Order Routing Field Correlations between CAT and Exchanges

4/7/2020

Version 1.3

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Revision Summary

Version	Publish Date	Description
1.0	12/6/2018	Initial Publication
1.1	2/11/2020	Updated guidance for populating senderIMID as per CAT Alert 2018-003 Cboe: Updates for population of session
1.2	3/24/2020	Nasdaq Family: Options Exchanges Added MIAX Family: 　·　Updates for population of session for MIAMI and PEARL 　·　MIAX EMRLD added 　·　MEI and MEO interfaces added
1.3	4/7/2020	Republished as "Order Routing Field Correlations between CAT and Exchanges" BOX: Updates for population of session

1. Summary

This document provides guidance related to the **linking obligations** of industry members that report an Order Route Event to reflect the routing of an order to a national securities exchange.

As described in Section 2.6.3 of the _CAT Reporting Technical Specifications for Industry Members_, the _Consolidated Audit Trail (CAT)_ system must be able to link all CAT Order Route Events to the related exchange orders. In order for CAT to link orders routed by an Industry Member to an exchange, certain matching data elements must be provided by each side to create the order's lifecycle. These data elements make up the **lifecycle key** for any Reportable Event. For orders routed by an Industry Member to an exchange, the lifecycle **route link key** is defined as:

> **date, senderIMID, destination, symbol, session, routedOrderID**

As shown below, the data in the respective fields of the linkage key **must match** in order to create lifecycle.

Industry Member Order Route Event	Participant Order Accepted Event
senderIMID	routingParty
destination (Exchange ID)	exchange (Exchange ID)
Date	Date
symbol (or optionID)	symbol (or optionID)
session	session
routedOrderID	routedOrderID

This document provides clarification on the values to be provided based on the **exchange the order is routed to**, describing specific guidance related to each field required for Exchange Route Matching.

2. IDs and Field Descriptions

Subsections below describe the formatting/configuration of the various IDs and fields associated with event reporting.

2.1. Exchange ID codes

The table below provides the respective **Exchange Code** for each US equity and options exchange. Industry Members should populate the **destination** field on their Order Route event when routing an order to the respective exchange. In turn, the respective exchange populates the **exchange** field on their Order Accepted event.

Exchange Family	Exchange	Exchange ID
	BOX Options Exchange	**BOX**
	Investors Exchange	**IEX**
	Long Term Stock Exchange (*future*)	**LTSE**
Cboe	Cboe Options Exchange	**CBOE**
	C2 Options Exchange	**C2**
	Cboe BYX Exchange	**BYX**
	Cboe BZX Exchange	**BZX**
	Cboe BZX Options Exchange	**BZXOP**
	Cboe EDGA Exchange	**EDGA**
	Cboe EDGX Exchange	**EDGX**
	Cboe EDGX Options Exchange	**EDGXOP**
Miami	Miami International Securities Exchange	**MIAMI**
	MIAX Emerald	**EMLD**
	MIAX PEARL	**PEARL**
Nasdaq	Nasdaq BX Equities Market	**BX**
	Nasdaq BX Options Market	**NOBO**
	Nasdaq PHLX Equities Market	**PSX**
	Nasdaq PHLX Options Market	**PHLX**
	Nasdaq Stock Market	**NSDQ**
	Nasdaq Options Market	**NOM**
	Nasdaq ISE	**ISE**
	Nasdaq GEMX	**GEMX**
	Nasdaq MRX	**MRX**
ICE	NYSE American Equities	**AMER**
	NYSE American Options	**AMEROP**
	NYSE ARCA Equities	**ARCA**
	NYSE ARCA Options	**ARCAOP**
	The New York Stock Exchange	**NYSE**
	NYSE Chicago	**CHX**
	NYSE National	**NSX**

2.2. senderIMID (Industry Member ID)

CAT requires members to report in the **senderIMID** field the unique identifier assigned to the member by the exchange.

Accordingly, the **senderIMID** must include the same member firm that is submitting the CAT Order Route event, representing the transmittal of the order to the exchange. If a firm has multiple identifiers assigned to them by the exchange, the firm must report the same identifier as the one that was used in the order route message to the exchange. The identifier contained in the **senderIMID** field must be equal the **routingParty** field value reported by the exchange on the Participant Order Accepted event.

CAT reporters must populate the **senderIMID** with both the CRD and exchange assigned identifier used in the order route message to the exchange, formatted as <CRD>:<exchange assigned identifier>. Refer to CAT Alert 2018-003 for more details.

2.3. routedOrderID

The **routedOrderID** is assigned to the order by the Industry Member when routing the order to the exchange.

The **routedOrderID** field must be reported to CAT in the exact format as sent to the exchange. Firms should take note of each exchange's interface specifications regarding special characters, spaces and leading zeros as some exchange transmission protocols may remove certain characters, spaces or leading zeros. This field value must match the value for **routedOrderID** reported by the exchange in their Order Accepted report.

Please note, **routedOrderID,** defined as a Text field in the *CAT Reporting Technical Specifications for Industry Members*, may not include delimiters including comma, pipe, double quote, and the @ symbol.

2.4. Symbol

The **symbol** is the stock symbol in the symbology of the primary listing exchange, or the **optionID** (the OSI symbol) of the listed options.

2.5. eventTimestamp

The **eventTimestamp** is the date/time the order is routed.

Timestamp must be reported to milliseconds or a finer increment, up to nanoseconds. Firms must include in the eventTimestamp field the precise date and time the order was routed to the exchange. However, only the date portion of this field is used for linkage purposes.

2.6. session

The **session** represents the name of the connection used when routing an order to a national securities exchange.

This value must match the **session** reported in the Order Accepted event by the receiving exchange. Since CAT requires all routedOrderIDs to be unique within the session, day, destination exchange and Exchange Participant ID (senderIMID), the session field is a mandatory field to ensure that each routed order is uniquely identified.

3. Order routing fields – CAT/Exchange correlations

The sections below contain a field-by-field mapping for each exchange to which CAT fields link.

3.1. BOX

The table below describes the specific fields CAT uses to match Order Route events to the related Order Accept events reported by **BOX** options exchange.

CAT Report Field	BOX-related field
senderIMID	Market Participant Identifier (MPID)
routedOrderID	CIOrdID (Tag 11) for FIX Users ClientOrderId (Tag 191) for SAIL Users
Symbol	Symbol
eventTimestamp	Trade Date
session[1]	FIX: • SenderCompID (Tag 49) SAIL: • "User Id" tag from the "TC-User Connection" Message sent by the Participant at the beginning of the day

3.2. Cboe Exchange Family

The below matrix describes the specific fields CAT uses to match CAT Order Route events to the related Order Accept events reported by the Cboe BYX Exchange, Cboe BZX Exchange, Cboe EDGA Exchange, Cboe EDGX Exchange, Cboe Options Exchange, Cboe C2 Options Exchange, Cboe BZX Options Exchange, and Cboe EDGX Options Exchange.

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[1] Beginning September 9, 2020, **session** must be populated as specified.

CAT Report Field	Exchange-Related Field
senderIMID	ClearingFirm (Tag 439) · FIX Users (except Service Bureau) OnBehalfofCompId (Tag 115) · FIX Users (Service Bureau) ClearingFirm · BOE Users
routedOrderID	ClOrdID (Tag 11) · FIX Users ClOrdID · BOE Users
Symbol	Symbol
eventTimestamp	Trade Date
session[2]	Concatenation of fields for a total session field length of 8 as follows: <SenderCompID(Tag 49)><SenderSubId (Tag 50)> · FIX Users < Username><SessionSubId> · BOE Users

3.3. Investors Exchange (IEX)

The below matrix describes the specific fields CAT uses to match CAT Order Route events to the related Order Accept events reported by **IEX**.

CAT Report Field	IEX-Related Field
senderIMID	OnBehalfOfCompID (Tag 115) · FIX Users (Service Bureau) SenderCompID (Tag 49) · FIX Users (except Service Bureau)
routedOrderID	ClOrdID (Tag 11) · FIX Users
Symbol	Symbol
eventTimestamp	Trade Date
session	SenderCompID (Tag 49) · FIX Users

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[2] Matching criteria for Cboe related to the population of **session** differs from the OATS requirement for populating Connection ID. There is no change to the OATS requirement. The guidance for populating **session** is effective September 9, 2020. Prior to September 9, 2020, **session** may be populated with the concatenated values as specified. Beginning September 9, 2020, **session** must be populated as specified.

3.4. Miami Exchange Family[3]

3.4.1. Miami Securities Exchange and MIAX Emerald

The below matrix describes the specific fields CAT uses to match CAT Order Route events to the related Order Accept events reported by the MIAMI International Exchange and MIAX Emerald.

CAT Report Field	Exchange-Related Field
senderIMID	SenderSubID FIX (Tag 50)
routedOrderID	FIX Order: · ClOrdID (Tag 11) eQuote (MEI): · Client message Id | Client Message ID	4	BinaryU	Unique message ID assigned by the firm	
Symbol	Symbol –Simple Option Order FIX (Tags 55, 200, 201, 202 and 205) Multi-leg Option Order FIX (Tags 600, 608, 611 and 612)
eventTimestamp	Trade Date
session	FIX Order: · SenderCompID (Tag 49) eQuote (MEI Interface): · IP Port + "-" + Username (see "TCP Session Management (SesM) Protocol Specification" section 3.2.1 Login Request) | Username	5	Alphanumeric	Username issued by MIAX during initial setup	

3.4.2. MIAX PEARL International

CAT Report Field	Exchange-Related Field
senderIMID	SenderSubID FIX (Tag 50)
routedOrderID	FIX Order: · ClOrdID (Tag 11) Binary Order (MEO Interface) (unassigned Market Maker Order or Non Market Maker Order or other than day TIF): · If Auto Replaced: Client message Id + '-' + "Client Order ID" | Client Message ID	4	BinaryU	Unique message ID assigned by the firm	

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[3] The updated guidance for populating the **route link key** for routes to an exchange in the MIAMI Exchange family is effective September 9, 2020.

Client Order ID	4	N	BinaryU	Client order ID. If an Order with this Client Order ID found for the same product, MPID and side, this Order replaces the resting Order. If not, this order is treated as new Order. For each Product and side, an MPID can have a maximum of N orders with unique client order ID that they can keep replacing. 0 results in a reject. Maximum value (N) defined in Regulatory circular.

      ·   Otherwise: Client Order Id

Symbol	Symbol –Simple Option Order FIX (Tags 55, 200, 201, 202 and 205)
eventTimestamp	Trade Date

session	FIX Order:
	   · SenderCompID (Tag 49)
	
	Binary Order (MEO Interface):
	   · IP Port + "-" + Username (see "TCP Session Management (SesM) Protocol Specification" section 3.2.1 Login Request)
	<table><tr><td>Username</td><td>5</td><td>Alphanumeric</td><td>Username issued by MIAX during initial setup</td></tr></table>

3.5. Nasdaq Exchange Family

3.5.1. Nasdaq Stock Market, Nasdaq BX and Nasdaq PSX

The below matrix describes the specific fields CAT uses to match CAT Order Route events to the related Order Accept Events reported by The Nasdaq Stock Market, Nasdaq BX and Nasdaq PSX.

CAT Report Field	Exchange-Related Field
senderIMID	Market Participant Identifier (MPID)

routedOrderID	CIOrdID (Tag 11)
	   · FIX Users
	Order Token/Client Order ID
	   · RASHport Users
	Order Token
	   · DROP Users
	   · OUCH Users
	User Order ID
	   · QIX Users
	UID
	   · CTCI Users

CAT Report Field	Exchange-Related Field
Symbol	Symbol 　· FIX Users Stock 　· DROP Users 　· OUCH Stock Symbol 　· RASHport
eventTimestamp	Trade Date
session	SenderCompID (Tag 49) 　· FIX Users OUCHAcct 　· NASDAQ INET OUCH QIXAcct 　· NASDAQ QIX: RASHAcct 　· RASHPort Source 　· OUCH Drop Deliver ToSubID (Tag 128) 　· FIX/RASH Drop

3.5.2.Nasdaq Options Markets

The below matrix describes the specific fields CAT uses to match CAT Order Route events to the related Order Accept events reported by The Nasdaq Options Markets (ISE, GEMX, MRX, PHLX, NOM, and NOBO).

CAT Report Field	Exchange-Related Field
senderIMID	Market Participant Identifier (Firm Mnemonic) / MM Badge
routedOrderID	CIOrdID (Tag 11) 　· FIX Users Order Token 　· OTTO 1.4.d CIOrdID 　· OTTO 2.1.* Message-ID 　· SQF (Since Message-ID is binary, it will be converted to HEX)
Symbol / OptionID	Symbol/OptionID 　· FIX Users 　· SQF Users (for Sweep Orders) 　· OTTO

CAT Report Field	Exchange-Related Field
eventTimestamp	Trade Date
session	SenderCompID (Tag 49) · FIX Users OTTO ACCT (Login-id from the URL) ·OTTO 1.4.d and OTTO 2.1 Users SQF ACCT (Login-id from the URL) · SQF Users

3.6. ICE Exchange Family

3.6.1.New York Stock Exchange (NYSE)

The below matrix describes the specific fields CAT uses to match CAT Order Route events to the related Order Accept events reported by the New York Stock Exchange.

CAT Report Field	NYSE-Related Field
senderIMID	Entering Firm Trading Mnemonic
routedOrderID	ClOrdID (Tag 11) · NYSE FIX Users ClientOrderID · NYSE UTP Direct Users
Symbol	Symbol · NYSE UTP Direct Users · NYSE FIX Users
eventTimestamp	Trade Date
session	SenderCompID (Tag 49) · NYSE UTP Direct Users · NYSE FIX Users

3.6.2.NYSE Arca, NYSE American, NYSE Chicago and NYSE National Stock Exchange (NYSE Pillar Gateway)

The below matrix describes the specific fields CAT uses to match CAT Order Route events to the related Order Accept Event in NYSE American, NYSE Chicago, NYSE National, and NYSE Arca, received via the NYSE Pillar Gateway.

CAT Report Field	Exchange-Related Field
senderIMID	Firm Identifier – MPID

routedOrderID	ClOrdID (Tag 11) · FIX Users · Binary Users
Symbol	Symbol
eventTimestamp	Trade Date
session	SenderCompID · FIX Users Username · Binary Users

3.6.3. NYSE Arca prior to the migration to Pillar Native Gateway

Firms are required to migrate to the NYSE Pillar gateway as per the schedule provided on the below website: https://www.nyse.com/pillar. The below matrix describes the specific fields that CAT uses to match CAT Order Route events to the related Order Accepted event, prior to migration to the Pillar gateway.

CAT Report Field	Exchange-Related Field
senderIMID	Equity Trading Permit ID (ETPID) · NYSE Arca Entering Firm Trading Mnemonic · NYSE MKT
routedOrderID	ClOrdID (Tag 11) · Arca FIX Users · NYSE FIX Users ClientOrderID · NYSE UTP Direct Users Client Order ID · Arca Direct Users
Symbol	Symbol · Arca FIX Users · NYSE UTP Direct Users · Arca Direct Users · NYSE FIX Users
eventTimestamp	Trade Date
session	SenderCompID (Tag 49) · FIX Users Login ID · ARCA Direct GCCD

3.6.4. NYSE American Options and NYSE Arca Options

The below matrix describes the specific fields CAT uses to match CAT Order Route events to the related Order Accept events reported by the NYSE American Options and the NYSE Arca Options exchanges.

CAT Report Field	Exchange-Related Field
senderIMID	Options Trading Permit ID (TPID) NYSE American Options NYSE Arca Options
routedOrderID	ClOrdID (Tag 11) · Arca FIX Users Client Order ID · Arca Direct Users
Symbol	Symbol FIX Users Arca Direct Users
eventTimestamp	Trade Date
session	SenderCompID (Tag 49) · FIX Users Login ID · ARCA Direct GCCD