

Wire Protocol

Message Formats

Administrative Message Format

Packet Header
Applicable Message Header

Business Message Format

Packet Header
Applicable Message Header
Message Body
Appendage Header
Applicable Appendage(s)

Field Mappings

Packet Headers

Packet Header

Name	Offset	Length	Value	Notes
Packet Length	0	4	Unsigned Int	Full packet length, including this header
Packet Header Length	4	1	Unsigned Int	Length of this header
Stream ID	5	8	Unsigned Int	Mapped to ingress multicast group and port
Chunk Count	13	1	Unsigned Int	Never zero
Current Chunk	14	1	Unsigned Int	Never zero
Packet Compression	15	1	Unsigned Int	Compression applied to all messages 0 = None 1 = FAST
Egress Time	16	8	Unsigned Int	UTC Epoch, nanoseconds
Msg Count	24	1	Unsigned Int	Number of messages following this header, might be zero
First Seq Num	25	8	Unsigned Int	SeqNum of first message, not zero if Msg Count > 0

Message Headers

Administrative Message Header

Name	Offset	Length	Value	Notes
Msg Header Length	0	2	Unsigned Int	Length of the message header
Msg Length	2	2	Unsigned Int	Length of the message
Number of Appendages	4	1	Unsigned Int	The number of appendages to the message

Msg Type	5	2	Unsigned Int	Admin Messages: 0x00 = Administrative Message 0x01 = Sequence Reset 0x02 = Heartbeat
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Business Message Header

Name	Offset	Length	Value	Notes
Msg Header Length	0	2	Unsigned Int	Length of the message header
Msg Length	2	2	Unsigned Int	Length of the message
Number of Appendages	4	1	Unsigned Int	The number of appendages to the message
Msg Type	5	2	Unsigned Int	Business Messages 0x20 = BBO Quote 0x21 = Depth Quote 0x22 = Order New 0x23 = Order Delete 0x24 = Order Fill 0x25 = Order Cancel 0x26 = Order Replace 0x27 = Order Revise 0x28 = Trade
Ingress Timestamp	7	8	Unsigned Int	
Source Content	15	2	Unsigned Int	
Entitlement	17	2	Unsigned Int	

Business Messages

BBO Quote

Name	Offset	Length	Value	Notes
Ticker	0	12	String 12 characters Left aligned Null padded	Ticker symbol
Bid	12	8	Unsigned Int 6 implied decimals	Bid price with 6 implied decimals
Bid Size	20	8	Unsigned Int	Bid size in actual shares
Bid Time	28	8	Unsigned Int	Bid Exchange timestamp, nanos since midnight
Bid Market	36	4	Left Aligned Null Padded 4 character string	Bid market center
Ask	40	8	Unsigned Int 6 implied decimals	Ask price with 6 implied decimals
Ask Size	48	8	Unsigned Int	Ask size in actual shares
Ask Time	56	8	Unsigned Int	Ask Exchange timestamp, nanos since midnight
Ask Market	64	4	Left Aligned Null Padded	Ask market center

			4 character string	
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Depth Quote

Name	Offset	Length	Value	Notes
Ticker	0	12	String 12 characters Left aligned Null padded	Ticker symbol
Side	12	1	Unsigned Int	Order side Bid = 0 Ask = 1
Price	13	8	Unsigned Int 6 implied decimals	Order price
Size	21	8	Unsigned Int	Order Size
Time	29	8	Unsigned Int	Exchange timestamp
Market	37	4	Left Aligned Null Padded 4 character string	Order market center
MMID	41	12	String 12 characters Left Aligned Null Padded	Market Maker ID

Order Add

Name	Offset	Length	Value	Notes
Market	0	4	Left Aligned Null Padded 4 character string	Order market center
Ticker	4	12	String 12 characters Left aligned Null padded	Ticker symbol
Side	16	1	Unsigned Int	Order side Bid = 0 Ask = 1
Order ID	17	8	Unsigned Int	Exchange order ID Unique per market
Price	29	8	Unsigned Int 6 implied decimals	Order price
Size	37	8	Unsigned Int	Order Size
Time	45	8	Unsigned Int	Exchange timestamp

Order Cancel

Name	Offset	Length	Value	Notes
Market	0	4	Left Aligned Null Padded	Order market center

			4 character string	
Ticker	4	12	String 12 characters Left aligned Null padded	Ticker symbol
Order ID	16	8	Unsigned Int	Exchange order ID Unique per market
Time	28	8	Unsigned Int	Exchange timestamp

Order Delete

Name	Offset	Length	Value	Notes
Market	0	4	Left Aligned Null Padded 4 character string	Order market center
Ticker	4	12	String 12 characters Left aligned Null padded	Ticker symbol
Order ID	16	8	Unsigned Int	Exchange order ID Unique per market
Time	28	8	Unsigned Int	Exchange timestamp

Order Fill

Name	Offset	Length	Value	Notes
Market	0	4	Left Aligned Null Padded 4 character string	Order market center
Ticker	4	12	String 12 characters Left aligned Null padded	Ticker symbol
Order ID	16	8	Unsigned Int	Exchange order ID Unique per market
Time	24	8	Unsigned Int	Exchange timestamp

Order Replace

Name	Offset	Length	Value	Notes
Market	0	4	Left Aligned Null Padded 4 character string	Order market center
Ticker	4	12	String 12 characters Left aligned Null padded	Ticker symbol
Previous Order ID	16	8	Unsigned Int	Order being cancelled Exchange order ID Unique per market
New Order ID	24	8	Unsigned Int	New order Exchange order ID Unique per market

Price	32	8	Unsigned Int 6 implied decimals	Order price
Size	40	8	Unsigned Int	Order Size
Time	48	8	Unsigned Int	Exchange timestamp

Order Revise

Name	Offset	Length	Value	Notes
Market	0	4	Left Aligned Null Padded 4 character string	Order market center
Ticker	4	12	String 12 characters Left aligned Null padded	Ticker symbol
Order ID	16	8	Unsigned Int	Exchange order ID Unique per market
Time	24	8	Unsigned Int	New exchange timestamp

Trade

Name	Offset	Length	Value	Notes
Market	0	4	Left Aligned Null Padded 4 character string	Order market center
Ticker	4	12	String 12 characters Left aligned Null padded	Ticker symbol
Time	16	8	Unsigned Int	Exchange timestamp
Price	24	8	Unsigned Int 6 implied decimals	Execution price
Volume	32	8	Unsigned Int	Execution size
Composite Price Change	40	2	Unsigned Int	Bitset 1 for the price change indicators for the composite 1 st bit : Last 2 nd bit: Open 3 rd bit: Close 4 th bit: High 5 th bit: Low 6 th bit: Volume 7 th bit: Bid 8 th bit: Ask Last 8 bits reserved
Participant Price Change	42	2	Unsigned Int	Price change indicators for the participant. Bitset 1 for the price change indicators 1 st bit : Last 2 nd bit: Open 3 rd bit: Close 4 th bit: High 5 th bit: Low

				6 th bit: Volume 7 th bit: Bid 8 th bit: Ask Last 8 bits reserved
Trade Condition 1 Settlement Condition	44	1	char	Regular = '@' Cash = 'C' Next Day Trade = 'N' Seller = 'R'
Trade Condition 2 Trade Thru Exemption Condition	45	1	char	None = '' Intermarket Sweep Order = 'F' Market Center Opening Trade = 'O' Derivatively Priced = '4' Market Center Reopening = '5' Market Center Closing = '6' Corrected Last Sale = '9'
Trade Condition 3 Sequencing Condition	46	1	char	None = '' Sold Last = 'L' Extended Hours = 'T' Extended Hours Sold = 'U' (out of sequence) Sold = 'Z'
Trade Condition 4 SRO Detail Condition	47	1	char	Regular Trade = '@' Average Price Trade = 'B' Automatic Execution = 'E' Price Variation Trade = 'H'

Appendage Header

Appendage Header

Name	Offset	Length	Value	Notes
Length	0	2	Unsigned Int	Length of appendage including this header
Type	2	2	Unsigned Int	= MMID Attribution = TotalView Order Add = TotalView Order Cancel = TotalView Order Delete = TotalView Order Fill = TotalView Order Fill Priced = Arca XDP Order Add = Arca XDP Order Add Attributed = Arca XDP Order Delete = Arca XDP Order Fill = Arca XDP Order Revise = Arca XDP Trade

General Appendages

MMID Attribution

Name	Offset	Length	Value	Notes
MMID	0	12	String 12 characters Left aligned	Market Maker ID

			Null padded	
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TotalView Appendages

TotalView Order Add

Name	Offset	Length	Value	Notes
Stock Locate	0	2	Unsigned Int	Stock Locator Code

TotalView Order Cancel

Name	Offset	Length	Value	Notes
Stock Locate	0	2	Unsigned Int	Stock Locator Code
Size	2	8	Unsigned Int	Size of shares canceled Actual Shares, not Lots

TotalView Order Delete

Name	Offset	Length	Value	Notes
Stock Locate	0	2	Unsigned Int	Stock Locator Code
Order Reference Number	2	8	Unsigned Int	Reference number of the order being canceled

TotalView Order Fill (Unpriced)

Name	Offset	Length	Value	Notes
Stock Locate	0	2	Unsigned Int	Stock Locator Code
Order Match ID	2	8	Unsigned Int	NASDAQ-generated day-unique match number
Size	10	8	Unsigned Int	Order execution size Actual shares not lots

TotalView Order Fill (Priced)

Name	Offset	Length	Value	Notes
Stock Locate	0	2	Unsigned Int	Stock Locator Code Common field
Order MatchID	2	8	Unsigned Int	NASDAQ-generated day-unique match number
Printable	10	1	Unsigned Int	Bitset 1: should be reflected on time & sales displays and in volume calculations
Executed Price	11	8	Unsigned Int 6 implied decimals	Price at which order was executed With 6 implied decimals
Size	19	8	Unsigned Int	Order execution size Actual shares not lots

Arca XDP Appendages

Arca XDP Order Add

Name	Offset	Length	Value	Notes
Duration	0	1	Unsigned Int	Day = 0 Good Til Cancel = 1

Morning Hours	1	1 bit	Unsigned Int	Bitset 1: Order for Arca Morning Hours
Core Hours		1 bit	Unsigned Int	Bitset 1: Order for Arca Core Hours
Late Hours		1 bit	Unsigned Int	Bitset 1: Order for Arca Late Hours
Reserved		5 bits		

Arca XDP Order Add Attributed

Name	Offset	Length	Value	Notes
Duration	0	1	Unsigned Int	Day = 0 Good Til Cancel = 1
Morning Hours	1	1 bit	Unsigned Int	Bitset 1: Order for Arca Morning Hours
Core Hours		1 bit	Unsigned Int	Bitset 1: Order for Arca Core Hours
Late Hours		1 bit	Unsigned Int	Bitset 1: Order for Arca Late Hours
Reserved		5 bits		
Firm ID	2	5	Unsigned Int	Firm ID of order

Arca XDP Order Revise

Name	Offset	Length	Value	Notes
Symbol Index	0	4	Unsigned Int	Numerical representation
Symbol Sequence	4	4	Unsigned Int	Symbol sequence number
Reason	8	1	Unsigned Int	Reason code = Changed And Lost Position = Changed And Kept Position = Routed Away = Filled
Price	9	8	Unsigned Int 6 implied decimals	New order price With 6 implied decimals
Size	17	8	Unsigned Int	New order size Actual shares not lots

Arca XDP Order Delete

Name	Offset	Length	Value	Notes
Symbol Index	0	4	Unsigned Int	Numerical representation
Symbol Sequence	8	4	Unsigned Int	Symbol sequence number
Side	12	1	Unsigned Int	Buy = 0 Sell = 1
Reason	13	1	Unsigned Int	Reason code = Changed And Lost Position = Changed And Kept Position = Routed Away = Filled

Arca XDP Order Fill

Name	Offset	Length	Value	Notes
Symbol Index	0	4	Unsigned Int	Numerical representation

Symbol Sequence	4	4	Unsigned Int	Symbol sequence number
Price	8	8	Unsigned Int 6 implied decimals	Order fill price With 6 implied decimals
Duration	16	1	Unsigned Int	Day = 0 Good Til Cancel = 1
Reason	17	1	Unsigned Int	Reason code = Changed And Lost Position = Changed And Kept Position = Routed Away = Filled
Trade ID	18	8	Unsigned Int	Identification number of the order being filled

Arca XDP Trade

Name	Offset	Length	Value	Notes
Symbol Index	0	4	Unsigned Int	Numerical representation
Symbol Sequence	4	4	Unsigned Int	Symbol sequence number
Trade ID	8	8	Unsigned Int	Identification number of the order being filled
Bid	16	8	Unsigned Int 6 implied decimals	Bid price with 6 implied decimals
Trade Thru Exempt	24	1 bit	Unsigned Int	Bitset 1: Trade Thru Exempt
Buy Side Liquidity		1 bit	Unsigned Int	Bitset 1: Buy-side added liquidity
Sell Side Liquidity		1 bit	Unsigned Int	Bitset 1: Sell-side added liquidity
Reserved		5 bits	Unsigned Int	Reserve space
Bid Size	25	8	Unsigned Int	Bid size in actual shares
Ask	33	8	Unsigned Int 6 implied decimals	Ask price with 6 implied decimals
Ask Size	41	8	Unsigned Int	Ask size in actual shares