Lightspeed Gateway::Prints and Quotes

All messages are text based in order to ensure human readability.

End Of Message (EOM) is a Line Feed (ASCII code 0x0a) or optionally a Carriage Return and Line Feed (ASCII codes 0x0d and 0x0a, respectively), both of these EOM indicators should be accounted for in client code.

Fields within a message are separated by any number of spaces (ASCII code 0x20)

Messages are classified into Control messages, Price messages, and ECN messages. Control messages are used for the configuration and control of all the applications. Price messages are used to distribute primary market data. ECN messages are used to distribute limit order books for Electronic Communication Networks.

Messages will be transmitted through standard TCP/IP sockets.

All messages will have a 2 character Message ID as the first field that uniquely identifies the message in the market data system. This 2 character Message ID defines the format of each message.

No server will ever disconnect a client, as there is no manner to indicate the health of a socket connection. No login or disconnect indication is needed. Closing a socket will close your session. There is no way to continue a closed session.

Client-Side Message Handling

Clients should read messages to the EOM marker, then check the Message ID field. Any Message ID that the client does not understand MUST be gracefully discarded. Receiving a message that the client does not know how to handle does NOT imply corruption of the stream nor warrant a disconnection/resynchronization with the server.

Clients should also consider all documented fields to be unchanging, however there may be more fields after those documented in the future. For extensibility messages will support the addition of new fields appended to what is documented below. Clients should parse fields up to the field numbers indicated below. Extra data before the EOM marker must not be considered malformed. Receiving a message with additional fields does not imply corruption of the stream nor warrant a disconnection/resynchronization with the server.

All customer applications MUST be prepared to accept new messages and fields as described above at any time.

Stream Status Messages

There are three special messages inserted into the stream from the server regarding the status of the stream. These messages consist just of a Message ID immediately followed by an EOM marker. Stream status messages are specific to the stream the client is reading, and are not system-wide.

Server to Customer Application

Message ID	Description
_Q	Messages are being queued server-side
_q	Messages are no longer queued
_D	Messages have been discarded by the server
_h	Message as server's heartbeat, this is a response to heartbeat message from client (see below).

Customer Application to Server

Message ID	Description
_H	Message as client's heartbeat

It is up to the client application to act on these messages appropriately. A list of possible reactions is provided below.

Message ID	Reason/Reaction
_Q	Client Application is not reading the data requested quickly enough and is causing the server to queue messages. Client Application may choose to reduce the amount of securities being watched.
_q	Client Application has caught up with the data stream.
_D	Client Application failed to catch up with the data stream, and data was lost. Client Application wipes its book information and rebuilds it again, possibly reducing the number of stocks it is watching.

Client Identification

[VI] Validate and Version Information

When connecting to any of the price servers the first message sent should be the optional VI message. Some of the servers require this message and will not send any data without verifying the login information. Doing this allows the programming support team to assist you in debugging your problems. In response the client will receive a message if the login successeded ("VA") or failed ("VX"). Additionally, an advisory message indicating market state will be generated in response to this message. See the "CI", "CJ", "CO", and "CC" messages below.

Customer Application to Server

Field	Description		Value
1	Message ID	Message type indicator	Text "VI"
2	Trader	Name of trader	Text
3	Password	Password for trader	Text
4	Version Text	Version of software	Text

[VA] Validate Approved

Response to “VI” message. Approved the identification will result in this message. After receiving this message the client can send subscription messages

Customer Application to Server

Field	Description		Value
1	Message ID	Message type indicator	Text “VA”
2	Venue	Name of venue connection is done for.	Text
3	Optional Data 1	Exchange code or other optional data.	Text
4	Optional Data 2	Exchange code or other optional data.	Text

[VX] Validate Rejected

Response to “VI” message. Rejected the identification will result in this message. After receiving this message any subscription message the client sends will return nothing.

Customer Application to Server

Field	Description		Value
1	Message ID	Message type indicator	Text “VX”
2	Venue	Name of venue connection is done for.	Text
3	Optional Data 1	Exchange code or other optional data.	Text
4	Optional Data 2	Exchange code or other optional data.	Text

The Price Server uses the same message formats for all participants, with differentiation occurring via the Participant ID field. Messages originating from named Nasdaq participants will carry the participant ID of that market maker. Messages originating from UTP participants carry translated market identifiers. Messages originating from other exchanges such as NYSE or AMEX carry appropriate identifiers. See the table in Appendix A.

Market Depth Quotation Messages

[MS] Market Snapshot

To receive a snapshot of the bids and offers of a specified security. Line count indicates how many listings are available, and can be used as a counter till 0, which is the end of the snapshot for the security. Receiving a message with Line Count 0 signifies the end of the snapshot, and should be immediately followed by an EOM marker. Total messages in the snapshot should be the initial Line Count + 1 for the end of snapshot message.

If a stock is halted or resumed from a previous halt, a TH (*trade halt*) or TR (*trade resume*) message will be transmitted immediately preceding the snapshot. Please refer to the specifications for those messages for more details.

Note: Some snapshot messages may reflect quotes that are not open. The quote condition must be processed in an appropriate fashion.

Customer Application to Server

Field	Description		Value
1	Message ID	Message type indicator	Text "MS"
2	Stock Symbol	Security's ticker symbol	Text

Server to Customer Application

Field	Description		Value
1	Message ID	Message type indicator	Text "MS"
2	Stock Symbol	Security's ticker symbol	Text
3	Line Count	Depth of this security's book	Number
4	Participant ID	Participant ID of this quote	Text
5	Bid	Price on the buy side	Price
6	Bid Size	Amount of shares on the buy side	Number
7	Ask	Price on the sell side	Price
8	Ask Size	Amount of shares on the sell side	Number
9	Idle time	Seconds passed since quote was updated	Number
10	Quote Condition	Directly from the market feed.[1] Typically indicates whether a quote is open or closed.	Text
11	Quote Time	Number of seconds since midnight for this quote	Number

1. Refer to the NQDS and CQS specifications and the Quote Condition description contained in Appendix A.

[MU] **Market Updates**

Registration to receive MU (*market update*), TH (*trade halt*), and TR (*trade resume*) messages on a specified stock.

If a stock is halted or resumed from a previous halt, a TH (*trade halt*) or TR (*trade resume*) message will be transmitted immediately preceding the snapshot. Please refer to the specifications for those messages for more details.

Note: Some market update messages may reflect quotes that are not open. The quote condition must be processed in an appropriate fashion.

Customer Application to Server

Field	Description		Value
1	Message ID	Message type indicator	Text "MU"
2	Stock Symbol	Security's ticker symbol	Text

Server to Customer Application

Field	Description		Value
1	Message ID	Message type indicator	Text "MU"
2	Stock Symbol	Security's ticker symbol	Text
3	Participant ID	Participant ID of this quote	Text
4	Bid	Price on the buy side	Price
5	Bid Size	Amount of shares on the buy side	Number
6	Ask	Price on the sell side	Price
7	Ask Size	Amount of shares on the sell side	Number
8	Quote Condition	Directly from the market feed.[1] Typically indicates whether a quote is open or closed.	Text
9	Quote Time	Number of seconds since midnight for this quote	Number

[MD] Market Dynamic

Registration to receive MS (*market snapshot*), MU (*market update*), TH (*trade halt*), and TR (*trade resume*) messages on a specified stock. Using this message will provide the snapshot up to the request, as well as providing current quotes after the snapshot. If current ongoing data in a security is needed, this message is recommended.

If a stock is halted or resumed from a previous halt, a TH (*trade halt*) or TR (*trade resume*) message will be transmitted immediately. Please refer to the specifications for those messages for more details.

Customer Application to Server

Field	Description		Value
1	Message ID	Message type indicator	Text "MD"
2	Stock Symbol	Security's ticker symbol	Text

[MQ] Market Updates Quit

To stop receiving updates on a security, whether registered via MU (*market update*) or MD (*market dynamic*) message. A successful quit would result in no more MU (*market update*) being sent to the Customer Application. There is no acknowledgement on sending a MQ (*market quit*) message.

Customer Application to Server

Field	Description		Value
1	Message ID	Message type indicator	Text "MQ"
2	Stock Symbol	Security's ticker symbol	Text

Inside Quotation Messages

[IS] Inside Snapshot

To receive an inside snapshot of quotes for a specified security.

If a stock is halted or resumed from a previous halt, a TH (*trade halt*) or TR (*trade resume*) message will be transmitted immediately preceding the snapshot. Please refer to the specifications for those messages for more details.

Customer Application to Server

Field	Description		Value
1	Message ID	Message type indicator	Text "IS"
2	Stock Symbol	Security's ticker symbol	Text

Server to Customer Application

Field	Description		Value
1	Message ID	Message type indicator	Text "IS"
2	Stock Symbol	Security's ticker symbol	Text
3	Tick	Direction of the security [1] The second letter stands for national tick.	Text
4	UPC Indicator	Indication of restricted or unrestricted [1]	Text
5	Bid	Price on the buy side	Price
6	Bid Size	Amount of shares on the buy side	Number
7	Ask	Price on the sell side	Price
8	Ask Size	Amount of shares on the sell side	Number
9	Close	Price of security at yesterday's close	Price 'C' Prefix
10	High	Price of security at it's highest point today	Price 'H' Prefix
11	Low	Price of security at it's lowest point today	Price 'L' Prefix
12	Last	Price of security at it's last print	Price 'A' Prefix
13	Last Size	Amount of shares on it's last print	Number 'S' Prefix
14	Volume	Total number of shares traded today for the Primary Market Center (Primary Market Volume)	Number 'V' Prefix
15	Name	Name of the company that this stock represents	Text
16	Market Category	Category this security falls into [1]	Text
17	Reserved[3]	Unused. Always contains the value "?"	Text
18	Industries	Industries group bit flag combination [2]	Number
19	Market Statistics	Reserved Field	Text
20	Open	Price of security at today's open	Number

			'O' Prefix
21	Bid Market Center	Market center for the best bid	Text
22	Ask Market Center	Market center for the best offer	Text
23	Consolidated Last Price	Price of security for it's last consolidated print	Number 'L' Prefix
24	Market Center	Market Center for the consolidated last price	Text
25	Consolidated Last Size	Size of the Consolidated Last Trade	Number 'z' Prefix
26	Consolidated Open Price	Consolidated Open Price	Number 'o' Prefix
27	Consolidated High Price	Consolidated High Price	Number 'h' Prefix
28	Consolidated Low Price	Consolidated Low Price	Number 'w' Prefix
29	Consolidated Market Volume	Total Consolidated Market Shares traded (Consolidated Market Volume)	Number 'v' Prefix
30	National Bid	National Best Bid Price on the buy side	Price
31	National Bid Size	National Best Bid Amount of shares on the buy side	Number
32	National Ask	National Best Offer Price on the sell side	Price
33	National Ask Size	National Best Offer Amount of shares on the sell side	Number
34	National Bid Market Center	National Best Bid Market center	Text
35	National Ask Market Center	National Best Offer Market center	Text
36	Primary Last Sale Time	Time of the Primary market Last trade. Number of seconds since midnight	Number
37	Consolidated Last Sale Time	Time of the Consolidated Last trade. Number of seconds since midnight	Number
38	Consolidated Close Price	Consolidated Close Price	Price 'c' Prefix
39	Last+ Price[4]	Last trade received for this symbol	Price
40	Last+ Size[4]	Size of the last trade received for this symbol	Number
41	Last+ Sale Time[4]	Time of the last trade received for this symbol	Number
42	Last+ Market Center[4]	The market center associated with the Last+ Sale	Text
43	Dollar Value	The Consolidated price * share dollar value sum	Price
44	Total Trades	Total number of consolidate trades for this security	Number

1. Refer to **Appendix A**
2. Refer to **Appendix B**
3. Previously contained the SOES Tier Size code but this field is now obsolete.
4. These "Last" values ignore all sale conditions and change indicators. This is to provide pre and post market last trade values. Referred to as "last plus".

Note: consulting the Nasdaq Trader website may be helpful. This link describes the previous fields: http://www.nasdaqtrader.com/trader/defincludes/sdDefinitions.stm#market

[IU] Inside Update

To receive changes to the inside quotes of a specified security. Registering for this data streams IU (*inside update*), TU (*trade update*), TH (*trade halt*), and TR (*trade resume*) messages to the Customer Application. The Server will also transmit IS (*inside snapshot*) messages if any fields contained in the Inside Snapshot change in a manner not computable by Inside Update messages alone.

If a stock is halted or resumed from a previous halt, a TH (*trade halt*) or TR (*trade resume*) message will be transmitted immediately preceding the snapshot. Please refer to the specifications for those messages for more details.

Customer Application to Server

Field	Description		Value
1	MessageID	Message type indicator	Text “IU”
2	Stock Symbol	Security’s ticker symbol	Text

Server to Customer Application

Field	Description		Value
1	MessageID	Message type indicator	Text “IU”
2	Stock Symbol	Security’s ticker symbol	Text
3	Tick	Direction of the security The second letter stands for national tick.	Text
4	UPC Indicator	Indication of restricted or unrestricted	Text
5	Bid	Price on the buy side	Price
6	Bid Size	Amount of shares on the buy side	Number
7	Ask	Price on the sell side	Price
8	Ask Size	Amount of shares on the sell side	Number
9	Bid Market Center	Market center for the best bid	Text
10	Ask Market Center	Market center for the best offer	Text
11	Change Indicator	Indicates if this quote affects the Primary Market BBO or National BBO[1]	Number
12	National Best Bid	National Best Bid Price[2]	Price
13	National Best Bid Size	National Best Bid Size[2]	Number
14	National Best Ask	National Best Ask Price[2]	Price
15	National Best Ask Size	National Best Ask Size[2]	Number
16	Best Bid Market Center	Market center for the best bid value[2]	Text
17	Best Ask Market Center	Market center for the best ask value[2]	Text

[ID] Inside Dynamic

Registration to receive IS (*inside snapshot*), IU (*inside update*), and TU (*trade update*) messages on a specified stock. Using this message will provide the inside snapshot, as well as providing current inside movement after the snapshot. If current ongoing inside data for a security is needed, this message is recommended.

If a stock is halted or resumed from a previous halt, a TH (*trade halt*) or TR (*trade resume*) message will be transmitted immediately. Please refer to the specifications for those messages for more details.

Customer Application to Server

Field	Description		Value
1	MessageID	Message type indicator	Text “ID”
2	Stock Symbol	Security’s ticker symbol	Text

[IQ] Inside Quit

Quit receiving inside quote change messages. A successful quit would result in no more IU (*inside update*) or TU (*trade update*) messages being sent to the Customer Application. There is no acknowledgement on sending an IQ (*inside quit*) message.

Customer Application to Server

Field	Description		Value
1	Message ID	Message type indicator	Text “IQ”
2	Stock Symbol	Security’s ticker symbol	Text

Symbol Directory Messages

This section describes messages for symbol directory.

[NS] No Symbol

This message is a reply to any snapshot request for either IU (*inside snapshot)* or MS (*market snapshot)*. The reply will be sent to the client in case the client request a snapshot for a symbol that does not exist.

Server to Customer Application

Field	Description		Value
1	Message ID	Message type indicator	Text “NS”
2	Stock Symbol	Security’s ticker symbol	Text
3	Server ID[1]	Identifier of server that sends the reply back	Text

[NP] No Permission

This message is a reply to any snapshot request for either IU (*inside snapshot)* or MS (*market snapshot)*. The reply will be sent to the client in case the client request a snapshot for a symbol that he does not have permission to quote.

Server to Customer Application

Field	Description		Value
1	Message ID	Message type indicator	Text "NP"
2	Stock Symbol	Security's ticker symbol	Text
3	Server ID[12]	Identifier of server that sends the reply back	Text

Trade and Regulatory Messages

[TH] Trade Halt

This message indicates a regulatory trading halt has occurred or is in effect for the given security. A list of current halts can be obtained from the server by transmitting a TH message to the Server. The server will respond with a series of messages with Line Count indicating the number of remaining TH messages, until Line Count reaches 0. The last message in the set will contain no fields beyond Field 2 (Line Count).

If a registered security undergoes a regulatory halt, this message will be transmitted unsolicited with Line Count equal to 1 and proceeded immediately by a TH message with Line Count equal to zero as indicated above. Additionally, if a registration is initiated or snapshot requested for a security that is halted, the server will transmit a pair of TH messages with Line Count equal to 1 and 0 in the same fashion. The messages will precede the requested data.

To summarize, there are exactly three situations in which a halt message can be transmitted:
Solicited by a TH message from the Customer Application.
Solicited by a IS, ID, IU, MS, MD, or MU message from the Customer Application.
Unsolicited update on a registered security that has halted.

In ALL cases, the Line Count field is valid and has meaning. Therefore, the minimum number of TH messages that can be transmitted sequentially is two.

Customer Application to Server

Field	Description		Value
1	Message ID	Message type indicator	Text "TH"

Server to Customer Application

Field	Description		Value
1	Message ID	Message type indicator	Text "TH"
2	Line Count	Number of halt messages remaining	Number
3	Stock Symbol	Security's ticker symbol	Text
4	Idle time	Seconds passed since stock halted	Number

[TI] Trade Imbalance

This message indicates an imbalance of market orders before the market open. This message is meaningful only after 9:00 am. It is also used to indicate an imbalance of market on close orders before the market close. It is only used when the volume of the imbalance exceeds a predefined limit. This message is only currently meaningful for the NYSE and the AMEX.

Server to Customer Application

Field	Description		Value
1	Message ID	Message type indicator	Text "TI"
2	Stock Symbol	Security's ticker symbol	Text
3	Buy Volume	Volume of unmatched buy orders	Number
4	Sell Volume	Volume of unmatched sell orders	Number

[TR] Trade Resume

This message indicates a regulatory trading halt has ended or was previously in effect for the given security. It will be transmitted if a registered security is under regulatory halt and the halt ends. It is transmitted after the quote resumption window has ended and trading has resumed.

This message will also be transmitted if a registration is initiated or snapshot requested for a security that previously halted and resumed. The message will precede the requested data.

Server to Customer Application

Field	Description		Value
1	Message ID	Message type indicator	Text "TR"
2	Stock Symbol	Security's ticker symbol	Text
3	Idle time	Seconds passed since stock resumed	Number

[TU] Trade Update

This message indicates a trade has occurred in the given security. A TU message may be transmitted to the server to register for ongoing trade updates.

Note: Some trade updates have special meaning and may not reflect actual prints. The sale condition must be processed in an appropriate fashion.

Note: If this subscription is used simultaneously with an IU (*inside update*) or ID (*inside dynamic*) subscription, **duplicated** TU messages will be transmitted. Caveat implementor.

Customer Application to Server

Field	Description		Value
1	Message ID	Message type indicator	Text "TU"
2	Stock Symbol	Security's ticker symbol	Text

Server to Customer Application

Field	Description		Value
1	Message ID	Message type indicator	Text "TU"
2	Stock Symbol	Security's ticker symbol	Text

3	Total Volume	Total volume of shares traded in the current day.	Number
4	Sale Price	Price at which trade occurred	Price
5	Sale Condition	Directly from the market feed.[1]	Text
6	Market Center	Market center code. [2]	Text
7	Last Volume	Shares of the last print	Number
8	Change Indicator	Indicates if this trade should update **participant** last/high/low/open prices. [3]	Text
9	Consolidated Change Indicator	Indicates if this trade should update the **consolidated** last/high/low/open prices.[3]	Text
10	Trade Time	Number of seconds since midnight for this trade	Number
11	Sale Condition Wide	This is the 4 character "wide" sale condition if available. Blank locations will be filled with the dash '-' character, E.g.: '--X@'	Text
12	Sub-Market Participant Id	Single Character containing the Sub Market Participant Id or '?' if not supplied by the venue	Text

[TQ] Trade Quit

Discontinues trade update messages solicited by the TU (*trade update*) message.

Note: This message will not discontinue trade updates accompanying an Inside subscription via IU (*inside update*) or ID (*inside dynamic*) messages. It only reverses the effect of the customer transmitted TU message.

Customer Application to Server

Field	Description		Value
1	Message ID	Message type indicator	Text "TQ"
2	Stock Symbol	Security's ticker symbol	Text

Server and Status Messages

[CT] Server Timestamp

This message is periodically transmitted to indicate server timestamp and to act as a heartbeat. The Customer Application may also transmit this message to the Server to actively solicit a timestamp.

Customer Application to Server

Field	Description		Value
1	Message ID	Message type indicator	Text "CT"

Server to Customer Application

Field	Description		Value
1	Message ID	Message type indicator	Text "CT"
2	Timestamp	Current Server time	Unix Timestamp

[CI] Nasdaq Start of Day Indicator

This message indicates that market processing has begun for the day. This message is typically transmitted at 2:40am, Eastern Time.

Note: This message is currently broken. It is not transmitted reliably at the start of day due to system startup constraints. Currently, this message will only be transmitted if the market state is solicited by a VI message.

Server to Customer Application

Field	Description		Value
1	Message ID	Message type indicator	Text "CI"

[CJ] Nasdaq End of Day Indicator

This message indicates that market processing has ended for the day. No messages remain for the current market day. This message is typically transmitted at 6:40 pm, Eastern Time.

Server to Customer Application

Field	Description		Value
1	Message ID	Message type indicator	Text "CJ"

[CO] Nasdaq Start of Session Indicator

This message indicates that primary market trading has opened for the day. This message is typically transmitted at 9:30 am, Eastern Time.

Server to Customer Application

Field	Description		Value
1	Message ID	Message type indicator	Text "CO"

[CC] Nasdaq End of Session Indicator

This message indicates that primary market trading has closed for the day. This message is typically transmitted at 4:00 pm, Eastern Time.

Server to Customer Application

Field	Description		Value
1	Message ID	Message type indicator	Text "CC"

[ED] End of Day Marker

This message indicates that the price server is no longer processing market messages for the day. However, the Server continues to function normally. This message is solely an advisory of the end of day. It is typically transmitted at 8:00 pm, Eastern Time.

Server to Customer Application

Field	Description		Value
1	Message ID	Message type indicator	Text "ED"

Appendix A

Data Types

Type	Description
Number	**An unsigned integer. In some cases, the number may be prefixed by a letter used to distinguish fields visually.**
Text	**Alphanumeric (space converted to underscore)**
Price	**An unsigned number, integer or decimal, no length or format requirements other than a decimal point should be proceeded by a number. In some cases, the price may be prefixed by a letter used to help distinguish the field when visually debugging the market data stream. Examples (all are valid prices): 4 15 3001.25 05.402 105.0 A4 P11.3**
Unix Timestamp	**An unsigned integer representing a standard "Unix style" timestamp. This quantity is the number of seconds passed since 00:00:00 on January 1, 1970.**
Timestamp	**An unsigned integer representing the number of milliseconds past Midnight standard local time. This is Eastern Standard Time (UTC –0500) or Eastern Daylight Time (UTC –0400), according to local daylight savings time rules.**
Short Timestamp	**An unsigned integer representing the number of seconds past Midnight standard local time. This is Eastern Standard Time (UTC –0500) or Eastern Daylight Time (UTC –0400), according to local daylight savings time rules.**
Imbalance	**An unsigned integer with optional prefix. This field is prefixed by an 'S' to indicate sell-side imbalance or a 'B' to indicate buy-side imbalance. If there is no imbalance, this field has no prefix and value 0.**

BuySell Indicator

Value	*Description*
B	**Buy**
S	**Sell**
X	**Do not know (this indicator *only* occurs in ET [*ecn trade*] messages)**

Market Categories

Value	*Description*
NYSE	**New York Stock Exchange**
AMEX	**American Stock Exchange**
NNM	**Nasdaq National Market**
SCM	**Small Cap Market**
OTCB	**OTC BB**
OTCN	**Non Nasdaq OTC BB**
INDX	**Index**
FUTR	**Future**
ETF	**ETF**
PINK	**Pink Sheet**
STAT	**Statistic**
????	**Unknown**

Market Center Code

Value	*Description*
A	**American Stock Exchange**
B	**Boston Stock Exchange**
C	**Cincinnati Stock Exchange**

D	National Association of Securities Dealers Alternative Display Facility
E	No associated market center (handler generated)
M	Chicago Stock Exchange
N	New York Stock Exchange
P	Archipelago / Pacific Exchange
Q	NASDAQ
T	National Association of Securities Dealers
U	OTC Bulletin Board
u	OTC Non-Nasdaq Issue
X	Philadelphia Stock Exchange
Z	BATS Exchange Inc.

Participant ID Reference

Participant ID	*Source*	*Description*
BOST	Nasdaq UTP	Boston Stock Exchange
CINN	Nasdaq UTP	Cincinnati Stock Exchange
ADFN	Nasdaq UTP	NASD Alternative Display Facility
MWSE	Nasdaq UTP	Chicago Stock Exchange
ARCX	Nasdaq UTP	Archipelago / Pacific Exchange
NASD	Nasdaq UTP	Nasdaq
PHIL	Nasdaq UTP	Philadelphia Stock Exchange
NYSE	NYSE	New York Stock Exchange
AMEX	AMEX	American Stock Exchange
BATS	BATS	BATS Exchange Inc
????	Unknown	Reserved for unknown participants

Priority Reset Indicator

T	Order lost its priority.
F	Order kept its priority.
X	It is not known whether the order lost or kept its priority.

Quote Condition

Value	*Description*
The following values apply to all participants:	
L	Closed quote
R	Regular open quote*
The following values apply only to UTP participants within Nasdaq:	
A	Depth on ask side*
B	Depth on bid side*
F	Fast trading
H	Depth on bid and ask*
I	Order imbalance
N	Non-firm quote
O	Opening quote*
X	Order influx
Y	Regular one-sided open quote*
Z	No open / no resume
The following values apply only to NYSE & AMEX:	
A	Slow Quote on Ask (Formerly Depth on ask side)*
B	Slow Quote on Bid (Formerly Depth on bid side)*
C	Closing

D	**News dissemination**
E	**Slow Quote Due to LRP/Gap on Bid (Formerly Order influx)**
F	**Slow Quote Due to LRP/Gap on Ask (Formerly Fast trading)**
G	**Trading range indication**
H	**Depth on bid and ask***
I	**Order imbalance**
J	**Due to related security-news dissemination**
K	**Due to related security-news pending**
M	**Additional information**
N	**Non-firm quote**
O	**Opening quote***
P	**News pending**
Q	**Additional information due to related security**
S	**Due to related security**
T	**Resume**
U	***Slow Quote Due to LRP/Gap on both/Amex Tolerance Breach (New)***
V	**In view of common**
W	***Slow Quote Due to Set Slow List on both sides (New)****
X	**Equipment changeover**
Z	**No open / no resume**

Only quote conditions marked with an asterisk (*) will be considered for the National best bid and offer quote. For more information refer to the NQDS, UQDF, and CQS specifications.

Sale Condition

Value	Description
The following conditions apply to all participants:	
@	**Regular Sale**
A	**Acquisition**
B	**Bunched Trade**
C	**Cash Trade**
D	**Distribution**
K	**Rule 155 Trade**
L	**Sold Last**
N	**Next Day**
O	**Opened**
P	**Prior Reference Price**
R	**Seller**
T	**Form-T Trade**
W	**Average Price Trade**
Z	**Sold (Out of Sequence)**
The following conditions apply only to Nasdaq participants (including UTP):	
G	**Bunched Sold Trade**
S	**Split Trade**
The following conditions apply only to UTP participants within Nasdaq:	
M	**Market Center Close Price**
1	**Stopped Stock – Regular Transaction**
2	**Stopped Stock – Sold Last**
3	**Stopped Stock – Sold (Out of Sequence)**
The following conditions apply only to NYSE & AMEX:	
E	**Automatic Execution**
F	**Burst Basket Execution**
G	**Opening / Reopening Trade Detail**
H	**Intraday Trade Detail**
I	**Basket Index on Close Transaction**

J	Rule 127 Trade
S	Reserved

For more information refer to the NATS, UTDF, and CTS specifications.

Tick Indicator

Value	*Description*
U	**Up**
D	**Down**
N	**No Tick**

UPC Indicator

Value	*Description*
0	**Unrestricted**
1	**Restricted**

Change Indicator

This indictor is used to determine whether this last trade message should change any or combination of the following: Open/High/Low/Last prices.

Value	*Description*
A	**Volume Only**
B	**Last/Volume**
C	**Low/Volume**
D	**Low/Last/Volume**
E	**High/Volume**
F	**High/Last/Volume**
G	**High/Low/Volume**
H	**High/Low/Last/Volume**
I	**Open/Volume**
J	**Open/High/Volume**
K	**Open/Low/Volume**
L	**Open/High/Low/Last/Volume**
M	**Open/High/Low/Volume**
N	**Open/Last/Volume**
O	**Open/High/Last/Volume**
P	**Open/Low/Last/Volume**
a	**Update nothing**
b	**Last**
c	**Low**
d	**Low/Last**
e	**High**
f	**High/Last**
g	**High/Low**
h	**High/Low/Last**
i	**Open**
j	**Open/High**
k	**Open/Low**
l	**Open/High/Low/Last**
m	**Open/High/Low**
n	**Open/Last**
o	**Open/High/Last**
p	**Open/Low/Last**

Values I-M and i-m are used for NYSE only.
Values N-P and n-p are used for futures and indices from SUPI only.
Market Update Quote Change Indicator
This indictor is used to determine whether this last market update message should change affect the National or Primary Market BBO.

Value	*Description*
0	**Does not affect either National or Primary Market BBO**
1	**Affects the National BBO Only.**
2	**Affects the Primary Market BBO Only.**
3	**Affects both the National and Primary Market BBO.** ***Note: there will be an NBBO appendage attached for IU messages.***
4	**Affects both the National and Primary Market BBO – No NBBO appendage attached. Initial quote data affects both BBO and NBBO the same.**

Appendix B

Industries Group Bitflags

Bit	*Description*
1	**UPC11830**
2	**Bank**
4	**Biotech**
8	**Composite**
16	**Computer**
32	**Financial100**
64	**OtherFinance**
128	**Industrial**
256	**Insurance**
512	**Nasdaq100**
1024	**Telecom**
2048	**Transport**
4096	**Utility**
8192	**Biotech100**
16384	**Computer100**
32768	**Canada**

Appendix C

Example conversation with the **Price** server:

VI alpha bits v1.02
<- CO
MD QLGC
<- MS QLGC 108 WCHV 0.00 0 0.00 0 13051 R
<- MS QLGC 107 MSCO 38.07 1 39.52 1 11372 R
106 more messages…
<- MS QLGC 0
<- MU QLGC BRUT 38.55 4 38.56 4 R
<- MU QLGC NITE 38.55 6 38.68 1 R
<- MU QLGC BRUT 38.55 4 38.58 5 R
<- MU QLGC SCHB 38.46 44 38.59 30 R
<- MU QLGC SIZE 38.50 11 38.60 3 R
MQ QLGC

Revision History

Version	Date	Description
1.00	4/2/2003	Initial version of this document
1.01	4/14/2003	- Fixed errors in ECN messages - Indicated that TU is sent with IU & ID - Added indicator tables in Appendix A
1.02	4/16/2003	- Added VI message, - Indicated ECN message volatility - Pointers to Appendix A - Updated Appendix C
1.03	5/5/2003	- Removed ER message. - Updated semantics - Updated Appendix C
1.04	6/11/2003	Added ES message.
1.05	6/23/2003	- Added ER message. - Added ET message. - Added timestamp information. - Updated semantics. - Added timestamp data type to Appendix A. - Added priority reset flag to Appendix A. - Updated Appendix A buy/sell flags. - Updated Appendix C.
	6/27/2003	Clarified EC message semantics
1.06	8/26/2003	- Renamed NQDS Messages to Price Server Messages. - Added CT message. - Added CC, CI, CJ, and CO messages. - Added TH and TR messages. - Added ED message. - Added TI message. - Updated TU message. - Updated IS, ID, IU, MS, MD, and MU messages to reflect halt semantics. - Added Quote Condition and Sale Condition informative values to Appendix A. - Added Market Center values to Appendix A. - Removed obsolete SOES Tiers information from Appendix A. - Updated Appendix C.

1.07	11/20/2003	Updated IU message. IS messages will now be transmitted to an IU or ID subscription if a trade break or other update causes the IS fields to change.
	2/18/2004	- Inside prices accompanied by associated market center; IS, TU will carry the price and shares of the consolidated last print. - Updated ECN participants to reflect Island's change to INET and to remove Instinet. - Added TU and TQ customer application to server messages. - Updated appendix C. - Document renamed to Trillium Market Data Specification. - Removed obsolete advisories.
1.08	3/17/2004	- Added Market Centers "N" and "T" to Appendix A. - Removed consolidated last price and size from TU message.
	4/29/2004	Added notices regarding quote/sale condition processing to MS, MU, and TU message descriptions.
1.09	4/19/2004	- Added imbalance message (EI) to ECN Messages. - Added imbalance appendage type A (ARCA) to imbalance message description.
1.10	6/8/2004	- Addendum to 1.09 revisions: IU and IS message ticks expanded to contain national tick as well as market-specific tick. - Fix ECN name in ECN Message Timestamps.
1.11	7/14/2004	Added extended snapshot messages (XS, XA, XI) to ECN Messages.
1.12	12/12/2006	- Changed references from Price Server to Prints and Quotes Server - Removed all BRUT ECN references - Removed ECNMD references that are already included in Lightspeed Gateway Books - Created Appendix A to contain just Data Types table - Merged ‘Industries Group Bitflags’ into Appendix B
1.13	2/8/2007	- NYSE/AMEX Quote Condition ‘A’ - Changed description from ' Depth on ask side ' to read ' Quote is slow as a result of market conditions such as, but not limited to, locked or cross markets ' - Hybrid Market consolidated tape changes - NYSE/AMEX Quote Condition ‘B’ - Changed description from ' Depth on bid side ' to read ' Quote is slow as a result of market conditions such as, but not

		limited to, locked or cross markets ' - Hybrid Market consolidated tape changes - NYSE/AMEX Quote Condition ‘H’ - Changed description from ' Depth on bid and ask side ' to read ' Quote is slow as a result of market conditions such as, but not limited to, locked or cross markets ' - Hybrid Market consolidated tape changes - NYSE/AMEX Quote Condition ‘E’ - Changed description from ' Order influx ' to read ' Quote is slow as a result of LRP or gap quote' - Hybrid Market consolidated tape changes - NYSE/AMEX Quote Condition ‘F’ Changed description from ' Fast trading ' to read ' Quote is slow as a result of LRP or gap quote' - Hybrid Market consolidated tape changes - Added new NYSE/AMEX Quote Condition 'U' and description 'Quote is slow as a result of LRP or gap quote' - Added new NYSE/AMEX Quote Condition 'W' and description 'Quote is slow as a result of a set slow list that includes high-priced securities' - Changed NYSE/AMEX Sales Condition 'I' description from 'Burst Basket Execution' to read 'Indicates an Intermarket Sweep Order execution when a better price was on another market ' - Hybrid Market consolidated tape changes - Changed NYSE/AMEX Sales Condition 'F' description from 'Basket Index on Close Transaction' to read ' Indicates trade was as a result of a sweep execution where CAP orders were elected and executed outside the best bid or offer, and appear as repeat trades ' - Hybrid Market consolidated tape changes - Removed MS (market snapshot) mention from ‘MU’ – Market Updates section as per Schonfeld specs - Renamed ‘[VI] Version Information Client Identification’ to ‘[VI] Validate and Version Information’ - Add the “VA” and “VX” messages to Client Identification Messages for all market data servers as per Schonfeld specs.
1.14	5/22/2007	- Add change indicators to TU message. - Added Change Indicators table to Appendix B
2.00	1/7/2009	- Renamed as Lightspeed Gateway Prints and Quotes

2.01	1/9/2009	- Added the TA (Time and Sales request / response) message type.
2.02	1/12/2009	- Updated TU to include the consolidated change indicator. - Updated IS to include consolidated Last size and the consolidated Open / High / Low prices.
2.03	1/15/2009	- Updated IS message documentation to include the value prefix for some fields (High / Low / Open / Close / Last / Last Size values). - Updated IS message to Include the Consolidated Market Volume and clarified the old volume message to be the Primary Market Volume (previously it was unspecified)
2.04	1/15/2009	- Added Trade Time to the TU message (Number of seconds past midnight) - Added National Best Bid, Best Bid Size, Best Offer, Best Offer Size, Best Bid Market center and Best Offer Market Center to IS message - Added Primary Market Last Timestamp and Consolidated Last Timestamp to IS message - Added Volume update indicators to the Consolidated and Participant change indicators - Added Wide sale condition to the TU message.
2.05	2/13/2009	- Added the ‘a’ change indicator for updating nothing at all, and ‘A’ for updating Volume Only.
2.06	2/16/2009	- Added the Inside Update change indicator to indicate if it is a National BBO update, Primary Market BBO update, both National and Primary Market BBO or Not a BBO quote.
2.07	3/23/2009	- Added the NBBO appendage data to the IU message. If we have a condition where we update both the BBO and the NBBO for Nyse, (Change Indicator ‘3’) we will have an NBBO appendage, containing the Best bid + bid size, ask + ask size and nbbo market centers. - Added the consolidated close price to the IS message. - Added the quote time to the MU and MS messages. - Added Last+ fields to the IS message. - Added the Market Center for the Last+ trade. - Added documentation for the Remote Snapshot port.
2.08	4/3/2009	- Added NS (No Symbol) message from Server to Client. - Added NP (No Permission) message from Server to Client. - Added new Market Center Code 'Z' and Participant Id ("BATS") for new BATS Exchange Inc exchange

		- Added new consolidated "Dollar Value" and "Total Trades" fields to the end of the IS message. - Added an optional "Sub-Market Participant Id" field to the Trade Update ("TU") message
2.09	5/4/2009	- Added new values to the change indicator flag. Support open flag with last.