Nasdaq Last Sale Plus

Version 5.0

Table of Contents

1. Product Description 2
2. Data Delivery Options 2
3. Network Protocol Options 2
4. Architecture 2
5. Data Types 3
6. Market Hours 3
7. Message Formats 3
   7.1 System Event Message 3
   7.2 Trade Report 4
   7.3 Trade Cancel/Error 5
   7.4 Trade Correction 6
8. Administrative Messages 8
   8.1 Stock Trading Action 8
   8.2 Reg SHO Short Sale Price Test Restricted Indicator 9
   8.3 Stock Directory 10
   8.4 Adjusted Closing Price 13
   8.5 End of Day Trade Summary 13
   8.6 IPO Information 14
   8.7 Market-Wide Circuit Breaker (MWCB) Messaging 15
      8.7.1 MWCB Decline Level Message 15
      8.7.2 MWCB Status Message 16
9. IPO Quoting Period Update 16
10. Operational Halt 17
Contact Information 18
Appendix A – Last Sale Processing 18
Appendix B - Stock Symbol Convention 22
Appendix C – Trading Action Reason Codes 22
Appendix D - Issue Classification Values 24
Appendix E - Issue Sub-Type Values 24
Appendix F – Documentation Version Control Log 26

1. Product Description

Nasdaq Last Sale (NLS) Plus is a direct data feed product offered by The Nasdaq Stock Market. NLS Plus will cover the full range of issues including Nasdaq, New York Stock Exchange, and other U.S. regional exchange listed securities. NLS Plus provides realtime trade data from the Nasdaq execution system, the Nasdaq/FINRA Trade Reporting Facilities (TRFs) as well as the Nasdaq Texas (formerly BX), and PSX execution systems. NLS Plus also contains intraday consolidated volume, end of day consolidated pricing information, and additional IPO information.

Market data distributors may use the NLS Plus data feed to feed real-time stock tickers, portfolio trackers, trade alert programs, time and sale graphs, and other display systems.

NOTE: Nasdaq may, from time to time, notify users of additional message types or the extension of the length of a message, As such, clients should ensure that their system/decoder is capable of processing unknown message types, as well as messages that exceed the expected length. Whenever feasible, Nasdaq will append additional data to the end of the message.

For pricing and administration information, please refer to the NLS Plus product page on the Nasdaq Market Data Knowledge Center.

3. Data Delivery Options

NLS Plus data is provided on 2 channels:
Channel 1: Nasdaq trades with real-time consolidated volume for Nasdaq-Listed securities
Channel 2: Nasdaq trades with consolidated volume for exchanges other than Nasdaq

3. Network Protocol Options

Nasdaq will offer the NLS data feed in three protocol options:

- SoupBinTCP
- MoldUDP64
- Compressed via SoupBinTCP

For network support and ordering information, please refer to the Nasdaq Market Data Knowledge Center website.

4. Architecture

Last Sale products will be made up of a series of sequenced messages. Each message is variable in length based on the message type. The messages that make up the Last Sale protocol are typically delivered using a higher-level protocol that takes care of sequencing and delivery guarantees.

5. Data Types

All integer fields are big-endian (network byte order) binary encoded numbers. Unless otherwise noted, they are unsigned.

Prices are represented as an 8-byte integer, supplied with an associated precision. Prices are unsigned. When converted to a decimal format, prices are in a fixed-point format, where the precision defines the number of decimal places. For example, a field flagged as Price (4) has an implied 4 decimal places. A field flagged as Price (6) has an implied six decimal places and is right padded with trailing zeroes to maintain the full six-decimal precision.

Sizes are represented as an 8-byte integer, supplied with an associated precision. Sizes are unsigned. When converted to a decimal format, sizes are in a fixed-point format, where the precision defines the number of decimal places. For example, a field flagged as Size (6) has an implied 6 decimal places.

Timestamps reflect the system time at which the outbound message was generated. Nasdaq states time as the number of nanoseconds since Epoch 1/1/1970, 00:00:00 UTC and unsigned.

All alphanumeric fields are left-justified, ASCII fields. Padding spaces appear on the right as necessary.

6. Market Hours

Market Hours

Market Center	Source	Identifier	Pre Market	Regular 9:30 AM - 4:00 PM ET	Post Market	Extended Session
Nasdaq Extended Session	q	1	—	—	—	9:00PM-4:00AM ET
Nasdaq Core Session	Q	2	4:00-9:30 AM ET	✓	4:00-8:00 PM ET	—
Nasdaq Texas	B	3	7:00 – 9:30 AM ET	✓	4:00 - 7:00 PM ET	—
Nasdaq PSX	X	4	8:00 – 9:30 AM ET	✓	4:00 – 5:00 PM ET	—

7. Message Formats

7.1 System Event Message

System Event Messages is used to signal key market or data feed control events.

System Event Message

Name	Offset	Length	Value	Value/Description
Message Type	0	1	Alphanumeric	S = System Event Message
Timestamp	1	8	Integer	Timestamp represented in nanoseconds since Epoch 1/1/1970, 00:00:00 UTC.

Event Code	9	1	Alphanumeric	Denotes the NLS type of system event for which the message is being generated. The allowable values are: "O" = Start of Transmissions: Denotes that the system has started its daily transmission schedule. "S" = Start of System Hours: This message indicates that Nasdaq is open and ready to start accepting orders. "Q" = Start of Market Hours: Denotes the start of the regular US market session. Traditionally, only trade transactions reported during the regular market session are considered to be "last sale" eligible. "M" = End of Market Hours: Denotes the end of the regular US session. "E" = End of System Hours: Indicates that Nasdaq is now closed and will not accept any new orders today. "C" = End of Transmissions: Denotes that the system has ended its daily transmission schedule.

7.2 Trade Report

The following message is used to relay trade transactions that are reported for the current business day. Please note that Nasdaq only reports one-side of a trade execution on the Last Sale feeds.

Trade Report Message

Name	Offset	Length	Type	Value/Description
Message Type	0	1	Alphanumeric	e = Trade Report including fractional shares
Timestamp	1	8	Integer	Denotes the time stamp of the Nasdaq system that generated the trade transaction. Please note that the Nasdaq and TRF systems maintain separate time stamps. Timestamp represented in nanoseconds since Epoch 1/1/1970, 00:00:00 UTC.
Client Timestamp	9	8	Integer	TRF Reported timestamp. Set to 0 for non-TRF trades. Timestamp represented in nanoseconds since Epoch 1/1/1970, 00:00:00 UTC.
Originating Market Center Identifier	17	1	Alphanumeric	Denotes the Nasdaq market system that generated the trade report message. The allowable values are: "Q" = Nasdaq Core "q" = Nasdaq Extended "L" = Nasdaq/FINRA Trade Reporting Facility (TRF) Carteret "2" = Nasdaq/FINRA Trade Reporting Facility (TRF) Chicago "B"= Nasdaq Nasdaq Texas "X"= Nasdaq PSX
Issue Symbol	18	8	Alphanumeric	Denotes the Nasdaq-assigned issue symbol of the security for which the trade report is being generated. For details on Nasdaq symbology, please refer to Appendix B.

Trade Report Message

Name	Offset	Length	Type	Value/Description
Trade Control Number	26	10	Alphanumeric	Indicates the source's internal control number associated with the given trade transaction. Please note that the Trade Control Number is specific to the source system reflected in the Market Center ID field. This number is used as a key field for trade cancellations and trade corrections.
Trade Price	36	8	Price (6)	Denotes the report price on the trade transaction. The price associated with the trade transaction being reported. Refer to Data Types for field processing NLS Plus.
Trade Size	44	8	Size (6)	Indicates the reported number of shares on the trade transaction.
Sale Condition Modifier	52	4	Alphanumeric	Denotes the settlement type of the transaction. For details on Sale Condition Modifiers -, please refer to Appendix A.
Consolidated Volume	56	8	Size (6)	Reflects the volume for the Issue Symbol as reported on the consolidated market data feed at the time that the trade message was generated. See Appendix A for calculation and dissemination information for this data element.

[1] For NLS processing, Nasdaq will use the sale condition modifier of "W" for all Average Price Trades regardless of the listing market center. While the UTP SIP uses the same sale condition modifier code for Nasdaq listed issues, it should be noted that SIAC / CTA SIP uses a "B" sale condition modifier for Average Price Trades for NYSE, NYSE American and NYSE Arca listed securities.

7.3 Trade Cancel/Error

The following message is used in the event that a transaction is cancelled on the same business day that it is reported.

Trade Cancel/Error Message

Name	Offset	Length	Type	Value/Description
Message Type	0	1	Alphanumeric	o = Trade Cancel/Error including fractional shares
Timestamp	1	8	Integer	Denotes the time stamp of the Nasdaq system that generated the trade cancel/error message. Timestamp represented in nanoseconds since Epoch 1/1/1970, 00:00:00 UTC.
Client Timestamp	9	8	Integer	TRF Reported timestamp. Set to 0 for non-TRF trades. Timestamp represented in nanoseconds since Epoch 1/1/1970, 00:00:00 UTC.

Trade Cancel/Error Message

Name	Offset	Length	Type	Value/Description
Originating Market Center Identifier	17	1	Alphanumeric	Denotes the Nasdaq market system that generated the trade report and cancel/error message. The allowable values are: "Q" = Nasdaq Core "q" = Nasdaq Extended "L" = Nasdaq/FINRA Trade Reporting Facility (TRF) "2" = Nasdaq/FINRA Trade Reporting Facility (TRF) Chicago "B"= Nasdaq Nasdaq Texas "X"= Nasdaq PSX
Issue Symbol	18	8	Alphanumeric	Denotes the Nasdaq-assigned issue symbol of the security for which the trade report is being generated. For details on Nasdaq symbology, please refer to Appendix B.
Original Trade Control Number	26	10	Alphanumeric	Indicates the source's internal control number associated with the given trade transaction. Please note that the Trade Control Number is specific to the source system reflected in the Market Center ID field.
Original Trade Price	36	8	Price (6)	Reported price for the transaction.
Original Trade Size	44	8	Size (6)	Reported number of shares for transaction.
Original Sale Condition Modifier	52	4	Alphanumeric	Defines the sale condition modifiers as reported on the original trade transaction.
Consolidated Volume	56	8	Size (6)	Reflects the volume for the Issue Symbol as reported on the consolidated market data feed at the time that the trade cancel/error message was generated. See Appendix A for calculation and dissemination information for this data element

7.4 Trade Correction

The following message is used in the event that a trade transaction is corrected on the same business day that it is reported.

Trade Correction Message

Name	Offset	Length	Type	Value/Description
Message Type	0	1	Alphanumeric	b = Trade Correction with fractional shares
Timestamp	1	8	Integer	Denotes the time stamp of the Nasdaq system that generated the trade correction message Timestamp represented in nanoseconds since Epoch 1/1/1970, 00:00:00 UTC.

Trade Correction Message

Name	Offset	Length	Type	Value/Description
Client Timestamp	9	8	Integer	TRF Reported timestamp. Set to 0 for non-TRF trades. Timestamp represented in nanoseconds since Epoch 1/1/1970, 00:00:00 UTC.
Originating Market Center Identifier	17	1	Alphanumeric	Denotes the Nasdaq market system that generated the trade report and cancel/error message. The allowable values are: "Q" = Nasdaq Core "q" = Nasdaq Extended "L" = Nasdaq/FINRA Trade Reporting Facility (TRF) "2" = Nasdaq/FINRA Trade Reporting Facility (TRF) Chicago "B"= Nasdaq Nasdaq Texas "X"= Nasdaq PSX
Issue Symbol	18	8	Alphanumeric	Denotes the Nasdaq-assigned issue symbol of the security for which the trade correction message is being generated. For details on Nasdaq symbology, please refer to Appendix B.
Original Trade Control Number	26	10	Alphanumeric	Indicates the source's internal control number associated with the given trade transaction. Please note that the Trade Control Number is specific to the source system reflected in the Market Center ID field.
Original Trade Price	36	8	Price (6)	Reported price on the original trade transaction.
Original Trade Size	44	8	Size (6)	Reported number of shares on the original trade transaction.
Original Sale Condition Modifier	52	4	Alphanumeric	Indicates sale condition modifiers associated with the original transaction.
Corrected Trade Control Number	56	10	Alphanumeric	Indicates the Nasdaq internal control number associated with the adjusted trade transaction. Please note that the Trade Control Number is specific to the Nasdaq host system reflected in the Market Center ID field.
Corrected Trade Price	66	8	Price (6)	Indicates the price for the corrected trade transaction.
Corrected Trade Size	74	8	Size (6)	Indicates the number of shares for the corrected trade transaction.
Corrected Sale Condition Modifier	82	4	Alphanumeric	Denotes the sale condition modifiers associated with the corrected trade transaction.

Trade Correction Message

Name	Offset	Length	Type	Value/Description
Consolidated Volume	86	8	Size (6)	Reflects the volume for the Issue Symbol as reported on the consolidated market data feed at the time that the trade correction message was generated. See Appendix A for calculation and dissemination information for this data element.

8. Administrative Messages

To help firms create a full display, Nasdaq supports the following administrative messages: (1) Stock Trading Action, (2) Symbol Directory, (3) Reg SHO Short Sale Price Test Restricted Indicator (4) Adjusted Closing Price, (5) End of Day Trade Summary and (6) IPO Information.

8.1 Stock Trading Action

Nasdaq uses this administrative message to indicate the current trading status of a security to the trading community. Please note that this message originates from the Nasdaq market center system.

Clients should initialize all securities as being halted at the start of the session. Nasdaq will send out Stock Trading Action messages to indicate changes to the trading state. Prior to the start of system hours, Nasdaq will send out a Stock Trading Action messages with Current Trading State of 'T' (Trading on Nasdaq) for all securities that will be trading on Nasdaq at the start of trading hours, and may send addition Trading Action messages throughout the day to communicate changes to the trading state of securities. Please note that securities may be halted in the Nasdaq system for regulatory or operational reasons.

After the start of system hours, Nasdaq will use the Trading Action message to relay changes in trading status for an individual security. Messages will be sent when a stock is:

Halted
Paused*
Released for quotation
Released for trading

* The paused status will be disseminated for Nasdaq-listed securities only. Trading pauses on non- Nasdaq listed securities will be treated simply as a halt.

Trading Action Message

Name	Offset	Length	Type	Value/Description
Message Type	0	1	Alphanumeric	H = Trading Action
Time-stamp	1	8	Integer	Timestamp represented in nanoseconds since Epoch 1/1/1970, 00:00:00 UTC.
Issue Symbol	9	8	Alphanumeric	Nasdaq-assigned indicator for issue for which the trading action message is being generated. For details on Nasdaq symbology, please refer to Appendix B.

Trading Action Message

Name	Offset	Length	Type	Value/Description
Current Trading State	17	1	Alphanumeric	Reflects the current trading state for the issue. The allowable values are: "H" = Halted across all U.S. equity markets / SROs "P" = Paused across all U.S. equity markets / SROs (Nasdaq-listed securities only) "Q" = Quotation only period for cross-SRO halt or pause "T" = Trading on Nasdaq
Reason	18	4	Alphanumeric	Reflects the Market Ops or Market Watch code for the trading state change. Refer to Appendix C for current code list.

Note: For Nasdaq-listed securities, Nasdaq conducts a cross (auction) when it releases an IPO security or when it re-opens a seasoned security after a trading halt or trading pause. To facilitate price transparency for its crosses, Nasdaq disseminates a Net Order Imbalance Indicator (NOII) message via the Nasdaq TotalView product suite at 5- second intervals during the quotation only period of the Trading Action release. The NOII data is especially valuable because it includes all order types (displayable and non- displayable) in its calculation.

8.2 Reg SHO Short Sale Price Test Restricted Indicator

In February 2011, the Securities and Exchange Commission (SEC) implemented changes to Rule 201 of the Regulation SHO (Reg SHO). For details, please refer to SEC Release Number 34-61595.

In association with the Reg SHO rule change, Nasdaq introduced the following Reg SHO Short Sale Price Test Restricted Indicator message format.

The Reg SHO Short Sale Price Test Restricted Indicator message is disseminated intra-day when a security has a price drop of 10% or more from the adjusted prior day's Nasdaq Official Closing Price (NOCP). Once a message with the "S" indicator is disseminated, all short sale orders entered for the given security will be subject to processing under Rule 201 (Alternative Bid Tick Rule) of Reg SHO for the remainder of the trading day or until a "C" action message is disseminated whichever is sooner.

In addition, Nasdaq supports a pre-opening spin of Reg SHO Short Sale Price Test Restricted Indicator messages for those securities in which Rule 201 will remain in effect for the current trading day.

Reg SHO Restriction

Name	Offset	Length	Type	Notes
Message Type	0	1	Alphanumeric	Y = Short Sale Restriction Indicator
Timestamp	1	8	Integer	Timestamp represented in nanoseconds since Epoch 1/1/1970, 00:00:00 UTC.
Issue Symbol	9	8	Alphanumeric	Nasdaq-assigned indicator for issue for which the short sale restriction indicator message is being generated. For details on Nasdaq symbology, please refer to Appendix B.

Reg SHO Action	17	1	Alphanumeric	Denotes the Reg SHO Short Sale Price Test Restriction status for the issue at the time of the message dissemination. Allowable values are: "0" = No price test in place "1" = Reg SHO Short Sale Price Test Restriction in effect due to an intra-day price drop in security "2" = Reg SHO Short Sale Price Test Restriction remains in effect

8.3 Stock Directory

At the start of each trading day, Nasdaq disseminates stock directory messages for all active Nasdaq and non Nasdaq listed security symbols.

Market data redistributors should process this message to populate the Financial Status Indicator (required display field) and the Market Category (recommended display field) for Nasdaq listed issues.

Stock Directory

Name	Offset	Length	Value	Notes
Message Type	0	1	Alphanumeric	R = Stock Directory Message
Time-stamp	1	8	Integer	Timestamp represented in nanoseconds since Epoch 1/1/1970, 00:00:00 UTC.
Stock	9	8	Alphanumeric	Denotes the security symbol for the issue in the Nasdaq execution system.
Market Category	17	1	Alphanumeric	Indicates Listing market or listing market tier for the issue. Nasdq-Listed Instruments: "Q" = Nasdaq Global Select Market "G" = Nasdaq Global Market "S" = Nasdaq Capital Market Non-Nasdaq Listed Instruments: "N" = New York Stock Exchange (NYSE) "A" = NYSE American "P" = NYSE Arca "M" = NYSE Texas "Z" = BATS Z Exchange "V" = Investors" Exchange, LLC "F" = Texas Stock Exchange "<space>" = Not available

Stock Directory

Name	Offset	Length	Value	Notes
Financial Status Indicator	18	1	Alphanumeric	For Nasdaq-listed issues, this field indicates when a firm is not in compliance with Nasdaq continued listing requirements. Nasdaq-Listed Instruments: "D" = Deficient "E" = Delinquent "Q" = Bankrupt "S" = Suspended "G" = Deficient and Bankrupt "H" = Deficient and Delinquent "J" = Delinquent and Bankrupt "K" = Deficient, Delinquent and Bankrupt "C" = Creations and/or Redemptions Suspended for Exchange Traded Product "N" = Normal (Default): Issuer Is NOT Deficient, Delinquent, or Bankrupt Non-Nasdaq-Listed Instruments: "<space>" = Not available. Firms should refer to SIAC feeds for code if needed.
Round Lot Size	19	4	Integer	Denotes the number of shares that represent a round lot for the issue
Round Lots Only	23	1	Alphanumeric	Indicates if Nasdaq system limits order entry for issue "Y" = Nasdaq system only accepts round lots orders for this security. "N" = Nasdaq system does not have any order size restrictions for this security. Odd and mixed lot orders are allowed.
Issue Classification	24	1	Alphanumeric	Identifies the security class for the issue as assigned by Nasdaq. See Appendix for allowable values.
Issue Sub-Type	25	2	Alphanumeric	Identifies the security sub-type for the issue as assigned by Nasdaq. See Appendix for allowable values.
Authenticity	27	1	Alphanumeric	Denotes if an issue or quoting participant record is set-up in Nasdaq systems in a live/production, test, or demo state. Please note that firms should only show live issues and quoting participants on public quotation displays. "P" = Live/Production "T" = Test
Short Sale Threshold Indicator	28	1	Alphanumeric	Indicates if a security is subject to mandatory close-out of short sales under SEC Rule 203(b)(3). "Y" = Issue is restricted under SEC Rule 203(b)(3) "N" = Issue is not restricted "<space>" = Threshold Indicator not available

Stock Directory

Name	Offset	Length	Value	Notes
IPO Flag	29	1	Alphanumeric	Indicates if the Nasdaq security is set up for IPO release. This field is intended to help Nasdaq market participant firms comply with FINRA Rule 5131(b). Nasdaq-Listed Instruments: "Y" = Nasdaq listed instrument is set up as a new IPO security "N" = Nasdaq listed instrument is not set up as a new IPO security "Z" - Nasdaq listed instrument is a non-IPO new listed security Non-Nasdaq-Listed Instruments: "<space>" = Not available
LULD Reference Price Tier	30	1	Alphanumeric	Indicates which Limit Up / Limit Down price band calculation parameter is to be used for the instrument. Refer to LULD Rule for details. "1" = Tier 1 NMS Stocks and select ETPs "2" = Tier 2 NMS Stocks "<space>" = Not applicable
ETP Flag	31	1	Alphanumeric	Indicates whether the security is an exchange traded product (ETP): "Y" = Instrument is an ETP "N" = Instrument is not an ETP "<space>" = Not available
ETP Leverage Factor	32	4	Integer	Tracks the integral relationship of the ETP to the underlying index. Example: If the underlying Index increases by a value of 1 and the ETP's Leverage factor is 3, indicates the ETF will increase/decrease (see Inverse) by 3. Leverage Factor is rounded to the nearest integer below, e.g. leverage factor 1 would represent leverages of 1 to 1.99. This field is used for LULD Tier I price band calculation purposes. ETP Leverage Factor currently not supported for Non-Nasdaq listed ETP's.
Inverse Indicator	36	1	Alphanumeric	Indicates the directional relationship between the ETP and underlying index. "Y" = ETP is an Inverse ETP "N" = ETP is not an Inverse ETP Example: An ETP Leverage Factor of 3 and an Inverse value of 'Y' indicates the ETP will decrease by a value of 3.
Bloomberg ID	37	12	Alphanumeric	The composite ID that Bloomberg has assigned to the security.

8.4 Adjusted Closing Price

At the start of each trading day, Nasdaq disseminates the adjusted closing price for all active symbols in the Nasdaq system.

For Nasdaq-listed securities the Nasdaq Official Closing Price will be used to calculate the adjusted close. For non-Nasdaq securities, the consolidated close will be used to calculate adjusted close.

Adjusted closing price

Name	Offset	Length	Value	Notes
Message Type	0	1	Alphanumeric	g = Adjusted Closing Price
Time-stamp	1	8	Integer	Timestamp represented in nanoseconds since Epoch 1/1/1970, 00:00:00 UTC.
Issue Symbol	9	8	Alphanumeric	Nasdaq-assigned indicator for issue for which the short sale restriction indicator message is being generated. For details on Nasdaq symbology, please refer to Appendix B.
Adjusted Closing Price	17	8	Price (6)	The previous trading day's official closing price adjusted for any applicable corporate actions. If there were no corporate actions for a security, the previous day's official close will be disseminated.

8.5 End of Day Trade Summary

At the close of each trading day, Nasdaq will disseminate the following end of day trade summary messages for all active Nasdaq- and non-Nasdaq-listed securities. Nasdaq disseminates this message to ensure that NLS Plus subscribers have the correct daily volume information for all issues.

End of Day Trade Summary

Name	Offset	Length	Type	Value/Description
Message Type	0	1	Alphanumeric	p = End of Day Trade Summary
Time-stamp	1	8	Integer	Timestamp represented in nanoseconds since Epoch 1/1/1970, 00:00:00 UTC.
Issue Symbol	9	8	Alphanumeric	Nasdaq-assigned indicator for issue for which the directory message is being generated. For details on Nasdaq symbology, please refer to Appendix C.
Consolidated High Price	17	8	Price (6)	The highest price of any high/low eligible transaction on Tapes A, B or C received on the trading day.
Consolidated Low Price	25	8	Price (6)	The lowest price of any high/low eligible transaction on Tapes A, B or C received on the trading day.
Consolidated Closing Price	33	8	Price (6)	The final last sale eligible transaction on Tapes A, B or C received on the trading day.

End of Day Trade Summary

Name	Offset	Length	Type	Value/Description
Consolidated Volume	41	8	Size (6)	Reflects the total volume for the issue reported at the consolidated market level.
Consolidated Open Price	49	8	Price (6)	The first last sale eligible transactions received on the Trading day for Tapes A, B or C.

8.6 IPO Information

Nasdaq will disseminate the following IPO messages from the UTP feeds for Initial Public Offerings for all Nasdaq-listed securities. Please note that NLS Plus filters the General Administrative Messages from the UTP feeds for IPO specific text as the General Administrative Messages are free-form text and not used solely for IPO messages only.

IPO Message

Name	Offset	Length	Type	Value/Description
Message Type	0	1	Alphanumeric	i = IPO Message
Timestamp	1	8	Integer	Timestamp represented in nanoseconds since Epoch 1/1/1970, 00:00:00 UTC.
Issue Symbol	9	8	Alphanumeric	Nasdaq-assigned indicator for issue for which the trading action message is being generated. For details on Nasdaq symbology, please refer to Appendix C.
Reference For Net Change	17	1	Alphanumeric	Reflects the current trading state for the issue. The allowable values are: "F" = First Trade Price "W" = Underwriter Price
Reference Price	18	8	Price (6)	Reference Price

8.7 Market-Wide Circuit Breaker (MWCB) Messaging

8.7.1 MWCB Decline Level Message

Informs data recipients what the daily MWCB breach points are set to for the current trading day.

MWCB Decline Level Message

Name	Offset	Length	Value	Notes
Message Type	0	1	Alphanumeric	V = Market Wide Circuit Breaker Decline Level Message

MWCB Decline Level Message

Name	Offset	Length	Value	Notes
Time-stamp	1	8	Integer	Time at which the MWCB Decline Level message was generated. Timestamp represented in nanoseconds since Epoch 1/1/1970, 00:00:00 UTC.
Level 1	9	8	Price (8)	Denotes the MWCB Level 1 Value.
Level 2	17	8	Price (8)	Denotes the MWCB Level 2 Value.
Level 3	25	8	Price (8)	Denotes the MWCB Level 3 Value.

8.7.2 MWCB Status Message

Informs data recipients when a MWCB has breached one of the established levels.

MWCB Breach Message

Name	Offset	Length	Value	Notes
Message Type	0	1	Alphanumeric	W = Market Wide Circuit Breaker Status Message
Time-stamp	1	8	Integer	Time at which the MWCB Breaker Status message was generated. Timestamp represented in nanoseconds since Epoch 1/1/1970, 00:00:00 UTC.
Breached Level	9	1	Alphanumeric	Denotes the MWCB Level that was breached. “1” = Level 1 “2” = Level 2 “3” = Level 3

9. IPO Quoting Period Update

Indicates the anticipated IPO quotation release time of a security.

IPO Quoting Period Update

Name	Offset	Length	Value	Notes
Message Type	0	1	Alphanumeric	k = IPO Quoting Period Update message
Time-stamp	1	8	Integer	Time at which the IPO Quoting Period Update message was updated. Timestamp represented in nanoseconds since Epoch 1/1/1970, 00:00:00 UTC.
Stock	9	8	Alphanumeric	Denotes the security symbol for the issue in the Nasdaq execution system.

IPO Quoting Period Update

Name	Offset	Length	Value	Notes
IPO Quotation Release Time	17	4	Integer	Denotes the IPO release time in seconds since Epoch 1/1/1970, 00:00:00 UTC. NOTE: If the quotation period is being canceled/postponed, we should state that 1. IPO Quotation Time will be set to 0 2. IPO Price will be set to 0
IPO Quotation Release Qualifier	21	1	Alphanumeric	"A" = Anticipated quotation release time This value would be used when Nasdaq Market Operations initially enters the IPO instrument for release. "C" = IPO release canceled/postponed This value would be used when Nasdaq Market Operations cancels or postpones the release of the IPO instrument.
IPO Price	22	8	Price (6)	Denotes the IPO price to be used for intraday net change calculations. Prices are given in decimal format with 6 whole number places followed by 4 decimal digits. The whole number portion is padded on the left with spaces; the decimal portion is padded on the right with zeros. The decimal point is implied by position; it does not appear inside the price field.

10. Operational Halt

The Exchange uses this message to indicate the current Operational Status of a security to the trading community. An Operational Halt means that there has been an interruption of service on the identified security impacting only the designated Market Center. These Halts differ from the "Stock Trading Action" message types since an Operational Halt is specific to the exchange for which it is declared, and does not interrupt the ability of the trading community to trade the identified instrument on any other market place.

Nasdaq uses this administrative message to indicate the current trading status of the three market centers operated by Nasdaq.

Operational Halt

Name	Offset	Length	Value	Notes
Message Type	0	1	Alphanumeric	h = Operational Halt
Time-stamp	1	9	Integer	Time at which the Operational Halt message was generated. Refer to data types for field processing notes. Timestamp represented in nanoseconds since Epoch 1/1/1970, 00:00:00 UTC.

Operational Halt

Name	Offset	Length	Value	Notes
Stock	9	8	Alpha	Denotes the security symbol for the issue in Nasdaq execution system.
Market Code	17	1	Alpha	"Q" = Nasdaq Core "B" = Nasdaq Texas "X" = PSX
Operational Halt Action	18	1	Alpha	"H" = Operationally Halted on the identified Market "T" = Operational Halt has been lifted and Trading resumed

Contact Information

Questions about the NLS entitlement, display guidelines may be directed to Clientsuccess@nasdaq.com.

Appendix A – Last Sale Processing

SEC Vendor Display Rule

The Securities and Exchange Commission (SEC) has established certain display standards for market data vendors. For more information, please contact the SEC directly.

NLS carries only trade transactions from Nasdaq systems. Since NLS is not a consolidated trade data feed, it should not be used to feed market data displays that are subject to the SEC Vendor Display Rule.

Issue Statistic Calculations

NLS only provides raw trade data for the Nasdaq execution and TRF systems. If needed, firms should create their own algorithms for issue- and market center-level statistics. To help in the process, Nasdaq offers the following guidelines.

Last Sale and Volume Calculation

Within the market data industry, the term "last sale" has been widely used in conjunction with the SEC Vendor Display Rule. "Last Sale" is typically used to denote the most recent round or mixed lot trade transaction reported by a market center with an eligible sale condition code for the regular U.S. market session. For consolidated Nasdaq and TRF displays, firms should use the time stamp field from
the Trade Report message to determine the proper trade sequence order for last sale calculations as well as time and sales displays.

To facilitate a "Last Sale" calculation, NLS includes the sale condition modifier for both Nasdaq
execution system and TRF transactions. The Sale Condition Modifier
field consists of four levels. A trade should only be applied to the high, low, last sale, and volume calculations if all four sales condition modifiers so allow.

Sale Condition – Level 1 denotes the settlement type of the transaction. If a transaction has a special settlement code, firms should not include transaction in high, low, or last sale price calculations. If the transaction has a regular settlement type, firms should process the next levels to determine proper processing.

Sale Condition – Level 1

Code	Value	High/Low	Last Sale	Volume
@	Regular Settlement	Yes, if other levels do not overrule	Yes, if other levels do not overrule	Yes, if other levels do not overrule
C	Cash Settlement	No	No	Yes
N	Next Day Settlement	No	No	Yes
R	Seller Settlement	No	No	Yes

Sale Condition – Level 2 indicates if a transaction was trade through exempt

Sale Condition – Level 2

Code	Value	High/Low	Last Sale	Volume
F	Intermarket Sweep	Yes	Yes	Yes
O	Opening Print	Yes	Yes	Yes
4	Derivative Priced	Yes	No (except if first regular market trade of day)	Yes
5	Re-Opening Print	Yes	Yes	Yes
6	Closing Print	Yes	Yes	Yes
7	Qualified Contingent Trade (QCT)	No	No	Yes
<space>	Not applicable	See other levels	See other levels	See other levels

Sale Condition – Level 3 indicates if the transaction was reported during regular market hours with a “sold” code or during the extended trading hours session. For the TRF system, the “sold” code is used to indicate that a trade occurred during normal market hours but was reported more than 90 seconds after execution. Historically, only trades that occur during normal market hours and in proper sequence are included in the “last sale” calculation.

Sale Condition – Level 3

Code	Value	High/Low	Last Sale	Volume
T	Extended Hours Trade	No	No	Yes

Sale Condition – Level 3

Code	Value	High/Low	Last Sale	Volume
U	Extended Hours Trade – Reported Late or Out of Sequence	No	No	Yes
L	Sold Last-Reported Late But In Sequence	Yes	Yes	Yes
Z	Sold – Out of Sequence	Yes	No (except if first regular market trade of day)	Yes
<space>	Not applicable	See other levels	See other levels	See other levels

Sale Condition – Level 4 indicates special trading situations.

For the Nasdaq execution system, this sale condition level is used to denote when a trade record contains the Nasdaq Official Opening Price (NOOP) or Nasdaq Official

Closing Price (NOCP) values. Since Nasdaq also reports the underlying cross execution transaction to the tape, the NOOP and NOCP report volume should not be included in the daily volume calculation.

For the Cross Trade (X) modifiers, firms should defer to the Level 2 and Level 3 sale condition codes to determine whether to include the trade in the high, low, and last sale calculation statistics.

As outlined in the table below, Nasdaq also observes special processing rules for the Prior Reference Price (P), Weighted Average Price (W), and Odd Lot Execution (o) codes.

Sale Condition – Level 4

Code	Value	High/Low	Last Sale	Volume
A	Acquisition	Yes	Yes	Yes
B	Bunched	Yes	Yes	Yes
D	Distribution	Yes	Yes	Yes
H	Price Variation Trade	No	No	Yes

Sale Condition – Level 4

Code	Value	High/Low	Last Sale	Volume
M	Nasdaq Official Close Price (NOCP)	Yes for Nasdaq market center only or Nasdaq system-wide displays No for Nasdaq/ FINRA TRF only displays	Yes (for Nasdaq market center only or Nasdaq system-wide displays only)	No
o	Odd lot execution	No	No	Yes
P	Prior Reference Price	Yes	No (except if first regular market trade of day)	Yes
Q	Nasdaq Official Opening Price (NOOP)	Yes for Nasdaq market center only or Nasdaq system-wide displays No for Nasdaq/ FINRA TRF only displays	No	No
S	Split Trade	Yes	Yes	Yes
V	Contingent Trade	No	No	Yes
W	Average Price[3]	No	No	Yes
X	Cross Trade	Yes (if sent with an eligible Level 2 modifier)	Yes (if sent with an eligible Level 2 modifier)	Yes
x	Odd Lot Cross Trade	No	No	Yes
<space>	Not applicable	See other levels	See other levels	See other levels

Last Trade Calculation

The term "Last Trade" is more widely applied within the market data industry. Many firms use the term "last trade" to refer to the most recent trade transaction reported in sequence. In addition to the "last sale" codes, many firms include odd lots and extended trading hour executions in the "last trade" price calculations.

Net Change Calculation

NLS does not include a net change indicator field. Data feed recipient must perform their own calculation for last sale eligible and last trade eligible transactions. The formula should be as follows:

Net Change for Issue Symbol = Current Trade Price - Adjusted Previous Close Price

To obtain the Adjusted Previous Close, firms will need to apply splits and dividends to the previous day's closing price value. For Nasdaq-listed securities, firms may obtain dividend and split information via the Dividend Daily List web-based product. For ordering information, please refer to the Daily List product page on the Nasdaq Trader website.

For NYSE-, NYSE American-, NYSE Arca- and BATS-listed securities, firms should contact the listing exchange directly to inquire about corporate action data delivery options.

Dividend adjustments are typically applied to the closing price on the day prior to ex- date and reflected on the ex-date, the next business day. Cash dividends of $0.01 or greater should be subtracted from the closing price. For stock dividends, the closing price should be divided by the dividend amount.

[3] For NLS processing, Nasdaq will use the sale condition modifier of "W" for all Average Price Trades regardless of the listing market center. While the UTP SIP uses the same sale condition modifier code for Nasdaq-listed issues, it should be noted that SIAC / CTA SIP uses a "B" sale condition modifier for Average Price Trades for NYSE-, NYSE American and NYSE Arca- listed securities.

Appendix B - Stock Symbol Convention

For Nasdaq-listed issues, Nasdaq currently restricts its symbol length to a maximum of 8 characters. For common stock issuances, Nasdaq, PSX and Nasdaq Texas will only assign root symbols of 1 to 4 characters in length with possible fifth and or sixth character denoting a suffix. In certain instances, a dot "." delimiter may be applied to symbols after the root and between the suffix eg., XXXX.A. For subordinate securities, Nasdaq and Nasdaq Texas will assign a 5 character symbol for which the last character relays information about the issue class or issue type. For the current list of fifth and or six character symbol suffixes,
please refer to Ticker Symbol Convention page on the Nasdaq Trader website.

For NYSE-, NYSE American- and NYSE Arca-listed securities with subordinate issue types, please refer to Ticker Symbol Convention page on the Nasdaq Trader website.

Appendix C – Trading Action Reason Codes

For Nasdaq-listed issues, Nasdaq acts as the primary market and has the authority to institute a trading halt or trading pause in an issue due to news dissemination or regulatory reasons.

For CQS issues, Nasdaq abides by any regulatory trading halts and trading pauses instituted by the primary or listing market as appropriate.

For both issue types, Nasdaq may also halt trading for operational reasons.

Nasdaq will send out a trading action message to inform its market participants when the trading status of an issue changes. For informational purposes, Nasdaq also attempts to provide the reason for each trading action update. For bandwidth efficiency reasons, Nasdaq uses a 4-byte code for the reason on its outbound data feeds.

Reason Codes For Trading Halt Actions

Code	Value
T1	Halt News Pending
T2	Halt News Disseminated
T5	Single Stock Trading Pause In Effect
T6	Regulatory Halt — Extraordinary Market Activity
T8	Halt ETF
T12	Trading Halted; For Information Requested by Listing Market
H4	Halt Non-Compliance
H9	Halt Filings Not Current
H10	Halt SEC Trading Suspension
H11	Halt Regulatory Concern
O1	Operations Halt; Contact Market Operations
LUDP	Volatility Trading Pause
LUDS	Volatility Trading Pause – Straddle Condition
MWC1	Market Wide Circuit Breaker Halt – Level 1
MWC2	Market Wide Circuit Breaker Halt – Level 2
MWC3	Market Wide Circuit Breaker Halt – Level 3
MWC0	Market Wide Circuit Breaker Halt – Carry over from previous day
IPO1	IPO Issue Not Yet Trading
M1	Corporate Action
M2	Quotation Not Available
<space>	Reason Not Available

Reason Codes For Quotation/Trading Resumption Actions

Code	Value
T3	News and Resumption Times
T7	Single Stock Trading Pause / Quotation Only Period
R4	Qualifications Issues Reviewed/Resolved; Quotations/Trading to Resume
R9	Filing Requirements Satisfied/Resolved; Quotations/Trading To Resume
C3	Issuer News Not Forthcoming; Quotations/Trading To Resume
C4	Qualifications Halt ended; Maintenance Requirements Met; Resume
C9	Qualifications Halt Concluded; Filings Met; Quotes/Trades To Resume
C11	Trade Halt Concluded By Other Regulatory Auth.; Quotes/Trades Resume

Reason Codes For Quotation/Trading Resumption Actions

Code	Value
MWCQ	Market Wide Circuit Breaker Resumption
R1	New Issue Available
R2	Issue Available
IPOQ	IPO Security Released for Quotation (Nasdaq Securities Only)
IPOE	IPO Security — Positioning Window Extension (Nasdaq Securities Only)
<space>	Reason Not Available

For the current list of regulatory halts, please refer to the Trading Halts page on the Nasdaq Trader website.

Appendix D - Issue Classification Values

Identifies the security class for the issue as assigned by Nasdaq

Codes For Issue Classification Values

Code	Value
A	American Depositary Share
B	Bond
C	Common Stock
F	Depository Receipt
I	144A
L	Limited Partnership
N	Notes
O	Ordinary Share
P	Preferred Stock
Q	Other Securities
R	Right
S	Shares of Beneficial Interest
T	Convertible Debenture
U	Unit
V	Units/Benif Int
W	Warrant

Appendix E - Issue Sub-Type Values

Codes For Issue Classification Values

Code	Value
A	Preferred Trust Securities
AI	Alpha Index ETNs
B	Index Based Derivative
C	Common Shares
CB	Commodity Based Trust Shares
CF	Commodity Futures Trust Shares
CL	Commodity-Linked Securities
CM	Commodity Index Trust Shares
CO	Collateralized Mortgage Obligation
CT	Currency Trust Shares
CU	Commodity-Currency-Linked Securities
CW	Currency Warrants
D	Global Depositary Shares
E	ETF-Portfolio Depositary Receipt
EG	Equity Gold Shares
EI	ETN-Equity Index-Linked Securities
EN	Exchange Traded Notes
EU	Equity Units
F	HOLDRS
FI	ETN-Fixed Income-Linked Securities
FL	ETN-Futures-Linked Securities
G	Global Shares
I	ETF-Index Fund Shares
IR	Interest Rate
IW	Index Warrant
IX	Index-Linked Exchangeable Notes
J	Corporate Backed Trust Security
L	Contingent Litigation Right
LL	Identifies securities of companies that are set up as a Limited Liability Company (LLC)
M	Equity-Based Derivative
MF	Managed Fund Shares
ML	ETN-Multi-Factor Index-Linked Securities
MT	Managed Trust Securities
N	NY Registry Shares
O	Open Ended Mutual Fund
P	Privately Held Security
PP	Poison Pill
PU	Partnership Units
Q	Closed-End Funds
R	Reg-S

Codes For Issue Classification Values

Code	Value
RC	Commodity-Redeemable Commodity-Linked Securities
RF	ETN-Redeemable Futures-Linked Securities
RT	REIT
RU	Commodity-Redeemable Currency-Linked Securities
S	SEED
SC	Spot Rate Closing
SI	Spot Rate Intraday
T	Tracking Stock
TC	Trust Certificates
TU	Trust Units
U	Portal
V	Contingent Value Right
W	Trust Issued Receipts
WC	World Currency Option
X	Trust
Y	Other
Z	Not Applicable

14. Appendix F – Documentation Version Control Log

NLS Version 1.00 February 22, 2007

NLS specification document released to public. For ordering information, please refer to Nasdaq Vendor Alert #2007-011.

NLS Version 1.00 April 30, 2007

The following sections of the NLS were updated for clarity reasons:

Section 5 – Data Type field was updated for all formats to delineate between alphabetic and alphanumeric fields.

Section 5.5.1 – Within the Stock Trading Action message, Nasdaq corrected the Data Type field to alphabetic for Current Trading Status field.

Section 5.5.2 – Within the Issue Directory message format, Nasdaq updated the code list for the Market Category field to denote that space is an allowable value. The Market Category field may be space filled if the security symbol is associated with a test issue OR if Nasdaq Operations adds a production issue to its online systems intra-day.

NLS Version 1.00 June 7, 2007

The following sections of the NLS were updated for clarity reasons:

Section 5.4 – Modified Trade Control message to add a Corrected Trade Control Number field to the message.

NLS Version 1.00 July 2, 2007

The following sections of the NLS were updated to reflect upcoming product changes:

Section 5.2 and Appendix A – Added new sale condition codes for Cross Trade transactions. For details on the new cross trade modifiers, please refer to Nasdaq Vendor Alert #2007-047.

NLS Version 1.00 August 22, 2007

The following sections of the NLS were updated to reflect upcoming product changes:

• Section 1.0 and Section 5 – Updated references to the Trade Reporting Facility (TRF) to the fact the National Association of Securities Dealers (NASD) changed its name to Financial Industry Regulatory Authority (FINRA).

• Section 5.2 and Appendix A – Added note to clearly state that the Nasdaq and TRF systems maintain separate time stamps.

• Appendix A – Modified Level 4 sale condition matrix to clarify processing rules for Nasdaq Official Opening Price (NOOP) and Nasdaq Official Closing Price (NOCP) prints. Firms should include NOOP and NOCP values in Nasdaq market center system (Market Center = "Q" only) or Nasdaq system-wide (Market Centers = "Q"

+ "L") statistics. Firms should however, use the NOOP and NOCP values to set Nasdaq/FINRA TRF system (Market Center = "L" only) statistics.

NLS Version 1.00 October 24, 2008

The NLS specification was updated to reflect the following documentation changes: Hyperlinks to Nasdaq Trader website pages were corrected and email addresses were updated.

NLS Version 1.00 October 30, 2008

The NLS specification was updated to reflect the following documentation changes:

Updated document to ensure that the value of "H" (Price Variation) properly reflected in references to the Level 4 Sale Condition Modifier.

NLS Version 1.00 December 4, 2009

The NLS specification was updated to reflect the following documentation changes:

Edited document to reflect that Sale Condition Level 2 now supports for Intermarket Sweep Order (ISO) values.

NLS Version 1.00 December 17, 2009

The NLS specification was updated to reflect the following documentation changes: Changed the Security Class field values to differentiate between NYSE and NYSE MKT listed issues.

Changed the Sale Condition Modifier - Level 4 code for Odd Lot transactions to lower case "o".

Added Delivery Option sections to highlight FilterView options for Nasdaq Last Sale (NLS).

NLS Version 1.00 January 7, 2010

The NLS specification was updated to reflect the following documentation changes:

• the Security Class field values to differentiate between NYSE, NYSE MKT and Arca listed issues.

NLS Version 1.10 January 26, 2010

Released a new version of the NLS documentation to support the following changes:

• Increased length of the symbol field from 6 characters to 8 characters in multiple message formats in support of the

equity symbology initiative.

• Added note to Appendix B to reflect that Nasdaq is reviewing its stock symbol conventions to determine if changes are needed.

NLS Version 1.10 May 25, 2010

The NLS specification was updated to reflect the following documentation changes:

• Added two new Trading Action – Reason Code values (T5 and T7) in support of the Single Stock Trading Pause.

NLS Version 1.10 July 2, 2010

Nasdaq added new Action Trading code(s) to the Stock Trading Action message for the Nasdaq Volatility Guard trading pause.

NLS Version 1.10 July 14, 2010

Nasdaq added a new Regulation SHO Short Sale Price Test Restricted Indicator message format to be introduced in the fourth quarter of 2010.

NLS Version 1.10 November 4, 2010

Nasdaq updated the Reg SHO message description to reflect the new SEC implementation date.

Nasdaq also fixed a documentation error related to the field layout for the the Stock Trading Action message. (Error was introduced in July of 2010.)

NLS Version 1.10 November 11, 2010

Nasdaq added a note to the sale condition matrixes about its standardization of the Average Price Trade code. As of November 2010, Nasdaq will use the "W" sale condition code for all exchange-listed issues.

NLS Version 1.10 April 6, 2011

Nasdaq added two new Trading Action – Reason codes to Appendix C for the Nasdaq Volatility Guard pilot program. New Reason codes were V1 and V2.

NLS Version 1.10 September 20, 2011

Nasdaq added two new values to the Financial Status Indicator. New values were N and S.

NLS Version 1.10 November 1, 2011

Nasdaq added a new Market Center code, "Z", for BATS-listed securities to the Market Category and Security Class fields.

NLS Version 1.10 November 6, 2012

Released a new version of the NLS documentation to support the following changes:

- Added the "P" value to the Trading State in the Stock Trading Message.

- Modified the values for the Trading Action Reason Codes. Added the following codes:
  - LUDP - Volatility Trading Pause
  - MWC1 - Market Wide Circuit Breaker Halt – Level 1
  - MWC2 - Market Wide Circuit Breaker Halt – Level 2
  - MWC3 - Market Wide Circuit Breaker Halt – Level 3
  - MWCQ - Market Wide Circuit Breaker Resumption
- Removed the Trading Action values related to the Volatility Guard Program.
- Removed Trading State, "V". Eliminated Trading Action Reason Codes, V1 and V2.

NLS Version 1.10 January 9, 2013

Released a new version of the NLS documentation to support the following changes: Added the following Trading Action Reason Code:

- MWC0 - Market Wide Circuit Breaker Halt – Carry over from previous day
- Removed the Trading State, "R", from the Stock Trading Action message.

NLS Version 1.10 February 22, 2013

Released a new version of the NLS documentation to correct offsets in the Stock Trading Action and Reg SHO Short Sale Price Test Restricted Indicator messages.

NLS Version 1.10 March 9, 2013

Released a new version of the NLS documentation to support the following changes:

Added the following Trading Action Reason Code for LULD to reflect when the National Best Bid is below the lower price band and/or the National Best Offer is above than the upper price band and the NMS Stock is not in a Limit State.

o LUDS - Volatility Trading Pause – Straddle Condition

NLS Version 1.10 April 12, 2013

The NLS specification was updated to reflect the following documentation changes: Changed all references from NYSE Amex to NYSE MKT.

NLS Version 1.10 April 23, 2013

The NLS specification was updated to reflect the addition of the following Event Codes in the System Event Message:

Start of System Hours: This message indicates that Nasdaq is open and ready to start accepting orders.

End of System Hours: Indicates that Nasdaq is now closed and will not accept any new orders today.

NLS Version 1.20 May 29, 2013

The NLS specification was updated to reflect the addition of the Adjusted Closing Price Message.

NLS Version 2.00 July 10, 2013

The NLS Specification was updated to reflect the following changes:

Added Enhanced Symbol Directory Added IPO Quotation Release Message

Added Market-Wide Circuit Breaker (MWCB) Messaging

- MWCB Decline Level Message
- MWCB Status Message

Addition of an internal tracking number to multiple messages

Addition of 'C' to the Financial Status Indicator field in the Symbol Directory Message Addition of 'x' to Sale Condition - Level 4

NLS Version 2.00 August 2, 2013

The NLS Specification was updated to reflect the following changes:

Removed internal tracking number from multiple messages

Inclusion of the Appendices for Issue Classification and Issue Sub-Type Updated offsets in the Symbol Directory Message

Updated offsets and lengths in the MWCB Decline Level Message

Changed the IPO Quotation Release Message Type to "K"

Updated offsets in the IPO Quotation Release Message

NLS Version 2.00 October 1, 2013

The NLS Specification was updated to reflect the following changes: Conversion to a binary format

Clarified interpretation of the levels in the MWCB Decline Levels Message

NLS Version 2.00 August 28, 2014

The NLS Specification was updated to reflect the following changes:

Section 6.5.4- Corrected the language for the Adjusted Closing Price

NLS Version 2.00 December 5, 2014

The NLS Specification was updated to include missing Issue Sub-Type Codes (Appendix F):

AI – Alpha Indexes ETNs

CO – Collateralized Mortgage Obligation EU – Equity Units

F – HOLDRS

IR – Interest Rate IW – Index Warrant

J – Corporate Backed Trust Security

PP – Poison Pill

Q – Closed -End Funds RT – REIT

SC – Spot Rate Closing SI – Spot Rate Intraday

WC – World Currency Option

X – Trust

Y – Other

Z – NA

NLS Version 2.1 March 27, 2015

The NLS Specification was updated to include the following: Addition of the following messages:

- NextShares Trade Report
- Trade Cancel/Error for NextShares
- Trade Correction for NextShares

Addition the Issue Sub-Type "EM" for Exchange Traded Managed Funds Addition of the Level 1 Sale Condition "J " for Proxy Price Settlement Clarification of Data Types

Increased timestamp length to reflect nanosecond granularity

These changes will take effect 10/1/2015. The 2.1 version will go live on 10/1/2015 - with v 2.0 running in parallel through 1/29/16.

Nasdaq and NFS are requesting that market data vendors display NextShares orders, quotations and trades in NAV-based format, if at all possible. For display use, Nasdaq is including the NAV premium / discount amount data points on QBBO, NLS and NLS Plus for these purposes. Firms may also calculate the NAV premium / discount amount from proxy price field by deducting $100 from the disseminated value.

If firms decide to display NextShares data in proxy price format, Nasdaq and NFS are asking firms to add an indicator to the display so consumers to understand that this value is not the actual execution price for the trade/quote

NLS Version 2.1 June 30, 2015

The NLS Specification was updated to now exclude the initially planned Level 1 Sale Condition "J " for Proxy Price Settlement http://www.Nasdaqtrader.com/TraderNews.aspx?id=dtn2015-7

NLS Version 2.1 October 30, 2015

The NLS Specification was updated to reflect sale condition modifiers for Qualified Contingent Trades (QCT)

NLS Version 2.1 December 23, 2015

The NLS Specification was updated to reflect the following changes: Section 6.7 - Trade correction for NextShares - Corrected the field offsets

NLS Version 2.1 September 12, 2017

The NLS Specification was updated to reflect the following change:

• A new Market Category code in the Symbol Directory messages for the Investors' Exchange, LLC to distinguish IEX-listed issues. New market category code is "V".

- A new Security Class field in the following messages:
- Stock Trading Action (Type H)
- Trade Report – Non-NextShares (Type T)
- Trade Cancel/Error – Non-NextShares (Type X)
- Trade Correction – Non-NextShares (Type C)
- Adjusted Closing Price (Type G)

NLS Version 2.1 September 12, 2017

NLS Version 2.1 September 12, 2017

NLS Version 2.1 September 12, 2017

The NLS Specification was updated to reflect the following change:

- A new Market Category code in the Symbol Directory messages for the Investors' Exchange, LLC to distinguish IEX-listed issues. New market category code is "V".
- A new Security Class field in the following messages:
  - Stock Trading Action (Type H)
  - Trade Report – Non-NextShares (Type T)
  - Trade Cancel/Error – Non-NextShares (Type X)
  - Trade Correction – Non-NextShares (Type C)
  - Adjusted Closing Price (Type G)

NLS Version 2.2 March 3, 2018

Released a new version of Nasdaq Last Sale documentation to add the new Operational Halt message (Section 6.8.7) to indicate the current Operational Status of a security to the trading community.

NLS Version 2.1 May 3, 2018

Nasdaq made the decision to fall back to the previous version number to avoid customer confusion related to different sequencing between the version number of the product specifications and the version number of the actual product code.

NLS Version 3.0 August 17, 2018

Nasdaq upgraded the software engine that creates the NLS Plus data stream to accommodate the introduction of the FINRA/Nasdaq TRF Chicago facility. The introduction of a new market center code of "2" to support TRF Chicago was also added to this specification. NLS Nasdaq Trades FilterView did not require an upgrade to support TRF Chicago, so the version number has not changed from 2.1.

NLS Version 3.0 May 17, 2021

Nasdaq enhanced message End of Day Trade Summary messages to now inlucde the Consolidated High Price, Consolidated Low Price, Consolidated Closing Price, and add Consolidated Open Price to the end of the message.

NLS Version 3.0 May 17, 2021

Nasdaq enhanced non-nextshares trades with Long form trades messages exceeding the upper limit 4-byte.

NLS Version 3.0 December 31, 2021

Nasdaq created separate and distinct specifications for both Nasdaq FilterView and Nasdaq TRF FilterView.

NLS Version 3.0 July 14, 2022

Due to the launch of non-integer leverage factors, updated ETP Leverage Factor from section 7.3 page 29.

NLS Version 3.0 May 28, 2024

In accordance with recent SEC rule change, per the Equity Trader Alert, Nasdaq will no longer be disseminating Sale Condition code “N” Next Day Settlement on respective trade feeds.

NLS Version 4.0 June 23, 2024

In accordance with recent FINRA change allowing for fractional shares to be reported by the TRFs Nasdaq is making changes to their message structures to support such change.

Nasdaq is also moving to a single protocol for their last sale feeds to promote a more customer friendly method of interating with our data across SROs and products.

NLS Version 4.0 June 16, 2025

The NLS Specification was updated to reflect the following changes:

In accordance with recent FINRA change allowing for fractional shares to be reported by the TRFs Nasdaq is making changes to their message structures to support such change. All price, size, and volume fields will be changing to datatype “Price (4)” or “Size (6)”. There will be a new field “Client Timestamp” that reflects the TRF reported timestamp. The value will be set to 0 for non-TRF trades. “Client Timestamp” will be available on the following messages:

- Trade Report
- Trade Cancel/Error
- Trade Correction

Nasdaq is also moving to a single protocol for their last sale feeds to promote a more customer friendly method of interating with our data across SROs and products. These changes will include removal of NextShares and Long Form messages seen in previous versions.

NLS Version 4.0 June 23, 2025

The NLS Specification was updated to include additional listing market value “M”.

NLS Version 4.0 February 13, 2026

The NLS specification was updated to reflect the Nasdaq BX name change to Nasdaq Texas

NLS Version 4.0 February 19, 2026

Updated to include value “Z” in IPO flag field of Stock Directory message

NLS Plus Version 5.0 May 19, 2026

Updated to have timestamp since Epoch and support additional markets/sessions.

NLS Version 5.0 June 17, 2026

The NLS Specification was updated to include additional listing market value “F”.