pad Byte' description to include binary representation. Order of field appearances in Block Header and Message Header. 'National BBO Indicator' field moved from Message Header to Quote Message formats. Message Header 'Transaction ID' field Data Type. Message routing reverted to current Production routing. MWCB Level 1, 2 and 3 Data Type representations. Data Type useable 'signed integer' values. Clarification on appearance of Bid /Offer Appendages following message formats. Retransmission code from 'R' back to 'V' to indicate Retransmission. Minor edits/clarification throughout document/removed verbiage associated with eliminated functionality. Binary and ASCII Protocol Differences and Notes.
1.3	May 5, 2017	<p><u>Added:</u></p> <ul style="list-style-type: none"> CBOE Stock Exchange, Inc. (CBSX) Participant ID 'W' <p><u>Corrected:</u></p> <ul style="list-style-type: none"> MWCB Levels implied decimal typo to be implied 6 decimals
1.4	June 2, 2017	<p><u>Added:</u></p> <ul style="list-style-type: none"> New Dedicated Test Symbols: ZIEXT, ZEXIT & ZXIET <p><u>Corrected:</u></p> <ul style="list-style-type: none"> From: Reset Message Sequence Number / To: Reset Block Sequence Number

CONSOLIDATED QUOTATION SYSTEM (CQS) PILLAR
MULTICAST OUTPUT BINARY SPECIFICATION

VERSION HISTORY

Version	Date	Description
1.5	August 28, 2017	<u>Modified:</u> <ul style="list-style-type: none"> Use of only a subset of new National Best Bid and Offer (NBBO) Indicator Codes ‘A, G, O, T, and U’ upon Binary implementation for a transitional period (complete set of codes to be used at a future date) Block Sequence Number rollover limited to occur after 999,999,999 (instead of 3,999,999,999) for a transitional period From: NYSE MKT / To: NYSE American
1.6	February 14, 2018	<u>Modified:</u> <ul style="list-style-type: none"> From: National Stock Exchange / To: NYSE National, Inc. From: Bats EDGA Exchange / To: Cboe EDGA Exchange From: Bats EDGX Exchange / To: Cboe EDGX Exchange From: Bats BYX Exchange / To: Cboe BYX Exchange From: Bats BZX Exchange / To: Cboe BZX Exchange IEX status to Primary Listing Exchange Security Status Indicator value ‘X’ From: Equipment Changeover / To: Operational Description of Auction Status message
1.7	May 8, 2018	<u>Modified:</u> <ul style="list-style-type: none"> From: Financial Industry Regulatory Authority, Inc. (FINRA) / To: FINRA Alternative Display Facility (ADF) <u>Eliminated:</u> <ul style="list-style-type: none"> Binary and ASCII Protocol Differences and Notes
1.8	July 17, 2019	<u>Added:</u> New Dedicated Test Symbols: CTEST and MTEST
1.9	October 25, 2019	<u>Modified:</u> <ul style="list-style-type: none"> <u>From: Chicago Stock Exchange / To: NYSE Chicago, Inc.</u> <u>Update:</u> <ul style="list-style-type: none"> <u>NYSE Chicago included in 20:00 OFFICIAL MARKET CLOSED</u> <u>NYSE Chicago included in 20:00 End of Participant Reporting</u> <u>Eliminated:</u> <ul style="list-style-type: none"> <u>16:33 Suspend Best Bid and Best Offer for: CHX</u>

CONSOLIDATED QUOTATION SYSTEM (CQS) PILLAR
MULTICAST OUTPUT BINARY SPECIFICATION

VERSION HISTORY

Version	Date	Description
2.0	December 4, 2019	<p><u>Modified:</u></p> <ul style="list-style-type: none"> Block Sequence Number limit to rollover occur after 4,294,967,295 Block Sequence Number to contain the Message Sequence Number in the Output Block SIP Block Timestamp for retransmitted block Block Sequence number on retransmitted blocks Summary of Daily Multicast Line Messages (Appendix C) Description of FINRA BBO LULD Indicator codes Start of Day message publication from three times to one time <p><u>Eliminated:</u></p> <ul style="list-style-type: none"> Security Status codes for Opening Delay and No Open/No Resume Dedicated Test Cycles scheduled prior to SOD 'Start of Test Cycle - Category C Type M' and 'End of Test Cycle - Category C Type N' messages Suspend BBO configuration to exclude participants from BBO CQS Closing Routing to publish closing quote on participant's behalf at configured closing time Time Beacon publication Administrative Unformatted (Category A Type H) Message APPENDIX D: ADMINISTRATIVE MESSAGE TEXT SAMPLES
2.1	January 24, 2020	<p><u>Modified:</u></p> <ul style="list-style-type: none"> Block version from 0 to 1 Line Integrity publication interval from 60 seconds to 10 seconds SIP Block Timestamp for retransmitted block
2.2	February 5, 2020	<p><u>Modified:</u></p> <ul style="list-style-type: none"> Block version from 1 to 2 'Timestamp 1' for any SIP generated messages from 0 to current time
2.3	February 20, 2020	<p><u>Modified:</u></p> <ul style="list-style-type: none"> Included redundant data stream for Retransmitted messages
2.4	February 25, 2020	<p><u>Modified:</u></p> <ul style="list-style-type: none"> End of Day (Category C Type Z) description to highlight that Line Integrity messages are published even after End of Day
2.5	March 27, 2020	<p><u>Modified:</u></p> <ul style="list-style-type: none"> Start of Day and End of Day Message transmission time
2.6	April 13, 2020	<p><u>Modified:</u></p> <ul style="list-style-type: none"> Appendix C for Summary of Daily CQS Multicast Line Activity
2.7	May 15, 2020	<p><u>Added:</u></p> <ul style="list-style-type: none"> MIAX Pearl Exchange, LLC (MIAX) Participant ID 'H' Members Exchange, LLC (MEMX) Participant ID 'U'
2.7a	June 12, 2020	<p><u>Clarification:</u></p> <ul style="list-style-type: none"> SIP Block Timestamp in retransmission block

CONSOLIDATED QUOTATION SYSTEM (CQS) PILLAR
MULTICAST OUTPUT BINARY SPECIFICATION

VERSION HISTORY

Version	Date	Description
2.8	August 14, 2020	<u>Added:</u> <ul style="list-style-type: none"> Security Status indicators for new Regulatory Halt Reason Codes (A, C, E, F, N, O and V) <u>Modified:</u> <ul style="list-style-type: none"> Renamed Regulatory Halt Reason Code D from News Dissemination to News Released Description of CQS Closing Routine <u>Eliminated:</u> <ul style="list-style-type: none"> Removed invalid reference of previously decommissioned End of Participant Quote Reporting message
2.9	October 2, 2020	<u>Modified:</u> <ul style="list-style-type: none"> Block Sequence number on End of Day (Category C Type Z) message to be one higher than last transmitted block
2.9a	November 23, 2020	<u>Modified:</u> <ul style="list-style-type: none"> Appendix C to update Cboe EDGX <i>OFFICIAL MARKET OPEN</i> time <u>Corrected:</u> <ul style="list-style-type: none"> Multicast data feed setup for CQS after-hour playback data Line Integrity Message publication schedule under Appendix C
2.9b	January 26, 2021	<u>Modified:</u> <ul style="list-style-type: none"> Clarified that all Halt Reason Codes are currently active
2.9c	Oct 26, 2022	<u>Modified:</u> <ul style="list-style-type: none"> Added section 1.3 to clarify system behavior during Failure Recovery
2.9d	Dec 16, 2022	<u>Modified:</u> <ul style="list-style-type: none"> Corrected Symbol Suffix examples under Appendix I to include series U
2.9e	Jan 27, 2023	<u>Modified:</u> <ul style="list-style-type: none"> Corrected description for the field 'FINRA BBO LULD Indicator'
2.9f	Jan 29, 2024	<u>Modified:</u> <ul style="list-style-type: none"> Removed Test Symbol 'ZZZ' and 'IBO' and updated Listing Exchange for Test Symbol 'CTEST' under Security Symbol Field Description
2.9g	June 12, 2024	<u>Modified:</u> <ul style="list-style-type: none"> Updated CQS Configuration diagram under Appendix A to remove reference to 'ICE Global Network'
2.9h	September 6, 2024	<u>Modified:</u> <ul style="list-style-type: none"> Updated Appendix c to clarify message publication start time
2.9i	January 14, 2025	<u>Modified:</u> <ul style="list-style-type: none"> Updated Appendix C for message publication times for MIAX Pearl
2.9j	Match 7, 2025	<u>Modified:</u> <ul style="list-style-type: none"> Updated Line Integrity message publication interval to clarify that it can be published more frequently than every 10 seconds

CONSOLIDATED QUOTATION SYSTEM (CQS) PILLAR
MULTICAST OUTPUT BINARY SPECIFICATION

VERSION HISTORY

Version	Date	Description
2.10	May 2, 2025	<p><u>Added:</u></p> <ul style="list-style-type: none"> Symbol Reference Data (Category A Type S) message <p><u>Modified:</u></p> <ul style="list-style-type: none"> Bid/Offer Size fields and NBBO appendages in Quote messages to support size in shares instead of lots Round Lot Size field description to include round lot size 40 Message publication start time for Cboe BZX under Appendix C Renamed NYSE Chicago to NYSE Texas and updated Listing Exchange for test symbol MTEST to NYSE Texas
2.10a	June 6, 2025	<p><u>Added:</u></p> <ul style="list-style-type: none"> 24X National Exchange LLC (24X) Participant ID ‘G’
2.11	August 6, 2025	<p>Eliminated:</p> <ul style="list-style-type: none"> Discontinued support for current Quote messages <p>Added:</p> <ul style="list-style-type: none"> Overview of odd lot quotes and handling of new message types New Round Lot Quotes messages to replace current quote messages New Odd Lot Quote messages Overview of Message Appendages New Odd Lot Quote Appendages New BOLO Appendages New Field Descriptions Best Odd Lot Order (BOLO) overview
2.11a	August 14, 2025	<ul style="list-style-type: none"> Updated overview of odd lot quotes to include considerations for “Exemptive Quote Relief” for odd lot quotes

1.0 INTRODUCTION

The Securities Industry Automation Corporation (SIAC) serves as the Processor for the Consolidated Quote Plan from its inception on August 1, 1978. In fulfilling its role as the Processor, SIAC plans, develops, operates, and maintains the Consolidated Quotation System (CQS).

1.1 Background

CQS receives transactions generated by participating U.S. Stock Exchanges and the FINRA Alternative Display Facility (ADF). In addition, CQS calculates the National ‘Best Bid and Best Offer’ (NBBO), ‘Best Odd Lot Order’ (BOLO) and identifies the FINRA ‘Best Bid and Best Offer’ (FBBO). CQS consolidates transactions that occurred on participating U.S. Stock Exchanges and the FINRA Alternative Display Facility (ADF) and disseminates this information via computer-to-computer linkages to the financial community in the U.S. and abroad.

Essential in ensuring the timely reporting of quote information are the CQS IP Multicast data streams. CQS has a unique set of IP Multicast addresses assigned to each of its data “lines”. Data generated by each participating Exchange and the FINRA Alternative Display Facility (ADF) is assembled in prescribed message formats and transmitted to the appropriate TCP/IP Processor address via the Participants’ private communications facility. As each message is received, it is merged with messages received from all Participants, and the consolidated message stream is transmitted simultaneously to all Data Recipients via their private communications facilities. Approved Data Recipients of the CQS service can redistribute CQS data worldwide to their customers as part of their individual services or use the data for their own purposes.

Note:

- It is recommended that Data Recipients subscribe to both the Consolidated Quotation System (CQS) and the Consolidated Tape System (CTS) in order to receive complete listed equity market data. Reference the CQS and CTS Specifications for further details at: www.ctaplan.com.

1.2 Dual Site Redundancy

Computer systems that support the processing and dissemination of quote transactions are operational at primary and backup sites. The backup site provides recovery capability in the event of a disaster at the primary site. Through computerized communications equipment, CQS transaction data is disseminated from either the primary or backup site. The dual-site configuration provides system fold-over for a limited site disaster (system failure) or full site disaster (loss of facility).

In the event of a Primary Data Center failover to the Disaster Recovery site (Backup Data Center), data will be sourced via the Backup Data Center source addresses.

1.3 Failure Recovery

1.3.1 NMS Publication Process Failure Recovery

- In the event the Primary publication process encounters an unexpected state, data publication automatically switches to the Secondary publication process on the Primary Data Center
 - Data Subscribers may observe gaps on the affected output multicast lines. Any such gaps can be requested for retransmission
- In the event where both the Primary and Secondary publication processes encounter an unexpected state at the same time on the Primary Data Center, Pillar CTA initiates an automatic restart for both the processes in a recovery mode
 - **Odd Lot quotes and BOLO are cleared, Participants are requested to resend the quotes for the affected symbols**
 - Data publication is paused for the affected output line(s) and any input messages received while the process is being restarted are queued and published once the processes recover
 - Upon recovery, output block sequence for the affected line(s) is reset to a higher Block Sequence number. System transmits the Reset Block Sequence Number (Category C Type L) message and resumes data publication.
 - Security Symbol state including the LULD Price Bands and the NBBO state are recovered from prior to failure.
 - All Messages for the day can be requested for retransmission, including those that were received prior to, or, while the processes were being restarted.

1.3.2 Input Gateway Failure and Recovery

- In the event the Primary input Gateway connection encounters an unexpected state, Input Participants can reconnect to the Secondary (backup) input connection
- In the event the Input Gateway encounters an unexpected state affecting both the Primary and Secondary Input Connections for all the Data Participants, a restart of the Input Gateway can be initiated on the Primary Data Center.
 - Both Primary and Secondary Input connections are temporarily unavailable, affecting all Participants and Data Subscribers from inputting any data or requesting any retransmissions
 - Quotes (both round lot and odd lot quotes) are cleared on the output lines on behalf of all participants across all symbols
 - Upon recovery, Input Block Sequence Number and PRN are recovered for each input line. Data Participants can reestablish connection and start submitting data. Data publication resumes.
 - There is no loss of data, all messages can be requested for retransmission.

1.3.3 Primary Data Center Failure Recovery

In the event that the Primary Data Center becomes unavailable, failover to the Disaster Recovery site (Secondary Data Center) is initiated.

Upon failover to Secondary Data Center:

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MULTICAST OUTPUT BINARY SPECIFICATION

- Output block sequence for all the lines is reset to a higher Block Sequence number and System transmits the Reset Block Sequence Number (Category C Type L) message
- Security symbol state including the LULD Price Bands is recovered.
- Quotes (both round lot and odd lot quotes) are cleared on behalf of all participants across all symbols and NBBO does not persist.
- Input Lines are enabled and Data Publication Resumes
- There is no loss of data, all messages can be requested for retransmission.

However, if the DR site is also unavailable, then a Session Cold Restart on the Primary Data Center can be performed. In case of a Session Cold Restart on the Primary Data Center:

- Both Primary and Secondary Input connections are temporarily unavailable, affecting all Participants and Data Subscribers from inputting any data or requesting any retransmissions
- Upon restart:
 - Output block sequence for all the lines is reset to a higher Block Sequence number and System transmits the Reset Block Sequence Number (Category C Type L) message
 - Security symbol state including the LULD Price Bands is recovered.
 - Quotes (both round lot and odd lot quotes) are cleared on behalf of all participants across all symbols and NBBO does not persist.
 - Input Lines are enabled and Data Publication Resumes
 - Messages prior to the Restart cannot be requested for Retransmission

1.4 Scope

This specification defines the interface and message format requirements for recipients of the CQS data feed via connectivity to the National Market System (NMS) IP Multicast distribution network.

1.5 Data Feed Reference Material

Technical Specifications

For Technical Specifications visit www.ctaplan.com - and select Tech Specs tab for the following:

- CQS Multicast Output Specification
- CTS Multicast Output Specification
- Common IP Multicast Distribution Network Specification
- Automated Retransmission Facility User Guide

Consolidated Tape Association (CTA) Announcements

CTA Announcements including feed enhancements, traffic rates, etc. visit www.ctaplan.com

Future Data Feed Enhancements

Future enhancements and/or modifications may require system changes for your firm. Please refer to the CTA Plan website www.ctaplan.com to obtain the latest CTA Notifications and Technical Specification documents. **To automatically receive these Notifications and System Alerts, subscribe at:** <https://www.ctaplan.com/subscribe>

Data Feed Related Resources

For customers selecting to initiate ICE Global Network (IGN), formerly known as the Secure Financial Transaction Infrastructure (SFTI), connections to CQS:

- Submit a request at: <https://www.theice.com/contact-us/connectivity>
- Contact IGN Sales at: clientnetworks@theice.com
- For more information on IGN, including documentation such as Customer and Technical guides reach out to an IGN representative at: iceglobalnetwork-info@theice.com

2.0 GENERAL DESIGN OF DATA DISTRIBUTION NETWORK

The NMS IP Multicast distribution network disseminates all market data information in the form of multicast addressed IP datagrams.

Data available via the NMS IP Multicast distribution network includes:

CQS Real-Time Production Data

A copy of each CQS real-time production message is available from SIAC's production/primary site. These redundant copies are delivered via two distinct multicast data streams.

CQS Real-Time Retransmission Data

The retransmission data streams are available from SIAC's production/primary site, and are delivered via two redundant retransmission multicast data streams.

CQS After-Hours Playback Data

There is a separate IP Multicast data feed dedicated for after-hours playback test data. The playback data is made available via a single set of multicast data feeds.

IP Multicast Network Interface

The requirements for the NMS IP Multicast distribution network interface are defined in the document, 'Common IP Multicast Distribution Network Recipient Interface Specification' which can be accessed at website: <http://www.ctaplan.com> and select the Tech Specs tab.

3.0 TRANSMISSION CHARACTERISTICS

3.1 Transmission Block

Encapsulated within each IP packet is a single transmission Block. One type of transmission Block is used for all types of messages. A Block can have a maximum of 1,000 bytes inclusive of Block Header, Block Data, and Block Pad Byte.

Block Structure	Length
Block Header	20
Block Data	Variable
Block Pad Byte (optional)	1

3.2 Block Data

The Block Data consists of one or more CQS messages.

A message consists of a Message Header, which is of fixed length and format and Message Data (Body), which is variable in length and format. Category C – Control messages are each sent in their own individual block.

The Block Data structure is as follows:

Block Data Structure
Message 1 Data
Message 2 Data
~~~~
Message N Data

#### 3.3 Block Pad Byte

**Byte.** Unsigned integer contains binary zero (Hex 0x00). Only used when the size of a block consists of an odd number of bytes. In instances of odd number of bytes, the Block Pad Byte is added to the Block to ensure the Block is an even number of bytes.

### 3.4 Data Type

The following data types are used by CQS:

Type	Value
<b>NUMERIC – Big-Endian (Network Byte Order)</b>	
byte	Big-Endian Unsigned 1 Byte Integer
short	Big-Endian Unsigned 2 Byte Integer
integer	Big-Endian Unsigned 4 Byte Integer
long	Big-Endian Unsigned 8 Byte Integer
<b>ALPHA/ALPHANUMERIC/SPECIAL/PRINTABLE</b>	
char	Single printable ASCII character
char[ ]	Fixed length printable ASCII characters
varchar [ ]	Variable lengths printable ASCII characters

#### 3.4.1 Numeric Types

1. All numeric fields will be in Big-Endian (Network Byte Order) format
2. Numeric types (byte, short, integer and long) represent sequence numbers, timestamps, prices and sizes
3. Prices represented by short fields have implied 2 decimal places
4. Prices represented by long fields have implied 6 decimal places
5. Any numeric value that is unused or does not apply to a given message type has a value set to 0

The maximum range values for the numeric fields are as follows:

1 byte unsigned integer: 0 – 255 (byte)  
 2 byte unsigned integer: 0 – 65,535 (short)  
 4 byte unsigned integer: 0 – 4,294,967,295 (integer)  
 8 byte unsigned integer: 0 – 18,446,744,073,709,551,615 (long)

Select values represented as 2's complement, will have signed integers with the following range:

8 byte signed integer: -9,223,372,036,854,775,808 to +9,223,372,036,854,775,807 (signed long)

#### 3.4.2 Alpha/Alphanumeric/Special/Printable Types

1. ASCII printable character codes 32 – 126
2. Left justified and padded on the right with spaces for fixed length fields

CONSOLIDATED QUOTATION SYSTEM (CQS) PILLAR  
MULTICAST OUTPUT BINARY SPECIFICATION

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### 3.5 Block Header

Field	Length	Type
Version	1	Byte
Block Size	2	Short
Data Feed Indicator	1	Char
Retransmission Indicator	1	Char
Block Sequence Number	4	Integer
Messages In Block	1	Byte
SIP Block Timestamp	8	2 x Integer
Block Checksum	2	Short
<b>Total Length</b>	<b>20</b>	

#### 3.5.1 Version

**Byte.** Indicates the CQS binary protocol version and allows for Block Header, Message Header and Message formats to be updated while still supporting previous versions of headers/message formats during transition. Version value is set to 2 for current version for CTA Pillar SIP.

#### 3.5.2 Block Size

**Short.** Indicate size in bytes of the entire transmission block.



### 3.5.3 Block Sequence Number

**Integer.** The Block Sequence Number denotes the sequence number of the first message in the block. If a Block contains more than one message, any messages following the first message are implicitly numbered sequentially. As such, the Block Sequence Number in the next Block is incremented by the number of messages published in the previous Block.

Block Sequence Number rollover occurs after 4,294,967,295. On a per multicast line basis, the Block Sequence Number on the multicast lines are set to zero at the start of each day, and incremented each time a block is transmitted, with the following exceptions:

1. The Block Sequence Number in retransmitted blocks contains the Message Sequence Number of the first message in the retransmitted Block
2. The Block Sequence Number field in the Block Header of a Category C Type L message (Reset Block Sequence Number) contains the number to which the Block Sequence Number counter is to be reset. This number is either one (1) in the event the sequence number rolls over from 4,294,967,295 or a number greater than the highest number previously transmitted.
3. The block containing a Category C Type A message (Start of Day) or Category C Type Z message (End of Day) contains the block sequence number one higher than the last transmitted message block.
4. The block containing a Category C Type T (Line Integrity) message contains the message sequence number of the last block transmitted, which was not a retransmitted block.
5. Should CQS experience a line failure and recovery, the Block Sequence number for the recovered multicast line(s) can be reset to a number greater than the last message sequence number transmitted once message transmission is resumed.

### 3.5.4 Messages in Block

**Byte.** The number of messages contained in the transmission block.

### 3.5.5 Block Checksum

**Short.** Lower 2 bytes of the 4 byte sum of all the bytes in the block, excluding this Block Checksum field.

### 3.5.6 Data Feed Indicator

**Char.** Value is 'Q' for Consolidated Quotation System (CQS).

### 3.5.7 Retransmission Indicator

**Char.** Contains either a ‘O’ (indicating an original message) or ‘V’ (indicating a retransmitted block).

### 3.5.8 SIP Block Timestamp

**2 x Integer (pair of integers).** Contains the block timestamp and is the SIP time that processing a block of messages is completed. The first integer contains the number of seconds from Epoch 1/1/1970, 00:00:00 UTC. The next integer contains the nanosecond portion of the time (e.g., 972402315).

Precision Time Protocol (PTP) is utilized to provide a standard method to synchronize devices on a network with sub-microsecond precision. The protocol synchronizes slave clocks to a master clock ensuring that events and timestamps in all devices use the same time base.

SIAC recommends to represent this time in HH:MM:SS.mmmμμμnnn format Eastern Time (ET) when communicating with SIAC.

For Retransmissions, the SIP Block Timestamp contains the timestamp representing when the first message in the retransmitted block was originally processed by SIP.

### 3.6 Retransmission Capability

CQS stores all data transmitted to the Data Recipients for a single trading day to facilitate data retransmission. If Data Recipients do not receive a block(s), a retransmission of the missed messages can be requested. Retransmission requests are accepted in the period following transmission of the Start of Day message and before the transmission of the End of Day message.

The following Message Category and Types are not included in retransmissions:

Message Category	Message Type	Description
C	A	Start of Day
C	T	Line Integrity

The Automated Retransmission Facility is utilized for automatically receiving and processing CQS block retransmission requests.

A Data Recipient may request automated retransmission(s) of missed messages by connecting directly through IGN, formerly known as SFTI, to the Automated Retransmission Facility via TCP/IP addresses and ports. A Data Recipient is required to enter their assigned user ID and password along with system, line, and message sequence number information. The requested message(s) are re-published over the dedicated Retransmission multicast streams. An **‘Automated Retransmission Facility User Guide’** for automated retransmission requests can be accessed at the following website: <http://www.ctaplan.com> and select the Technical Specs tab.

All retransmitted CQS blocks contain only ‘V’ in the Retransmission Indicator field of the Block Header. The Block Sequence Number field in the Block Header of each retransmitted block contains the Message Sequence Number of the first message in the retransmitted block.

**Note:**

- It is the responsibility of the Data Recipient to ignore retransmitted messages not requested by them.

CONSOLIDATED QUOTATION SYSTEM (CQS) PILLAR  
MULTICAST OUTPUT BINARY SPECIFICATION

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#### 4.0 MESSAGE HEADER

The Message Header uniquely identifies the Category and Type of each message within a Block. The Message Header can represent an entire message or appears before the Message Body segment in each message transmitted. The Message Header contains the following bytes and conforms in all cases to the following data fields:

Field	Length	Type
Message Length	2	Short
Message Category	1	Char
Message Type	1	Char
Participant ID	1	Char
Timestamp 1	8	2 x Integer
Message ID	1	Byte
Transaction ID	4	Integer
Participant Reference Number	8	Signed Long
<b>Total Length</b>	<b>26</b>	

#### 4.1 Message Length

**Short.** The Message Length identifies the total message length inclusive of the Message Header and Message Body.

CONSOLIDATED QUOTATION SYSTEM (CQS) PILLAR  
MULTICAST OUTPUT BINARY SPECIFICATION

## 4.2 Message Category and Message Type Table

**Note:** To support Odd Lot quote reporting, CQS will replace current quote messages with new Round Lot quote messages which can optionally include odd lot quotes. Additionally, CQS will introduce new Odd Lot quote Message types specifically for reporting odd lot quotes in the absence of a round lot update. **Existing round lot quote messages will be discontinued and new messages will be in-effect starting April 27, 2026.**

Migration to new quote messages will be a “hot-cut” i.e., upon the activation of odd lot quote publication, quotes will be published via the new message types only.

- Messages as per the rows highlighted in **Yellow** in the table below would be discontinued
- Messages as per the rows highlighted in **Green** in the table below would replace the to-be-decommissioned messages

Message Category	Message Type	Message Description
<b>Administrative</b>		
A	S	Symbol Reference Data
<b>Control</b>		
C	A	Start of Day
C	C	FINRA Close
C	L	Reset Block Sequence Number
C	O	FINRA Open
C	P	Disaster Recovery Data Center Activation
C	T	Line Integrity
C	Z	End of Day
<b>Market Status</b>		
M	K	Market-Wide Circuit Breaker Decline Level Status
M	L	Market-Wide Circuit Breaker Status
<b>Quote</b>		
Q	A	Auction Status
Q	Q	Short Quote
Q	L	Long Quote
Q	S	Special Long Quote (FINRA ADF) with FBBO Information
Q	P	Round Lot Short Quote (with optional Odd Lot quotes)
Q	K	Round Lot Long Quote (with optional Odd Lot quotes)
Q	U	Round Lot FINRA ADF Quote (with Optional Odd Lot quotes)
Q	R	Odd Lot Short Quote
Q	M	Odd Lot Long Quote
Q	T	Odd Lot Extended Quote

CONSOLIDATED QUOTATION SYSTEM (CQS) PILLAR  
MULTICAST OUTPUT BINARY SPECIFICATION

---

#### 4.2.1 Message Category

**Char.** The Message Category represents the message classification. Refer to Message Category and Message Type Table *section 4.2*.

#### 4.2.2 Message Type

**Char.** The Message Type together with the Message Category identifies the message. Refer to Message Category and Message Type Table *section 4.2*.

#### 4.3 Participant ID

**Char.** Participant ID identifies the Participant or Processor that generated the message.

Code	Value
A	NYSE American, LLC (NYSE American)
B	NASDAQ OMX BX, Inc. (NASDAQ OMX BX)
C	NYSE National, Inc. (NYSE National)
D	FINRA Alternative Display Facility (ADF)
G	24X National Exchange LLC (24X)
H	MIAX Pearl Exchange, LLC (MIAX)
I	International Securities Exchange, LLC (ISE)
J	Cboe EDGA Exchange, Inc. (Cboe EDGA)
K	Cboe EDGX Exchange, Inc. (Cboe EDGX)
L	Long-Term Stock Exchange, Inc. (LTSE)
M	NYSE Texas, Inc. (NYSE Texas)
N	New York Stock Exchange, LLC (NYSE)
P	NYSE Arca, Inc. (NYSE Arca)
S	Consolidated Quotation System
T	NASDAQ Stock Market, LLC (NASDAQ)
U	Members Exchange, LLC (MEMX)
V	Investors' Exchange, LLC. (IEX)
W	CBOE Stock Exchange, Inc. (CBSX)
X	NASDAQ OMX PSX, Inc. (NASDAQ OMX PSX)
Y	Cboe BYX Exchange, Inc. (Cboe BYX)
Z	Cboe BZX Exchange, Inc. (Cboe BZX)

#### 4.4 Timestamp 1

**2 x Integer (pair of integers).** Timestamp 1 is a Participant-provided timestamp. The first integer contains the number of seconds from Epoch 1/1/1970, 00:00:00 UTC. The next integer contains the nanosecond portion of the time (e.g., 972402315). For any messages generated by CQS, e.g., Messages generated on behalf of a Participant, stored Odd Lot quotes published upon an NBBO update, Price Band messages, Control messages and Market Status messages, the Timestamp 1 field will be set to current SIP time.

- **If from an Exchange: Timestamp 1** denotes the time where the quote bid price and/or the offer price for a security is designated with an Exchange's Matching Engine Publication timestamp. Exchanges use a clock sync methodology ensuring that timestamps are accurate within tolerances of 100 microseconds or less. Exchanges shall provide the timestamp in terms of nanoseconds since Epoch.
- **If from the FINRA Alternative Display Facility (ADF): Timestamp 1** denotes the time of the quote bid price and/or the offer price for a security that a FINRA member reports to the FINRA Alternative Display Facility. FINRA shall provide such times to the Processor in nanoseconds since Epoch.

#### 4.5 Participant Reference Number

**Signed Long.** Set to Zero. Participant Reference Number is a pass-thru of the inbound Participant Reference number assigned to a transaction. Zero, positive and negative Participant Reference Numbers will be sent.

#### 4.6 Message ID

**Byte.** The Message ID identifies the individual message within the block beginning with number one (1).

#### 4.7 Transaction ID

**Integer.** The Transaction ID will be populated by CQS and is **Reserved for Internal Use** only.

**Note:**

- Data Recipients should ignore/disregard this field to the extent that it does not impact their normal data processing.

CONSOLIDATED QUOTATION SYSTEM (CQS) PILLAR  
MULTICAST OUTPUT BINARY SPECIFICATION

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## 5.0 MESSAGE ROUTING

In total, CQS messages are disseminated over **twenty-four (24)** IP multicast lines designated as:

1. Line 1 (**L1**) through Line 12 (**L12**) for Network ‘A’, (NYSE listed securities)
2. Line 1 (**L1**) through Line 12 (**L12**) for Network ‘B’ (Cboe BZX, NYSE ARCA, NYSE American and NYSE Texas listed securities)’.

Note: The ‘Primary Listing Market Participant ID’ field will explicitly identify the Listing Market associated with their listed security.

Messages will be routed over the twenty-four IP multicast lines according to the network and security symbol range distribution except the following:

1. Control (Category C) messages are distributed over all Network ‘A’ and Network ‘B’ lines.

Traffic for CQS Network ‘A’ and Network ‘B’ messages will be routed by network and security symbol to twenty-four (24) assigned multicast lines as follows:

CQS NETWORK ‘A’ Symbol Range Distribution			CQS NETWORK ‘B’ Symbol Range Distribution		
Multicast Lines	From	To	Multicast Lines	From	To
1	A	ANZZZZ	1	A	DZZZZZ
2	AO	BXZZZZ	2	E	EWZZZZ
3	BY	CRZZZZ	3	EX	GZZZZZ
4	CS	ELZZZZ	4	H	IWEZZZ
5	EM	GLZZZZ	5	IWF	KZZZZZ
6	GM	IQZZZZ	6	KJ	RMZZZZ
7	IR	LVZZZZ	7	RN	SKZZZZ
8	LW	NOZZZZ	8	SL	SPZZZZ
9	NP	PRZZZZ	9	SQ	UMZZZZ
10	PS	STZZZZ	10	UN	VNZZZZ
11	SU	USZZZZ	11	VO	XLEZZZ
12	UT	ZZZZZZ	12	XLF	ZZZZZZ



CONSOLIDATED QUOTATION SYSTEM (CQS) PILLAR  
MULTICAST OUTPUT BINARY SPECIFICATION

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**Message Routing:** *continued*

**Test Messages:**

- CQS messages containing dedicated ‘Test Symbols’ for Listing Exchange NYSE will route to multicast lines for Network ‘A’ according to the network and security symbol range distribution.
- CQS messages containing dedicated ‘Test Symbols’ for Listing Exchanges Cboe BZX, IEX, NYSE ARCA, NYSE American and NYSE Texas will route to multicast lines for Network ‘B’ according to the network and security symbol range distribution.
- Dedicated ‘Test Symbols’ and their associated listing exchange are listed in the Field Descriptions section under the ‘Security Symbol’ field.

**Note:**

- Data Recipients are responsible for handling any symbol over any line. Redistribution of traffic may not occur intraday. Notification may not be sent to the Data Recipients regarding redistribution of traffic.

## 6.0 MESSAGE FORMATS

The Message Category and Message Type identify the Message and determine the format of the body. Each message transmitted by CQS consists of a Message Header and Message Body or Message Header only.

All messages formats have fixed field which is determined by reading the Message Header and Message Body.

A field description is provided as part of the Block Header format, Message Header format, Message Body or in the **Field Descriptions** section of this document.

### 6.1 Administrative Messages – Category A

#### 6.1.1 Symbol Reference Data – Category A Type S

Symbol Reference Data message contains symbol configuration as applicable at the start of each trading day. The Participant ID field of the Message Header is populated with 'S', signifying that the message is generated by Consolidated Quotation System.

Message is published immediately following the Start of Day Message. A subsequent publication for any symbol(s) can occur in case there are any changes to symbol configuration intraday or in case of failure recovery.

Halt Reason is populated with the appropriate halt code (as defined under 'Security Status Indicator' field) if symbol was previously halted by Primary Listing Exchange and a Resume has not been received. Note - Message is not republished if Halt or Short Sale Restriction state of a symbol changes intraday, as such Security Status updates are reported via the Long Quote (Category Q Type L) message.

CONSOLIDATED QUOTATION SYSTEM (CQS) PILLAR  
MULTICAST OUTPUT BINARY SPECIFICATION

**Symbol Reference Data, (continued)**

Field Name	Length	Type
Security Symbol	11	Char [ ]
Prior Security Symbol	11	Char [ ]
Primary Listing Market Participant ID	1	Char
Primary Listing Market Previous Closing Price	8	Long
Consolidated Closing Price	8	Long
Round Lot Size	2	Short
Reserved	1	TBD
LULD Tier	1	Char
LULD Leverage Ratio	4	Integer
Test	1	Char
IPO	1	Char
Financial Status Indicator	1	Char
Short Sale Restriction Indicator	1	Char
Halt Reason	1	Char
Instrument Type	1	Char
Reserved	1	TBD
Reserved	1	TBD
Reserved	128	TBD
<b>Total Length</b>	<b>183</b>	

## **6.2 Control Messages – Category C**

Control messages consist of the standard **Message Header only**, and are **not** blocked with any other messages including Control messages.

When included in a retransmission sequence, the Retransmission Indicator field of a Control message contains code 'V'; otherwise this field contains the alphabetic upper case character 'O' (meaning original message).

### **6.2.1 Start of Day – Category C Type A**

The Start of Day message signals the start of normal data dissemination over the multicast lines. A single Start of Day message is sent with the Block Sequence Number field set to zero.

### **6.2.2 FINRA Close – Category C Type C**

The FINRA Close message is transmitted by FINRA to CQS to indicate the Close state of FINRA Market Maker(s). All FINRA Market Maker quotes must be in either an Open or Close state where Open implies current and Close implies not current.

### **6.2.3 Reset Block Sequence Number – Category C Type L**

The Reset Block Sequence Number message is transmitted when the block sequence number on an output multicast line requires resetting.

The Block Sequence Number field in the Reset Block Sequence Number message contains the number to which the Block Sequence Number counter is to be reset. This number is higher than the highest Block Sequence Number previously transmitted.

### **6.2.4 FINRA Open – Category C Type O**

The FINRA Open message is transmitted by FINRA to CQS. This message indicates the Open state of FINRA Market Maker(s). All FINRA Market Maker quotes must be in either an Open or Close state, whereby Open implies 'current' and Close implies not current.

### **6.2.5 Disaster Recovery Data Center Activation – Category C Type P**

The Disaster Recovery Data Center Activation message is transmitted to signify that the Consolidated Quotation System (CQS) has switched processing from the Primary Data Center to the Disaster Recovery Data Center. The Disaster Recovery Data Center Activation message is preceded by the transmission of Reset Block Sequence Number Category C Type L messages.

The Block Sequence Number field of the Disaster Recovery Data Center Activation message contains a number greater than the highest Block Sequence Number previously transmitted.

#### **6.2.6 Line Integrity – Category C Type T**

The Line Integrity message is transmitted over the multicast lines at frequent intervals, with at least one message published no later than every ten (10) seconds to verify continued integrity of multicast transmission. The Line Integrity message transmission does not interrupt a transmission in progress.

The Block Sequence Number is not incremented for Line Integrity messages. The Block Sequence Number field will contain the Sequence Number of the last transmitted message.

#### **6.2.7 End of Day – Category C Type Z**

The End of Day message is transmitted over the multicast lines to advise all Data Recipients that there are no further messages to be transmitted for the day.

The Block Sequence Number field of the End of Day message contains a number one greater than the highest Block Sequence Number previously transmitted.

**Note:**

- Under normal conditions, upon receiving the End of Day Category C Type Z message, it is the Data Recipient's responsibility to terminate their production CQS output multicast line feeds from SIAC.
- System will continue to publish Line Integrity (Category C Type T) Messages until the CQS multicast lines are brought down.

CONSOLIDATED QUOTATION SYSTEM (CQS) PILLAR  
MULTICAST OUTPUT BINARY SPECIFICATION

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### 6.3 Market Status Messages – Category M

Market Status messages are used to provide market data information.

Unless otherwise noted, detailed information on each field is contained in alphabetical order in the **Field Descriptions** section of this document.

#### 6.3.1 Market-Wide Circuit Breaker Decline Level Status – Category M Type K

The Market-Wide Circuit Breaker Decline Level Status message is used to report the calculated Level 1, Level 2 and Level 3 threshold values for the current trading day necessary to trigger a circuit breaker. Levels are reset each trading day based on the closing value of the S&P 500 Index. If Levels are set as a result of inaccurate activity, Levels will be reset and disseminated. The most recently disseminated Levels will be in effect for that trading day.

**Note:**

- MWCB levels are index values (not prices) and have implied 6 decimal places.
- The Market-Wide Circuit Breaker Decline Level Status Message will be disseminated by CQS on a daily trading day basis at approximately 7:00 am and at 8:00 am ET; and additional occurrences if necessary, e.g., due to erroneously set Levels.

Field Name	Length	Type
MWCB Level 1	8	Signed Long
MWCB Level 2	8	Signed Long
MWCB Level 3	8	Signed Long
Reserved	1	TBD
<b>Total Length</b>	<b>25</b>	

### 6.3.2 Market-Wide Circuit Breaker Status – Category M Type L

The Market-Wide Circuit Breaker Status message is used to report the Market-Wide Circuit Breaker threshold Level that has been breached. Each Level will be disseminated only once during the trading day, unless a Level is breached as a result of erroneous activity. The most recently disseminated breached Level will be in effect.

The duration of Market-Wide Circuit Breaker Level 1 and Level 2 Regulatory Trading Halts is fifteen minutes. Following Level 3 Market-Wide Circuit Breaker Regulatory Trading Halts, trading will be halted for the remainder of the trading day and carried over to the following trading day in a Regulatory Trading Halted state.

Field Name	Length	Type
Market-Wide Circuit Breaker Level Indicator	1	Char
Reserved	1	TBD
<b>Total Length</b>	<b>2</b>	

## 6.4 Quote Messages – Category Q

Existing round lot quote messages will be discontinued when odd lot quote publication is activated. New Messages will be used to report the round lot and odd lot quotes as follows:

- Round lot updates for a symbol will be published via the new Round Lot Quote messages without including the optional odd lot appendages in the message.
- Odd lot updates for a symbol will be published via the new Odd Lot Quote messages when there is no round lot update.
- Simultaneous updates to both round lot and odd lot quotes for a symbol will be published together using the optional odd lot quote appendages on Round Lot Quote messages.

Round Lot Quote messages can further contain optional NBBO and BOLO appendages. Odd Lot Quote messages can contain optional BOLO appendages, these do not affect the NBBO.

### Overview of the SIP odd lot quote publication

1. SIP will publish the odd lot quotes that have a price at or better than the NBBO (i.e. odd lot bids with prices at or higher than the National Best Bid and odd lot Offers with prices at or lower than the National Best Offer)
  - a. Odd lot quotes at prices worse than the NBBO will be stored in SIP without being immediately published. Participants can update such quotes while they are being held.
  - b. If an NBBO update makes a stored quote eligible for publication, it will be immediately published unless the Participant has already removed it.
  - c. If an NBBO update results in a previously published odd lot quote to become worse than the latest NBBO, SIP will publish an update to clear the quote. Such quote will be maintained in SIP for republication in case NBBO updates again.
2. Odd lot quotes across multiple prices can be reported for each Participant.
3. When reporting updates for odd lot quotes for any Participant, only the quotes which have a size update are included. The latest Participant quotes replaces any previous quote at the same price. Any previously reported odd lot quotes are not included in subsequent messages if there is no change.
4. If a previously reported odd lot bid or offer is no longer available or is no longer at or within the NBBO, it is explicitly removed by either:
  - a. Providing an update with size equal to zero for the respective odd lot bid or offer price in the odd lot quote appendage, or
  - b. Setting the 'Clear Prior Odd Lot Quotes' field, which clears all prior odd lot bids and/or offers for the Participant identified by the 'Participant ID' field in the message header. Any odd lot bid and/or offer appendages on the message shall be processed after clearing any previous quotes as per the field value
5. For odd lot quotes from FINRA ADF, a quote from only one FINRA MMID is supported at each price. If the FINRA MMID changes for a previously reported FINRA ADF quote, the latest quote replaces the prior one at that price, without requiring it to be explicitly cleared. A FINRA ADF odd lot quote is cleared if no FINRA ADF Participant quote exists at a given price, or if the odd lot quote price is no longer at or within the NBBO.
6. Odd lot quotes cannot have a size that is equal to or more than the symbol Round Lot Size, and are not applicable for symbol with Round Lot size of 1



7. If trading in a symbol is halted, Participants are required to clear their odd lot quotes and round lot quotes, CQS does not clear the Participants quotes on their behalf.
8. Odd lot quotes will be published on existing channels intermingled with the round lot quote messages.

### **Overview of the SIP Odd Lot Quote messages**

1. SIP will publish odd lot quotes via messages comprising of either just the odd lot quotes, or both the odd lot and the round lot quotes together, as needed.
2. For each Participant, odd lot quotes across multiple prices can be reported via the odd lot appendages across one or more messages.
3. Each quote messages can include odd lot quotes from multiple Participants, at one or more prices.
4. Participant ID for each odd lot quote is provided via the 'Odd lot Quote Participant ID' field in the Odd Lot Quote Appendages. The 'Participant ID' field in the message header does not apply to the odd lot quotes in a message.
  - a. Note: For message containing both round lot and odd lot quotes, Participant ID in the message header only applies to the round lot quote. For message containing only odd lot quotes, Participant ID in the message header can be set to 'S'. Data Subscribers shall refer to the 'Odd lot Quote Participant ID' field to determine the Participant for each odd lot quote.
5. Odd lot bids and offers are independent of each other i.e.; a quote message can be reported with just odd lot bids or just odd lot offers or both
  - a. Fields 'Count of Odd Lot Bid appendages' and 'Count of Odd Lot Offer appendages' on the message identify the numbers of odd lot quote appendages, either of which can be zero if no odd lot quote appendages are present in the message.
  - b. Each quote message supports a specific type of odd lot quote appendage
  - c. All odd lot bid appendages are populated first followed by all odd lot offer appendages, regardless of whether the message has one or multiple bid or offer appendages.
6. Odd lot quotes are not protected and have no impact on the round lot quotes or the NBBO.
7. All quote messages may include optional BOLO appendages. Refer the section for 'Message Appendages' for details on how the various appendages are populated on each quote message. For details on how BOLO is calculated by SIP, refer the Appendix for 'BEST ODD LOT ORDER (BOLO) OVERVIEW'

### **Considerations if "Exemptive Quote Relief" is received for odd lot quotes**

1. If Exemptive Quote Relief is received to support only one price level for odd lot quotes, a maximum of one odd lot bid and/or offer will be published per Participant
  - a. Note - Quote messages can still contain more than one odd lot bid or offer appendage (i.e. 'Count of Odd Lot Bid appendages' or 'Count of Odd Lot Offer appendages' can be greater than 1) since a message can contain odd lot quotes from multiple Participants
2. When odd lot quote update is published for a Participant, any previous quote for that Participant will be explicitly cleared via the 'Clear Prior Odd Lot Quotes' field provided in the message.

CONSOLIDATED QUOTATION SYSTEM (CQS) PILLAR  
MULTICAST OUTPUT BINARY SPECIFICATION

---

#### 6.4.1 Auction Status – Category Q Type A

The Auction Status message is used when a Participant in a CTA eligible security, Local Issue or a Bonds reports requires Auction Information. Primary Listing Markets using an automated reopening will calculate Auction Collars, in compliance with rules around prices for re-opening, when applicable and will publish the Auction Status message. The initial Auction Collar will be published after the LULD Trading Pause. The ‘Number of Extensions’ field will reflect when a new Auction Status message has been published. The first Auction Collar extension, at the time of the LULD Trading Pause, will be set to zero (0) indicating the first Auction Status message and will increment by one (1) for each new Auction Status message sent during the LULD Trading Pause event.

Field Name	Length	Type
Security Symbol	11	Char [ ]
Instrument Type	1	Char
Auction Collar Reference Price	8	Long
Auction Collar Upper Threshold Price	8	Long
Auction Collar Lower Threshold Price	8	Long
Number of Extensions	1	Byte
Short Sale Restriction Indicator	1	Char
Primary Listing Market Participant ID	1	Char
Financial Status Indicator	1	Char
<b>Reserved (for future use)</b>	<b>62</b>	<b>TBD</b>
<b>Total Length</b>	<b>102</b>	

## 6.4.2 Round Lot Quote Messages

### 6.4.2.1 Short Quote – Category Q Type Q (will be discontinued)

The Short Quote message is used to report Bid and Offer quote information for **CTA eligible Equity only** (not used for Local Issues or Bonds) if the quote meets all the criteria and message format requirements, otherwise Long Quote message is used.

Note - As part of the amendment to regulation NMS, Size fields will represent value in shares instead of lots starting Nov 3, 2025.

The Short Quote has the following criteria:	
1.	Instrument Type is implied 'CTA Eligible Equity'.
2.	Quote Condition is implied 'Regular' quote condition.
3.	Settlement Condition is implied regular way settlement.
4.	Market Condition is implied normal auction market.
5.	Quote is <u>not</u> from FINRA ADF.

Field Name	Length	Type
Security Symbol	5	Char [ ]
Bid Price	2	Short
Bid Size	2	Short
Offer Price	2	Short
Offer Size	2	Short
Primary Listing Market Participant ID	1	Char
National BBO Indicator	1	Char
<b>Total Length</b>	<b>15</b>	

CONSOLIDATED QUOTATION SYSTEM (CQS) PILLAR  
MULTICAST OUTPUT BINARY SPECIFICATION

#### 6.4.2.2 Long Quote – Category Q Type L (will be discontinued)

The Long Quote message is used to report quote data for a CTA eligible Equity, Local Issue or Bonds. This message can also be used to report trading suspensions in a security, price indications and trading range indications. The Long Quote message is used by FINRA ADF only when either no FINRA BBO exists or there is no FINRA BBO change and will not be used to remove FINRA ADF from the NBBO. The Limit Up-Limit Down (LULD) Indicator is not applicable to FINRA ADF quotes.

Note - As part of the amendment to regulation NMS, Size fields will represent value in shares instead of lots starting Nov 3, 2025.

Field Name	Length	Type
Security Symbol	11	Char [ ]
Instrument Type	1	Char
Quote Condition	1	Char
Security Status Indicator	1	Char
Bid Price / Lower Limit Price Band	8	Long
Bid Size	4	Integer
Offer Price / Upper Limit Price Band	8	Long
Offer Size	4	Integer
Retail Interest Indicator	1	Char
Settlement Condition	1	Char
Market Condition	1	Char
FINRA Market Maker ID	4	Char [ ]
FINRA BBO Indicator	1	Char
Timestamp 2	8	2 x Integer
Short Sale Restriction Indicator	1	Char
Primary Listing Market Participant ID	1	Char
Financial Status Indicator	1	Char
SIP Generated Message Identifier	1	Char
Limit Up-Limit Down (LULD) Indicator	1	Char
National BBO LULD Indicator	1	Char
National BBO Indicator	1	Char
<b>Total Length</b>	<b>61</b>	

**6.4.2.3 Special Long Quote (FINRA ADF) with FINRA BBO Information – Category Q Type S (will be discontinued)**

The Special Quote (FINRA ADF) with FINRA BBO Information message is used only by FINRA to report the FINRA Best Bid and FINRA Best Offer for their Market Makers for CTA eligible Equity, Local Issue or Bond information Makers inclusive of changes to any existing FINRA BBO. The FINRA Best Bid and FINRA Best Offer will be used in the National Best Bid and Best Offer (NBBO) calculation.

Note - As part of the amendment to regulation NMS, Size fields will represent value in shares instead of lots starting Nov 3, 2025.

CONSOLIDATED QUOTATION SYSTEM (CQS) PILLAR  
MULTICAST OUTPUT BINARY SPECIFICATION

**Special Long Quote (FINRA ADF) with FINRA BBO Information, continued** (*will be discontinued*)

Field Name	Length	Type
Security Symbol	11	Char [ ]
Instrument Type	1	Char
Quote Condition	1	Char
Security Status Indicator	1	Char
Bid Price	8	Long
Bid Size	4	Integer
Offer Price	8	Long
Offer Size	4	Integer
Retail Interest Indicator	1	Char
Settlement Condition	1	Char
Market Condition	1	Char
FINRA Market Maker ID	4	Char [ ]
FINRA Best Bid Quote Condition	1	Char
FINRA Best Bid Price	8	Long
FINRA Best Bid Size	4	Integer
FINRA Best Bid Market Maker ID	4	Char [ ]
FINRA Best Offer Quote Condition	1	Char
FINRA Best Offer Price	8	Long
FINRA Best Offer Size	4	Integer
FINRA Best Offer Market Maker ID	4	Char [ ]
Timestamp 2	8	2 x Integer
Short Sale Restriction Indicator	1	Char
Primary Listing Market Participant ID	1	Char
Financial Status Indicator	1	Char
SIP Generated Message Identifier	1	Char
FINRA BBO LULD Indicator	1	Char
National BBO LULD Indicator	1	Char
National BBO Indicator	1	Char
<b>Total Length</b>	<b>94</b>	

CONSOLIDATED QUOTATION SYSTEM (CQS) PILLAR  
MULTICAST OUTPUT BINARY SPECIFICATION

#### 6.4.2.4 Round Lot Short Quote (with optional Odd Lot information) – Category Q Type P (NEW)

This message is used to report round lot quotes for a symbol if the quote meets all the criteria and message format requirements, otherwise Round Lot Long Quote message is used. Odd lot bids and/or offers for one or more Participants can be included in the message via the optional odd lot quote appendages.

Note - This Message Type is being defined but will not be in use for Day 1.

The Short Quote has the following criteria:
Instrument Type is implied 'CTA Eligible Equity'.
Quote Condition is implied 'Regular' quote condition.
Settlement Condition is implied regular way settlement.
Market Condition is implied normal auction market.
Quote is <u>not</u> from FINRA ADF.

Field Name	Length	Type
Security Symbol	5	Char [ ]
Round Lot Bid Price	2	Short
Round Lot Bid Size	2	Short
Round Lot Offer Price	2	Short
Round Lot Offer Size	2	Short
Primary Listing Market Participant ID	1	Char
National BBO Indicator	1	Char
BOLO Indicator	1	Char
Clear Prior Odd Lot Quotes	1	Char
Count of Odd Lot Bid appendages	1	Byte
Count of Odd Lot Offer appendages	1	Byte
<<NBBO Appendage>>		
<< Odd Lot Extended Quote Appendages (Repeatable) >>		
<<BOLO Appendage>>		
Total Length	19*	

*

*Minimum Length = 19 bytes. Total length may exceed if message includes any of the optional appendages (NBBO appendages, Odd Lot Extended Quote Appendages or BOLO appendages)

**6.4.2.5 Round Lot Long Quote (with optional Odd Lot information) – Category Q  
Type K (NEW)**

This message is used to report round lot quotes for a symbol. Odd lot bids and/or offers for one or more Participants can be included in the message via the optional odd lot quote appendages.

The Long Quote message can be used by FINRA ADF for reporting round lot quotes only when either no FINRA BBO exists or there is no FINRA BBO change and will not be used to remove FINRA ADF from the NBBO. The Limit Up-Limit Down (LULD) Indicator in the message is not applicable to FINRA ADF quotes.

This message is also used to report security status updates such as halts, LULD Price Bands, price indications and trading range indications, as identified by 'Security Status Indicator' field on the message. In this case, round lot quote update is not included in the message, however, message can still include updates for odd lot quotes, NBBO and BOLO.



CONSOLIDATED QUOTATION SYSTEM (CQS) PILLAR  
MULTICAST OUTPUT BINARY SPECIFICATION

**Round Lot Long Quote (with optional Odd Lot information), *continued***

Field Name	Length	Type
Security Symbol	11	Char [ ]
Quote Condition	1	Char
Security Status Indicator	1	Char
Round Lot Bid Price / Lower Limit Price Band	8	Long
Round Lot Bid Size	4	Integer
Round Lot Offer Price / Upper Limit Price Band	8	Long
Round Lot Offer Size	4	Integer
Retail Interest Indicator	1	Char
Settlement Condition	1	Char
Market Condition	1	Char
FINRA Market Maker ID	4	Char [ ]
FINRA BBO Indicator	1	Char
Timestamp 2	8	2 x Integer
Short Sale Restriction Indicator	1	Char
Primary Listing Market Participant ID	1	Char
SIP Generated Message Identifier	1	Char
Limit Up-Limit Down (LULD) Indicator	1	Char
National BBO LULD Indicator	1	Char
National BBO Indicator	1	Char
BOLO Indicator	1	Char
Clear Prior Odd Lot Quotes	1	Char
Count of Odd Lot Bid appendages	1	Byte
Count of Odd Lot Offer appendages	1	Byte
<<NBBO Appendage>>		
<< Odd Lot Extended Quote Appendages (Repeatable) >>		
<<BOLO Appendage>>		
<b>Total Length</b>	<b>63*</b>	

*Minimum Length = 63 bytes. Total length may exceed if message includes any of the optional appendages (NBBO appendages, Odd Lot Extended Quote Appendages or BOLO appendages)

**6.4.2.6 Round Lot FINRA ADF quote (with FINRA BBO and optional Odd Lot information) - Category Q Type U (NEW)**

This message is used only by FINRA to report the FINRA Best Bid and FINRA Best Offer for their Market Makers for CTA eligible Equity, Local Issue or Bond information inclusive of changes to any existing FINRA BBO. The FINRA Best Bid and FINRA Best Offer comprises of FINRA ADF Market Maker round lot quotes and is used in the National Best Bid and Best Offer (NBBO) calculation.

Odd lot bids and/or offers for one or more Participants can be included in the message via the optional odd lot quote appendages.

CONSOLIDATED QUOTATION SYSTEM (CQS) PILLAR  
MULTICAST OUTPUT BINARY SPECIFICATION

**Round Lot FINRA ADF quote (with FINRA BBO and optional Odd Lot information),  
continued**

Field Name	Length	Type
Security Symbol	11	Char [ ]
Quote Condition	1	Char
Round Lot Bid Price	8	Long
Round Lot Bid Size	4	Integer
Round Lot Offer Price	8	Long
Round Lot Offer Size	4	Integer
Retail Interest Indicator	1	Char
Settlement Condition	1	Char
Market Condition	1	Char
FINRA Market Maker ID	4	Char [ ]
FINRA Best Bid Quote Condition	1	Char
FINRA Best Bid Price	8	Long
FINRA Best Bid Size	4	Integer
FINRA Best Bid Market Maker ID	4	Char [ ]
FINRA Best Offer Quote Condition	1	Char
FINRA Best Offer Price	8	Long
FINRA Best Offer Size	4	Integer
FINRA Best Offer Market Maker ID	4	Char [ ]
Timestamp 2	8	2 x Integer
SIP Generated Message Identifier	1	Char
FINRA BBO LULD Indicator	1	Char
National BBO LULD Indicator	1	Char
National BBO Indicator	1	Char
BOLO Indicator	1	Char
Clear Prior Odd Lot Quotes	1	Char
Count of Odd Lot Bid appendages	1	Byte
Count of Odd Lot Offer appendages	1	Byte
<<NBBO Appendage>>		
<< Odd Lot Extended Quote Appendages (Repeatable) >>		
<<BOLO Appendage>>		
<b>Total Length</b>	<b>93*</b>	

*

*Minimum Length = 93 bytes. Total length may exceed if message includes any of the optional appendages (NBBO appendages, Odd Lot Extended Quote Appendages or BOLO appendages)

### 6.4.3 Odd Lot Quote Messages (NEW)

#### 6.4.3.1 Odd Lot Short Quote – Category Q Type R

The Odd Lot Short Quote message is used to report odd lot bids and offers via the optional repeatable Odd Lot Short Quote Appendages if the quote meets all the criteria and message format requirements, otherwise Odd Lot Long Quote message is used. An odd lot quote from FINRA ADF is not published via this message.

Message may be reported without any optional quote appendages when previously reported odd lot quotes for a Participant are being cleared via the ‘Clear Prior Odd Lot Quotes’ field and there are no additional odd lot updates to report.

Field Name	Length	Type
Security Symbol	5	Char [ ]
BOLO Indicator	1	Char
Clear Prior Odd Lot Quotes	1	Char
Count of Odd Lot Bid appendages	1	Byte
Count of Odd Lot Offer appendages	1	Byte
<< Odd Lot Short Quote Appendages (Repeatable) >>		
<<BOLO Appendage>>		
Total Length	9*	

*Minimum Length = 9 bytes. Total length may exceed if message includes any of the optional appendages (Odd Lot Short Quote Appendages or BOLO appendages)

CONSOLIDATED QUOTATION SYSTEM (CQS) PILLAR  
MULTICAST OUTPUT BINARY SPECIFICATION

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### 6.4.3.2 Odd Lot Long Quote – Category Q Type M

The Odd Lot Long Quote message is used to report odd lot bids and offers via the optional repeatable Odd Lot Long Quote Appendages. An odd lot quote from FINRA ADF is not published via this message.

Message may be reported without any optional quote appendages when previously reported odd lot quotes for a Participant are being cleared via the 'Clear Prior Odd Lot Quotes' field and there are no additional odd lot updates to report.

Field Name	Length	Type
Security Symbol	11	Char [ ]
BOLO Indicator	1	Char
Clear Prior Odd Lot Quotes	1	Char
Count of Odd Lot Bid appendages	1	Byte
Count of Odd Lot Offer appendages	1	Byte
<< Odd Lot Long Quote Appendages (Repeatable) >>		
<<BOLO Appendage>>		
Total Length	15*	

*Minimum Length = 15 bytes. Total length may exceed if message includes any of the optional appendages (Odd Lot Long Quote Appendages or BOLO appendages)

CONSOLIDATED QUOTATION SYSTEM (CQS) PILLAR  
MULTICAST OUTPUT BINARY SPECIFICATION

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### 6.4.3.3 Odd Lot Extended Quote – Category Q Type T

The Odd Lot Extended Quote message is used to report odd lot bids and offers via the optional repeatable Odd Lot Extended Quote Appendages. An odd lot quote from any Participant including FINRA ADF can be published via this message.

Message may be reported without any optional quote appendages when previously reported odd lot quotes for a Participant are being cleared via the 'Clear Prior Odd Lot Quotes' field) and there are no additional odd lot updates to report.

Field Name	Length	Type
Security Symbol	11	Char [ ]
BOLO Indicator	1	Char
Clear Prior Odd Lot Quotes	1	Char
Count of Odd Lot Bid appendages	1	Byte
Count of Odd Lot Offer appendages	1	Byte
<< Odd Lot Extended Quote Appendages (Repeatable) >>		
<<BOLO Appendage>>		
Total Length	15*	

*Minimum Length = 15 bytes. Total length may exceed if message includes any of the optional appendages (Odd Lot Extended Quote Appendages or BOLO appendages)

#### 6.4.4 Message Appendages

1. Quote messages can optionally contain NBBO Appendages, Odd Lot quote Appendages (bid and/or offer) and BOLO Appendages. NBBO Appendages are only available on round lot quote messages. As such -
  - a. Round Lot quote messages can optionally include NBBO appendages, Odd Lot quote appendages and BOLO appendages
  - b. Odd Lot quote messages can optionally include Odd Lot quote appendages and BOLO appendages.
2. Fields 'National BBO Indicator', 'Count of Odd Lot Bid appendages', 'Count of Odd Lot Offer appendages' and 'BOLO Indicator' on the quote messages identify whether the respective appendages are included in a published message.
3. When one or multiple appendages are included in a quote message, those are always appended in the following sequence:
  - a. NBBO appendages (always 2-sided when included, as per 'National BBO Indicator')
  - b. All odd lot bids (as per the 'Count of Odd Lot Bid appendages')
  - c. All odd lot offers (as per the 'Count of Odd Lot Offer appendages')
  - d. Best Odd Lot Bid appendage (as per 'BOLO Indicator')
  - e. Best Odd Lot Offer appendage (as per 'BOLO Indicator')

#### 6.4.4.1 National Best Bid and Offer (NBBO) Appendages

##### 6.4.4.1.1 National Best Bid Short Appendage and National Best Offer Short Appendage

The National Best Bid Short Appendage and/or National Best Offer Short Appendage is generated whenever a new quote has caused a new National Best Bid and/or new National Best Offer and the Best Bid and/or Best Offer data meets all criteria. If any of the criteria are **not** met, the National Best Bid Long Appendage and/or the National Best Offer Long Appendage format are used. If it is determined that a National Best Bid Short Appendage and/or National Best Offer Short Appendage is required, the appropriate Best Bid and Best Offer information is appended following either the Short Quote, Long Quote or Special Long Quote (FINRA ADF) with FINRA BBO Information message. In instances when both a National Best Bid Short Appendage and a National Best Offer Short Appendage are generated, the National Best Bid Short Appendage will be appended first followed by the National Best Offer Short Appendage.

National Best Bid Short Appendage and National Best Offer Short Appendages have the following criteria:	
1.	Quote Condition is implied 'Regular' for the Best Bid and Best Offer.
2.	No FINRA Best Bid and/or FINRA Best Offer are involved in generating the National Best Bid and National Best Offer.

#### National Best Bid Short Appendage:

Field Name	Length	Type
Best Bid Participant ID	1	Char
Best Bid Price	2	Short
Best Bid Size	2	Short
<b>Total Length</b>	<b>5</b>	

#### National Best Offer Short Appendage:

Field Name	Length	Type
Best Offer Participant ID	1	Char
Best Offer Price	2	Short
Best Offer Size	2	Short
<b>Total Length</b>	<b>5</b>	



#### 6.4.4.1.2 National Best Bid Long Appendage and National Best Offer Long Appendage

The National Best Bid Long Appendage and/or National Best Offer Long Appendage are generated whenever a new quote has caused a new National Best Bid and/or new National Best Offer. If it is determined that a new National Best Bid Long Appendage and/or National Best Offer Long Appendage is required, the appropriate Best Bid and Best Offer information is appended following either the Short Quote, Long Quote or Special Long Quote (FINRA ADF) with FINRA BBO Information message. In instances when both a National Best Bid Long Appendage and a National Best Offer Long Appendage are generated, the National Best Bid Long Appendage will be appended first followed by the National Best Offer Long Appendage.

##### National Best Bid Long Appendage:

Field Name	Length	Type
Best Bid Participant ID	1	Char
Best Bid Quote Condition	1	Char
Best Bid Price	8	Long
Best Bid Size	4	Integer
FINRA Best Bid Market Maker ID	4	Char [ ]
<b>Total Length</b>	<b>18</b>	

##### National Best Offer Long Appendage:

Field Name	Length	Type
Best Offer Participant ID	1	Char
Best Offer Quote Condition	1	Char
Best Offer Price	8	Long
Best Offer Size	4	Integer
FINRA Best Offer Market Maker ID	4	Char [ ]
<b>Total Length</b>	<b>18</b>	

#### 6.4.4.2 Odd Lot Quote Appendages (NEW)

Following odd lot quote appendages are supported for reporting odd lot bids and offers. Each quote message supports a specific type of appendage as defined in the respective message type layout. Multiple odd lot quote appendages from one or more Participants can be included in each quote message.

##### Odd Lot Short Quote Appendage

Field Name	Length	Type
Odd lot Quote Participant ID	1	Char
Odd Lot Quote Price	2	Short
Odd Lot Quote Size	1	Byte
<b>Total Length</b>	<b>4</b>	

##### Odd Lot Long Quote Appendage

Field Name	Length	Type
Odd lot Quote Participant ID	1	Char
Odd Lot Quote Price	8	Long
Odd Lot Quote Size	1	Byte
<b>Total Length</b>	<b>10</b>	

##### Odd Lot Extended Quote Appendage

Field Name	Length	Type
Odd lot Quote Participant ID	1	Char
Odd Lot Quote Price	8	Long
Odd Lot Quote Size	1	Byte
Odd Lot FINRA Market Maker ID	4	Char [ ]
<b>Total Length</b>	<b>14</b>	

Note - Odd Lot Extended Quote Appendage can be used to publish an odd lot quote for a Participant other than FINRA ADF. Field 'Odd Lot FINRA Market Maker ID' is not populated in this case.

#### 6.4.4.3 Best Odd Lot Order (BOLO) Appendages (NEW)

Best Odd Lot Bid Appendage and/or Best Odd Lot Offer Appendage is generated whenever a new quote results in a new Odd Lot Best Bid and/or Offer. If it is determined that a Best Odd Lot Bid Appendage and/or Best Offer Odd Lot Offer Appendage is required, it is appended at the end of the quote message following any NBBO Appendage and repeatable Odd Lot Quote Appendages (if included).

‘BOLO Indicator’ field on the message identifies whether a Best Odd Lot Bid Appendage and/or a Best Odd Lot Offer Appendage is included in the message. In instances when both a Best Odd Lot Bid Appendage and a Best Odd Lot Offer Appendage are generated, the Best Odd Lot Bid Appendage will be appended first followed by the Best Odd Lot Offer Appendage.

##### Best Odd Lot Bid Appendage

Field Name	Length	Type
Odd Lot Best Bid Participant ID	1	Char
Odd Lot Best Bid Quote Price	8	Long
Odd Lot Best Bid Quote Size	1	Byte
Odd Lot FINRA Best Bid Market Maker ID	4	Char [ ]
<b>Total Length</b>	<b>14</b>	

##### Best Odd Lot Offer Appendage

Field Name	Length	Type
Odd Lot Best Offer Participant ID	1	Char
Odd Lot Best Offer Quote Price	8	Long
Odd Lot Best Offer Quote Size	1	Byte
Odd Lot FINRA Best Offer Market Maker ID	4	Char [ ]
<b>Total Length</b>	<b>14</b>	

CONSOLIDATED QUOTATION SYSTEM (CQS) PILLAR  
MULTICAST OUTPUT BINARY SPECIFICATION

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## 7.0 FIELD DESCRIPTIONS

Field Name	Length	Description
Auction Collar Reference Price	8	Long. Long have implied 6 decimal places and a maximum price of \$18,446,744,073,709.551615. Optional set to zero.  Represents the price used by the exchange to establish the Auction Collar.
Auction Collar Lower Threshold Price	8	Long. Long have implied 6 decimal places and a maximum price of \$18,446,744,073,709.551615. Optional set to zero.  Represents the latest lower threshold price of the Auction Collar. The lower threshold price of the Auction Collar is the lowest price of the auction collar, if any.
Auction Collar Upper Threshold Price	8	Long. Long have implied 6 decimal places and a maximum price of \$18,446,744,073,709.551615. Optional set to zero.  Represents the latest upper threshold price of the Auction Collar. The upper threshold price of the Auction Collar is the highest price of the auction collar, if any.

CONSOLIDATED QUOTATION SYSTEM (CQS) PILLAR  
MULTICAST OUTPUT BINARY SPECIFICATION

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## FIELD DESCRIPTIONS

Field Name	Length	Description
Best Bid Participant ID	1	<p>Char. Space-filled.</p> <p>Identifies the Participant that submitted the Best Round Lot Bid on a consolidated basis.</p> <p>Refer to <b>Participant ID</b> field description for Participant codes.</p>
Best Bid Price	2 or 8	<p>2 Short. Short have implied 2 decimal places and a maximum price of \$655.35.</p> <p>8 Long. Long have implied 6 decimal places and a maximum price of \$18,446,744,073,709.551615.</p> <p>Short or Long Optional set to zero.</p> <p>Represents the Best Round Lot Bid Price on a consolidated basis.</p>
Best Bid Quote Condition	1	<p>Char. Space-filled.</p> <p>Identifies the Quote Condition associated with the Best Bid Price on a consolidated basis.</p>
Best Bid Size	2 or 4	<p>2 Short. Short have a maximum size of 65,535</p> <p>4 Integer. Integer has a maximum size of 4,294,967,295</p> <p>Short or Integer Optional set to zero.</p> <p>Represents the Size associated with the Best Bid Price on a consolidated basis.</p> <p>Best Bid Size is the number of shares for a symbol rounded down to the nearest multiple of its Round Lot Size. As an example, for a symbol with round-lot size of 40, Best Bid Size can be in multiples of 40 i.e. 40, 80, 120 and so on.</p>
Best Offer Participant ID	1	<p>Char. Space-filled.</p> <p>Identifies the Participant that submitted the Best Round Lot Offer on a consolidated basis.</p> <p>Refer to <b>Participant ID</b> field description for Participant codes.</p>

CONSOLIDATED QUOTATION SYSTEM (CQS) PILLAR  
MULTICAST OUTPUT BINARY SPECIFICATION

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**FIELD DESCRIPTIONS**

Field Name	Length	Description
Best Offer Price	2 or 8	<p>2 Short. Short have implied 2 decimal places and a maximum price of \$655.35.</p> <p>8 Long. Long have implied 6 decimal places and a maximum price of \$18,446,744,073,709.551615. Short or Long Optional set to zero.</p> <p>Represents the Best Round Lot Offer Price on a consolidated basis.</p>
Best Offer Quote Condition	1	<p>Char. Space-filled.</p> <p>Identifies the Quote Condition associated with the Best Offer Price on a consolidated basis.</p>
Best Offer Size	2 or 4	<p>2 Short. Short have a maximum size of 65,535</p> <p>4 Integer. Integer has a maximum size of 4,294,967,295 Short or Integer Optional set to zero.</p> <p>Represents the Size associated with the Best Bid Price on a consolidated basis.</p> <p>Best Offer size is the number of shares for a symbol rounded down to the nearest multiple of its Round Lot Size. As an example, for a symbol with round-lot size of 40, Best Offer Size can be in multiples of 40 i.e. 40, 80, 120 and so on.</p>

CONSOLIDATED QUOTATION SYSTEM (CQS) PILLAR  
MULTICAST OUTPUT BINARY SPECIFICATION

## FIELD DESCRIPTIONS

Field Name	Length	Description																				
BOLO Indicator (Best Odd Lot Order)	1	<p>Char.</p> <p>Indicates the effect the new quote has on the Best Odd Lot (OL) Bid and/or Best Odd Lot (OL) Offer. If it is determined that a new BOLO appendage or appendages are required, the appropriate BOLO information is appended on the Quote message. A BOLO appendage is not present if it is determined that the current quote is the new BOLO, there is no change to the BOLO, or there is no BOLO.</p> <table><tr><th>Code</th><th>Value</th></tr><tr><td>A</td><td><b>No OL Best Bid change, No OL Best Offer change</b> New quote does not affect the OL Best Bid or Best Offer. No appendage is required.</td></tr><tr><td>B</td><td><b>No OL Best Bid change, Quote contains OL Best Offer</b> New quote does not affect the OL Best Bid, but is the OL Best Offer. No appendage is required.</td></tr><tr><td>C</td><td><b>No OL Best Bid Change, OL Best Offer Appendage</b> New quote does not affect the OL Best Bid, a new OL Best Offer is generated and the new OL Best Offer information is contained in the OL Best Offer Appendage.</td></tr><tr><td>D</td><td><b>No OL Best Bid Change, No OL Best Offer</b> New quote does not affect the OL Best Bid, and there is no OL Best Offer. No appendage is required.</td></tr><tr><td>E</td><td><b>Quote contains OL Best Bid, No OL Best Offer Change</b> New quote is itself the OL Best Bid, but does not affect the Best Offer. No appendage is required.</td></tr><tr><td>F</td><td><b>Quote contains OL Best Bid, Quote contains OL Best Offer</b> New quote is itself the OL Best Bid and Best Offer. No appendage is required.</td></tr><tr><td>G</td><td><b>Quote contains OL Best Bid, OL Best Offer Appendage</b> New quote is itself the OL Best Bid, a new OL Best Offer is generated and the new OL Best Offer information is contained in the OL Best Offer Appendage.</td></tr><tr><td>H</td><td><b>Quote contains OL Best Bid, No OL Best Offer</b> New quote is itself the OL Best Bid, and there is no OL Best Offer. No appendage is required.</td></tr><tr><td>I</td><td><b>No OL Best Bid, No OL Best Offer Change</b> There is no OL Best Bid, and the quote does not affect the Best Offer. No appendage is required.</td></tr></table>	Code	Value	A	<b>No OL Best Bid change, No OL Best Offer change</b> New quote does not affect the OL Best Bid or Best Offer. No appendage is required.	B	<b>No OL Best Bid change, Quote contains OL Best Offer</b> New quote does not affect the OL Best Bid, but is the OL Best Offer. No appendage is required.	C	<b>No OL Best Bid Change, OL Best Offer Appendage</b> New quote does not affect the OL Best Bid, a new OL Best Offer is generated and the new OL Best Offer information is contained in the OL Best Offer Appendage.	D	<b>No OL Best Bid Change, No OL Best Offer</b> New quote does not affect the OL Best Bid, and there is no OL Best Offer. No appendage is required.	E	<b>Quote contains OL Best Bid, No OL Best Offer Change</b> New quote is itself the OL Best Bid, but does not affect the Best Offer. No appendage is required.	F	<b>Quote contains OL Best Bid, Quote contains OL Best Offer</b> New quote is itself the OL Best Bid and Best Offer. No appendage is required.	G	<b>Quote contains OL Best Bid, OL Best Offer Appendage</b> New quote is itself the OL Best Bid, a new OL Best Offer is generated and the new OL Best Offer information is contained in the OL Best Offer Appendage.	H	<b>Quote contains OL Best Bid, No OL Best Offer</b> New quote is itself the OL Best Bid, and there is no OL Best Offer. No appendage is required.	I	<b>No OL Best Bid, No OL Best Offer Change</b> There is no OL Best Bid, and the quote does not affect the Best Offer. No appendage is required.
Code	Value																					
A	<b>No OL Best Bid change, No OL Best Offer change</b> New quote does not affect the OL Best Bid or Best Offer. No appendage is required.																					
B	<b>No OL Best Bid change, Quote contains OL Best Offer</b> New quote does not affect the OL Best Bid, but is the OL Best Offer. No appendage is required.																					
C	<b>No OL Best Bid Change, OL Best Offer Appendage</b> New quote does not affect the OL Best Bid, a new OL Best Offer is generated and the new OL Best Offer information is contained in the OL Best Offer Appendage.																					
D	<b>No OL Best Bid Change, No OL Best Offer</b> New quote does not affect the OL Best Bid, and there is no OL Best Offer. No appendage is required.																					
E	<b>Quote contains OL Best Bid, No OL Best Offer Change</b> New quote is itself the OL Best Bid, but does not affect the Best Offer. No appendage is required.																					
F	<b>Quote contains OL Best Bid, Quote contains OL Best Offer</b> New quote is itself the OL Best Bid and Best Offer. No appendage is required.																					
G	<b>Quote contains OL Best Bid, OL Best Offer Appendage</b> New quote is itself the OL Best Bid, a new OL Best Offer is generated and the new OL Best Offer information is contained in the OL Best Offer Appendage.																					
H	<b>Quote contains OL Best Bid, No OL Best Offer</b> New quote is itself the OL Best Bid, and there is no OL Best Offer. No appendage is required.																					
I	<b>No OL Best Bid, No OL Best Offer Change</b> There is no OL Best Bid, and the quote does not affect the Best Offer. No appendage is required.																					

CONSOLIDATED QUOTATION SYSTEM (CQS) PILLAR  
MULTICAST OUTPUT BINARY SPECIFICATION

**FIELD DESCRIPTIONS**

Field Name	Length	Description																
BOLO Indicator, <i>continued</i>	1	<div>Char.</div> <table><tr><th>Code</th><th>Value</th></tr><tr><td>J</td><td><b>No OL Best Bid, Quote contains Best Offer</b> There is no OL Best Bid, and the quote is itself the Best Offer. No appendage is required.</td></tr><tr><td>K</td><td><b>No OL Best Bid, OL Best Offer Appendage</b> There is no OL Best Bid, a new OL Best Offer is generated and the new OL Best Offer is contained in the OL Best Offer Appendage.</td></tr><tr><td>L</td><td><b>No OL Best Bid, No OL Best Offer</b> There is no OL Best Bid, and no OL Best Offer. No appendage is required.</td></tr><tr><td>M</td><td><b>OL Best Bid Appendage, No OL Best Offer Change</b> A new OL Best Bid is generated and the new OL Best Bid information is contained in the OL Best Bid Appendage, but the quote does not affect the Best Offer.</td></tr><tr><td>N</td><td><b>OL Best Bid Appendage, Quote contains Best Offer</b> A new OL Best Bid is generated and the new OL Best Bid information is contained in the OL Best Bid Appendage, and the quote is the Best Offer.</td></tr><tr><td>O</td><td><b>OL Best Bid Appendage, OL Best Offer Appendage</b> A new OL Best Bid is generated and the new OL Best Bid information is contained in the OL Best Bid Appendage, a new OL Best Offer is generated and the new OL Best Offer information is contained in the OL Best Offer Appendage.</td></tr><tr><td>P</td><td><b>OL Best Bid Appendage, No OL Best Offer</b> A new Best Bid is generated and the new Best Bid information is contained in the Best Bid Appendage, and there is no OL Best Offer.</td></tr></table>	Code	Value	J	<b>No OL Best Bid, Quote contains Best Offer</b> There is no OL Best Bid, and the quote is itself the Best Offer. No appendage is required.	K	<b>No OL Best Bid, OL Best Offer Appendage</b> There is no OL Best Bid, a new OL Best Offer is generated and the new OL Best Offer is contained in the OL Best Offer Appendage.	L	<b>No OL Best Bid, No OL Best Offer</b> There is no OL Best Bid, and no OL Best Offer. No appendage is required.	M	<b>OL Best Bid Appendage, No OL Best Offer Change</b> A new OL Best Bid is generated and the new OL Best Bid information is contained in the OL Best Bid Appendage, but the quote does not affect the Best Offer.	N	<b>OL Best Bid Appendage, Quote contains Best Offer</b> A new OL Best Bid is generated and the new OL Best Bid information is contained in the OL Best Bid Appendage, and the quote is the Best Offer.	O	<b>OL Best Bid Appendage, OL Best Offer Appendage</b> A new OL Best Bid is generated and the new OL Best Bid information is contained in the OL Best Bid Appendage, a new OL Best Offer is generated and the new OL Best Offer information is contained in the OL Best Offer Appendage.	P	<b>OL Best Bid Appendage, No OL Best Offer</b> A new Best Bid is generated and the new Best Bid information is contained in the Best Bid Appendage, and there is no OL Best Offer.
Code	Value																	
J	<b>No OL Best Bid, Quote contains Best Offer</b> There is no OL Best Bid, and the quote is itself the Best Offer. No appendage is required.																	
K	<b>No OL Best Bid, OL Best Offer Appendage</b> There is no OL Best Bid, a new OL Best Offer is generated and the new OL Best Offer is contained in the OL Best Offer Appendage.																	
L	<b>No OL Best Bid, No OL Best Offer</b> There is no OL Best Bid, and no OL Best Offer. No appendage is required.																	
M	<b>OL Best Bid Appendage, No OL Best Offer Change</b> A new OL Best Bid is generated and the new OL Best Bid information is contained in the OL Best Bid Appendage, but the quote does not affect the Best Offer.																	
N	<b>OL Best Bid Appendage, Quote contains Best Offer</b> A new OL Best Bid is generated and the new OL Best Bid information is contained in the OL Best Bid Appendage, and the quote is the Best Offer.																	
O	<b>OL Best Bid Appendage, OL Best Offer Appendage</b> A new OL Best Bid is generated and the new OL Best Bid information is contained in the OL Best Bid Appendage, a new OL Best Offer is generated and the new OL Best Offer information is contained in the OL Best Offer Appendage.																	
P	<b>OL Best Bid Appendage, No OL Best Offer</b> A new Best Bid is generated and the new Best Bid information is contained in the Best Bid Appendage, and there is no OL Best Offer.																	



CONSOLIDATED QUOTATION SYSTEM (CQS) PILLAR  
MULTICAST OUTPUT BINARY SPECIFICATION

## FIELD DESCRIPTIONS

Field Name	Length	Description										
Clear Prior Odd Lot Quotes	1	<p>Char.</p> <p>Identifies whether to clear all previously reported odd lot bids and/or offers for the Participant identified as per the Participant ID field on the message header.</p> <p>If the field is populated, all previous odd lot bids and/or offers for that Participant are cleared prior to processing any new odd lot quotes provided in the message via the Odd Lot Quote Appendages.</p> <p>If the field is not populated, any previous reported odd lot quotes are <b>not</b> cleared and the Odd Lot Quote Appendages in the message are used to provide updates for individual odd lot quotes as applicable.</p> <table><tr><th>Code</th><th>Value</th></tr><tr><td>Space</td><td>Not Applicable</td></tr><tr><td>B</td><td>Clear all previous odd lot Bids</td></tr><tr><td>S</td><td>Clear all previous odd lot Offers</td></tr><tr><td>X</td><td>Clear all previous odd lot Bids and Offers</td></tr></table>	Code	Value	Space	Not Applicable	B	Clear all previous odd lot Bids	S	Clear all previous odd lot Offers	X	Clear all previous odd lot Bids and Offers
Code	Value											
Space	Not Applicable											
B	Clear all previous odd lot Bids											
S	Clear all previous odd lot Offers											
X	Clear all previous odd lot Bids and Offers											
Count of Odd Lot Bid Appendages	1	<p>Byte. Optional set to zero (0 - 255).</p> <p>Identifies the number of odd lot bid appendages on a quote message. When a quote message has multiple odd lot bid appendages, those are grouped together and populated before any odd lot offer appendage.</p>										
Count of Odd Lot Offer Appendages	1	<p>Byte. Optional set to zero (0 - 255).</p> <p>Identifies the number of odd lot offer appendages on a quote message. When a quote message has multiple odd lot offer appendages, those are grouped together and populated after any offer odd lot bid appendages.</p>										

CONSOLIDATED QUOTATION SYSTEM (CQS) PILLAR  
MULTICAST OUTPUT BINARY SPECIFICATION

## FIELD DESCRIPTIONS

Field Name	Length	Description																								
Financial Status Indicator	1	<div>Char.</div> <div>Identifies the financial status of the security.</div> <table><tr><th>Code</th><th>Value</th></tr><tr><td>0</td><td>Financial Status Not Applicable</td></tr><tr><td>1</td><td>Bankrupt</td></tr><tr><td>2</td><td>Below Continuing Listing Standards</td></tr><tr><td>3</td><td>Bankrupt &amp; Below Continuing Listing Standards</td></tr><tr><td>4</td><td>Late Filing</td></tr><tr><td>5</td><td>Bankrupt &amp; Late Filing</td></tr><tr><td>6</td><td>Below Continuing Listing Standards &amp; Late Filing</td></tr><tr><td>7</td><td>Bankrupt, Below Continuing Listing Standards &amp; Late Filing</td></tr><tr><td>8</td><td>Creations Suspended (for Exchange Traded Products)</td></tr><tr><td>9</td><td>Redemptions Suspended (for Exchange Traded Products)</td></tr><tr><td>A</td><td>Liquidation (for Exchange Traded Products)</td></tr></table>	Code	Value	0	Financial Status Not Applicable	1	Bankrupt	2	Below Continuing Listing Standards	3	Bankrupt & Below Continuing Listing Standards	4	Late Filing	5	Bankrupt & Late Filing	6	Below Continuing Listing Standards & Late Filing	7	Bankrupt, Below Continuing Listing Standards & Late Filing	8	Creations Suspended (for Exchange Traded Products)	9	Redemptions Suspended (for Exchange Traded Products)	A	Liquidation (for Exchange Traded Products)
Code	Value																									
0	Financial Status Not Applicable																									
1	Bankrupt																									
2	Below Continuing Listing Standards																									
3	Bankrupt & Below Continuing Listing Standards																									
4	Late Filing																									
5	Bankrupt & Late Filing																									
6	Below Continuing Listing Standards & Late Filing																									
7	Bankrupt, Below Continuing Listing Standards & Late Filing																									
8	Creations Suspended (for Exchange Traded Products)																									
9	Redemptions Suspended (for Exchange Traded Products)																									
A	Liquidation (for Exchange Traded Products)																									
FINRA BBO Indicator	1	<div>Char.</div> <div>For FINRA ADF, represents the FINRA BBO state of the FINRA ADF quote.</div> <table><tr><th>Code</th><th>Value</th></tr><tr><td>Space</td><td>FINRA BBO Indicator Not Applicable (used by Participants other than FINRA ADF)</td></tr><tr><td>A</td><td>No FINRA BBO Change</td></tr><tr><td>B</td><td>No FINRA BBO Exists</td></tr></table>	Code	Value	Space	FINRA BBO Indicator Not Applicable (used by Participants other than FINRA ADF)	A	No FINRA BBO Change	B	No FINRA BBO Exists																
Code	Value																									
Space	FINRA BBO Indicator Not Applicable (used by Participants other than FINRA ADF)																									
A	No FINRA BBO Change																									
B	No FINRA BBO Exists																									

CONSOLIDATED QUOTATION SYSTEM (CQS) PILLAR  
MULTICAST OUTPUT BINARY SPECIFICATION

## FIELD DESCRIPTIONS

Field Name	Length	Description	
FINRA BBO LULD Indicator	1	Char.	
		Indicates the affect that the Limit Up-Limit Down Price Bands have on the FINRA Best Bid and FINRA Best Offer (FBBO).	
		Code	Value
		Space	Limit Up-Limit Down Not Applicable
		A	FINRA Best Bid <u>and</u> FINRA Best Offer are Executable
		B	FINRA Best Bid outside Price Band – FINRA Best Bid is Non-Executable
		C	FINRA Best Offer outside Price Band – FINRA Best Offer is Non-Executable
		D	FINRA Best Bid <u>and</u> FINRA Best Offer outside Price Band – FINRA Best Bid <u>and</u> FINRA Best Offer are Non-Executable
<b>Note 1:</b> CQS will republish the FINRA Best Bid and FINRA Best Offer if existing FBBOs require adjustments as a result of Limit Up-Limit Down Price Band changes (e.g., an FBBO update to Executable from Non-Executable [or vice-versa]). Price Band messages will contain the <u>latest</u> National and modified FINRA BBO LULD Indicators.			
FINRA Best Bid Market Maker ID	4	Char [4]. Left justified, space-filled.  Contains the FINRA ADF provided FINRA Best Bid Market Maker identifier of the Market Maker that had the FINRA Best Bid (FBBO).	
FINRA Best Bid Price	8	8 Long. Long have implied 6 decimal places and a maximum price of \$18,446,744,073,709.551615. Optional set to zero.  Contains the FINRA ADF provided FINRA Best Bid Price that is the FINRA Best Bid (FBBO).	

CONSOLIDATED QUOTATION SYSTEM (CQS) PILLAR  
MULTICAST OUTPUT BINARY SPECIFICATION

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**FIELD DESCRIPTIONS**

Field Name	Length	Description
FINRA Best Bid Quote Condition	1	Char. Space-filled.  Contains the FINRA ADF provided FINRA Best Bid Quote Condition associated with the FINRA Best Bid Price that had the FINRA Best Bid (FBBO).
FINRA Best Bid Size	4	4 Integer. Integer has a maximum size of 4,294,967,295 Optional set to zero.  Contains the FINRA ADF provided FINRA Best Bid Size associated with the FINRA Best Bid Price that had the FINRA Best Bid (FBBO).  FINRA Best Bid Size is the number of shares for a symbol rounded down to the nearest multiple of its Round Lot Size. As an example, for a symbol with round-lot size of 40, FINRA Best Bid Size can be in multiples of 40 i.e. 40, 80, 120 and so on.
FINRA Best Offer Price	8	8 Long. Long have implied 6 decimal places and a maximum price of \$18,446,744,073,709.551615. Optional set to zero.  Contains the FINRAADF provided Best FINRA Offer Price that is the FINRA Best Offer (FBBO).
FINRA Best Offer Size	4	Integer. Integer has a maximum size of 4,294,967,295 Optional set to zero.  Contains the FINRA ADF provided FINRA Best Offer Size associated with the FINRA Best Offer Price that had the FINRA Best Offer (FBBO).  FINRA Best Offer Size is the number of shares for a symbol rounded down to the nearest multiple of its Round Lot Size. As an example, for a symbol with round-lot size of 40, FINRA Best Offer Size can be in multiples of 40 i.e. 40, 80, 120 and so on.
FINRA Best Offer Market Maker ID	4	Char [4]. Left justified, space-filled.  Contains the FINRA ADF provided FINRA Best Offer Market Maker identifier of the Market Maker that had the FINRA Best Offer (FBBO).

CONSOLIDATED QUOTATION SYSTEM (CQS) PILLAR  
MULTICAST OUTPUT BINARY SPECIFICATION

## FIELD DESCRIPTIONS

Field Name	Length	Description										
FINRA Best Offer Quote Condition	1	<p>Char. Space-filled.</p> <p>Contains the FINRA ADF provided FINRA Best Offer Quote Condition associated with the Best FINRA Offer Price that had the FINRA Best Offer (FBBO).</p>										
FINRA Market Maker ID (MMID)	4	<p>Char [4]. Left justified, space-filled.</p> <p>Contains the FINRA Market Maker ID of the quoting participant on FINRA's Alternative Display Facility (ADF) or the FINRA ADF Identifier <b>‘FNRA’</b>.</p> <p><b>Note:</b> The FINRA ADF MMID <b>‘FNRA’</b> will be identified in CQS quote messages as follows:</p> <ul style="list-style-type: none"><li>➤ Whenever CQS, on behalf of FINRA, generates closing quotes upon receiving FINRA Close (Category C Type C) message (<i>Reference Appendix E – Closing Routine</i>), quote messages will be generated containing the following characteristics:<ul style="list-style-type: none"><li>▪ Participant ID <b>‘D’</b> in the Message Header</li><li>▪ Quote Condition <b>‘L’</b> – Market Maker Closed (FINRA)</li><li>▪ Zero-filled bid and/or offer prices, zero-filled bid and/or offer sizes and <b>‘Clear Prior Odd Lot Quotes’</b> set to <b>‘X’</b></li></ul></li><li>➤ Whenever CQS on behalf of FINRA ADF removes FINRA from the Best Bid and Best Offer, CQS will generate quote messages containing the following characteristics:<ul style="list-style-type: none"><li>▪ Participant ID <b>‘D’</b> in the Message Header</li><li>▪ Quote Condition <b>‘R’</b> – Regular</li><li>▪ Zero-filled bid and/or offer prices, zero-filled bid and/or offer sizes and <b>‘Clear Prior Odd Lot Quotes’</b> set to <b>‘X’</b></li></ul></li></ul> <p><b>Note:</b> When CQS is the originator of a quote message the SIP Generated Message Identifier field will be populated with <b>‘S’</b>.</p>										
Instrument Type	1	<p>Char.</p> <p>Identifies the instrument type relevant to the quote.</p> <table><tr><th>Code</th><th>Value</th></tr><tr><td>0</td><td>CTA Eligible Equity</td></tr><tr><td>1</td><td>Local Issue</td></tr><tr><td>2</td><td>Corporate Bond</td></tr><tr><td>3</td><td>Government Bond</td></tr></table>	Code	Value	0	CTA Eligible Equity	1	Local Issue	2	Corporate Bond	3	Government Bond
Code	Value											
0	CTA Eligible Equity											
1	Local Issue											
2	Corporate Bond											
3	Government Bond											

CONSOLIDATED QUOTATION SYSTEM (CQS) PILLAR  
MULTICAST OUTPUT BINARY SPECIFICATION

## FIELD DESCRIPTIONS

Field Name	Length	Description								
IPO	1	<div>Char.</div> <div>Identifies whether the security symbol is an IPO</div> <table><tr><th>Code</th><th>Value</th></tr><tr><td>0</td><td>Not an IPO symbol</td></tr><tr><td>1</td><td>IPO symbol</td></tr></table>	Code	Value	0	Not an IPO symbol	1	IPO symbol		
Code	Value									
0	Not an IPO symbol									
1	IPO symbol									
Limit Up-Limit Down (LULD) Indicator	1	<div>Char.</div> <div>Indicates the affect the Quote has on the Limit Up-Limit Down Price Band range.</div> <div>An Offer Price that is below the Lower Limit Price Band, or a Bid Price that is above the Upper Limit Price Band is identified as follows:</div> <table><tr><th>Code</th><th>Value</th></tr><tr><td>Space</td><td>Limit Up-Limit Down Not Applicable</td></tr><tr><td>A</td><td>Bid Price above Upper Limit Price Band – Bid is Non-Executable</td></tr><tr><td>B</td><td>Offer Price below Lower Limit Price Band Offer is Non-Executable</td></tr></table> <div><b>Note 1:</b> If a Bid or an Offer is marked as Non-Executable, it will not qualify for inclusion in the BBO calculations.</div> <div><b>Note 2:</b> CQS will modify and republish a quote if existing Participant quotations require adjustments as a result of Limit Up-Limit Down Price Band changes, e.g., an update to a Bid/Offer Price to Executable from Non-Executable (or vice-versa). Price Band messages will contain the latest National and FINRA BBO LULD Indicators as well as the National and FINRA Best Bids and Best Offers.</div> <div><b>Note 3:</b> CQS will be identified as the source of a republished Quote in the SIP Generated Message Identifier field, and the Message Header Participant ID field will identify the Participant that initiated the original Quote message.</div> <div><b>Note 4:</b> Limit Up-Limit Down’ is not applicable to Local Issues or Bonds.</div>	Code	Value	Space	Limit Up-Limit Down Not Applicable	A	Bid Price above Upper Limit Price Band – Bid is Non-Executable	B	Offer Price below Lower Limit Price Band Offer is Non-Executable
Code	Value									
Space	Limit Up-Limit Down Not Applicable									
A	Bid Price above Upper Limit Price Band – Bid is Non-Executable									
B	Offer Price below Lower Limit Price Band Offer is Non-Executable									

CONSOLIDATED QUOTATION SYSTEM (CQS) PILLAR  
MULTICAST OUTPUT BINARY SPECIFICATION

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## FIELD DESCRIPTIONS

Field Name	Length	Description								
LULD Tier	1	<div>Char. Identifies the Limit Up Limit Down tier of the security symbol</div> <table><tr><th>Code</th><th>Value</th></tr><tr><td>0</td><td>LULD not applicable</td></tr><tr><td>1</td><td>LULD Tier 1 Security</td></tr><tr><td>2</td><td>LULD Tier 2 Security</td></tr></table>	Code	Value	0	LULD not applicable	1	LULD Tier 1 Security	2	LULD Tier 2 Security
Code	Value									
0	LULD not applicable									
1	LULD Tier 1 Security									
2	LULD Tier 2 Security									
LULD Leverage Ratio	4	<div>Integer. Fields has implied 6 decimal places and a maximum value of 4294.967295</div> <div>Represents the Leverage ratio associated with the LULD Tier of the security symbol. Currently CTA symbols have LULD Leverage Ratio values of 1, 2, 3 or 4.</div>								

CONSOLIDATED QUOTATION SYSTEM (CQS) PILLAR  
MULTICAST OUTPUT BINARY SPECIFICATION

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## FIELD DESCRIPTIONS

Field Name	Length	Description										
Market Condition	1	<p>Char.</p> <p>Identifies the market condition of a quote for a security. <b>Crossed Market</b> and <b>Locked Market</b> are only applicable to Government Bonds. In cases of a <b>Normal Auction Market</b>, the Round Lot Bid Price must be less than the Round Lot Offer Price. In cases of a <b>Crossed Market</b>, the Round Lot Bid Price must be greater than the Round Lot Offer Price. In cases of a <b>Locked Market</b>, the Round Lot Bid Price must be equal to the Round Lot Offer Price.</p> <table><tr><th>Code</th><th>Value</th></tr><tr><td>Space</td><td>Normal Auction Market</td></tr><tr><td>A</td><td>Crossed Market</td></tr><tr><td>B</td><td>Locked Market</td></tr></table>	Code	Value	Space	Normal Auction Market	A	Crossed Market	B	Locked Market		
Code	Value											
Space	Normal Auction Market											
A	Crossed Market											
B	Locked Market											
Market-Wide Circuit Breaker (MWCB) Level Indicator	1	<p>Char.</p> <p>Identifies the threshold level that was breached.</p> <table><tr><th>Code</th><th>Value</th></tr><tr><td>Space</td><td>MWCB Not Applicable</td></tr><tr><td>1</td><td>Level 1 Breached</td></tr><tr><td>2</td><td>Level 2 Breached</td></tr><tr><td>3</td><td>Level 3 Breached</td></tr></table>	Code	Value	Space	MWCB Not Applicable	1	Level 1 Breached	2	Level 2 Breached	3	Level 3 Breached
Code	Value											
Space	MWCB Not Applicable											
1	Level 1 Breached											
2	Level 2 Breached											
3	Level 3 Breached											



CONSOLIDATED QUOTATION SYSTEM (CQS) PILLAR  
MULTICAST OUTPUT BINARY SPECIFICATION

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## FIELD DESCRIPTIONS

Field Name	Length	Description
MWCB Level 1	8	<p>Signed Long. MWCB Level 1 value represents an <u>index value (i.e., not a price)</u> and has <u>implied 6 decimal places</u> and a maximum value of -9,223,372,036,854.775808 to +9,223,372,036,854.775807.</p> <p>Identifies the daily established drop level value (trigger value) associated with each Decline Level:</p> <p>Level 1 = 7% of Previous Close S&amp;P 500 Value</p>
MWCB Level 2	8	<p>Signed Long. MWCB Level 2 value represents an <u>index value (i.e., not a price)</u> and has <u>implied 6 decimal places</u> and a maximum value of -9,223,372,036,854.775808 to +9,223,372,036,854.775807.</p> <p>Identifies the daily established drop level value (trigger value) associated with each Decline Level:</p> <ul style="list-style-type: none"> <li>▪ Level 2 = 13% of Previous Close S&amp;P 500 Value</li> </ul>
MWCB Level 3	8	<p>Signed Long. MWCB Level 3 value represents an <u>index value (i.e., not a price)</u> and has <u>implied 6 decimal places</u> and a maximum value of -9,223,372,036,854.775808 to +9,223,372,036,854.775807.</p> <p>Identifies the daily established drop level value (trigger value) associated with each Decline Level:</p> <ul style="list-style-type: none"> <li>▪ Level 3 = 20% of Previous Close S&amp;P 500 Value</li> </ul>

CONSOLIDATED QUOTATION SYSTEM (CQS) PILLAR  
MULTICAST OUTPUT BINARY SPECIFICATION

## FIELD DESCRIPTIONS

Field Name	Length	Description																		
National BBO Indicator (NBBO)	1	<p>Char.</p> <p>Indicates the affect the new Round Lot quote has on the National BBO. If it is determined that a new National BBO appendage is required, the appropriate BBO information is appended following the Short Quote or Long Quote message. A National appendage is not present, if it is determined that the current quote is the new National BBO or does <b><u>not</u></b> affect the BBO.</p> <table><tr><th>Code</th><th>Value</th></tr><tr><td>Space*</td><td>Indicates that the new quote did not meet the BBO requirements. This quote is not included in the BBO.</td></tr><tr><td>A</td><td><b>No Best Bid change, No Best Offer change</b> New quote does not affect the Best Bid or Best Offer. No appendage is required.</td></tr><tr><td>B*</td><td><b>No Best Bid change, Quote contains Best Offer</b> New quote does not affect the Best Bid, but is the Best Offer. No appendage is required.</td></tr><tr><td>C*</td><td><b>No Best Bid Change, Best Offer Short Appendage</b> New quote does not affect the Best Bid, a new Best Offer is generated and the new Best Offer information is contained in the Best Offer Short Appendage.</td></tr><tr><td>D*</td><td><b>No Best Bid Change, Best Offer Long Appendage</b> New quote does not affect the Best Bid, a new Best Offer is generated and the new Best Offer information is contained in the Best Offer Long Appendage.</td></tr><tr><td>E*</td><td><b>No Best Bid Change, No Best Offer</b> New quote does not affect the Best Bid, and there is no Best Offer. No appendage is required.</td></tr><tr><td>F*</td><td><b>Quote contains Best Bid, No Best Offer Change</b> New quote is itself the Best Bid, but does not affect the Best Offer. No appendage is required.</td></tr><tr><td>G</td><td><b>Quote contains Best Bid, Quote contains Best Offer</b> New quote is itself the Best Bid and Best Offer. No appendage is required.</td></tr></table> <p><b>*Indicator Codes to be used in the future</b></p>	Code	Value	Space*	Indicates that the new quote did not meet the BBO requirements. This quote is not included in the BBO.	A	<b>No Best Bid change, No Best Offer change</b> New quote does not affect the Best Bid or Best Offer. No appendage is required.	B*	<b>No Best Bid change, Quote contains Best Offer</b> New quote does not affect the Best Bid, but is the Best Offer. No appendage is required.	C*	<b>No Best Bid Change, Best Offer Short Appendage</b> New quote does not affect the Best Bid, a new Best Offer is generated and the new Best Offer information is contained in the Best Offer Short Appendage.	D*	<b>No Best Bid Change, Best Offer Long Appendage</b> New quote does not affect the Best Bid, a new Best Offer is generated and the new Best Offer information is contained in the Best Offer Long Appendage.	E*	<b>No Best Bid Change, No Best Offer</b> New quote does not affect the Best Bid, and there is no Best Offer. No appendage is required.	F*	<b>Quote contains Best Bid, No Best Offer Change</b> New quote is itself the Best Bid, but does not affect the Best Offer. No appendage is required.	G	<b>Quote contains Best Bid, Quote contains Best Offer</b> New quote is itself the Best Bid and Best Offer. No appendage is required.
Code	Value																			
Space*	Indicates that the new quote did not meet the BBO requirements. This quote is not included in the BBO.																			
A	<b>No Best Bid change, No Best Offer change</b> New quote does not affect the Best Bid or Best Offer. No appendage is required.																			
B*	<b>No Best Bid change, Quote contains Best Offer</b> New quote does not affect the Best Bid, but is the Best Offer. No appendage is required.																			
C*	<b>No Best Bid Change, Best Offer Short Appendage</b> New quote does not affect the Best Bid, a new Best Offer is generated and the new Best Offer information is contained in the Best Offer Short Appendage.																			
D*	<b>No Best Bid Change, Best Offer Long Appendage</b> New quote does not affect the Best Bid, a new Best Offer is generated and the new Best Offer information is contained in the Best Offer Long Appendage.																			
E*	<b>No Best Bid Change, No Best Offer</b> New quote does not affect the Best Bid, and there is no Best Offer. No appendage is required.																			
F*	<b>Quote contains Best Bid, No Best Offer Change</b> New quote is itself the Best Bid, but does not affect the Best Offer. No appendage is required.																			
G	<b>Quote contains Best Bid, Quote contains Best Offer</b> New quote is itself the Best Bid and Best Offer. No appendage is required.																			

CONSOLIDATED QUOTATION SYSTEM (CQS) PILLAR  
MULTICAST OUTPUT BINARY SPECIFICATION

**FIELD DESCRIPTIONS**

Field Name	Length	Description																		
National BBO Indicator (NBBO) <i>continued</i>	1	<div>Char.</div> <table><tr><th>Code</th><th>Value</th></tr><tr><td>H*</td><td><b>Quote contains Best Bid, Best Offer Short Appendage</b> New quote is itself the Best Bid, a new Best Offer is generated and the new Best Offer information is contained in the Best Offer Short Appendage.</td></tr><tr><td>I*</td><td><b>Quote contains Best Bid, Best Offer Long Appendage</b> New quote is itself the Best Bid, a new Best Offer is generated and the new Best Offer information is contained in the Best Offer Long Appendage.</td></tr><tr><td>J*</td><td><b>Quote contains Best Bid, No Best Offer</b> New quote is itself the Best Bid, and there is no Best Offer. No appendage is required.</td></tr><tr><td>K*</td><td><b>No Best Bid, No Best Offer Change</b> There is no Best Bid, and the quote does not affect the Best Offer. No appendage is required.</td></tr><tr><td>L*</td><td><b>No Best Bid, Quote contains Best Offer</b> There is no Best Bid, and the quote is itself the Best Offer. No appendage is required.</td></tr><tr><td>M*</td><td><b>No Best Bid, Best Offer Short Appendage</b> There is no Best Bid, a new Best Offer is generated and the new Best Offer is contained in the Best Offer Short Appendage.</td></tr><tr><td>N*</td><td><b>No Best Bid, Best Offer Long Appendage</b> There is no Best Bid, a new Best Offer is generated and the new Best Offer is contained in the Best Offer Long Appendage.</td></tr><tr><td>O</td><td><b>No Best Bid, No Best Offer</b> There is no Best Bid, and no Best Offer. No appendage is required.</td></tr></table> <div>*Indicator Codes to be used in the future</div>	Code	Value	H*	<b>Quote contains Best Bid, Best Offer Short Appendage</b> New quote is itself the Best Bid, a new Best Offer is generated and the new Best Offer information is contained in the Best Offer Short Appendage.	I*	<b>Quote contains Best Bid, Best Offer Long Appendage</b> New quote is itself the Best Bid, a new Best Offer is generated and the new Best Offer information is contained in the Best Offer Long Appendage.	J*	<b>Quote contains Best Bid, No Best Offer</b> New quote is itself the Best Bid, and there is no Best Offer. No appendage is required.	K*	<b>No Best Bid, No Best Offer Change</b> There is no Best Bid, and the quote does not affect the Best Offer. No appendage is required.	L*	<b>No Best Bid, Quote contains Best Offer</b> There is no Best Bid, and the quote is itself the Best Offer. No appendage is required.	M*	<b>No Best Bid, Best Offer Short Appendage</b> There is no Best Bid, a new Best Offer is generated and the new Best Offer is contained in the Best Offer Short Appendage.	N*	<b>No Best Bid, Best Offer Long Appendage</b> There is no Best Bid, a new Best Offer is generated and the new Best Offer is contained in the Best Offer Long Appendage.	O	<b>No Best Bid, No Best Offer</b> There is no Best Bid, and no Best Offer. No appendage is required.
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CONSOLIDATED QUOTATION SYSTEM (CQS) PILLAR  
MULTICAST OUTPUT BINARY SPECIFICATION

**FIELD DESCRIPTIONS**

Field Name	Length	Description														
National BBO Indicator (NBBO) <i>continued</i>	1	<div>Char.</div> <table><tr><th>Code</th><th>Value</th></tr><tr><td>P*</td><td><b>Best Bid Short Appendage, No Best Offer Change</b> A new Best Bid is generated and the new Best Bid information is contained in the Best Bid Short Appendage, but the quote does not affect the Best Offer.</td></tr><tr><td>Q*</td><td><b>Best Bid Long Appendage, No Best Offer Change</b> A new Best Bid is generated and the new Best Bid information is contained in the Best Bid Long Appendage, but the quote does not affect the Best Offer.</td></tr><tr><td>R*</td><td><b>Best Bid Short Appendage, Quote contains Best Offer</b> A new Best Bid is generated and the new Best Bid information is contained in the Best Bid Short Appendage, and the quote is the Best Offer.</td></tr><tr><td>S*</td><td><b>Best Bid Long Appendage, Quote contains Best Offer</b> A new Best Bid is generated and the new Best Bid information is contained in the Best Bid Long Appendage, and the quote is the Best Offer.</td></tr><tr><td>T*</td><td><b>Best Bid Short Appendage, Best Offer Short Appendage</b> A new Best Bid is generated and the new Best Bid information is contained in the Best Bid Short Appendage, a new Best Offer is generated and the new Best Offer information is contained in the Best Offer Short Appendage.</td></tr><tr><td>U</td><td><b>Best Bid Long Appendage, Best Offer Long Appendage</b> A new Best Bid is generated and the new Best Bid information is contained in the Best Bid Long Appendage, a new Best Offer is generated and the new Best Offer information is contained in the Best Offer Long Appendage.</td></tr></table> <div>*Indicator Codes to be used in the future</div>	Code	Value	P*	<b>Best Bid Short Appendage, No Best Offer Change</b> A new Best Bid is generated and the new Best Bid information is contained in the Best Bid Short Appendage, but the quote does not affect the Best Offer.	Q*	<b>Best Bid Long Appendage, No Best Offer Change</b> A new Best Bid is generated and the new Best Bid information is contained in the Best Bid Long Appendage, but the quote does not affect the Best Offer.	R*	<b>Best Bid Short Appendage, Quote contains Best Offer</b> A new Best Bid is generated and the new Best Bid information is contained in the Best Bid Short Appendage, and the quote is the Best Offer.	S*	<b>Best Bid Long Appendage, Quote contains Best Offer</b> A new Best Bid is generated and the new Best Bid information is contained in the Best Bid Long Appendage, and the quote is the Best Offer.	T*	<b>Best Bid Short Appendage, Best Offer Short Appendage</b> A new Best Bid is generated and the new Best Bid information is contained in the Best Bid Short Appendage, a new Best Offer is generated and the new Best Offer information is contained in the Best Offer Short Appendage.	U	<b>Best Bid Long Appendage, Best Offer Long Appendage</b> A new Best Bid is generated and the new Best Bid information is contained in the Best Bid Long Appendage, a new Best Offer is generated and the new Best Offer information is contained in the Best Offer Long Appendage.
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CONSOLIDATED QUOTATION SYSTEM (CQS) PILLAR  
MULTICAST OUTPUT BINARY SPECIFICATION

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## FIELD DESCRIPTIONS

Field Name	Length	Description						
National BBO Indicator (NBBO) <i>continued</i>	1	<div>Char.</div> <table><tr><th>Code</th><th>Value</th></tr><tr><td>V*</td><td><b>Best Bid Short Appendage, No Best Offer</b> A new Best Bid is generated and the new Best Bid information is contained in the Best Bid Short Appendage, and there is no Best Offer.</td></tr><tr><td>W*</td><td><b>Best Bid Long Appendage, No Best Offer</b> A new Best Bid is generated and the new Best Bid information is contained in the Best Bid Long Appendage, and there is no Best Offer.</td></tr></table> <div><b>*Indicator Codes to be used in the future</b></div>	Code	Value	V*	<b>Best Bid Short Appendage, No Best Offer</b> A new Best Bid is generated and the new Best Bid information is contained in the Best Bid Short Appendage, and there is no Best Offer.	W*	<b>Best Bid Long Appendage, No Best Offer</b> A new Best Bid is generated and the new Best Bid information is contained in the Best Bid Long Appendage, and there is no Best Offer.
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CONSOLIDATED QUOTATION SYSTEM (CQS) PILLAR  
MULTICAST OUTPUT BINARY SPECIFICATION

**FIELD DESCRIPTIONS**

Field Name	Length	Description																						
National BBO LULD Indicator	1	<div>Char.</div> <div>Indicates the affect that the Limit Up-Limit Down Price Band changes have on the National Best Bid and National Best Offer.</div> <table><tr><th>Code</th><th>Value</th></tr><tr><td>Space</td><td>Limit Up-Limit Down Not Applicable</td></tr><tr><td>A</td><td>National Best Bid <b><u>and</u> / <u>or</u></b> National Best Offer are Executable</td></tr><tr><td>B</td><td>National Best Bid below Lower Limit Price Band – National Best Bid is Non-Executable</td></tr><tr><td>C</td><td>National Best Offer above Upper Limit Price Band – National Best Offer is Non-Executable</td></tr><tr><td>D</td><td>National Best Bid below Lower Limit Price Band <b><u>and</u></b> National Best Offer above Upper Limit Price Band – National Best Bid <b><u>and</u></b> National Best Offer are Non-Executable</td></tr><tr><td>E</td><td>National Best Bid equals Upper Limit Price Band – National Best Bid is in Limit State</td></tr><tr><td>F</td><td>National Best Offer equals Lower Limit Price Band – National Best Offer is in Limit State</td></tr><tr><td>G</td><td>National Best Bid equals Upper Limit Price Band – National Best Bid is in Limit State <b><u>and</u></b> National Best Offer above Upper Limit Price Band – National Best Offer is Non-Executable</td></tr><tr><td>H</td><td>National Best Bid below Lower Limit Price Band – National Best Bid is Non-Executable <b><u>and</u></b> National Best Offer equals Lower Limit Price Band – National Best Offer is in Limit State</td></tr><tr><td>I</td><td>National Best Bid equals Upper Limit Price Band <b><u>and</u></b> National Best Offer equals Lower Limit Price Band (Crossed - <b><u>NOT in Limit State</u></b>)</td></tr></table>	Code	Value	Space	Limit Up-Limit Down Not Applicable	A	National Best Bid <b><u>and</u> / <u>or</u></b> National Best Offer are Executable	B	National Best Bid below Lower Limit Price Band – National Best Bid is Non-Executable	C	National Best Offer above Upper Limit Price Band – National Best Offer is Non-Executable	D	National Best Bid below Lower Limit Price Band <b><u>and</u></b> National Best Offer above Upper Limit Price Band – National Best Bid <b><u>and</u></b> National Best Offer are Non-Executable	E	National Best Bid equals Upper Limit Price Band – National Best Bid is in Limit State	F	National Best Offer equals Lower Limit Price Band – National Best Offer is in Limit State	G	National Best Bid equals Upper Limit Price Band – National Best Bid is in Limit State <b><u>and</u></b> National Best Offer above Upper Limit Price Band – National Best Offer is Non-Executable	H	National Best Bid below Lower Limit Price Band – National Best Bid is Non-Executable <b><u>and</u></b> National Best Offer equals Lower Limit Price Band – National Best Offer is in Limit State	I	National Best Bid equals Upper Limit Price Band <b><u>and</u></b> National Best Offer equals Lower Limit Price Band (Crossed - <b><u>NOT in Limit State</u></b> )
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CONSOLIDATED QUOTATION SYSTEM (CQS) PILLAR  
MULTICAST OUTPUT BINARY SPECIFICATION

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## FIELD DESCRIPTIONS

Field Name	Length	Description
National BBO LULD Indicator, <i>continued</i>	1	<p><b>Note 1:</b> CQS will modify and republish an NBBO if existing NBBO's require adjustments as a result of Limit Up-Limit Down Price Band changes (e.g., an update to an NBBO to Executable from Non-Executable (or vice-versa). Price Band messages will contain the latest National and FINRA BBO LULD Indicators as well as the National Best Bids and Best Offers.</p> <p><b>Note 2:</b> CQS will be identified as the source of a republished NBBO in the SIP Generated Message Identifier field, and the Message Header Participant ID field will identify the Participant that initiated the original Quote message.</p> <p><b>Note 3:</b> CQS will populate the 'National BBO LULD Indicator' field with a 'Space' as follows:</p> <ul style="list-style-type: none"> <li>(a) Prior to regular trading hours and after regular trading hours.</li> <li>(b) When the current quote does not affect the NBBO (e.g., BBO non-qualifying quote conditions such as Non-Firm quotes).</li> <li>(c) When Price Bands are not in effect (e.g., Price Bands with zero values prevailing).</li> <li>(d) Until the Price Band for a symbol is published.</li> <li>(e) If no eligible quotes have taken place.</li> </ul>
Number of Extensions	1	<p>Byte. Optional set to zero.</p> <p>Identifies the number of manual or automatic extensions the applicable auction has received. The first Auction Collar extension, at the time of the LULD Trading Pause, will be set to zero (0) indicating the first Auction Status message and will increment by one (1) for each new Auction Status message sent during the LULD Trading Pause event.</p>

CONSOLIDATED QUOTATION SYSTEM (CQS) PILLAR  
MULTICAST OUTPUT BINARY SPECIFICATION

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**FIELD DESCRIPTIONS**

Field Name	Length	Description
Odd Lot Best Bid Participant ID	1	Char.  Identifies the Participant that submitted the Best Odd Lot Bid on a consolidated basis.  Refer to Participant ID field description for Participant codes.
Odd Lot Best Bid Quote Price	8	8 Long. Long have implied 6 decimal places and a maximum price of \$18,446,744,073,709.551615.  Represents the Best Odd Lot Bid Price on a consolidated basis.
Odd Lot Best Bid Quote Size	1	Byte. Optional set to zero.  Represents the Best Odd Lot Bid Size associated with the Best Bid Price on a consolidated basis.
Odd Lot FINRA Best Bid Market Maker ID	4	Char [4]. Left justified, space-filled.  Contains the identifier of the FINRA ADF Market Maker that had the FINRA Best Odd Lot Bid.
Odd Lot Best Offer Participant ID	1	Char.  Identifies the Participant that submitted the Best Odd Lot Offer on a consolidated basis.  Refer to Participant ID field description for Participant codes.
Odd Lot Best Offer Quote Price	8	8 Long. Long have implied 6 decimal places and a maximum price of \$18,446,744,073,709.551615.  Represents the Best Odd Lot Offer Price on a consolidated basis.
Odd Lot Best Offer Quote Size	1	Byte. Optional set to zero.  Represents the Best Odd Lot Offer Size associated with the Best Offer Price on a consolidated basis.
Odd Lot FINRA Best Offer Market Maker ID	4	Char [4]. Left justified, space-filled.  Contains the identifier of the FINRA ADF Market Maker that had the FINRA Best Odd Lot Offer.



CONSOLIDATED QUOTATION SYSTEM (CQS) PILLAR  
MULTICAST OUTPUT BINARY SPECIFICATION

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## FIELD DESCRIPTIONS

Field Name	Length	Description
Odd lot Quote Participant ID	1	Char.  Identifies the Participant that generated the odd lot quote.  Refer to Participant ID field description for Participant codes.
Odd Lot Quote Price	2 or 8	2 Short. Short have implied 2 decimal places and a maximum price of \$655.35. 8 Long. Long have implied 6 decimal places and a maximum price of \$18,446,744,073,709.551615.  Represents the price associated with an odd lot bid or offer.
Odd Lot Quote Size	1	Byte. Optional set to zero.  Represents the size associated with an odd lot bid or offer. It is represented in number of shares and is always less than the Round lot size of a symbol. E.g., for a symbol with Round Lot Size of 100, Odd Lot Quote Size can be up to 99 shares.  When Odd Lot Quote Size is set to zero, it indicates that a previously reported odd lot bid or offer at the respective Odd Lot Quote Price is being removed.
Odd Lot FINRA Market Maker ID	4	Char [4]. Left justified, space-filled.  Contains the identifier of the FINRA ADF Market Maker associated with the respective FINRA Odd Lot Bid or Offer.

CONSOLIDATED QUOTATION SYSTEM (CQS) PILLAR  
MULTICAST OUTPUT BINARY SPECIFICATION

**FIELD DESCRIPTIONS**

Field Name	Length	Description																																											
Primary Listing Market Participant ID	1	Char. Identifies the Primary Listing Market for a security.																																											
		Code	Value	Space	Primary Listing Market Participant ID Not Applicable	A	NYSE American	B	NASDAQ OMX BX	C	NYSE National	D	FINRA ADF	G	24X	H	MIAX Pearl	I	ISE	J	Cboe EDGA	K	Cboe EDGX	L	LTSE	M	NYSE Texas	N	NYSE	P	NYSE Arca	T	NASDAQ	U	Members Exchange	V	IEX	W	CBSX	X	NASDAQ OMX PSX	Y	Cboe BYX	Z	Cboe BZX
		Code	Value																																										
		Space	Primary Listing Market Participant ID Not Applicable																																										
		A	NYSE American																																										
		B	NASDAQ OMX BX																																										
		C	NYSE National																																										
		D	FINRA ADF																																										
		G	24X																																										
		H	MIAX Pearl																																										
		I	ISE																																										
		J	Cboe EDGA																																										
		K	Cboe EDGX																																										
		L	LTSE																																										
		M	NYSE Texas																																										
		N	NYSE																																										
		P	NYSE Arca																																										
		T	NASDAQ																																										
		U	Members Exchange																																										
		V	IEX																																										
		W	CBSX																																										
		X	NASDAQ OMX PSX																																										
		Y	Cboe BYX																																										
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CONSOLIDATED QUOTATION SYSTEM (CQS) PILLAR  
MULTICAST OUTPUT BINARY SPECIFICATION

**FIELD DESCRIPTIONS**

Field Name	Length	Description																														
Quote Condition	1	<p>Char.</p> <p>Denotes a particular condition applicable to the Round Lot quote. The Quote Condition is used to determine whether a quote qualifies for the Best Bid and Best Offer calculation. When the Quote Condition field is not provided, the Security Status Indicator field will be provided.</p> <table><tr><th>Code</th><th>Value</th></tr><tr><td>Space</td><td>Quote Condition Not Applicable When Quote Condition is space filled, the Security Status Indicator field must contain a value other than space.</td></tr><tr><td>A</td><td>Slow Quote on Offer Side (Eligible for BBO)</td></tr><tr><td>B</td><td>Slow Quote on Bid Side (Eligible for BBO)</td></tr><tr><td>C</td><td>Closing (Not eligible for BBO)</td></tr><tr><td>E</td><td>Slow Quote Due to LRP or Gap Quote on the Bid Side (ONLY OFFER SIDE is eligible for BBO)</td></tr><tr><td>F</td><td>Slow Quote Due to LRP or Gap Quote on the Offer Side (ONLY BID SIDE is eligible for BBO)</td></tr><tr><td>H</td><td>Slow Quote on the Bid and Offer Sides (Eligible for BBO)</td></tr><tr><td>L</td><td>Closed Market Maker (FINRA) (Not eligible for BBO)</td></tr><tr><td>N</td><td>Non-Firm Quote (Not eligible for BBO)</td></tr><tr><td>O</td><td>Opening Quote (Eligible for BBO)</td></tr><tr><td>R</td><td>Regular (FINRA Open) (Eligible for BBO)</td></tr><tr><td>U</td><td>Slow Quote Due to Liquidity Replenishment Point (LRP), or Gap Quote on Both the Bid and Offer Sides (Not eligible for BBO)</td></tr><tr><td>W</td><td>Slow Quote Due to Set Slow List on Both the Bid and Offer Sides (Eligible for BBO)</td></tr><tr><td>4</td><td>On Demand Intra-Day Auction (Not eligible for BBO)</td></tr></table>	Code	Value	Space	Quote Condition Not Applicable When Quote Condition is space filled, the Security Status Indicator field must contain a value other than space.	A	Slow Quote on Offer Side (Eligible for BBO)	B	Slow Quote on Bid Side (Eligible for BBO)	C	Closing (Not eligible for BBO)	E	Slow Quote Due to LRP or Gap Quote on the Bid Side (ONLY OFFER SIDE is eligible for BBO)	F	Slow Quote Due to LRP or Gap Quote on the Offer Side (ONLY BID SIDE is eligible for BBO)	H	Slow Quote on the Bid and Offer Sides (Eligible for BBO)	L	Closed Market Maker (FINRA) (Not eligible for BBO)	N	Non-Firm Quote (Not eligible for BBO)	O	Opening Quote (Eligible for BBO)	R	Regular (FINRA Open) (Eligible for BBO)	U	Slow Quote Due to Liquidity Replenishment Point (LRP), or Gap Quote on Both the Bid and Offer Sides (Not eligible for BBO)	W	Slow Quote Due to Set Slow List on Both the Bid and Offer Sides (Eligible for BBO)	4	On Demand Intra-Day Auction (Not eligible for BBO)
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CONSOLIDATED QUOTATION SYSTEM (CQS) PILLAR  
MULTICAST OUTPUT BINARY SPECIFICATION

## FIELD DESCRIPTIONS

Field Name	Length	Description										
Quote Condition, <i>continued</i>		<b>Note:</b> If a BBO qualifying Bid or Offer is marked as Non-Executable in the ‘Limit Up-Limit Down (LULD) Indicator’ field, the Non-Executable Bid or Offer side will <u>not qualify</u> for inclusion in the BBO calculations. <b>Note:</b> Quote conditions are not applicable to the odd lot quotes										
Reserved	1	Space-filled. Field is reserved for future use.										
Retail Interest Indicator	1	<p>Char.</p> <p>When Retail Price Improvement (RPI) interest is priced better than the Protected Best Bid or Offer (PBBO) by a minimum of \$0.001, an indication of interest on the Bid, Offer, or both the Bid and Offer will identify that interest will be eligible to interact with incoming Retail Order interest.</p> <table><tr><th>Code</th><th>Value</th></tr><tr><td>Space</td><td>Retail Interest Indicator Not Applicable</td></tr><tr><td>A</td><td>Retail Interest on Bid Quote</td></tr><tr><td>B</td><td>Retail Interest on Offer Quote</td></tr><tr><td>C</td><td>Retail Interest on both the Bid and Offer Quotes</td></tr></table>	Code	Value	Space	Retail Interest Indicator Not Applicable	A	Retail Interest on Bid Quote	B	Retail Interest on Offer Quote	C	Retail Interest on both the Bid and Offer Quotes
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B	Retail Interest on Offer Quote											
C	Retail Interest on both the Bid and Offer Quotes											
Round Lot Bid Price	2 or 8	<p>2 Short. Short have implied 2 decimal places and a maximum price of \$655.35.</p> <p>8 Long. Long have implied 6 decimal places and a maximum price of \$18,446,744,073,709.551615.</p> <p>Short or Long Optional set to zero.</p> <p>Represents the highest protected bid price for a Participant at a particular time for a security.</p> <p><b>When the Round Lot Bid Price and the Round Lot Bid Size fields are set to zeroes</b>, it represents a ‘No Bid’ quote, a ‘No Quote’ (i.e., neither a Bid nor an Offer, which zeroes out the quote) or Trading Halt condition. <b>If the Round Lot Bid Size is set to zero and there is a Round Lot Bid Price</b>, it represents either a Trading Range Indication or a Price Indication.</p>										

CONSOLIDATED QUOTATION SYSTEM (CQS) PILLAR  
MULTICAST OUTPUT BINARY SPECIFICATION

## FIELD DESCRIPTIONS

Field Name	Length	Description
Round Lot Bid Price / Lower Limit Price Band	8	<p>Long. Implied 6 decimal places and a maximum price of \$18,446,744,073,709.551615.</p> <p><b>Round Lot Bid Price:</b> represents the highest protected bid price for a Participant at a particular time for a security.</p> <p><b>When the Round Lot Bid Price and the Round Lot Bid Size fields are set to zeroes,</b> it represents a ‘No Bid’ quote, a ‘No Quote’ (i.e., neither a Bid nor an Offer, which zeroes out the quote) or Trading Halt condition. If the <b>Round Lot Bid Size</b> is set to zero and there is a <b>Round Lot Bid Price</b>, it represents either a Trading Range Indication or a Price Indication.</p> <p><b>Lower Limit Price Band:</b> represents the lower price band value for a security.</p> <p>When the Security Status Indicator field code is ‘Limit Up-Limit Down Price Band’, the Lower Limit Price Band value will be contained in the Bid Price/Lower Limit Price Band fields.</p> <p>When the Lower Limit Price Band field is set to zero, it identifies that the previous Price Bands have been removed and are no longer effective for a security.</p>
Round Lot Bid Size	2 or 4	<p>2 Short. Short have a maximum size of 65,535</p> <p>4 Integer. Integer has a maximum size of 4,294,967,295 Short or Integer Optional set to zero.</p> <p>Identifies the number of shares for a symbol rounded down to the nearest multiple of its Round Lot Size. As an example, for a symbol with round-lot size of 40, Round Lot Bid Size can be in multiples of 40 i.e. 40, 80, 120 and so on.</p> <p><b>If the Round Lot Bid Size is set to zero and there is a Round Lot Bid Price,</b> it represents either a Trading Range Indication or a Price Indication.</p>

CONSOLIDATED QUOTATION SYSTEM (CQS) PILLAR  
MULTICAST OUTPUT BINARY SPECIFICATION

**FIELD DESCRIPTIONS**

Field Name	Length	Description
Round Lot Offer Price	2 or 8	<p>2 Short. Short have implied 2 decimal places and a maximum price of \$655.35.</p> <p>8 Long. Long have implied 6 decimal places and a maximum price of \$18,446,744,073,709.551615.</p> <p>Short or Long Optional set to zero.</p> <p>Represents the lowest protected offer price for a Participant at a particular time for a security.</p> <p><b>When the Round Lot Offer Price and the Round Lot Offer Size fields are all set to zeroes</b>, this represents a ‘No Offer’ quote, a ‘No Quote’ (i.e., neither a Bid nor an Offer, which zeroes out the quote) or Trading Halt condition. <b>If the Round Lot Offer Size is set to zero</b> and there is a Round Lot <b>Offer Price</b>, it represents either a Trading Range Indication or a Price Indication.</p>
Round Lot Offer Price / Upper Limit Price Band	8	<p>Long. Long have implied 6 decimal places and a maximum price of \$18,446,744,073,709.551615.</p> <p><b><u>Round Lot Offer Long Price:</u></b> represents the lowest price acceptable to a prospective seller at a particular time for a security.</p> <p><b>When the Round Lot Offer Price and the Round Lot Offer Size fields are all set to zeroes</b>, this represents a ‘No Offer’ quote, a ‘No Quote’ (i.e., neither a Bid nor an Offer, which zeroes out the quote) or Trading Halt condition. If the <b>Round Lot Offer Size</b> is set to zero and there is a <b>Round Lot Offer Price</b>, it represents either a Trading Range Indication or a Price Indication.</p> <p><b><u>Upper Limit Price Band:</u></b> represents the upper price band value for a security.</p> <p>When the Security Status Indicator field code is ‘Limit Up-Limit Down Price Bands, the Upper Limit Price Band value will be contained in the Offer Price/Upper Limit Price Band field.</p> <p>When the Upper Limit Price Band field is set to zero, it identifies that the previous Price Bands have been removed and are no longer effective.</p>

CONSOLIDATED QUOTATION SYSTEM (CQS) PILLAR  
MULTICAST OUTPUT BINARY SPECIFICATION

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**FIELD DESCRIPTIONS**

Field Name	Length	Description
Round Lot Offer Size	2 or 4	<p>2 Short. Short have a maximum size of 65,535</p> <p>4 Integer. Integer has a maximum size of 4,294,967,295 Short or Integer Optional set to zero.</p> <p>Identifies the number of shares for a symbol rounded down to the nearest multiple of its Round Lot Size. As an example, for a symbol with round-lot size of 40, Round Lot Offer Size can be in multiples of 40 i.e. 40, 80, 120 and so on.</p> <p><b>If the Round Lot Offer Size is set to zero</b> and there is a <b>Round Lot Offer Price</b>, it represents either a Trading Range Indication or a Price Indication.</p>
Round Lot Size	2	<p>Short. Round-lot size for a symbol can consist of 1, 10, 40 or 100 shares.</p>

CONSOLIDATED QUOTATION SYSTEM (CQS) PILLAR  
MULTICAST OUTPUT BINARY SPECIFICATION

**FIELD DESCRIPTIONS**

Field Name	Length	Description																																																																																															
Security Status Indicator	1	Char.  The Security Status Indicator field is used to report trading suspensions in a security, price indications, trading range indications, LULD Price Bands and Market Wide Circuit Breaker activity. When the Security Status Indicator is provided, the Quote Condition field must be space filled.																																																																																															
				Regulatory	Non Regulatory	Code	Value			Space	Security Status Indicator Not Applicable When Security Status Indicator is space filled, the Quote Condition field must contain a value other than space.			A	Additional Information Requested	X		C	Regulatory Concern	X		D	News Released (formerly News Dissemination)	X		E	Merger Effective	X		F	ETF Component Prices Not Available	X		G	Trading Range Indication			I	Order Imbalance		X	M	Limit-Up-Limit Down (LULD) Trading Pause	X		N	Corporate Action	X		O	New Security Offering	X		P	News Pending	X		V	Intraday Indicative Value Not Available	X		T	Resume*			X	Operational		X	Y	Sup-Penny Trading		X	Z	Reserved **			0	Limit Up-Limit Down (LULD) Price Band			1	Market-Wide Circuit Breaker Level 1 – Breached	X		2	Market-Wide Circuit Breaker Level 2 – Breached	X		3	Market-Wide Circuit Breaker Level 3 – Breached	X		9	Republished Limit Up-Limit Down (LULD) Price Band		
				Regulatory	Non Regulatory																																																																																												
		Code	Value																																																																																														
		Space	Security Status Indicator Not Applicable When Security Status Indicator is space filled, the Quote Condition field must contain a value other than space.																																																																																														
		A	Additional Information Requested	X																																																																																													
		C	Regulatory Concern	X																																																																																													
		D	News Released (formerly News Dissemination)	X																																																																																													
		E	Merger Effective	X																																																																																													
		F	ETF Component Prices Not Available	X																																																																																													
		G	Trading Range Indication																																																																																														
		I	Order Imbalance		X																																																																																												
		M	Limit-Up-Limit Down (LULD) Trading Pause	X																																																																																													
		N	Corporate Action	X																																																																																													
		O	New Security Offering	X																																																																																													
		P	News Pending	X																																																																																													
		V	Intraday Indicative Value Not Available	X																																																																																													
		T	Resume*																																																																																														
		X	Operational		X																																																																																												
		Y	Sup-Penny Trading		X																																																																																												
		Z	Reserved **																																																																																														
		0	Limit Up-Limit Down (LULD) Price Band																																																																																														
		1	Market-Wide Circuit Breaker Level 1 – Breached	X																																																																																													
		2	Market-Wide Circuit Breaker Level 2 – Breached	X																																																																																													
		3	Market-Wide Circuit Breaker Level 3 – Breached	X																																																																																													
		9	Republished Limit Up-Limit Down (LULD) Price Band																																																																																														



CONSOLIDATED QUOTATION SYSTEM (CQS) PILLAR  
MULTICAST OUTPUT BINARY SPECIFICATION

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		<p>* Used to indicate that trading for a Participant is no longer suspended in a security which had been Trading Halted.</p> <p>** Indicator Code currently not in use</p> <p>Note: If the Security Status Indicator is populated with either a regulatory or a non-regulatory status, it will result in the NBBO being recalculated excluding the Participant from the NBBO if that Participant was part or all of the NBBO.</p>
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CONSOLIDATED QUOTATION SYSTEM (CQS) PILLAR  
MULTICAST OUTPUT BINARY SPECIFICATION

## FIELD DESCRIPTIONS

Field Name	Length	Description																														
Security Symbol	5 or 11	<p>Char [5] or [11]. Left justified, space-filled.</p> <p>Contains the security symbol. Suffixes start with one of the following characters with no embedded spaces: (1) ASCII Period (.), (2) lower case p, (3) lower case r, or (4) lower case w.</p> <p><b>Note:</b> CQS will allow for a base or root symbol to consist of from one (1) up to six (6) characters with the remaining characters in the security symbol field available for possible suffixes.</p> <p><b>Identification of Test Data:</b> The purpose of a Test Message is to have a mechanism whereby end-to-end connectivity and functionality between the CQS Participant and Data Recipient can be tested prior to the opening or during normal operational hours.</p> <p>Messages with any of the dedicated test symbols will be included in Participant statistics (e.g., National BBO calculations), but will be excluded in quote counts, etc.</p> <p>Alphanumeric Test Symbols are reserved for future use.</p> <table><tr><th>Listing Exchange</th><th>Test Symbol</th></tr><tr><td rowspan="4">NYSE</td><td>CBO</td></tr><tr><td>CBX</td></tr><tr><td>NTEST</td></tr><tr><td>01N thru 12N</td></tr><tr><td rowspan="3">NYSE American</td><td>CTEST</td></tr><tr><td>ATEST</td></tr><tr><td>01A thru 12A</td></tr><tr><td rowspan="6">NYSE Arca</td><td>IGZ</td></tr><tr><td>ZVV</td></tr><tr><td>ZZK</td></tr><tr><td>ZZZ</td></tr><tr><td>PTEST</td></tr><tr><td>01P thru 12P</td></tr><tr><td>NYSE Texas</td><td>MTEST</td></tr><tr><td rowspan="4">Cboe BZX</td><td>ZBZX</td></tr><tr><td>ZTEST</td></tr><tr><td>ZTST</td></tr><tr><td>01Z thru 12Z</td></tr><tr><td rowspan="4">IEX</td><td>ZIEXT</td></tr><tr><td>ZEXIT</td></tr><tr><td>ZXIET</td></tr><tr><td>01Vthru 12V</td></tr></table>	Listing Exchange	Test Symbol	NYSE	CBO	CBX	NTEST	01N thru 12N	NYSE American	CTEST	ATEST	01A thru 12A	NYSE Arca	IGZ	ZVV	ZZK	ZZZ	PTEST	01P thru 12P	NYSE Texas	MTEST	Cboe BZX	ZBZX	ZTEST	ZTST	01Z thru 12Z	IEX	ZIEXT	ZEXIT	ZXIET	01Vthru 12V
Listing Exchange	Test Symbol																															
NYSE	CBO																															
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NYSE American	CTEST																															
	ATEST																															
	01A thru 12A																															
NYSE Arca	IGZ																															
	ZVV																															
	ZZK																															
	ZZZ																															
	PTEST																															
	01P thru 12P																															
NYSE Texas	MTEST																															
Cboe BZX	ZBZX																															
	ZTEST																															
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IEX	ZIEXT																															
	ZEXIT																															
	ZXIET																															
	01Vthru 12V																															

CONSOLIDATED QUOTATION SYSTEM (CQS) PILLAR  
MULTICAST OUTPUT BINARY SPECIFICATION

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## FIELD DESCRIPTIONS

Field Name	Length	Description												
Settlement Condition	1	<p>Char.</p> <p>Identifies the settlement condition for a security.</p> <table><tr><th>Code</th><th>Value</th></tr><tr><td>Space</td><td>Regular Way Settlement</td></tr><tr><td>A</td><td>Cash (only) Settlement</td></tr><tr><td>B</td><td>Next Day (only) Settlement</td></tr></table>	Code	Value	Space	Regular Way Settlement	A	Cash (only) Settlement	B	Next Day (only) Settlement				
Code	Value													
Space	Regular Way Settlement													
A	Cash (only) Settlement													
B	Next Day (only) Settlement													
Short Sale Restriction Indicator	1	<p>Char.</p> <p>Identifies whether or not a Short Sale Restriction is in effect. A Short Sale Restriction is to be in effect if a security's price decreases by 10% or more from the previous day's closing price. Once activated, the Short Sale Restriction will remain in effect for the remainder of the day as well as the following day, unless deactivated.</p> <table><tr><th>Code</th><th>Value</th></tr><tr><td>Space</td><td>Short Sale Restriction Not in Effect</td></tr><tr><td>A</td><td>Short Sale Restriction Activated</td></tr><tr><td>C</td><td>Short Sale Restriction Continued</td></tr><tr><td>D</td><td>Short Sale Restriction Deactivated</td></tr><tr><td>E</td><td>Short Sale Restriction in Effect</td></tr></table>	Code	Value	Space	Short Sale Restriction Not in Effect	A	Short Sale Restriction Activated	C	Short Sale Restriction Continued	D	Short Sale Restriction Deactivated	E	Short Sale Restriction in Effect
Code	Value													
Space	Short Sale Restriction Not in Effect													
A	Short Sale Restriction Activated													
C	Short Sale Restriction Continued													
D	Short Sale Restriction Deactivated													
E	Short Sale Restriction in Effect													

CONSOLIDATED QUOTATION SYSTEM (CQS) PILLAR  
MULTICAST OUTPUT BINARY SPECIFICATION

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**FIELD DESCRIPTIONS**

Field Name	Length	Description						
SIP Generated Message Identifier	1	<p>Char.</p> <p>Identifies CQS as the originator of a message, used in instances when:</p> <ul style="list-style-type: none"><li>▪ CQS is the originator of a <b>republished</b> Quote message (used when CQS republishes the LULD and/or LULD BBO Indicators as a result of a <b>Price Band change</b>). When CQS republishes a Quote message, the Participant ID field in the Message Header will identify the Participant that initiated the <b>original</b> message.</li><li>▪ CQS is <b>the originator of a Price Band</b> message. The Participant ID field in the Message Header <b>and</b> the ‘SIP Generated Message Identifier’ field will both be populated with code ‘S’ identifying CQS as the originator of the message.</li></ul> <table><tr><th>Code</th><th>Value</th></tr><tr><td>Space</td><td>SIP Generated Message Not Applicable</td></tr><tr><td>S</td><td>Consolidated Quotation System</td></tr></table>	Code	Value	Space	SIP Generated Message Not Applicable	S	Consolidated Quotation System
Code	Value							
Space	SIP Generated Message Not Applicable							
S	Consolidated Quotation System							

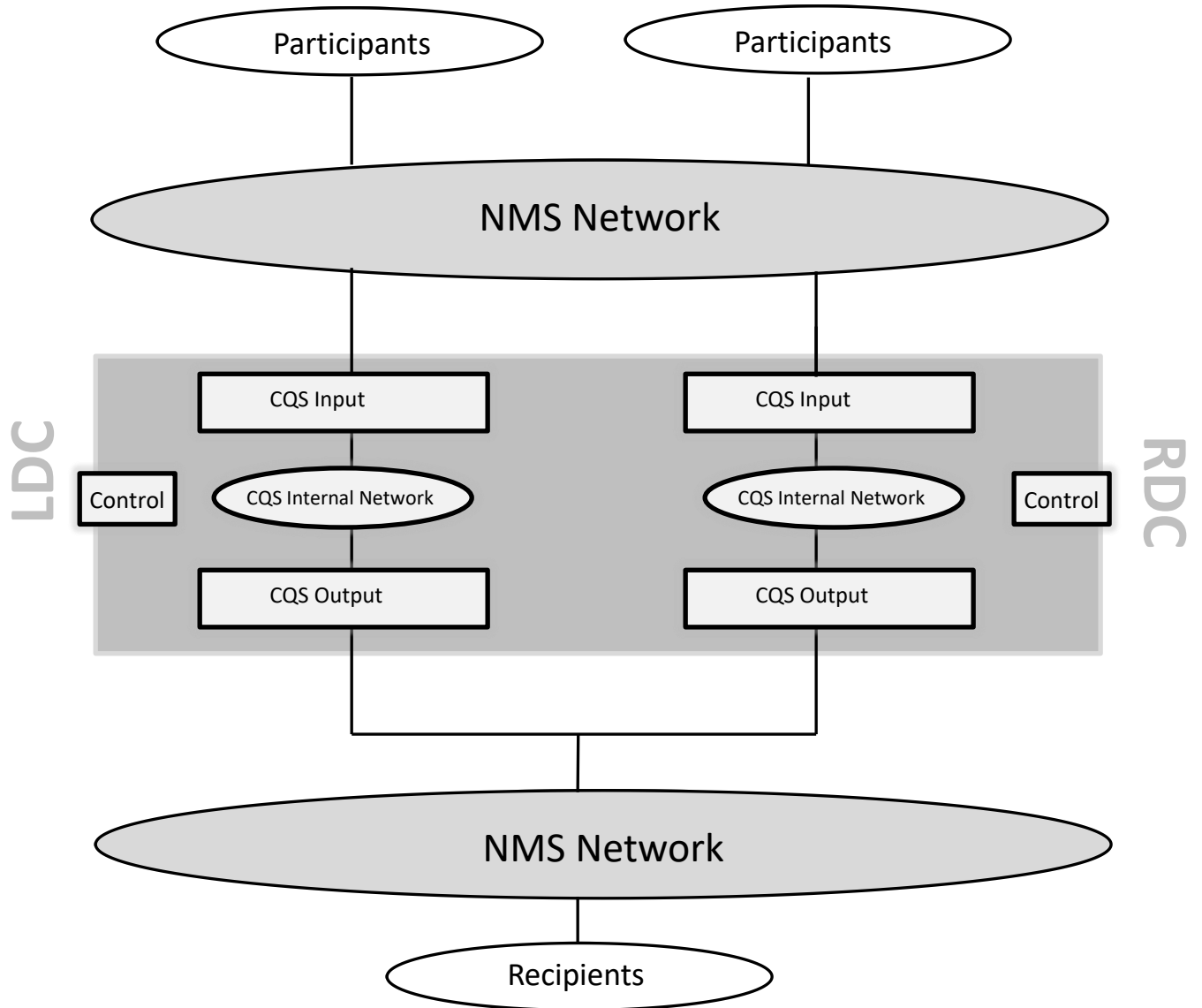
CONSOLIDATED QUOTATION SYSTEM (CQS) PILLAR  
MULTICAST OUTPUT BINARY SPECIFICATION

**FIELD DESCRIPTIONS**

Field Name	Length	Description						
Test	1	<p>Char.</p> <p>Identifies whether the security symbol is a test symbol</p> <table><tr><th>Code</th><th>Value</th></tr><tr><td>0</td><td>Not a test symbol</td></tr><tr><td>1</td><td>Test symbol</td></tr></table>	Code	Value	0	Not a test symbol	1	Test symbol
Code	Value							
0	Not a test symbol							
1	Test symbol							
Timestamp 2	8	<p>2 x Integer (pair of Integers). Optional set to zero.</p> <p>Timestamp 2 is a FINRA Alternative Display Facility (ADF)-provided timestamp represented in nanoseconds since Epoch. The first integer contains the number of seconds from Epoch 1/1/1970, 00:00:00 UTC. The next integer contains the nanosecond portion of the time (e.g., 972402315). If Timestamp 2 is not provided, this field will be set to zero. For any messages generated by CQS, e.g., messages generated on behalf of a Participant, Administrative messages and Control messages, the Timestamp 2 field will be set to zero.</p> <ul style="list-style-type: none"><li>▪ <b>If from an Exchange: Timestamp 2</b> field will be set to zero.</li><li>▪ <b>If from the FINRA Alternative Display Facility (ADF):</b><ul style="list-style-type: none"><li>▪ <b>If the FINRA ADF</b> provides a proprietary feed of its quotation information, then FINRA will publish the time of the quotation as also published on the facility’s proprietary feed. FINRA shall provide such times to the Processor in nanoseconds since Epoch.</li><li>▪ <b>If the FINRA ADF</b> does <b>not</b> have a proprietary quotation feed then the Timestamp 2 field will be set to zero.</li></ul></li></ul>						

**APPENDIX A: CQS CONFIGURATION**

**CQS CONFIGURATION**



CONSOLIDATED QUOTATION SYSTEM (CQS) PILLAR  
MULTICAST OUTPUT BINARY SPECIFICATION

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**APPENDIX B: GLOSSARY**

Term	Description
Below Continuing Listing Standards	A financial status designation pertaining to Tape ‘A’ and Tape ‘B’ listed securities. The status identifies a company, whose issue is listed on the New York Stock Exchange, the NYSE American Stock Market or on one of the participating U.S. Stock Exchanges, and has failed to meet established listings standards. The listing exchange will subsequently review the appropriateness of continuing to list the issue, and may decide to commence the process of delisting the issue.
Cash (Only) Settlement	A security settling in cash all day on a participant or consolidated basis, such as a Common, Preferred or Right that is nearing expiration. Participants can elect to report different settlements in the same security during the day based on their own settlement requirements. For example, one participant can report quotes as cash (only) settlement while another participant can report quotes as regular or next day settlement.
Creations Suspended (For Exchange Traded Products)	A financial status designation used to denote the ability to create new shares of this Exchange Traded Product (ETP) has been temporarily suspended by the ETP Issuer. ETPs that are closed for Creations typically are allowed to continue trading on the listing market once the ETP Issuer publishes the press release.
Crossed Market	Indicates a Round Lot Bid Price, which is greater than the Round Lot Offer Price for a security for a quote. (Only applicable to Bonds.)
CTA Eligible Equity	Generally, any common stock, rights, long-term warrants or preferred stock which becomes registered on any national securities exchange or is admitted to unlisted trading privileges thereon and which at the time of such registration or at the commencement of such trading substantially meets the original listing requirements of the NYSE or the NYSE American Stock Market for such securities.

CONSOLIDATED QUOTATION SYSTEM (CQS) PILLAR  
MULTICAST OUTPUT BINARY SPECIFICATION

**GLOSSARY**

Term	Description
Late Filing	A financial status designation pertaining to Tape ‘A’ and Tape ‘B’ issues (i.e. issues listed on the NYSE, the NYSE American Stock Market or on one of the participating U.S. Stock Exchanges). The status identifies a company, which has failed to meet established listings standards for filing its annual reports.
Limit Up-Limit Down (LULD) Price Band	<p>The Limit Up-Limit Down Price Band represents a price range which is set at a percentage level above and below the average price of a security over the immediately preceding five (5) minute period. Price Bands prevail for a minimum of thirty (30) seconds. During a Limit State Price Bands will not be disseminated and will recommence when Limit State is terminated.</p> <p>For further details related to Limit Up-Limit Down, reference the following:  <a href="http://www.sec.gov/news/press/2011/2011-84.htm">http://www.sec.gov/news/press/2011/2011-84.htm</a></p> <p><b>Note1:</b> There are no sizes associated with LULD Price Bands.  <b>Note2:</b> ‘Limit Up-Limit Down’ Price Bands are republished every 30 seconds at clock time.</p>
Limit Up-Limit Down (LULD) Trading Pause	Denotes a five-minute regulatory trading halt (pause) for an individual security that does not exit a Limit State within 15 seconds.
Limit State	Indicates that a National Best Bid is equal to the Upper Limit Price Band, or that a National Best Offer is equal to the Lower Limit Price Band.
Liquidation (For Exchange Traded Products)	A financial status designation used to denote that the ETP Issuer announced the ETP will be liquidated and NYSE ARCA announced the date the ETP will be suspended from trading.
Local Issue	A Local Issue is an issue that does <b>not</b> meet the NYSE American Stock Market or NYSE listing requirements (is not CTA eligible) but is traded at one or more participating U.S. Stock Exchanges.
Locked Market	Indicates an identical Round Lot Bid and Offer Price for a security for a quote. (Only applicable to Bonds.)



CONSOLIDATED QUOTATION SYSTEM (CQS) PILLAR  
MULTICAST OUTPUT BINARY SPECIFICATION

**GLOSSARY**

Term	Description
Market-Wide Circuit Breaker Level 1 – 7% Decline	This Regulatory Trading Halt is used to denote that trading is suspended due to the S&P 500 Index reaching a 7% decline level below its closing value on the previous trading day. A Level 1 Market-Wide Circuit Breaker Regulatory Trading Halt would operate as follows: before 3:25 p.m. ET – duration 15 minutes; at or after 3:25 p.m. ET – trading shall continue, unless there is a Level 3 Market-Wide Circuit Breaker Regulatory Trading Halt.
Market-Wide Circuit Breaker Level 2 – 13% Decline	This Regulatory Trading Halt is used to denote that trading is suspended due to the S&P 500 Index reaching a 13% decline level below its closing value on the previous trading day. A Level 2 Market-Wide Circuit Breaker Regulatory Trading Halt would operate as follows: before 3:25 p.m. ET – duration 15 minutes; at or after 3:25 p.m. ET – trading shall continue, unless there is a Level 3 Market-Wide Circuit Breaker Regulatory Trading Halt.
Market-Wide Circuit Breaker Level 3 – 20% Decline	This Regulatory Trading Halt is used to denote that trading is suspended due to the S&P 500 Index reaching a 20% decline level below its closing value on the previous trading day. A Level 3 Market-Wide Circuit Breaker Regulatory Trading Halt would operate as follows: at any time during regular trading hours, trading shall Halt and <u>not</u> Resume for the remainder of the trading day.
Next Day (Only) Settlement	Same definition as cash (only) settlement except settlement is next day.
Non-Regulatory or Trading Halt	An operational or Trading Halt for a Participant due to Order Imbalance, Order Influx or Operational.
Normal Auction Market	Where the quote bid price is less than the offer price for a security for a Participant.
On Demand Intra-Day Auction	This quote condition is used to provide additional clarity to the CQS Participants and allow them to take part in an auction which will enhance liquidity in the marketplace. It is anticipated that this quote condition will be input into CQS by Participants with a zero bid price, zero bid size, zero offer price, and zero offer size and disseminated over the CQS multicast output lines.
Price Indication	Reflects an approximate price range of what a security's trading range (bid and offer prices) will be when trading resumes after a Trading Halt.
Redemptions Suspended (For Exchange Traded Products)	A financial status designation used to denote the ability to redeem shares of this ETP has been suspended by the ETP Issuer. ETPs that are closed for redemption will remain halted on the listing market.
Regular Way Settlement	The settlement date is within three (3) business days following the date of the transaction.

CONSOLIDATED QUOTATION SYSTEM (CQS) PILLAR  
MULTICAST OUTPUT BINARY SPECIFICATION

**GLOSSARY**

Term	Description
Regulatory Halt - Additional Information Requested	Denotes a regulatory trading halt when the primary market has requested additional information from the issuer of the security. Trading is suspended until the primary market has received and reviewed the requested information.
Regulatory Halt - Corporate Action	Denotes a regulatory trading halt when the primary market determines a halt is necessary pending the outcome of a Corporate Action event. Trading is suspended until the results of the Corporate Action are confirmed and the security is suitable for trading.
Regulatory Halt - ETF Component Prices Not Available	Denotes a regulatory trading halt when a significant percentage of an ETF's weight is invested in components in which pricing is not available. Trading is suspended until the primary market determines that such condition no longer exists.
Regulatory Halt - Intraday Indicative Value Not Available	Denotes a regulatory trading halt when the Intraday Indicative Value of an ETF is not being disseminated or is being disseminated incorrectly. Trading is suspended until the primary market determines that such condition no longer exists.
Regulatory Halt - Merger Effective	Denotes a regulatory trading halt in connection with a security being suspended in connection with a merger. Trading is suspended indefinitely.
Regulatory Halt - New Security Offering	Denotes a regulatory trading halt in connection with a new security offering. Trading is suspended until the new security is admitted to trading on the primary listing exchange during the primary trading session.
Regulatory Halt - News Pending	Denotes a regulatory Trading Halt due to an expected news announcement, which may influence the security. A Trading Halt may be continued once the news has been disseminated.
Regulatory Halt - News Released	Denotes a regulatory trading halt when relevant news influencing the security is being disseminated. Trading is suspended until the primary market determines that an adequate time has passed to allow for full dissemination of the news into the market.
Regulatory Halt - Regulatory Concern	Denotes a regulatory trading halt due to an ongoing regulatory concern regarding the suitability of trading in a security. Trading is suspended until the primary market determines the security is suitable for trading.

CONSOLIDATED QUOTATION SYSTEM (CQS) PILLAR  
MULTICAST OUTPUT BINARY SPECIFICATION

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**GLOSSARY**

Term	Description
Republished Limit Up-Limit Down Price Band	Indicates that the Price Band being disseminated is a republication of the latest Price Band for a security.
Resume	This quote condition along with zero-filled bid, offer and size fields is used to indicate that trading for a Participant is no longer suspended in a security which had been Trading Halted.
Short Sale Restriction	A restriction designed to control short selling from further driving down the price of a security any day in which the price declines by 10% or more from the previous day's closing price. Once the Short Sale Restriction is activated, a Short Sale Restriction would be in effect in that security for the remainder of the day as well as the following day, unless deactivated.
Sub-Penny Trading	Indicates a non-regulatory Trading Halt for a security whose price may fall below \$1.05, possibly leading to a sub-penny execution.
Trading Halt	Temporary halt in trading in a particular security for a Participant.

CONSOLIDATED QUOTATION SYSTEM (CQS) PILLAR  
MULTICAST OUTPUT BINARY SPECIFICATION

**APPENDIX C: SUMMARY OF DAILY CQS MULTICAST LINE ACTIVITY**

Time Ranges shown have approximate end times indicated, are dependent on daily traffic volume and are subject to change based on a Participant's hours of operation. Times are represented in *Eastern Time (ET)*.

Time (ET)	Transmission / Events
00:20	Line Integrity Messages*
01:30	Start of Day – Control Message
01:30 – 20:05	Symbol Reference Data Trading Range Indications Short Sale Restriction Trading Halts Price Indications Resumes Control messages Market Status Messages Auction Status Messages Quote Messages Retransmission Messages Test Data**
04:00	<i>OFFICIAL MARKET OPEN: NASDAQ, NYSE ARCA, Cboe EDGX, Cboe BZX, MIAX Pearl &amp; 24X</i>
07:00 (Iteration 1) 08:00 (Iteration 2)	Market-Wide Circuit Breaker (MWCBS) Decline Level – Market Status Message
07:00	<i>OFFICIAL MARKET OPEN: Cboe BYX, Cboe EDGA, NYSE Texas, NASDAQ OMX BX, NYSE American, NYSE National &amp; MEMX</i>
08:00	<i>OFFICIAL MARKET OPEN: FINRA ADF, IEX, NASDAQ OMX PSX &amp; LTSE</i>
09:30	<i>OFFICIAL MARKET OPEN: NYSE</i>
09:30 – 16:00	LULD Price Band Messages

* Line Integrity Messages are transmitted at frequent intervals, with at least one message published no later than every ten (10) seconds throughout the day, starting when the CQS multicast lines are brought up and ending when the CQS multicast lines are brought down.

** Test Data for Test Symbols is disseminated after the Start of Day message and continues throughout the day up till End of Day message.

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MULTICAST OUTPUT BINARY SPECIFICATION

**APPENDIX C: SUMMARY OF DAILY CQS MULTICAST LINE ACTIVITY, *continued***

<b>Time (ET)</b>	<b>Transmission / Events</b>
16:00	<i>OFFICIAL MARKET CLOSED: NYSE</i>
17:00	<i>OFFICIAL MARKET CLOSED: IEX, NASDAQ PSX &amp; LTSE</i>
18:30	<i>OFFICIAL MARKET CLOSED: FINRA ADF</i>
19:00	<i>OFFICIAL MARKET CLOSED: NASDAQ OMX BX</i>
20:00	<i>OFFICIAL MARKET CLOSED: Cboe BYX, Cboe BZX, Cboe EDGA, Cboe EDGX, NASDAQ, NYSE ARCA, NYSE American, NYSE National, NYSE Texas, MEMX, MIAX Pearl &amp; 24X</i>
20:05	End of Day***

*** All CQS Participant Lines are brought down (Dependent on all Participants being closed).

**Afterhours Test Data Dissemination:**

- CQS Multicast Data Recipients are reminded that test data dissemination over CQS multicast data feeds can commence as early as **8:30 P.M. ET** and terminate as late as **11:00 P.M. ET** during business weekdays and any time during Saturdays, Sundays and Market holidays. This test period is accommodated to allow testing opportunities for Participants and Data Recipients, as well as to provide test time to rectify any production problems that may have occurred the prior business day. Multicast data feed recipients should take the necessary precautions to protect their systems against any adverse impact (e.g., database corruption) if processing data throughout the test dissemination period. During the test period, note that test data can be disseminated over all CQS multicast channels (e.g., Production, Retransmission or Playback Test Group IP addresses).

## **APPENDIX E: CQS CLOSING ROUTINE**

A Participant can individually close a security by sending in a closing quote to CQS. CQS disseminates this closing quote over the Multicast Line and appends a new NBBO, excluding that Participant, if that Participant was part of the current NBBO.

Additionally upon receiving FINRA Close (Category C Type C) message from FINRA, CQS disseminates Closing Quote (Quote Condition L) for any securities where FINRA had previously quoted a BBO eligible FINRA Best Bid and Offer.

## APPENDIX F: NATIONAL BEST BID AND OFFER OVERVIEW

National Best Bid and Best Offer calculations are performed for each Market Center beginning at various times (between 4:00 a.m. and 9:30 a.m. ET) whenever a new qualifying Round Lot quote is received after a Participant Market Open. If it is determined that the new Round Lot quote or FINRA provided FBBO has caused a new National BBO, the appropriate National BBO information is appended to the new Short Quote, Long Quote or Special Long Quote (FINRA ADF) with FINRA BBO Information quote message. Appendages are not added if it is determined that the current quote does not affect the National BBO.

A new Round Lot quote can be the entire new National BBO quote (both Bid and Offer). In addition, the National BBO and FINRA provided FBBO can indicate a Crossed Market where the Round Lot Bid price is higher than the Round Lot Offer price or a Locked Market where both the Round Lot Bid and the Round Lot Offer prices are the same.

CQS generates a National BBO based on the following criteria in this order:

- **Price** - Exchanges with highest Round Lot Bid and lowest Round Lot Offers have overall priority.
- **Size** - Largest size takes precedence when multiple Exchanges submit the same Round Lot Bid and/or Offer price.
- **Time** - Earliest time takes precedence when multiple Exchanges submit the same Round Lot Bid and/or Offer price with the same size.

## **APPENDIX F: NATIONAL BEST BID AND OFFER OVERVIEW, continued**

### **BBO Considerations**

There are several trading conditions that affect the calculations of a National BBO for a security, including:

#### **Non-Qualifying Quote Conditions**

If a quote with a non-qualifying quote condition is entered from a Participant which made up part or all of the current National BBO, CQS will calculate and append a new National BBO.

#### **Participant Overall Halt in Trading**

If a Participant were to halt trading in all securities during the trading day (due to computer failure, market shutdown, etc.), CQS, when instructed by the Participant, can send a 'Zero Quote' for only those issues in which that Participant had an outstanding BBO eligible quote. A new National BBO is calculated and, if necessary appends a new National BBO.

### **FINRA BBO**

FINRA provides a FINRA calculated FBBO and the FBBO is included in the National BBO calculations.

If part of the new FINRA BBO is also part of the new National BBO, the appropriate National BBO information is also appended to the Short Quote, Long Quote or Special Long Quote (FINRA ADF) with FINRA BBO Information message.



## APPENDIX G: BEST ODD LOT ORDER (BOLO) OVERVIEW

BOLO comprises of the highest-priced odd lot buy price that is priced higher than the National Best Bid and the lowest-priced odd lot sell price that is priced lower than the National Best Offer, across all Participants' odd lot quotes.

Best Odd Lot Bid and Best Odd Lot Offer calculations are performed for each Market Center whenever a new qualifying odd lot quote is received from a Participant. If it is determined that the new quote has caused a new BOLO, the appropriate BOLO information is added to the new quote via the optional BOLO Appendages, as needed

The Odd Lot Best Bid price can be equal to (i.e. lock) either the National Best Offer or the Odd Lot Best Offer, or can be higher than (i.e. cross) either the National Best Offer or the Odd Lot Best Offer, and vice versa.

CQS generates a BOLO based on the following criteria in this order:

- **Price** - Exchanges with the highest Odd Lot Bid and the lowest Odd Lot Offers have overall priority.
- **Size** - Largest size takes precedence when multiple Exchanges submit the same Odd Lot Bid and/or Offer price.
- **Time** - Earliest time takes precedence when multiple Exchanges submit the same Odd Lot Bid and/or Offer price with the same size(s).

Note - Any odd lot quotes with prices at or better than the NBBO are published by CQS. However, BOLO only comprises of an odd lot quote that is better than the NBBO. As such, if odd lot quotes only exist at the NBBO price, it is possible odd lot quotes are published but BOLO does not exist.

## APPENDIX H: QUOTE CONDITIONS

The quote condition determines whether a quote qualifies to be included in the calculation of the National BBO. The National BBO calculation is performed whenever a new qualifying quote with price and size filled Bid and/or Offer is received from a Participant. For quotes with BBO eligible quote conditions containing zero-filled price and size Bid and Offer information, the National BBO is recalculated excluding the Participant that transmitted the BBO eligible quote condition with zero-filled prices and sizes.

The quote conditions may be viewed as belonging to two classes:

1. Those that qualify for inclusion in the National Best Bid & Offer (BBO) calculations.
2. Those that do not qualify for inclusion in the National Best Bid & Offer (BBO) calculations.

### **BBO Eligible Quotes**

#### **Quote Condition A – Slow Quote on the Offer Side**

This condition indicates that the current offer is in ‘Slow’ quote mode. While in this mode, auto-execution is not eligible on the Offer side and can be traded through pursuant to anticipated Regulation NMS requirements.

#### **Quote Condition B – Slow Quote on the Bid Side**

This condition indicates that the current bid is in ‘Slow’ quote mode. While in this mode, auto-execution is not eligible on the Bid side and can be traded through pursuant to anticipated Regulation NMS requirements.

#### **Quote Condition E – Slow Quote due to Liquidity Replenishment Point (LRP) or Gap Quote on the Bid Side - Only OFFER SIDE is eligible for BBO**

This quote condition is used to indicate that the current Bid is in ‘Slow’ quote mode due to a Liquidity Replenishment Point (LRP) or Gap Quote. While in this mode, auto-execution is not eligible, the quote is then considered Slow on the Bid side and can be traded through, as per Regulation NMS.

## **APPENDIX H: QUOTE CONDITIONS**

### **BBO Eligible Quotes**

#### **Quote Condition F - Slow Quote due to Liquidity Replenishment Point (LRP) or Gap Quote on the Offer Side - Only BID SIDE is eligible for BBO**

This quote condition is used to indicate that the current Offer is in Slow quote mode due to a Liquidity Replenishment Point (LRP) or Gap Quote. While in this mode, auto-execution is not eligible, the quote is then considered Slow on the Offer side and can be traded through, as per Regulation NMS.

#### **Quote Condition H - Slow Quote on the Bid and Offer Sides**

This condition indicates that the quote is a 'Slow' quote on both the Bid and Offer sides. While in this mode, auto-execution is not eligible on the Bid and Offer sides, and either or both sides can be traded through pursuant to anticipated Regulation NMS requirements.

#### **Quote Condition O - Opening Quote**

This condition can be disseminated to indicate that this quote was the opening quote for a security for that Participant.

#### **Quote Condition R - Regular (for FINRA - Market Maker Open)**

This condition is used for the majority of quotes to indicate a normal trading environment. It is also used by the FINRA Market Makers in place of Quote Condition 'O' to indicate the first quote of the day for a particular security. The condition may also be used when a Market Maker re-opens a security during the day.

#### **Quote Condition W – Slow Quote Due to Set Slow List on both Bid and Offer Sides**

This quote condition is used to indicate that the quote is a Slow Quote on both the Bid and Offer sides due to a Set Slow List that includes High Price securities. While in this mode, auto-execution is not eligible, the quote is then considered Slow on the Bid and Offer sides and either or both sides can be traded through, as per Regulation NMS.

## **APPENDIX H: QUOTE CONDITIONS**

### **BBO Ineligible Quotes**

#### **Quote Condition C - Closing Quote**

This condition can be disseminated to indicate that this quote was the last quote for a security for that Participant.

#### **Quote Condition L - Market Maker Quotes Closed (FINRA)**

This condition is disseminated by each individual FINRA Market Maker to signify either the last quote of the day or the premature close of an individual Market Maker for the day. In the latter case, the Market Maker can re-open by transmitting a quote accompanied by the Quote Condition R.

#### **Quote Condition N - Non-Firm Quote**

This quote condition suspends a Participant's firm quote obligation for a quote for a security.

#### **Quote Condition U - Slow Quote due to Liquidity Replenishment Point (LRP) or Gap Quote on both the Bid and Offer Sides**

This quote condition is used to indicate that the quote is a Slow Quote on both the Bid and Offer sides due to a Liquidity Replenishment Point (LRP) or Gap Quote. While in this mode, auto-execution is not eligible, the quote is then considered Slow on the Bid and Offer sides, and either or both sides can be traded through, as per Regulation NMS.

#### **Quote Condition 4 – On Demand Intra-Day Auction**

This quote condition is used to provide additional clarity to the industry participants and to allow participants to take part in an auction which will enhance liquidity in the marketplace.

## **APPENDIX I: SECURITY STATUS INDICATORS**

In addition to the Quote Condition field determining whether a quote qualifies to be included in the calculation of the National BBO the Security Status field is also considered in the calculation of the National BBO. If the Security Status Indicator is populated with either a regulatory or a non-regulatory status (other than Market Wide Circuit Breaker Levels), it will result in the BBO being recalculated excluding the Participant from the BBO if that Participant was part or all of the BBO.

### **Security Status Indicator 1 – Market-Wide Circuit Breaker Level 1 – Breached**

This security status indicator is used to indicate that trading is suspended due to the S&P 500 Index reaching a 7% decline level below its closing value on the previous trading day. A Level 1 Market-Wide Circuit Breaker Regulatory Trading Halt would operate as follows: before 3:25 p.m. ET – duration 15 minutes; at or after 3:25 p.m. ET – trading shall continue, unless there is a Level 3 Market-Wide Circuit Breaker Regulatory Trading Halt.

### **Security Status Indicator 2 – Market-Wide Circuit Breaker Level 2 – Breached**

This security status indicator is used to indicate that trading is suspended due to the S&P 500 Index reaching a 13% decline level below its closing value on the previous trading day. A Level 2 Market-Wide Circuit Breaker Regulatory Trading Halt would operate as follows: before 3:25 p.m. ET – duration 15 minutes; at or after 3:25 p.m. ET – trading shall continue, unless there is a Level 3 Market-Wide Circuit Breaker Regulatory Trading Halt.

### **Security Status Indicator 3 – Market-Wide Circuit Breaker Level 3 – Breached**

This security status indicator is used to indicate that trading is suspended due to the S&P 500 Index reaching a 20% decline level below its closing value on the previous trading day. A Level 3 Market-Wide Circuit Breaker Regulatory Trading Halt would operate as follows: at any time during regular trading hours, trading shall Halt and not Resume for the remainder of the trading day.

### **Security Status Indicator A - Additional Information Requested**

This security status indicator is used to indicate a regulatory Trading Halt when the primary market has requested additional information from the issuer of the security. Trading is suspended until the primary market has received and reviewed the requested information.

### **Security Status Indicator C - Regulatory Concern**

This security status indicator is used to indicate a regulatory Trading Halt due to an ongoing regulatory concern regarding the suitability of trading in a security. Trading is suspended until the primary market determines the security is suitable for trading

### **Security Status Indicator D - News Released**

This regulatory Trading Halt is used when relevant news influencing the security is being disseminated. Trading is suspended until the primary market determines that an adequate time has passed to allow for full dissemination of the news into the market.

## **APPENDIX I: SECURITY STATUS INDICATORS**

### **Security Status Indicator E - Merger Effective**

This security status indicator is used to indicate a regulatory Trading Halt in connection with a security being suspended in connection with a merger. Trading is suspended indefinitely.

### **Security Status Indicator F - ETF Component Prices Not Available**

The regulatory trading halt is used when a significant percentage of an ETF's weight is invested in components in which pricing is not available. Trading is suspended until the primary market determines that such condition no longer exists.

### **Security Status Indicator G - Trading Range Indication**

The trading range indication is used to denote the probable trading range (bid and offer prices, no sizes) of a security that is **not** Trading Halted. The Trading Range Indication is used prior to or after the opening of a security.

### **Security Status Indicator I - Order Imbalance**

This non-regulatory Trading Halt is used when there is a significant imbalance of buy or sell orders.

### **Security Status Indicator M – Limit Up-Limit Down (LULD) Trading Pause**

This regulatory Trading Halt is used to indicate conditions in which a stock experiences a 10% or more change in price over a five minute period.

### **Security Status Indicator N - Corporate Action**

This security status indicator is used to indicate a regulatory Trading Halt when the primary market determines a halt is necessary pending the outcome of a Corporate Action event. Trading is suspended until the results of the Corporate Action are confirmed and the security is suitable for trading.

### **Security Status Indicator O- New Security Offering**

This security status indicator is used to indicate a regulatory Trading Halt in connection with a new security offering. Trading is suspended until the new security is admitted to trading on the primary listing exchange during the primary trading session.

## **APPENDIX I: SECURITY STATUS INDICATORS**

### **Security Status Indicator P - News Pending**

This security status indicator is used to indicate a regulatory Trading Halt due to an expected news announcement, which may influence the security. A Trading Halt may be continued once the news has been disseminated.

### **Security Status Indicator V - Intraday Indicative Value Not Available**

The regulatory trading halt is used when the Intraday Indicative Value of an ETF is not being disseminated or is being disseminated incorrectly. Trading is suspended until the primary market determines that such condition no longer exists.

### **Security Status Indicator T - Resume**

This security status indicator along with zero-filled bid, offer and size fields is used to indicate that trading for a Participant is no longer suspended in a security which has been Trading Halted.

### **Security Status Indicator X - Operational**

This non-regulatory Trading Halt is used when the ability to trade a security by a Participant is temporarily inhibited due to technical reasons.

### **Security Status Indicator Y – Sub-Penny Trading**

This non-regulatory Trading Halt is used to indicate a Trading Halt for a security whose price may fall below \$1.05, possibly leading to a sub-penny execution.

CONSOLIDATED QUOTATION SYSTEM (CQS) PILLAR  
MULTICAST OUTPUT BINARY SPECIFICATION

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**APPENDIX J: SYMBOL SUFFIXES EXAMPLES**

	<b>Suffix</b>	<b>Description</b>
<b>A</b>	.A	Series (or Class) <b>A</b> - <i>Also</i> Series <b>B-Z</b>
	.A.CL	Series <b>A</b> Called - <i>Also</i> Series <b>B-Z</b>
	.A.CV	Series <b>A</b> Convertible - <i>Also</i> Series <b>B-Z</b>
	.Aw	Series <b>A</b> When Issued - <i>Also</i> Series <b>B-Z</b>
<b>C</b>	.CL	Called
	.CT	Certificates
	.CV	Convertible
	.CVR	Contingent Value Right
	.CV.CL	Convertible Called
<b>D</b>	.DP	Amount of most recent dividend to go ‘ex- distribution’
	.DV	Accumulated dividend per share net expenses, through and including the previous day’s close of trading
<b>E</b>	.EC	EMERGING COMPANY MARKETPLACE SM
	.EU	Estimated cash amount per creation unit
<b>F</b>	.F.N	Foreign News
<b>I</b>	.ID	Index – differentiates an index from a stock with the same root symbol
	.IV	Intra-Day Net Asset Value per share
<b>M</b>	.MN	Mini
<b>N</b>	.NV	Net Asset Value per share as at the close on the previous day’s close of trading
<b>P</b>	.PO	Percent Paid
	.PP	Partial Paid
	.PT.CL	Part Called
	p	Preferred
	pA	Preferred Series <b>A</b> - <i>Also</i> Series <b>B-Z</b>
	pA.CV	Preferred Series <b>A</b> Convertible - <i>Also</i> Series <b>B-Z</b>
	pA.CL	Preferred Series <b>A</b> Called - <i>Also</i> Series <b>B-Z</b>
	pAw	Preferred Series <b>A</b> When Issued - <i>Also</i> Series <b>B-Z</b>
	pw	Preferred When Issued
	p.CL	Preferred Called
	p.CV	Preferred Convertible



CONSOLIDATED QUOTATION SYSTEM (CQS) PILLAR  
MULTICAST OUTPUT BINARY SPECIFICATION

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**APPENDIX J: SYMBOL SUFFIX EXAMPLES**

	<b>Suffix</b>	<b>Description</b>
<b>P</b>	p.CV.CL	Preferred Convertible Called
	p.WD	Preferred When Distributed
	p.CA	Indicates Class <b>A</b> of a Second Category of Preferred - <i>Also</i> Class <b>B-K</b> and <b>M-S</b>
<b>R</b>	r	Rights
	rw	Rights When Issued
<b>S</b>	.SC	Small Corporate - Offering Registration
	.SD	Stamped
	.SM	Mini Settlement
	.SO	Current shares outstanding in thousands
	.SP	Special
	.SV	Settlement
<b>T</b>	.TC	Total cash amount per creation unit
	.TT	Tier II Securities
<b>U</b>	.U	Units – (A combination of securities composed of two or more warrants, common stocks, preferred stocks and/or bonds.)
<b>V</b>	.VR	Variable Common Right
<b>W</b>	.WD	When Distributed
	w	When Issued
	.WS	Warrants
	.W.WS	With Warrants
	.WS.A	Warrants Series <b>A</b> - <i>Also</i> Series <b>B-Z</b>
	.WSw	Warrants When Issued

**Note:**

- Any combination of suffixes can be represented. Root Symbols for Government Bonds, e.g., TB, TN, US and ZC, and root symbols for Corporate Bonds, e.g., GMC are always followed by a three (3) upper case character suffix.
- Suffixes start with one of the following characters with no embedded spaces: a) ASCII Period (‘.’’); b) Lower case ‘p’; c) Lower case ‘r’; d) Lower case ‘w’.

CONSOLIDATED QUOTATION SYSTEM (CQS) PILLAR  
MULTICAST OUTPUT BINARY SPECIFICATION

**APPENDIX K: ASCII PRINTABLE TABLE (Character Code 32-126)**

ASCII	DEC	Description
<space>	32	Space
!	33	Exclamation
"	34	Double quotes
#	35	Number
\$	36	Dollar
%	37	Percent
&	38	Ampersand
'	39	Single Quote
(	40	Open Parenthesis
)	41	Close Parenthesis
*	42	Asterisk
+	43	Plus
,	44	Comma
-	45	Hyphen
.	46	Period
/	47	Slash or Divide
0	48	Zero
1	49	One
2	50	Two
3	51	Three
4	52	Four
5	53	Five
6	54	Six
7	55	Seven
8	56	Eight
9	57	Nine
:	58	Colon
;	59	Semicolon
<	60	Less than
=	61	Equals
>	62	Greater than
?	63	Question mark
@	64	At symbol
A	65	Uppercase A
B	66	Uppercase B
C	67	Uppercase C
D	68	Uppercase D
E	69	Uppercase E
F	70	Uppercase F
G	71	Uppercase G
H	72	Uppercase H
I	73	Uppercase I
J	74	Uppercase J
K	75	Uppercase K
L	76	Uppercase L
M	77	Uppercase M
N	78	Uppercase N
O	79	Uppercase O
P	80	Uppercase P

ASCII	DEC	Description
Q	81	Uppercase Q
R	82	Uppercase R
S	83	Uppercase S
T	84	Uppercase T
U	85	Uppercase U
V	86	Uppercase V
W	87	Uppercase W
X	88	Uppercase X
Y	89	Uppercase Y
Z	90	Uppercase Z
[	91	Opening bracket
\	92	Backslash
]	93	Closing bracket
^	94	Caret
_	95	Underscore
`	96	Grave accent
a	97	Lowercase a
b	98	Lowercase b
c	99	Lowercase c
d	100	Lowercase d
e	101	Lowercase e
f	102	Lowercase f
g	103	Lowercase g
h	104	Lowercase h
i	105	Lowercase i
j	106	Lowercase j
k	107	Lowercase k
l	108	Lowercase l
m	109	Lowercase m
n	110	Lowercase n
o	111	Lowercase o
p	112	Lowercase p
q	113	Lowercase q
r	114	Lowercase r
s	115	Lowercase s
t	116	Lowercase t
u	117	Lowercase u
v	118	Lowercase v
w	119	Lowercase w
x	120	Lowercase x
y	121	Lowercase y
z	122	Lowercase z
{	123	Opening Brace
	124	Vertical Bar
}	125	Closing Brace
~	126	Equivalency Sign-Tilde