MIAX Clearing Trade Drop for Options

CTD Interface Specification

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1 Overview

MIAX Clearing Trade Drop (**CTD**) is a messaging interface that provides real-time clearing trade information to the parties of a trade (and/or entitled designated recipients) on the MIAX Options Market.

CTD Features:

CTD messaging and the system architecture is designed to benefit its recipients by providing low latency and high throughput messaging. Some of the key features of the interface are:

- CTD uses binary numeric fields and fixed length ASCII fields to utilize bandwidth efficiently and assist in achieving **low latency**.
- CTD requires the use of the TCP IP based MIAX proprietary SesM protocol in order to provide a **guaranteed delivery** mechanism for the CTD sourced messages.
- CTD messages support entitlements by:
  - OCC Number
  - CMTA
  - MPID (This is the clearing member MPID and not the introducing broker MPID)

This specification is intended for the use for MIAX Member firms and authorized subscribers of CTD only.

1.1 Exchange related information

1.1.1 Hours of operation for MIAX Options Exchange

Please refer to MIAX website at http://www.MIAXOptions.com for details about times for each of these events.

Note: Times specified below are in United States Eastern Time zone.

7:00 am	**Firm Interface Start up time** Firms are allowed to connect
9:30 am to 4:00 pm	**Trading Session for Equity Options** (ends at 1:00 pm on early closing days) Note that MIAX may still send queued executions, cancels or corrections even after the end of this time range
9:30 am to 4:15 pm	**Trading Session for ETF and Index Options** (ends at 1:15 pm on early closing days) Note that MIAX may still send queued executions, cancels or corrections even after the end of this time range
5 pm (approx.)	**End of Session** (ends at 2 pm on early closing days) CTD has completed sending all messages and Firms will soon be disconnected

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1.1.2 Obtaining more information

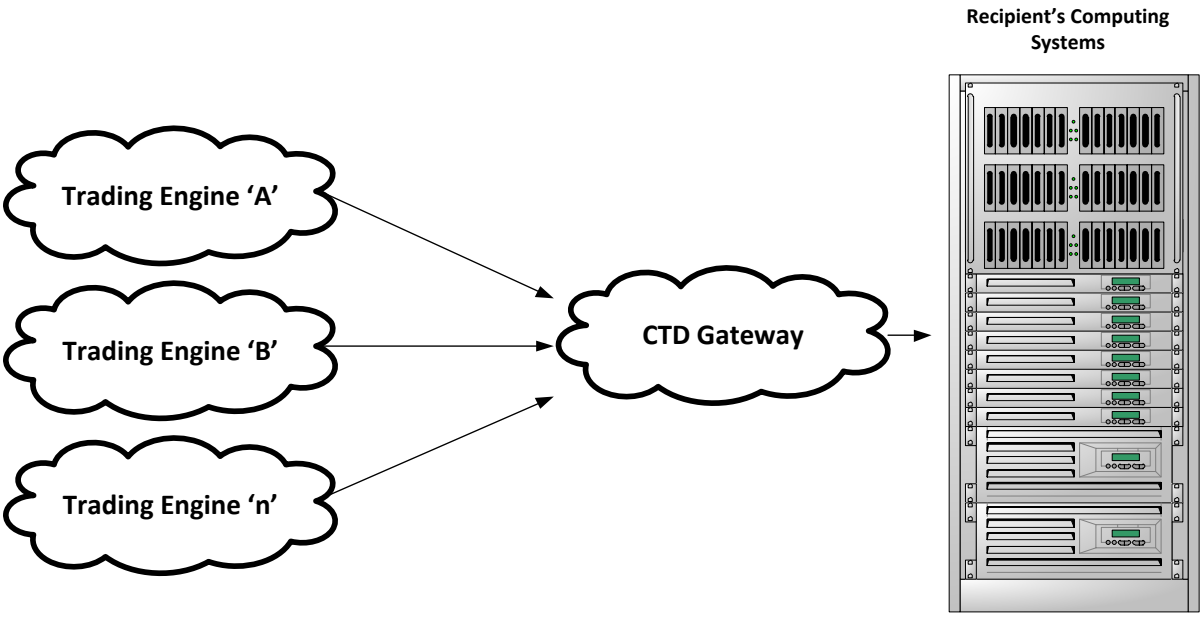
Information such as membership, rules, data feeds, fees and support can be obtained by sending an email to Trading Operations or by referring to MIAX website at http://www.MIAXOptions.com.

1.2 Certification for Connecting to and Receiving Data from CTD

Please contact MIAX Trading Operations to obtain more information about certification testing and the details about the test environment.

In order for the firms to connect to production, they must certify their application with MIAX. This certification testing is a manual process. In order to schedule a certification test, please email Trading Operations.

1.3 CTD Architecture



Highlights:

- MIAX trading architecture is highly scalable and consists of multiple trade engines. Each trading engine handles trading for all options for a set of underlyings. The underlying sets may not be contiguous ranges of underlyings and could be organized in any manner as assigned by the exchange. The CTD acts as a gateway by collecting the trades from each trading engine and providing a consolidated flow of trades to the recipients of the CTD output.
- CTD clients must have a backup connection for the purposes of handling service interruptions to the primary connection point if necessary.
- This architecture offers low latency, high throughput, small fault domains and high resiliency.

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1.4 FAQs

Failure Recovery: If there is a problem with the primary connection, firms can connect to the primary again if it is available or switch to the corresponding backup connection if primary is not available.

When reconnecting to the primary connection, Firms are recommended to login with the next sequence number expected based on the last sequence number received before they disconnected.

When connecting to the backup, Firms must login with a request to receive messages starting with a sequence number of 1 given that the SesM sequence numbers (and ordering of messages) may be different on the backup session. This ensures that firms do not miss any trades. Firms must be able to handle retransmitted trades and can use a combination of *TradeID, CorrectionNumber, Side* and *Trade Action* as a unique key to know if a given message is a retransmitted message.

In order to facilitate easy recoverability and continuity in sequenced message delivery, SesM protocol supports a store on the server side where it keeps all messages for a trading session regardless of the client's connection state.

Retransmission of Trade messages: MIAX may choose to retransmit trade messages in response to an interruption of the CTD service. MIAX will work to coordinate with the firms before initiating such retransmissions. Firms may be recommended to login with a request to receive messages starting with a sequence number of 1. Firms can use a combination of *TradeID, CorrectionNumber*, *Side* and *Trade Action* as a unique key to know if a given message is a retransmitted message.

1.5 Data Types

The following table describes the data types used in CTD messaging:

Note: Time fields in all messages are as per timings of United States Eastern Time zone.

Data Type	Description
BinaryU	Unsigned, Intel x86 byte-ordered (**little-endian**), binary encoded numbers
BinaryPrc4U	BinaryU Field with the last 4 (right most) digit places being decimal places
NanoTime	BinaryU field that contain transaction time in nanoseconds since past midnight
Alphanumeric	Each place can contain characters or numbers. Left justified and space-padded on to the right

1.6 Configuration

Entitlements: Recipients are required to submit their entitlement information to Trading Operations for submission to the system.

CTD Port Assignments/Connections: Recipients will be required to maintain a primary and secondary port connection to CTD.

Risk Protection Monitoring: Firms participating in MIAX Risk Protection Monitoring can manage Risk Notification messages on a per session basis. The configuration of notification messages can be

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coordinated with MIAX Trading Operations. Each notification type (solicited or un-solicited) is independently configurable to be forwarded or dropped.

Stock Symbol Format: Underlying symbol will be in the OCC Options Underlying symbol format by default. Firms can opt to receive the Underlying Symbol in the stock ticker format for stock leg trades of Complex stock-tied orders in the Trade message. This can be configured per CTD port.

2 Session Management Messages

Please refer to latest TCP session management protocol document (available at MIAX website at http://www.MIAXOptions.com) for details about MIAX proprietary **SesM session management Protocol**. This protocol layer offers session management capabilities such as authentication, application messaging over TCP/IP, sequencing of messages, heartbeats and gap fills.

3 Application Messages

This section consists of application level messages.

3.1 System State

This message format is used to notify firms of the state changes of the system. Firms can use notifications as triggers in their system to ensure electronic synchronization of systems.

Field Name	Length	Data Type	Notes
SesM Protocol Data			*Sequenced Pkt; Refer to SesM Protocol Specification*
Message Type	1	Alphanumeric	S
Notification Time	8	NanoTime	Time at which this was generated by MIAX system.
CTD Version	8	Alphanumeric	E.g.: CTD2.0
Session ID	4	BinaryU	MIAX assigned ID for the current trading session
System Status	1	Alphanumeric	Current system status: “C” = End of Application Messages “1” = Start of Test Session (sent before tests). “2” = End of Test Session.

Points to note:

- From time to time, MIAX will conduct off-hours testing. Such tests will be preceded by a System State Message indicating the start of test and close with a System State Message indicating the end of the test. Firms must ensure that messages sent on this feed from the beginning of “start of test session” to the end of “end of test session” will not affect their production systems.
- A change in Session ID will mean that restarting at message sequence number 1. Firms must be able to handle more than one trading sessions in a single trading day.
- The CTD Version field value for this release will be CTD2.0. Firms are advised to send CTD2.0 in the SesM Login Request.

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3.2 Trade Message

This is the message format that will be used to disseminate all MIAX trade related content for entitled parties. MIAX sends trades, trade corrections and trade cancels using this message.

Field Name	Length	Data Type	Notes
SesM Protocol Data			*Sequenced Pkt; Refer to SesM Protocol Specification*
Message Type	1	Alphanumeric	T
Processing Time	8	NanoTime	Time at which MIAX system (Matching Engine) processed this trade.
Trade Time	8	NanoTime	Automatic Trades: Time at which the Matching Engine created this trade. Will be same as Processing Time. Manual Trades: Trade Time of the new manual trade. Trades cancels, corrections: Trade Time of the original trade.
Trade As-of Date	4	BinaryU	As-of Date for As-of Trades. Format: YYYYMMDD. Zero for non As-of Trades.
Trade Action	1	Alphanumeric	Possible values: N = New trade C = Trade Correction X = Trade Cancel Note that New trades and Trade Cancel messages can also be generated due to a Clearing changing correction. See Correction Type field for details.
Trade Type	1	Alphanumeric	A = Automatic execution by the system M = Manual trade that Traders requested MIAX personnel to enter
Trade ID	4	BinaryU	MIAX assigned unique Trade ID for the day. For corrections and cancels, this is the trade ID of the original trade. When used in conjunction with Correction Number, Side and Trade Action, this is a unique identifier for each clearing trade.
Execution ID	8	BinaryU	MIAX assigned unique Execution ID. Each side of the Clearing trade will have a unique Execution ID.
Correction Number	1	BinaryU	Trade correction number. Used to identify version of the trade being corrected or canceled. Increments by 1 for each subsequent correction. While this is 0 for new trades, new trades resulting from corrections may have a non-zero number.

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Field Name	Length	Data Type	Notes
Transaction ID	4	BinaryU	All clearing trades generated from a single Engine transaction will have the same transaction ID
Reference Trade Time	8	NanoTime	Time of the parent trade (version of this trade that was active prior to this correction) in case of a correction or a new trade generated due to correction. 0 otherwise.
Reference Trade ID	4	BinaryU	Trade ID of the parent trade in case of a correction or a new trade generated due to correction. 0 otherwise.
Reference Correction Number	1	BinaryU	Correction Number of the parent trade in case of a correction or a new trade generated due to correction. 0 otherwise.
Correction Type	1	Alphanumeric	Gives more information to the user when this is a correction. Possible Values: 1 = Not Applicable (Used when message is generated due to a transaction other than Trade corrections) 2 = Price and/or Size change 3 = This side Clearing change (Could affect size for Trade splits) 4 = Contra side Clearing change 5 = Both side Clearing change
Event ID	4	BinaryU	Event ID in case this trade is a result of a liquidity gathering event at MIAX. 0 otherwise. Please refer to the TransactionType field for the Event type associated with this Event ID.
Strategy ID	4	BinaryU	MIAX assigned unique Complex Strategy ID for the day. Populated only for complex trades, otherwise set to zero.
Reserved	*12*	*BinaryU*	** Reserved for future use **
Symbol information			
Product ID	4	BinaryU	*Option leg:* MIAX Product ID mapped to a given option. It is assigned per trading session and is valid for that session. *Stock leg:* 0 (zero)
Underlying Symbol	11	Alphanumeric	Underlying Symbol for the option or stock leg. Format for Stock Leg: OCC Options Underlying Symbol (default) or Stock Ticker Symbol (configurable)
Underlying Type	1	Alphanumeric	Possible Values: F = ETF

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Field Name	Length	Data Type	Notes
			I = Index E = Equity
Security Symbol	6	Alphanumeric	*Option leg:* Option Security Symbol *Stock leg:* Filled with spaces = N/A (Not Applicable)
Expiration Date	4	BinaryU	*Option leg:* Expiration date of the option in YYYYMMDD format *Stock leg:* 0 (zero)
Strike Price	4	BinaryPrc4U	*Option leg:* Explicit strike price of the option. Refer to data types for field processing notes *Stock leg:* 0 (zero)
Call or Put	1	Alphanumeric	*Option leg:* Option Type C = Call P = Put *Stock leg:* ' ' (space) = N/A (Not Applicable)
Reserved	*8*	*BinaryU*	** Reserved for future use **
Trade price/size Information			
Side	1	Alphanumeric	The side of the trade on which this receiver was involved in. Possible values: B = Buy S = Sell
Price	4	BinaryPrc4U	Trade price. This is the corrected trade price if that price changed in a trade correction.
Size	4	BinaryU	Number of option contracts or stock shares traded in this clearing trade This is the corrected trade size if that size changed in a trade correction.
Trade condition	1	Alphanumeric	See Appendix A for list of possible values This is the corrected trade condition if that condition changed in a trade correction.
Reserved	*8*	*BinaryU*	** Reserved for future use **
Additional Billing parameters			
Class Fee Type	1	Alphanumeric	Possible values:

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<table>
<tr><th>Field Name</th><th>Length</th><th>Data Type</th><th>Notes</th></tr>
<tr><td></td><td></td><td></td><td>C = Conventional Fee based
M = Maker/Taker Fee Based</td></tr>
<tr><td>MIAX BBO Posting Increment Indicator</td><td>1</td><td>Alphanumeric</td><td>Option leg:
This is the Minimum Price Variation as agreed to by the Options industry (penny pilot program) and as published by MIAX
<table>
<tr><th rowspan="2">Indicator</th><th colspan="2">BBO Increments</th></tr>
<tr><th>Price <= $3</th><th>Price > $3</th></tr>
<tr><td>P</td><td>Penny (0.01)</td><td>Penny (0.01)</td></tr>
<tr><td>N</td><td>Penny (0.01)</td><td>Nickel (0.05)</td></tr>
<tr><td>D</td><td>Nickel (0.05)</td><td>Dime (0.10)</td></tr>
</table>
Stock leg:
‘ ‘ (space) = N/A (Not Applicable)</td></tr>
<tr><td>Execution Exchange</td><td>1</td><td>Alphanumeric</td><td>Option leg:
Market where a customer option order was traded after routing from MIAX
A = NYSE Amex
N = NYSE Arca
B = BOX
C = CBOE
W = C2 (from CBOE)
I = ISE
H = ISE Gemini
J = ISE Mercury
Q = NASDAQ OMX Options Market
X = NASDAQ OMX PHLX Options Market
T = NASDAQ BX
Z = BATS
E = EDGX Options Market
P = MIAX PEARL
D = MIAX Emerald
‘ ‘ (space) = Traded at MIAX
Stock leg:
‘-’ = N/A (Not Applicable)</td></tr>
<tr><td>Routed Order Quantity</td><td>4</td><td>BinaryU</td><td>This contains 0 (zero) for trades at MIAX. For trades resulting from Orders routed to other exchanges, this contains total routed quantity that will be useful in calculating away-exchange block size billing rate.</td></tr>
<tr><td>Market Maker Role</td><td>1</td><td>Alphanumeric</td><td>Pertains to this side.
Possible values:
P = PLMM
L = LMM</td></tr>
</table>

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Field Name	Length	Data Type	Notes
			R = RMM U = UMM (Unassigned MM for this Underlying) ‘ ‘ (space) = other
Traded with Directed MM	1	Alphanumeric	Indicates if the trade occurred with the MM to which the order was Directed Possible values: Y = Yes N = No ‘ ‘ (space) = Not applicable
Market State	1	Alphanumeric	Simple Market State Possible values: T = FreeTrading A = Auction H = Halted N = NonTradable ‘ ‘ (space) = Not applicable (for eg: not applicable for manual trades or for stock leg)
Auction Type	1	Alphanumeric	Simple Market Auction Type. Only applicable when Market State is Auction. Possible values: ‘ ‘ (space) = Not Applicable 1 = Opening 2 = Reopening 3 = Closing 4 = Routing 5 = Liquidity Refresh 6 = PRIME Paired Order 7 = PRIME Customer Cross 8 = PRIME Qualified Contingent Cross 9 = Liquidity Exposure Process (LEP) ‘*’ (asterisk) = downgraded for older version
Directed Status	1	Alphanumeric	Status of directed order flow. Directed: ‘E’ = Directed to DLMM assigned to Underlying ‘U’ = Directed to DLMM not assigned to Underlying Not Directed: ‘N’ = Non-directed Order (NDO) ‘X’ =DFC invalid ‘I’ = Not directed due to Order origin (Origin not Priority Customer)
Strategy State	1	Alphanumeric	Possible values: ‘ ‘ (space) = Not Applicable ‘A’ = Standard Auction

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Field Name	Length	Data Type	Notes
			'F' = Free Trading 'P' = cPRIME 'X' = cC2C 'Q' = cQCC '*' (asterisk) = downgraded for older version
Strategy Auction Type	1	Alphanumeric	Only applicable when Strategy State is Standard Auction. Possible values: ' ' (space) = Not Applicable 'I' = Initial Improvement Opening 'Y' = Initial Improvement Opening: Book Crossed 'U' = Upon Receipt Improvement 'R' = Reevaluation Improvement 'P' = Reevaluation Improvement: Book Crossed 'C' = Immediate Book Uncrossing 'L' = Complex Liquidity Exposure Process (cLEP) '*' (asterisk) = downgraded for older version
Stock Execution Destination	1	Alphanumeric	*Stock leg:* Stock trading/reporting venue that will report and clear the stock leg trade. Possible values: '1' – NASDAQ TRF *Option leg:* ' ' (space) – Not Applicable
Reserved	*13*	*BinaryU*	** Reserved for future use **
This side Liquidity information			
Executing MPID	4	Alphanumeric	For Trades due to Orders: MPID of the EEM/OFP (SenderSubID field in FIX order or FirmMPID for MIAX PRIME/cPRIME Order; Note that this will be different than Clearing MPID for MM FIX orders). For Trades due to Quotes, eQuotes: MM MPID.
Order Date	4	BinaryU	For Trades due to Orders: Format: YYYYMMDD For Trades due to Quotes, eQuotes: zero.
FIX Order ID	30	Alphanumeric	For Trades due to Orders: Firm assigned Order ID sent via the CLOrderID FIX field For Trades due to Quotes, eQuotes: Spaces.
Client Message ID	4	BinaryU	For Trades due to Quotes, eQuotes: Firm assigned ID of the Quote or eQuote For Trades due to Orders: zero.
Bulk Quote Index	1	BinaryU	For Trades due to Quotes: Index assigned by MIAX to each quote in bulk quote (Index = quote position in the bulk quote) For Trades due to Orders, eQuotes: zero.

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Field Name	Length	Data Type	Notes
Open/Close Indicator	1	Alphanumeric	*Option leg:* Possible Values: O = Opening position C = Closing position *Stock leg:* ' ' (space) = N/A (Not Applicable)
Liquidity Type	1	Alphanumeric	Pertains to this side. Possible values: O = Order Q = Quote E = eQuote C = Complex Order D = Complex eQuote ' ' (space) = N/A (Not Applicable) (eg: Manual Trade) '*' (asterisk) = downgraded for older version
MM Priority Indicator	1	Alphanumeric	Pertains to this side only if this side belongs to a market maker. Possible values: 'Y' = Yes 'N' = No ' ' (space) = N/A (Not applicable)
Liquidity Indicator	1	Alphanumeric	Pertains to this side. Possible values: A = Add R = Remove ' ' (space) = N/A (Not Applicable)
Liquidity Timer Role	1	Alphanumeric	When the liquidity is involved in a trade occurring in a MIAX PRIME Auction or Timer Event such as a Route and Liquidity Refresh, this field contains the role of the liquidity:: I = Timer Initiator or PRIME Agency Order or PRIME Qualified Contingent Cross Agency Order J = Timer Joiner on same side as Timer Initiator T = Liquidity received before and on the same side as Timer Initiator or PRIME Agency Order B = Received on opposite side of Initiator/Agency order before Timer/Auction started A = Received on opposite side of Initiator/Agency order after Timer/Auction started R = Received as a response and on opposite side of Timer Initiator or PRIME Agency Order after event started

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Field Name	Length	Data Type	Notes
			E = Managed interest filled by PRIME Agency order before the auction starts K = PRIME Contra order that trades with agency order at the end of auction or PRIME Qualified Contingent Cross Contra Order that trades with Agency Order P = PRIME Customer Cross ' ' (space) = N/A (Not Applicable) '*' (asterisk) = downgraded for older version
TimeInForce	1	Alphanumeric	0 = DAY 1 = GTC (Good Till Canceled) 2 = OPG (Opening transaction only or Cancel) 3 = IOC (Immediate or Cancel) 4 = FOK (Fill or Kill) 9 = AtCrossing (Use only in the Liquidity gathering event specified in EventID; Auction or Cancel Order) A = SAO (Settlement Auction Only) '*' (asterisk) = downgraded for older version
BillingMPID	4	Alphanumeric	For Trades due to Orders: specifies the MPID that is being Billed. This defaults to the same as the Executing MPID unless an alternative MPID is specified on order entry. For Trades due to Quotes, eQuotes: MM MPID.
Leg Reference ID	5	Alphanumeric	Client specified ID in FIX complex order for the leg corresponding to the option in this trade.
Strategy Timer Role	1	Alphanumeric	When the liquidity is involved in a trade occurring in a Complex Standard Auction as defined in field Strategy Auction Type, or a cPRIME auction or cC2C or cQCC crossing, this field contains the role of the liquidity: 'I' = Standard Auction Initiator or cPRIME Agency Order or cQCC Agency Order 'J' = Joiner (un-related) on the same side of initiator and received after auction started 'T' = Pre- existing on the same side of initiator and received before auction started 'B' = Pre- existing on opposite side of Initiator and received before auction stated 'A' = Un-related on opposite side of Initiator and received after auction started 'R' = Response on opposite side of Initiator and received after event started 'G' =Response on the same side of initiator and received after auction started

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Field Name	Length	Data Type	Notes
			'K' = cPRIME Contra Order that trades with Agency Order at the end of auction or cQCC Contra Order that trades with Agency Order 'P' = cC2C Order These are possible values in all other situations: ' ' (space) = N/A (Not Applicable) '*' (asterisk) = downgraded for older version
Stock Short Sell indicator	1	Alphanumeric	Possible values: N = Not a Short Sale Y = Short Sale E = Short Sale Exempt ' ' (space) = Not applicable (e.g. when this is an option leg or a buy stock leg)
Reserved	*4*	*BinaryU*	** Reserved for future use **
This side Clearing Information			
Clearing MPID	4	Alphanumeric	*Option leg:* Clearing MPID of the member *Stock leg:* Underlying MPID or the DTC Account number
Member Type	1	Alphanumeric	*Option leg:* E = Electronic Exchange Member (EEM) M = Market Maker R = Routing Broker *Stock leg:* ' ' (space) = Not applicable
Origin	1	Alphanumeric	C = Priority Customer N = Non-Priority customer F = Firm B = Broker/Dealer M = MIAX member Market Maker A = Away Exchange Market Maker
Clearing Number	4	BinaryU	*Option leg:* OCC Clearing number of this side *Stock leg:* 0 (zero)
CMTA	4	BinaryU	*Option leg:* CMTA in case of a give-up trade *Stock leg:* 0 (zero)
Multi Account	5	Alphanumeric	Sub or multi account ID specified in FIX order
Account ID	10	Alphanumeric	Account ID that is supplied in the FIX order

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Field Name	Length	Data Type	Notes
Supplementary ID	13	Alphanumeric	Supplementary ID supplied in the Text field of the FIX order
Allocation ID	4	Alphanumeric	Individual Allocation ID (Tag 467) for each MIAX PRIME/cPRIME Order participant supplied in the FIX New Order Cross. If not applicable, filled with spaces.
Billing Clearing Number	4	BinaryU	OCC Clearing number to be billed. This defaults to the same as the Clearing Number unless an alternative Billing MPID is specified on order entry. For Trades due to Quotes, eQuotes: MM Clearing Number.
Order Capacity	1	Alphanumeric	*Option leg:* ' ' (space) = Not applicable *Stock leg:* P – Principal A – Agency R – Riskless Principal
Reserved	*7*	*BinaryU*	** Reserved for future use **
Contra side (opposite side) clearing information			
MPID	4	Alphanumeric	*Option leg:* MPID of the member *Stock leg:* Underlying MPID or the DTC Account number
Member Type	1	Alphanumeric	*Option leg:* E = Electronic Exchange Member (EEM) M = Market Maker R = Routing Broker *Stock leg:* ' ' (space) = Not applicable
Origin	1	Alphanumeric	C = Priority Customer N = Non-Priority customer F = Firm B = Broker/Dealer M = MIAX member Market Maker A = Away Exchange Market Maker
Clearing Number	4	BinaryU	*Option leg:* OCC Clearing number *Stock leg:* 0 (zero)
CMTA	4	BinaryU	*Option leg:* CMTA in case of a give-up trade

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Field Name	Length	Data Type	Notes
			Stock leg: 0 (zero)
ContraTimeInForce	1	Alphanumeric	0 = DAY 1 = GTC (Good Till Canceled) 2 = OPG (Opening transaction only or Cancel) 3 = IOC (Immediate or Cancel) 4 = FOK (Fill or Kill) 9 = AtCrossing (Use only in the Liquidity gathering event specified in EventID; Auction or Cancel Order) A = SAO (Settlement Auction Only) '*' (asterisk) = downgraded for older version
ContraLiquidityTimerRole	1	Alphanumeric	When the liquidity is involved in a trade occurring in a MIAX PRIME Auction or Timer Event such as a Route and Liquidity Refresh, this field contains the role of the contra liquidity: I = Timer Initiator or PRIME Agency Order or PRIME Qualified Contingent Cross Agency Order J = Timer Joiner on same side as Timer Initiator T = Liquidity received before and on the same side as Timer Initiator or PRIME Agency Order B = Received on opposite side of Initiator/Agency order before Timer/Auction started A = Received on opposite side of Initiator/Agency order after Timer/Auction started R = Received as a response and on opposite side of Timer Initiator or PRIME Agency Order after event started E = Managed interest filled by PRIME Agency order before the auction starts K = PRIME Contra order that trades with agency order at the end of auction or PRIME Qualified Contingent Cross Contra Order that trades with Agency Order P = PRIME Customer Cross These are possible value in all other situations: ' ' (space) = N/A (Not Applicable) '*' (asterisk) = downgraded for older version
Contra Strategy Timer Role	1	Alphanumeric	When the liquidity is involved in a trade occurring in a Complex Standard Auction as defined in field Strategy Auction Type, or a cPRIME auction or cC2C or cQCC crossing, this field contains the role of the liquidity:

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Field Name	Length	Data Type	Notes
			'I' = Standard Auction Initiator or cPRIME Agency Order or cQCC Agency Order 'J' = Joiner (un-related) on the same side of initiator and received after auction started 'T' = Pre- existing on the same side of initiator and received before auction started 'B' = Pre- existing on opposite side of Initiator and received before auction stated 'A' = Un-related on opposite side of Initiator and received after auction started 'R' = Response on opposite side of Initiator and received after event started 'G' =Response on the same side of initiator and received after auction started 'K' = cPRIME Contra Order that trades with Agency Order at the end of auction or cQCC Contra Order that trades with Agency Order 'P' = cC2C Order These are possible values in all other situations: ' ' (space) = N/A (Not Applicable) '*' (asterisk) = downgraded for older version
Order Capacity	1	Alphanumeric	*Option leg:* ' ' (space) = Not applicable *Stock leg:* P – Principal A – Agency R – Riskless Principal
Reserved	*12*	*BinaryU*	** Reserved for future use **

Points to note:

- This is a sequenced message. Please refer to SesM protocol specification as to the features extended by sequenced messages.
- **Important**: MIAX may choose to retransmit trade messages in response to an interruption of the CTD service. MIAX will work to coordinate with the firms before initiating such retransmissions. Firms can use a combination of *TradeID, CorrectionNumber*, *Side* and *Trade Action* as a unique key to know if a given message is a retransmitted message.

3.3 Risk Notification Message

Firms configured to use Risk Protection Monitoring will receive User Notification communicating the status of Risk checks. Field "Event Type" is used to determine the reason for the notification.

The following message will be used to disseminate all MIAX Risk Protection Monitor (RPM) related notifications.

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Field Name	Length	Data Type	Notes
SesM Protocol Data			*Sequenced and UnSequenced Pkt based on Event Type; Refer to SesM Protocol Specification*
Message Type	1	Alphanumeric	R
Processing Time	8	NanoTime	Time at which MIAX system (Matching Engine) processed this notification.
MPID Group ID	32	Alphanumeric	Firm Assigned Group ID
Metric ID	32	Alphanumeric	Metric ID for the group
Route ID	32	Alphanumeric	ID used to route to this session.
Metric Type	1	Alphanumeric	"C" = Rate of Executed Order Contracts "O" = Rate of New/Replace Orders Received '*' (asterisk) = downgraded for older version
Protection Type	1	Alphanumeric	"B" = Block all MPIDs for this MPID Group ID "M" = Block all MPIDs for this MPID Group ID and also mass-cancel all day orders for MPIDs in the group "W" = Warning only '*' (asterisk) = downgraded for older version
Event Type	1	Alphanumeric	"S" = Period Status/Pulse Notification "T" = Safeguard Trigger "R" = Reset Risk Metric "W" = Warning Only "D" = "Metric Deleted" "A" = "Metric Added" "P" = "Metric Paused" "U" = "Metric Un-Paused" '*' (asterisk) = downgraded for older version
Event ID	4	Binary4U	Unique ID assigned by MIAX for this event. Can be used to order events. Event Type "S" Event ID will equal zero
Configured Counting Time Period	4	Binary4U	Configured time period in milliseconds which is used to consider events for this Metric ID
Configured Max Quantity	4	Binary4U	Configured max threshold of counted items for the Configured Counting Time interval for this Metric ID. Defines rate for the counting time period.
Current Quantity	4	Binary4U	Current counted quantity at the time of the event for this Metric ID.
Max Peak Quantity	4	Binary4U	Max peak for Current Quantity during pulse interval
Percentage Level	1	BinaryU	Current Percentage for the Counted Quantity in relationship to Configured Max Quantity. Valid values from 0 to 255%. Actual percentages greater than 255 will be reported as the max (255)
Reserved	32	Binary4U	Reserved for future use.

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Points to note:

- Event Types are treated as solicited (T, R, W, D, A, P, U) or unsolicited (S). See configuration section on how to control what types are published on the session.
- Status Notifications are sent periodically on a best effort basis at one minute intervals. Intra-day configurations may delay updates one interval.
- MIAX will deliver warnings on a best effort basis. If a metric rapidly produces multiple warnings, initial or older warning levels may be dropped. The latest, or most current, warning will be delivered. Solicited messages are considered "Sequenced" messages at the SesM protocol level and recoverable. Unsolicited messages are considered "Unsequenced" at the SesM protocol level and not recoverable.
- If a new Event Type is published using an older App Protocol version, it will be mapped to a '*' (asterisk) for backward compatibility purposes. They will be published as unsolicited or solicited based on the new event type and are unsequenced in SesM protocol level.

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Appendix A: Trade Conditions

Note that the trade conditions below are intended to be aligned with the OPRA trade conditions as a convenience. However, this is not a fixed requirement and, as such, they may digress at times.

Trade conditions applicable to the trade message:

Condition Code	Description
Space	Regular
A	Cancel of Trade previously reported other than as the last or opening for the particular Option
B	Trade that is Late and is out of sequence
C	Cancel of the last reported Trade for the particular Option
D	Trade that is Late and is in correct sequence
E	Cancel of the first (opening) reported Trade for the particular Option
F	Trade that is late report of the opening trade and is out of sequence
G	Cancel of the only reported Trade for the particular Option
H	Trade that is late report of the opening trade and is in correct sequence
I	Auto
J	Trade due to reopening of an Option in which trading has been previously halted; process as a regular transaction.
K	* Reserved for future use *
L	Transaction represents a trade in two options in the same class
M	Transaction represents a trade in two options in the same class (a buy and a sell in a put and a call). Prefix appears solely for information; process as a regular transaction.
N	* Reserved for future use *
O	* Reserved for future use *
P	Transaction represents the option or stock portion of an order involving a single option leg (buy or sell of a call or put) and stock. Prefix appears solely for information: process as a regular transaction
Q	Transaction represents the buying of a call and the selling of a put for the same underlying stock or index. Prefix appears solely for information; process as a regular transaction
R	Trade was the execution of an order which was "stopped" at a price that did not constitute a Trade-Through on another market at the time of the stop. Process like a normal transaction except don't update "last".
S	Trade was the execution of an order identified as an Intermarket Sweep Order (ISO).
T	* Reserved for future use *
X	Trade that is Trade Through Exempt. The trade should be treated like a regular sale.
a	Trade from a Paired PRIME transaction
b	* Reserved for future use *
c	Trade from PRIME Customer to Customer Cross or PRIME QCC transaction
d	* Reserved for future use *
e	* Reserved for future use *

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f	Trade from a Complex transaction that is not Complex stock-tied and does not involve legging
g	Trade from a Complex PRIME transaction that is not Complex stock-tied and does not involve legging
h	Trade from a Complex PRIME Customer to Customer Cross or Complex PRIME QCC transaction that is not Complex stock-tied
i	* Reserved for future use *
j	Trade from a Complex legging transaction that is not Complex stock-tied
k	Trade from a Complex PRIME stock-tied transaction that does not involve legging
l	Trade from a Complex PRIME legging transaction that is not Complex stock-tied
m	* Reserved for future use *
n	Trade from a Complex stock-tied transaction that does not involve legging
o	Trade from Complex Customer to Customer Cross stock-tied or Complex QCC stock-tied transaction
p	* Reserved for future use *
q	* Reserved for future use *
r	* Reserved for future use *
s	* Reserved for future use *
t	* Reserved for future use *

NOTE: The list of trade conditions above is a superset of those supported by the MIAX Exchange Group for Options. Individual exchanges may or may not emit certain trade conditions depending on the related supported functionality.

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Appendix B: Contact List

Please visit MIAX website at http://www.MIAXOptions.com for obtaining most up-to-date contact list and other such information.

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Appendix C: Revision History

Revision Date	Version	Author	Description
Dec 01 2011	1.0	Vinay S. Rao	First release.
Apr 05 2012	1.1	Vinay S. Rao	Field additions and updates based on latest rules.
July 24 2012	1.2	Kevin Mueller	Adding Nasdaq BX exchange
Nov 07 2012	1.3	Vinay S. Rao	Addition of ISE TOPAZ and Trade condition X.
Feb 8 2013	1.3a	Vinay S. Rao	Copyright and page footer updated
June 25 2013	1.4	Vinay S. Rao	Directed PFOF enhancements: U and I added to Directed Status field. Also, renamed ISE Topaz to ISE Gemini. Added a note about CTD version field in System State message
April 8 2014	1.5	Anatoly Khusid	MIAX PRIME enhancements: Auction Type: 6 and 7 added. Liquidity Timer Role: E, K, and P added Allocation ID: Added in reserved area
May 19th 2014	1.5a	Kevin Mueller	Executing MPID description change.
July 28th 2014	1.6	Kevin Mueller	Added three new fields in the Trade Message. In This side Liquidity information section: TimeInForce In Contra Side Clearing information section: ContraTimeInForce ContraLiquidityTimerRole
September 22nd, 2014	1.7	Kevin Mueller	In the Trade Message: Added field BillingMPID Added field “Billing Clearing Number” Changed the field name “MPID” to “Clearing MPID” in This side Clearing Information
Jan 15th, 2015	1.8	Anatoly Khusid	MIAX PRIME QCC enhancements, ISE Mercury addition & Risk Protection addition: Auction Type: 8 added. Liquidity Time Role: Q added. ContraLiquidityTimerRole: Q added. ExecutionExchange: Added ‘J’(ISE Mercury). Added Risk Protection Message. Failure/recovery clarifications in FAQs section.
June 15th, 2015	1.8a	Kevin Mueller	Liquidity Timer Role and ContraLiquidityTimerRole: Expanded to indicate MIAX PRIME QCC Agency or Contra participation (I,K). Q - Deprecated.
Aug 15th 2015	1.8b	Vinay Rao	ExecutionExchange: Added ‘E’(EDGX Options)

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Jan 15th 2016	1.8c	Siddharth Sahoo	ExecutionExchange: Added 'P' (MIAX PEARL) Added *Trade Action* to the combination of fields that form a unique key to know if a given message is a retransmitted message
January 5th, 2016	2.0	Anatoly Khusid	In the Trade Message: Added Strategy ID Added Strategy State Expanded Liquidity Type to complex liquidities Added Strategy Leg Index Added Strategy Reference ID Added Strategy Auction Type field Added Strategy Timer Role Field Added Strategy Contra Timer Role Field Added Trade Conditions to Appendix A
Feb 27th 2017	2.0b	Vinay S. Rao	System startup time moved up
Apr 3rd, 2017	2.1	Siddharth Sahoo, Anatoly Khusid	Complex Crossing Order enhancements. In Trade Message: Added following possible values for Strategy State: 'P' = cPRIME 'X' = cC2C 'Q' = cQCC Noted support for cPRIME /cC2C/cQCC orders in following fields: Executing MPID Allocation ID For fields - Strategy Timer Role and Contra Strategy Timer Role: Added values 'K' and 'P' Updated description for value 'I' Added notes to clarify following fields are applicable to Simple Market: Market State Auction Type
Feb 28th, 2018	2.2	Siddharth Sahoo	Stock-tied strategy trading enhancements. In Trade Message: Noted values for multiple fields in case of a stock leg Used existing reserved bytes and added following new fields: Stock Execution Destination in *Additional Billing Parameters* section Stock Short Sell Indicator in *This Side Liquidity Information* section

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			Order Capacity in *This Side Clearing Information* and *Contra Side Clearing Information* sections
Jun 27th, 2018	2.2a	Vinay Rao	Firms can now opt-in to receive the Underlying symbol in the ticker symbol format for the stock leg trades of Complex Stock-tied orders.
Aug 20th,2018	2.3	Muna Tang	Added new value 'A' (Settlement Auction Only) to TimeInForce. Added LEP AuctionType, cLEP to StrategyAuctionType.
Jun 10, 2019	2.4	Muna Tang	Added new Trade Conditions to Appendix A
July 25, 2019	2.4a		Corrected Appendix A

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