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# CAT Reporting Technical Specifications for Industry Members

10/30/2018  
Version 1.0

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## Preface

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Rule 613 of the Securities Exchange Act of 1934 requires national securities exchanges and national securities associations (“SROs”) to submit a national market system plan to the Securities and Exchange Commission (“Commission” or “SEC”) to create, implement, and maintain a consolidated audit trail (the “CAT”) that would allow regulators to more efficiently and accurately track all activity in U.S. equity and listed options markets. Pursuant to Rule 613, the SROs filed with the Commission the National Market System Plan Governing the Consolidated Audit Trail (“CAT NMS Plan”), which was approved by the Commission on November 15, 2016.

Under Rule 613(g)(2), each member of a national securities exchange or national securities association is required to comply with all the provisions of the CAT NMS Plan. Relatedly, as mandated under Rule 613, the CAT NMS Plan requires each SRO to adopt rules requiring its members to comply with Rule 613 and the CAT NMS Plan, and to agree to enforce compliance by its members in that regard. Accordingly, each SRO has adopted rules requiring its members to comply with Rule 613 and the CAT NMS Plan. See, e.g., FINRA Rule 6800 Series.

The SROs jointly own CAT NMS, LLC, which was formed by the SROs to arrange for and oversee the creation, implementation, and maintenance of the CAT as required under Rule 613. Thus, the CAT is a facility of each SRO. CAT NMS, LLC selected Thesys CAT LLC as the Plan Processor to create, implement, and maintain the CAT System; however, CAT NMS, LLC is the exclusive owner of the CAT System. Thus, when Industry Member reporting commences, Industry Members will submit data to an SRO facility, rather than a system that is owned by a non-SRO entity.

This specification represents a phased approach to industry reporting. Key dates are as noted below. Please note that a proposed amendment to the CAT NMS Plan will be filed with the Commission to reflect the phased approach for Industry Member CAT reporting described in these Technical Specifications. The proposed amendment will be subject to the Commission's approval.

Phase 2a - Equities Part 1 Go Live 11/15/19	Phase 2c - Equities Part 2 Go Live 9/1/2020
All events and scenarios covered by OATS	Linkages to the customer order(s) being represented for all representative order scenarios including agency average price, net trading, aggregated orders, OMS-EMS scenarios
All proprietary orders including market maker orders	Sub-account allocations
Firm Designated ID (mandatory by end of regulatory conformance period)	Rejected External Routes with flag indicating route was not accepted by receiving destination
All street side representative orders (both agency and proprietary)	Internal Route modifications and cancels
Linkage is required between the representative street side order and the order being represented when the representative order was originated specifically to represent a <u>single</u> order (received either from a customer or another broker-dealer) and there is: 1) an existing direct electronic link in the firm's system between the order being represented and the representative order, and 2) any resulting executions are immediately and automatically applied to the represented order in the firm's system	Unlisted quotes <u>sent</u> to an inter-dealer quotation system operated by a CAT Reporter
Quotes in NMS stocks sent to a national securities exchange or facility of a national securities association *assumes exemptive relief request for verbal quotes	Revisit application of OATS guidance to CAT for firm modifications to previously routed orders (OATS FAQ C35) *subject to Event Type Decision
Unlisted quotes (OTC Equity Securities) <u>received</u> by a broker-dealer operating an inter-dealer quotation system (e.g., Global OTC, OTC Link) *see above comment on verbal quotes	
Unlisted quotes that meet the definition of bid or offer under the Plan sent by a broker-dealer to a quotation venue not operated by an SRO or broker-dealer *see above comment on verbal quotes	
Electronic capture time for manual orders	
Special Handling instructions on Route Reports (limited to a defined set of values)	
OATS guidance regarding firm modifications to previously routed orders (OATS FAQ C35) applies to CAT *subject to Event Type Decision	

Phase 2b - Options Part 1 Go Live 5/31/20	Phase 2d - Options Part 2 Go Live 5/15/21
Simple electronic orders, excluding electronic paired orders	Simple manual orders
	Electronic and manual paired orders
	All complex orders with linkage to all CAT-reportable legs



## Executive Summary

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This document describes the requirements for the reporting of data to CAT by Industry Members, including detailed information about data elements and file formats of each Reportable Event. It also describes how Industry Members should submit files to CAT, including access instructions, network and transport options, and testing requirements.

A separate companion document containing detailed reporting scenarios entitled CAT Industry Member Reporting Scenarios should be used as a guide for determining how the event types and field values laid out in this document should be applied when reporting various order handling and execution scenarios for both equities and options.

### Revision / Change Process

Version	Date	Author	Description
1.0	10/30/2018	Thesys CAT	Initial publication

# 1. Introduction

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## 1.1. CAT Overview

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The Securities and Exchange Commission (SEC) approved Rule 613 under the Securities Exchange Act of 1934, which requires national securities exchanges and national securities associations (collectively, the Participants) to submit a national market system plan to create, implement, and maintain a consolidated audit trail ([CAT NMS Plan](#)) that would capture customer and order event information for orders in NMS Securities and OTC Equity Securities (Eligible Securities), across all markets, from the time of order inception through routing, cancellation, modification, execution, and allocation. The SEC approved the CAT NMS Plan on November 15, 2016.

In accordance with SEC Rule 613, the CAT NMS Plan requires a Central Repository that will comprehensively track orders throughout their lifecycle and identify the Participants and Industry Members handling them, as well as the account holders and authorized traders for any account that originates an order (Customers<sup>1</sup>). Specific data elements will be submitted to the Central Repository by Participants, Industry Members, and CAT Reporting Agents. CAT Reporting Agents may be third-party firms reporting on behalf of other entities, or may be outside parties that are not required to submit data to the CAT, but from which the CAT may receive data per the CAT NMS Plan, such as the Securities Information Processors (SIPs).

The CAT NMS Plan also requires the selection of an entity as the Plan Processor to be responsible for performing the processing functions required by Rule 613 and the Plan. Thesys CAT LLC (Thesys CAT) is the Plan Processor. The Operating Committee of CAT NMS LLC, a governing body composed of representatives of the Participants, oversees the operation of the CAT. The duties of the Operating Committee are further described in Article IV of the CAT NMS Plan.

Refer to SEC Rule 613, available at: <https://www.sec.gov/rules/final/2012/34-67457.pdf> for more details. Refer also to CAT NMS Plan, available at: <https://www.catnmsplan.com/wp-content/uploads/2018/02/34-79318-exhibit-a.pdf>

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<sup>1</sup> Customers are defined in SEC Rule 613(j)(3) as: (i) the account holder(s) of the account at a registered broker-dealer originating the order; and (ii) any person from whom the broker-dealer is authorized to accept trading instructions for such account, if different from the account holder(s).

## 2. CAT Reporting Fundamentals

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### 2.1. Industry Member Perspective

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Industry Members should populate fields from their own perspective. For example, for “capacity”, the Industry Member should report based on the capacity in which it is acting. For a New Order and Order Accepted, reports should indicate the instructions as received; for an Order Route, the fields should include the instructions as sent to the destination.

### 2.2. Key Data Elements

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The sections below describe the key data elements of CAT that may be used in order events and/or metadata files.

#### 2.2.1. Reporter ID and Submitter ID

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Two CAT identifiers, the Reporter ID and the Submitter ID, i.e., CAT Reporting Agent, are used during the CAT file submission process to identify the Industry Member and, if applicable, the party authorized to submit CAT files on behalf of the Industry Member (CAT Reporting Agent).

##### Reporter ID

The CAT Reporter ID is the SRO assigned identifier that an Industry Member used to report order events to CAT. A CAT Reporter may use any SRO assigned identifier that is valid on the CAT Trading Day for which order events are submitted. CAT will use reference data submitted by Participant Reporters each day to identify the Industry Member to which the specific identifier is assigned. Each SRO assigned identifier is linked to the Industry Member's CRD number so that all reporting activity of a single Industry Member CAT reporter can be consolidated at the firm level in CAT.

##### Submitter ID

The Submitter ID is the identifier of the CAT Reporting Agent, the entity authorized to submit the files to CAT on behalf of the Industry Member. CAT Reporters may authorize third-parties (“CAT Reporting Agents”) to submit data to CAT on their behalf. The CAT Reporting Agent must be authorized to submit data on behalf of the Reporter. Each CAT Reporting Agent will be assigned a unique Submitter ID by CAT during onboarding. If an Industry Member submits data on its own behalf, then the Submitter ID assigned to the entity may be the same as the CAT Reporter ID.

#### 2.2.2. Order ID

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The order ID used in order events, representing the internal order IDs assigned by the Industry Member, must be unique when combined with the date, reporter and *symbol* (or *optionID*).

#### 2.2.3. Timestamps

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Each Industry Member must record and report Industry Member Data to the CAT with timestamps in milliseconds. However, to the extent that any Industry Member's order handling or execution systems utilize timestamps in increments finer than milliseconds, such Industry Member must record and report Industry Member Data to the CAT with timestamps in such finer increments. CAT will accept granularity up to nanoseconds. Each Industry Member may record and report Manual Order Events to the CAT in increments up to and including one

second, provided that each Industry Member shall record and report the time when a Manual Order Event has been captured electronically in an order handling and execution system of such Industry Member (“Electronic Capture Time”) in milliseconds. Each Industry Member may record and report the time of Allocation Reports in increments up to and including one second.

There are two timestamps fields in each event - *eventTimestamp* and *electronicTimestamp*. The *eventTimestamp* is the time of order handling or execution pursuant to Section 6.8 of the CAT NMS Plan (e.g. origination, receipt, etc, depending on the respective order event). For manual order handling, *eventTimestamp* is the manual handling or execution time, which is required to be reported in increments of at least one second. When the manual order is later captured electronically, the systematized time must be captured in the *electronicTimestamp* field.

With respect to sequence numbers, Alternative Trading Systems (ATSs) must provide a sequence number assigned by the ATS’s matching engine on all Reportable Events.

#### 2.2.4. Order Types

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CAT uses a standardized list of order types for Industry Members that can be found in the [Data Dictionary](#). All events with the field *orderType* will require one of these standard order types as a value.

For events reported *by* ATSs, an additional field (in addition to *orderType*) - *atsOrderType* - is used to capture ATS-specific order types. Please see Section 3.1.2 ATS Order Types for more details.

Please note that brokers routing *to* ATSs are not required to use the *atsOrderType* field, nor the ATS specific codes in the standardized *orderType* field in their Order Route events. The *orderType* on the Order Route event will *not* be validated against an *atsOrderType*.

#### 2.2.5. Order Handling Instructions

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Special handling instructions are reported in the *handlingInstructions* field using a standardized list of handling instructions based on common exchange order types and codes. Multiple codes and values can be used in combination to describe the special handling instructions.

In the event an Industry Member routes an order with exactly the same handling instructions received from the customer, they may use *handlingInstructions* code "RAR" (Routed as Received) on the Order Route event rather than re-stating all *handlingInstructions* values from the New Order/Order Accepted event.

### 2.3. Reference Data

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#### 2.3.1. Industry Member Identifier (IMID)

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An Industry Member Identifier, IMID, is any identifier assigned by an SRO to one of its members. Examples of SRO assigned identifiers include FINRA MPIDs, Nasdaq MPIDs, NYSE Mnemonics, CBOE User Acronyms, and CHX Acronyms.

Reportable events will use fields with the Data Type "IMID" to refer to the Industry Member performing the action described by the event, and/or the entity that is the subject of the action described by the event. In other words, an IMID type field will be used in all scenarios where an Industry Member must refer to themselves or another Industry Member in an event.

This IMID approach allows the Industry Member to use any SRO-Assigned Industry Member Identifier in the Reportable Events. Acknowledging the potential that the same SRO-assigned Industry Member Identifier may be used by different SRO for different entities, CAT will publish a daily file to highlight any conflict among the SRO-assigned Industry Member Identifiers. Such conflicts are detected in the processing of the daily member dictionaries submitted by each SRO. If a conflict is identified for a specific IMID, the Industry Member may choose to use either the SRO-Assigned Industry Member Identifier by another SRO that is not conflicted with other IDs, or the full format of the IMID - the combination of source (issuing SRO) and the SRO-Assigned Industry Member Identifier - to guarantee uniqueness of the IMID. For example, if AAAA is conflicted with another SRO-Assigned Market Participant Identifier in the CAT, the alternative can be to either use a different SRO-Assigned Market Participant Identifier assigned by another SRO (e.g., AAAB, pointing to the same Industry Member), or the full format FINRA:AAAA - a combination of ID and the source SRO.

### 2.3.2. Firm Designated ID (FDID)

FDID is defined in Section 1.1 of the CAT NMS Plan as “a unique identifier for each trading account designated by Industry Members for purposes of providing data to the Central Repository, where each such identifier is unique among all identifiers from any given Industry Member for each business date.”

FDID represents an account and not a specific customer. For example, John Doe has two accounts at BDA, a regular trading account (account #124) and an IRA account (account #456). BDA would have two different FDIDs in this case, one for John Doe's regular trading account and a second for John Doe's IRA account.

The FDID for the trading account an order was received or originated for must be reported on all New Order Events.

Unless a new account or entity identifier is assigned to a client or customer, each FDID must be unique and persistent for each trading account on any given day so that a single account may be tracked across time within a single broker-dealer. For example, if an Industry Member assigns a new account or entity identifier to a client or customer for any reason, such as due to a merger, acquisition or some other corporate action, then a new FDID may be created to identify the new account identifier/entity identifier in use at the Industry Member for the entity

An actual account may not be used as the FDID for CAT reporting. See CAT Interpretive FAQ 20 for more information on the prohibition on use of actual account numbers.

### 2.3.3. Equity Symbols

Industry Members must report Reportable Events related to listed equity Eligible Securities to CAT using the symbology of the primary listing exchange and must report Reportable Events related to OTC Equity Securities using FINRA OTC symbology.

### 2.3.3.1. CAT Symbol Master

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CAT will provide a start-of-day equity symbol master list at 6:00AM and an end-of-day equity symbol master list each day on [www.catnmsplan.com](http://www.catnmsplan.com).

The symbol master file for Industry Members contains the following information:

- the listing exchange,
- the symbol in the symbology of the listing exchange, and
- a flag indicating whether the symbol is a test symbol.

### 2.3.4. Option Symbols

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As stated above, the CAT NMS Plan requires symbols to be reported to CAT in the symbology of the listing exchange. Standard option symbols established across exchanges as the result of the Option Symbology Initiative (OSI) should be used for any single-leg listed options.

#### 2.3.4.1. Flex Percent Option Symbols

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FLEX Percent options can only be uniquely identified using the OSI once their deterministic prices are known. When reporting the optionID for a FLEX Percent option, Industry Members must append "%" to the beginning of the standard OSI symbol. This will enable the CAT system to differentiate between a strike value that is expressed in percent terms from one that is expressed in dollars and cents.

Thus, FLEX Percent option symbols expressed with percentage strike values will have 22 characters. For example, an option order with optionID

`%1AAPL 200131C00095000` indicates it is a Flex Percent option order on OSI symbol `1AAPL 200131C00095000`.

### 2.3.5. Corporate Actions

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The CAT System will maintain a historical symbology in the Central Repository that includes corporate actions.

CAT will receive daily corporate action files and symbol updates from the various data sources (including equity and options listing exchanges, FINRA OTC Equity Symbols, Data Distribution Services from Options Clearing Corporation, etc.) and publish daily symbol master files to the Industry Members. The symbol changes impacted by corporate actions will be reflected in the daily symbol master files. Industry Members must use the updated symbol in Reportable Events from the effective date of the symbol change. Failure to report in the updated symbol would result in rejects of the record(s).

Industry Members are not required to report order adjustments due to corporate actions, e.g., price or size changes. However, if an Industry Member chooses to report an adjustment resulting from a corporate action, the adjustment should be reported using the Order Modified event (or Order Adjusted event).

#### 2.3.5.1. Options Intraday Listing or Delisting

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CAT accommodates intraday listing of options by exchanges. Industry Members must report the OSI symbol as the optionID, just like for previously listed options.

CAT will maintain a historical record of option symbols, including symbols that have been delisted.

Exchanges and the OCC will provide reference data to CAT for option symbols that are listed or delisted intraday.

## 2.4. Data Types

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CAT will accept two kinds of text-based files: JSON and CSV. The fundamental data types used throughout this document are described below. Other data types are defined in the Data Dictionary provided in [Appendix G](#) of this document.

To support both JSON and CSV submissions, CAT will publish a JSON schema file on the CAT public website that describes each data type with required representation formats and a mapping that defines the position in a CSV representation that the data element would assume. A schema will be provided for each data object that can be reported in both JSON and CSV.

### Data Validation Based on Data Types

All data submitted to CAT will be validated based on the defined data type of each item, including proper formatting and range checking. Examples of accepted values are detailed in the table below. Valid values for Choice fields are defined in the Data Dictionary for each data element. Valid data values, ranges, and formats will be specified in the record schema files, which will be used to validate submitted data element values. Records and values that fail validation will be marked as a failure and will be reported as feedback to the Reporter and Data Submitter as detailed in Section 7.

## Data Types

Data Type	JSON Type	Description
Numeric	NUMBER	<p>A general numeric type, composed of digits, an optional decimal point, followed by more digits (with an optional leading +/- sign). While these values look like floating point numbers, they should always be read and processed in a way that represents the exact value as signified by the text. Examples:</p> <ul style="list-style-type: none"> <li>• 1235</li> <li>• -1235</li> <li>• 1235.67</li> <li>• -1235.67</li> </ul> <p>When a numeric type is described in this document, it will include two numbers, the first is the maximum number of digits before the decimal point, and the second is the maximum number of digits after the decimal point.</p> <p>For example, Numeric (6,4) means that the number can have up to 6 digits before the decimal point and up to 4 digits after the decimal point (the visual format would be #####.####). Note that these are maximum limits but the lengths can be smaller. Valid examples which comply with Numeric (6,4) including the following:</p> <ul style="list-style-type: none"> <li>• -999999.9999</li> <li>• -0.1</li> <li>• 0</li> <li>• 0.0001</li> <li>• 999999.99</li> </ul> <p>All numeric values must have a whole number portion before the decimal point (for example, 0.25 cannot be represented as .25). The fractional portion is optional.</p> <p>Do not use leading zeros in numeric values. A zero should only appear as the first digit if it is the only digit before the decimal point (e.g., 0.75).</p>
Price	NUMBER	<p>A Price is shorthand for Numeric (10,8), which can support prices in the inclusive range [-9999999999.99999999, 9999999999.99999999].</p>
Real Quantity	NUMBER	<p>A numeric field meaning Numeric (12,6) with up to 12 digits before the decimal point and up to 6 digits after the decimal point. However, the type Real Quantity cannot have trailing zeroes in the decimal quantities. Trailing zeroes in the decimal quantity will result in a rejection.</p> <p>For example, a value of 100.00 would not be accepted for the type Real Quantity, only 100 would be accepted. Similarly, a value of 100.10 would not be accepted, only 100.1 is acceptable for the type Real Quantity.</p>
Whole Quantity	NUMBER	<p>An integer value with no decimal fraction component. Shorthand for Numeric (12,0).</p>



Data Type	JSON Type	Description
Integer	NUMBER	An integer value (positive, negative, or zero), with no decimal fraction component, in the inclusive range from -9,223,372,036,854,775,808 to 9,223,372,036,854,775,807 (the same range as a 64-bit signed integer).
Unsigned	NUMBER	An unsigned value, greater than or equal to zero, with no decimal fraction component, in the inclusive range from 0 to 18,446,744,073,709,551,615 (the same range as a 64-bit unsigned integer).
Boolean	BOOLEAN	A value with only two choices: true or false. In CSV representations, the value must equal <code>true</code> or <code>false</code> (lower cases, no quotation marks)
Alphanumeric	STRING	A string, composed only of letters and digits [a-zA-Z0-9]. When an Alphanumeric type is described, it will include a number, indicating the maximum length of the field. For example, Alphanumeric(7) means that the field can contain up to 7 characters.
Text	STRING	A string, composed of any printable character, except comma (ASCII decimal 44, hex 2C), pipe (ASCII decimal 124, hex 7C), double quote (ASCII decimal 34, hex 22), and @ (ASCII decimal 64, hex 40). When a Text data type is described, it will include a number, indicating the maximum length of the field. For example, Text(7) means that the field can contain up to 7 characters.
Date	NUMBER	An 8-digit integer representing the date in YYYYMMDD.
Time	STRING	A numeric field, with a specific format conforming to what the ISO 8601 standard calls the <i>basic format</i> , with a few extra specifications.  All 24-hour time components are mandatory ( <i>i.e.</i> , hour, minute, and second as HHMMSS). The decimal-fraction part must be separated from the whole part with a period (ASCII decimal 46, hex 2E), and can contain up to 9 digits (to represent nanosecond component).  The timezone is always Eastern Time (ET). For example, 09:30:00.123456789 ET would be reported as 093000.123456789.

Data Type	JSON Type	Description
Timestamp	STRING NUMBER	<p>A timestamp represents a moment in time, and contains both Date and Time, separated by the letter T (ASCII decimal 84, hex 54) or a space (ASCII decimal 32, hex 20). All time must be in Eastern Time (ET). For example, January 7, 2017 21:30:00.123456789 in New York would be represented as the string  20170107T213000.123456789 or  20170107 213000.123456789.</p> <p>As an alternative format, the timestamp can be submitted as a value of type Unsigned, representing the number of nanoseconds that have elapsed since 00:00:00 Coordinated Universal Time (UTC), Thursday,1 January 1970, not counting leap seconds. This is also commonly known as POSIX time or UNIX time. The same point in time from the above example would be represented as the number 1483842600123456789.</p> <p>Note that the data type is different between the two formats. In JSON, the first representation requires it to be surrounded by double quotes, while the second does not.</p>
Name Value Pairs	STRING	A value of type Text, composed as described in the Name Value Pairs section. (Note that the pipe character is allowed for the purpose of separating each name/value pair. Commas and double quotes are not allowed in name/value pair strings.). Please refer to the following section for more details.
Array of ZZZ	ARRAY	<p>When represented in JSON, it is an array of the indicated type (ZZZ is a placeholder). So, Array of Unsigned would be an array of unsigned integers, and would be represented as [ 0, 42 ].</p> <p>When represented in CSV, it is a series of the indicated type, separated by the pipe symbol. So, the array cited previously of Unsigned would be represented as 0 42.</p>
Choice	STRING	A Text field, but with an explicit list of acceptable values. The <a href="#">Data Dictionary</a> section of this document lists acceptable values for Choice fields.
Symbol	STRING	Text (22). See Section 2.2.3 and 2.2.4 for more details on Equity and Options symbols. The string is case sensitive.
Message Type	STRING	An Alphanumeric(5) field, indicating the type of message being reported.
Reporter ID	STRING	Alphanumeric(7) - a CAT Reporter ID.
Participant ID	STRING	A subclass of Reporter ID that applies only to Participants.
Exchange ID	STRING	A subclass of Participant ID that applies only to exchanges.
Submitter ID	STRING	Alphanumeric(7) - a unique ID assigned by CAT to the CAT Reporting Agent.

Data Type	JSON Type	Description
Industry Member ID (IMID)	STRING	<p>Text(16) - SRO-Assigned Market Participant Identifier - an identifier assigned by an SRO to one of its members. For example, FINRA MPID, Nasdaq MPID, NYSE Mnemonic, CBOE User Acronym, or CHX Acronym.</p> <p>As an alternative, the IMID can be represented in the format of IssuingSRO:IMID. For example, a FINRA MPID AAAA can be represented as <i>FINRA:AAAA</i>.</p> <p>The alternative format is used when simple IMID cannot guarantee the uniqueness of identification of an Industry Member.</p>
FDID	STRING	<p>FDID is defined in Section 1.1 of the CAT NMS Plan as “a unique identifier for each trading account designated by Industry Members for purposes of providing data to the Central Repository, where each such identifier is unique among all identifiers from any given Industry Member for each business date.”</p>
Trade Side Details	Nested Object	<p>A compound object that consists of a list of data elements that represents buy or sell side details of a Trade.</p> <p>For example, <i>fieldName</i> is the data elements of this data type. It is represented as:</p> <pre>{   "field0": "value0",   "fieldName": {     "nestedField0": "nestedValue0",     "nestedField1": "nestedValue1",     "nestedField2": "nestedValue2"   } }</pre> <p>When represented in CSV, it is value0,nestedValue0,nestedValue1,nestedValue2</p> <p>Please refer to Section 4.12.1 table Trade Side Details for the list of nested fields.</p>
Trade on a Quote Side Details	Nested Object	<p>A compound object that consists of a list of data elements that represents buy or sell side details of a trade as the result of a quote. Please refer to Section 4.12.2 table Trade on a Quote Side Details for the list of nested fields.</p>
Fulfillment Side Details	Nested Object	<p>A compound object that consists of a list of data elements that represents firm side or customer/client side details of an Order Fulfillment. Please refer to Section 4.13.1 table Fulfillment Side Details and 5.10.1 Options Fulfillment Side Details for the list of nested fields.</p>

### 2.4.1. Name/Value Pairs

Some fields are described as containing Name/Value pairs. This signifies a list of zero or more attributes, where each attribute is either a name with no value, or a name with an accompanying value such that the name and value are separated by a single equal sign (ASCII decimal 61, hex 3D). Multiple attributes, i.e., Name/Value Pairs, are separated by the pipe symbol (ASCII decimal 124, hex 7C). If an attribute is boolean in nature, it can optionally be

represented as a name alone, where its value is implied by its presence (true) or absence (false).

The Name part is the string up to the first pipe symbol or equal sign. Names must not contain commas (ASCII 44, hex 2C), pipes, equal-signs, or double-quotes (ASCII decimal 34, hex 22). If the name terminates with a pipe, it is a boolean value, and its presence indicates true. If the name terminates with an equal sign, the value must follow.

The Value part is the string starting with the character just after the equal sign, up to either a pipe symbol or the end of the string. Values may contain an equal sign, but must not contain commas, pipes or double-quotes.

For example, the following JSON represents a hypothetical name/value pair field, with a boolean attribute and a price attribute: `{ "data": "XYZ|ABC=12.55" }`

The above format works for both JSON and CSV data entry. However, when submitting data in JSON, a more native JSON style can optionally be used by assigning a JSON object as the value for a Name Value Pair attribute. Note, however, that boolean values must be explicitly set. The above example can alternatively be submitted as:

```
{ "data": { "XYZ": true, "ABC": 12.55 } }
```

## 2.4.2. Required, Conditional, and Optional Fields

Throughout this document, event types and their fields will be defined. Each field will be notated with the abbreviation R, C, O or A to represent whether it is required, conditionally required, optional or required for ATSS only. This codification will appear in the last column of each table describing an event.

Value	Abbreviation	Description
Required	R	Required for the given event. This field must always be included.
Conditional	C	Conditionally required for the given event, depending upon other values submitted in the Reportable Event message.
Optional	O	Optional for the given event. May be included at the discretion of the reporter/submitter.
ATS	A	Required for ATSS only.

## 2.5. Linkage Overview

This section describes the linkage keys that are used to create lifecycles in CAT and explains how the linkage keys are constructed via different data elements in respective Reportable Events.

### 2.5.1. CAT Linkage Keys

All Reportable Events will be linked in CAT via the daisy chain approach. Below is the list of linkage keys that connect order events within an Industry Member and across Industry Members.

- **Order Key** links together the events of the same order, within an Industry Member, e.g. linking an Order Route event to the Order Accepted event. The Order Key is constructed by date, reporter, *symbol (or optionID)* and *orderID*.

- **Prior Order Key** links together the modified, cancel/replaced or internally routed order to the original order. For example, linking an Order Modified event to the Order Accepted event. Generally, the data elements to construct the Prior Order Key are date, reporter, *symbol (or optionID)*, *priorOrderID*. However, the field names may vary depending on the order events. Please see each order events sections for more details.
- **Route Linkage Key** links the order events by the Industry Member routing an order away and the Industry Member accepting the order. Please see Section 2.5.2 below for more detailed descriptions.
- **Trade Key:** Each Trade event has a Trade Key (date, reporter, *symbol (or optionID)*, *tradeID*), and each side of the trade has an Order Key that links to the order on side.
- **Fulfillment Key:** date, reporter, *symbol (or optionID)*, *fulfillmentID*
- **Prior Fulfillment Key:** date, reporter, *symbol (or optionID)*, *priorFulfillmentID*
- **Quote Key:** date, reporter, *symbol*, *quoteID*

Generally, the date used in the linkage key is the calendar date of the event (the date portion of the *eventTimestamp*). In the scenario when an order event needs to be linked to a prior event on a different date (e.g., modify a GTC order on a prior day), an additional field *priorOrderDate* is reported on the event and will be used in linking.

### 2.5.2. Reporting Responsibilities of Sender/Receiver in Order Route

In Phase 2a, Industry Members are responsible for reporting routes, modifications, and cancellations in line with OATS guidance. Below are a list of sample scenarios and the reporting responsibilities of the sender (Broker A) and the receiver (Broker B).

Scenario	Sender (Broker A)		Receiver (Broker B)	
	Action	CAT Report	Action	CAT Report
An Order Sent from Broker A to Broker B	Routes the order to Broker B	Order Route	Accepts the order from Broker A	Order Accepted
An Order Sent from Broker A to Broker B is rejected	Routes the order to Broker B	N/A	Rejects the order from Broker A	N/A
Customer Initiates a cancel/replace on a previously routed order to Broker B	Routes the original order to Broker B	Order Route	Accepts the order from Broker A	Order Accepted
	Sends a cancel/replace route request to Broker B (via a different Routed Order ID)	Order Route	Accepts the request and cancel/replaced the order	Order Modified

Customer Initiates a modification on a previously routed order to Broker B	Routes the original order to Broker B	Order Route	Accepts the order from Broker A	Order Accepted
	Sends modify route request to Broker B (via the same Routed Order ID)	Order Route	Accepts the modify route request, and modifies the order	Order Modified
Broker A initiates a modification on a previously routed firm order to Broker B	Routes the original order to Broker B	Order Route	Accepts the order from Broker A	Order Accepted
	Broker A sends a modify route request to Broker B to update the order	N/A	Modifies the order	Order Modified
Broker A requests to cancel a previously routed order to Broker B	Contacts Broker B to cancel route request	N/A	Acknowledges the cancel route and cancels the order	Order Canceled
	Contacts Broker B to cancel route request	N/A	Rejects the cancel route	N/A
Broker B cancels the order received from Broker A	<None>	N/A	Cancels the order from Broker A	Order Canceled

**2.5.3. Summary of Route Linkage Keys**

The table below summarizes the required data elements to construct the route key for linking Route and Order Accepted events reported by different entities in CAT. The combination of the data elements must be unique. Data elements in the same row must always be equal values. Note that only the data elements used to create linkage are listed here.

For Participant related event details, please refer to the *CAT Reporting Technical Specifications for Participants*.

Routing Between Industry Members (IMs)	<b>IM - Order Route Event</b>	<b>IM - Order Accepted Event</b>
	senderIMID	routingOrigin
	destination (IMID)	receiverIMID
	Date	Date
	symbol (or optionID)	symbol (or optionID)
	session (must be blank)	session (must be blank)
	routedOrderID*	routedOrderID*
Routing from an Industry Member to an Exchange	<b>IM - Order Route Event</b>	<b>Participant - Order Accepted Event</b>
	senderIMID	routingParty
	destination (Exchange ID)	exchange (Exchange ID)
	Date	Date
	symbol (or optionID)	symbol (or optionID)
	session	session
	routedOrderID*	routedOrderID

Routing from an Exchange to the Exchange Affiliated/ Routing Broker	<b>Participant - Order Route Event</b>	<b>IM - Order Accepted Event</b>
	exchange (Exchange ID)	routingOrigin (Exchange ID)
	routingParty	receiverIMID
	Date	Date
	symbol (or optionID)	symbol (or optionID)
	session	session
	routedOrderID	routedOrderID*
Routing from an Industry Member to a non-reporting Foreign Entity	<b>IM - Order Route Event</b>	<b>Foreign Broker-Dealer</b>
	No Linkage	

\* Not required for manual order route/receipt.

- **session** - The *session* field contains an ID string for the specific session used to route the order. Note that this differs from the trading session (e.g., pre-market, regular, post-market, etc.) Session can constitute an actual protocol session name, IP/port combination, unique login account, or some other means of identifying a particular API session. It must be reported as the same value by both the sending and receiving entities. When routing between two Industry Members, the session must be left blank by both the sending and receiving entities.
- **routedOrderID** - When an order is routed away, it may be assigned another ID on the route - this is noted in the Order Route event as the *routedOrderID* (e.g., the ClOrdID in FIX, ClientOrderID for NYSE UTP direct users, etc). This ID must match the *routedOrderID* reported by the receiving entity in its Order Accepted event.

### Routing Between Industry Members

For orders routed between Industry Members, the linkage between sender and receiver is established via a combination of:

- Date, *symbol (or optionID)*, *session (must be blank)*, *destination*, *senderIMID*, and *routedOrderID* on the Order Route events reported by the sender; and
- Date, *symbol (or optionID)*, *session (must be blank)*, *receiverIMID*, *routingOrigin*, and *routedOrderID* on Order Accepted event reported by the receiver.
- **destination** - The IMID of the destination receiving this routed order. It must equal the *receiverIMID* field on the Order Accepted event reported by the destination Industry Member. The sending and receiving firms must mutually agree on the IMID to be used if they have multiple SRO-assigned IMIDs.
- **senderIMID** - The IMID of the sender that is routing out the order, known also by the destination. The destination has to report the same value on the *routingOrigin* field of the Order Accepted event.
- **receiverIMID** - The IMID of the Industry Member receiving the routed order. It must match the *destination* field on the Order Route event reported by the sender.
- **routingOrigin** - The IMID of the Industry Member from which the order is routed. It must match *senderIMID* in the Order Route event reported by the routing entity.

## Routing to Exchanges

When routing to exchanges, the *destination* must be the Exchange ID to which the order is routed. Hence, the linkage will be created by:

- Date, *symbol (or optionID)*, *session*, *destination* (ExchangeID), *senderIMID*, and *routedOrderID* on the Order Route event; and
- Date, *symbol (or optionID)*, *session*, *exchange*, *routingParty*, and *routedOrderID* on the Participant Order Accepted event to create linkages. See *CAT Reporting Technical Specifications for Participants* for more details.

Note that, when using Order Route event to report a modification to an order that was previously routed to an exchange, the linkage key is created via the same set of data elements.<sup>2</sup>

## Routing to Foreign Destinations

If the order is routed to a foreign non-CAT-reporting entity, the *destinationType* must be marked as N (Foreign). However, there is no requirement to report *destination* or *routedOrderID*, thus there is no subsequent linkage in CAT.

## Routing from an Exchange to the Exchange's Routing Broker

When an Industry Member, that is an exchange routing broker, receives an order routed from the exchange, the *routingOrigin* field must be the Exchange ID from which the order is routed. Hence the linkage will be created by:

- Date, *symbol (or optionID)*, *exchange*, *routedOrderID*, *session*, *routingParty* on the Participant Order Route event (See *CAT Reporting Technical Specifications for Participants* for more details);
- Date, *symbol (or optionID)*, *routingOrigin* (Exchange ID), *routedOrderID*, *session*, *receiverIMID* on the Industry Member Order Accepted event.

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<sup>2</sup> In order to create the linkage key between Industry Member Order Route Event (potentially Order Modify Route Event in 2c) and Participant Order Modified event, a change is planned for future phases of the Participant reporting - adding *routingParty*, *session* and *routedOrderID* to Participant Order Modified event.



## 3. Special Reporting Requirements

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### 3.1. Alternative Trading Systems (“ATs”) Reporting

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ATs are required to submit additional information in applicable order events.

#### 3.1.1. National Best Bid and Offer (NBBO)

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ATs are required to report to CAT NBBO prices, though such information is optional for other Industry Members. The quantities being bid or offered for the NBBO are optional for all Industry Members.

The NBBO should be reported to CAT from the perspective of the Industry Member. An AT is required to report, for orders, the NBBO (or relevant reference price) in effect at the time of the order event, and the timestamp of when the AT captured the effective NBBO (or relevant reference price). In addition, the AT must identify the market data feed (NBBO Source) it used to obtain the NBBO (or relevant reference price).

If another reference price, such as the primary market's BBO, is used by the AT, then the applicable reference price should be reported instead of the NBBO.

#### 3.1.2. ATs Order Types

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For events reported by ATs, an additional field (in addition to *orderType*) - *atsOrderType* - is used to report AT-specific order types. Note that *orderType* and *atsOrderType* are not mutually exclusive; ATs must populate both of these fields with a value where they are present on Reportable Events.

The field *atsOrderType* is defined as Name/Value Pairs where "name" must be equal to a unique code that has been provided to CAT by the AT through the CAT web interface. All codes must be registered before any relevant order events are submitted. Specific instructions for registering *atsOrderTypes* will be published in a CAT Alert available on [catnmsplan.com](http://catnmsplan.com). All *atsOrderTypes* must be registered with CAT 20 business days prior to the order type becoming effective.

#### 3.1.3. Sequence Number

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Alternative Trading Systems (ATs) must also provide a sequence number assigned by the AT's matching engine on all reportable events.

### 3.2. Manual Orders

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The CAT NMS Plan defines a Manual Order Event as “non-electronic communication of order-related information for which CAT Reporters must record and report the time of the event.” This version of the Technical Specifications addresses manual equity orders, which are reportable in Phase 2a, while manual option orders will be addressed in the Phase 2d Technical Specifications.

#### 3.2.1. Manually Received Order Events Immediately Systematized

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Orders which are non-electronically communicated but immediately systematized (e.g., a broker received a call and directly enters the order into the order management system) must be marked as a manual event using the *manualFlag* but only require one, electronic timestamps (captured in the *eventTimestamp* field).

### 3.2.2. Manual Order Events Followed by Separate Electronic Messages

---

Manual order events must be reported to CAT marked as a manual event using the *manualFlag* and must include an electronic capture time if the manual event is captured in an order management or execution system.

If an Industry Member routes or receives an order manually and then subsequently sends or receives an electronic message to represent the manual instruction, the following reporting requirements apply:

- All material terms and conditions of a manually received or routed order, including time of route and receipt, must be reported to CAT on the required manual event, with all relevant timestamps representing when the manual order event occurred.
- Additional electronic messages related to a manual order or route that do not change any material term or condition of the original order are not required to be reported to CAT as they represent a duplicate of the original order.
- If the duplicate electronic message includes a routed order identifier that could be used to link the sender's route report to the receiver's new order, and the member has the ability to include this electronic information on the manual event (referred to as a "merged" event), the Industry Member should do so.
- If the Industry Member is not able to merge the manual and electronic information in a single manual event and elects to report the duplicate electronic message independently, such messages must be reported with the *electronicDupFlag* = true. Further, the *manualOrderID* may be populated with the Order ID of the original manual order. This is optional in Phase 2a, but will be mandatory in Phase 2c.

No linkage will be attempted for electronic duplicate events in Phase 2a.

## 4. Equity Events

This section describes Reportable Events for equities that are Eligible Securities. The following table lists each equity event type with its corresponding Message Type code.

Events and data elements that are greyed out do not apply to Phase 2a.

### Equity Events

Sec	Event	Message Type	Description
4.1	New Order Event	MENO	Reported when an Industry Member originates an order, receives a customer order, originates a bunched, representative or proprietary order, or receives an order from a non-reporting foreign entity.
4.2	New Order Supplement Event	MENOS	Supplement to the New Order event, used when the New Order event exceeds the maximum length allowed, or the child orders of a representative order is not captured in the New Order Event.
4.3	Order Route Event	MEOR	Reported when an Industry Member routes an order to another broker dealer or execution venue such as an exchange or ATS. The modification of a routed order is also reported using this Order Route event in Phase 2a.
4.3.1	Order Modify Route	MEMR	Deferred - event not required for Phase 2a or Phase 2b. SROs will evaluate need for a modified route event after reviewing Phase 2a/2b data and include event in Phase 2c, if necessary.
4.3.2	Order Cancel Route	MECR	Deferred - event not required for Phase 2a or Phase 2b. SROs will evaluate need for a canceled route event after reviewing Phase 2a/2b data and include event in Phase 2c, if necessary.
4.4	Order Accepted	MEOA	Reported when an Industry Member, including an ATS, accepts a routed order that originated at another broker dealer.
4.5.1	Order Internal Route	MEIR	Reported whenever an order moves within an Industry Member to another desk or other internal destination.
4.5.2	Order Internal Route Modified	MEIM	Reported when an Order Internal Route was modified.
4.5.3	Order Internal Route Canceled	MEIC	Reported when an Order Internal Route was canceled.
4.6.1	Child Order	MECO	Reported for the generation of child order(s). This is to provide extra flexibility of reporting, however there is not a scenario in which the use of Child Order is mandatory.
4.6.2	Child Order Modified	MECOM	Reported when a Child Order is modified.
4.6.3	Child Order Canceled	MECOC	Reported when a Child Order is canceled.
4.7	Order Modified	MEOM	Reported whenever changes to the Material Terms of an order are made, or an order is cancel/ replaced.

Sec	Event	Message Type	Description
4.8	Order Modified Supplement Event	MEOMS	Supplement to the Order Modified event, used when the Order Modified event exceeds the maximum length allowed, or the child orders of a representative order is not captured in the Order Modified Event.
4.9	Order Adjusted	MEOJ	An abbreviated message to report simple order modifications. The only types of modifications that are allowed to be reported with this event are changes to the side, price or quantity of the order.
4.10	Order Canceled	MEOC	Reported whenever an Industry Member fully or partially cancels an order that it has not already routed to another destination.
4.11	New Quote	MENQ	Reported when quotations on equity Eligible Securities sent to a quote display facility or quote driven ATS, or a quote sent to a customer or broker dealer that resulted in a trade.
4.11.1	Equity Quote Received	MEQR	Reported when a quote is received by an Industry Member.
4.11.2	Equity Quote Canceled	MEQC	Reported when a quote is canceled.
4.12.1	Trade Event	MEOT	Reported by the executing venue where the trade occurred, with details of the trade, including Agency Order Crosses and broker internalization of an order. (i.e., the order is filled against Industry Member's proprietary account).
4.12.2	Trade on a Quote	MEOTQ	Reported when an execution occurs against a quote.
4.13	Order Fulfillment	MEOF	Reports how orders are fulfilled by each Industry Member who handled a given order.
4.14	Order Fulfillment Amendment	MEFA	Reports how the order fulfillment was amended.
4.15.1	Post Trade Allocation	MEPA	Reports how executed shares are allocated to end customer accounts during post-trade processing.
4.15.2	Amended Allocation	MEAA	Reports an amendment to a previously reported post trade allocation.

## 4.1. New Order Event

---

An Industry Member must report a New Order event to CAT when an order is received or originated. This includes:

- New customer orders<sup>3</sup>
- Representative orders
- Proprietary orders
- Order(s) received from a non-reporting foreign broker-dealer or affiliate.

Note that an order received from another CAT Reporter (US broker-dealer, ATS or an exchange) must be reported as an Order Accepted event.

### Phase 2a Representative Orders

In Phase 2a, linkage is required between the representative street-side order and the customer order or client order being represented when the representative order was originated specifically to represent a single order and there is:

- An existing direct electronic link in the Industry Member's system between the order being represented and the representative order, and
- Any resulting executions are immediately and automatically applied to the represented order in the Industry Member's system.

### Phase 2c Representative Orders

Any scenario that does not meet the definition of Phase 2a representative order will fall into this category. The Industry Member must report a New Order event for the creation of the representative order in Phase 2a and flag the New Order event properly to indicate that it is a representative order. It is not mandatory to report the linkage to the underlying orders (the *aggregatedOrders* field) until Phase 2c.

Appendix C contains detailed descriptions of representative order scenarios and illustrates when marking of the representative order, linkage between the represented order and the representative order, and Order Fulfillment linkage is required in each phase.

The *representativeInd* is used to show whether an order is originated to represent a customer/client order and whether the linkage is present. It is required for all New Order events.

Note that all fields and values necessary to support Phase 2c linkages are included in this version of the specification and Industry Member Reporters may voluntarily report these linkages prior to the start of Phase 2c.

---

<sup>3</sup> Note - this document refers to orders received from CAT Reporters as "client orders," and orders received from non-CAT Reporters, including non-US broker-dealers, as "customer orders."

## New Order Event Field Specifications

Field Name	Data Type	Description	
type	Message Type	MENO	R
firmROEID	Alphanumeric (12)	An identifier assigned to the record by the reporting firm.	O
eventTimestamp	Timestamp	The date/time of receipt of the order. Can be manual or electronic. If <i>manualFlag</i> is <i>true</i> , timestamp must be reported to seconds. If <i>manualFlag</i> is <i>false</i> , timestamp must be reported to milliseconds or a finer increment up to nanoseconds.	R
manualFlag	Boolean	Must be marked as <i>true</i> if the order is received or captured manually.	R
electronicDupFlag	Boolean	Indicating whether this is a duplicative electronic message of a manual event. If populated, this message will not be linked to any other events in Phase 2a.	C
electronicTimestamp	Timestamp	The time at which the order is electronically captured.	C
symbol	Symbol	The symbol of the stock in the symbology of the primary listing exchange or FINRA for OTC Equity Securities.	R
orderID	Text(40)	The internal order ID assigned to the order by the Industry Member. Must be unique within same date, reporter, and <i>symbol</i> combination.	R
originator	Choice	This indicates if the order was initiated by the Industry Member or received from a customer, client or foreign broker-dealer, and identifies affiliates. See the Data Dictionary for a list of allowed values.	R
deptType	Choice	This is the category of internal department, unit or desk originating or receiving the order. See the Data Dictionary for a list of allowed values.	R
quoteID	Text(40)	If this order was the result of a quote provided to a customer/client, this is the <i>quoteID</i> of the quote offered to the Industry Member's customer/client. Required if this order was originated as the result of a quote.	C
side	Choice	The side of the order. See the Data Dictionary for a list of allowed values.	R
price	Price	The limit price of the order, if applicable.	C
quantity	Real Quantity	The order quantity.	R
minQty	Whole Quantity	The minimum quantity of an order to be executed, required when applicable.	C
orderType	Choice	The type of order being submitted (e.g., market, limit). See the Data Dictionary for a list of allowed values.	R
timeInForce	Choice	The time-in-force for the order (e.g. DAY, IOC, GTC). See the Data Dictionary for a list of allowed values.	R
tradingSession	Choice	The trading session(s) during which an order is eligible to trade. See the Data Dictionary for a list of allowed values.	R

Field Name	Data Type	Description	
handlingInstructions	Name/Value Pairs	This field will contain zero or more order instruction codes, each separated by a single pipe symbol. See the Data Dictionary for a list of allowed values.	C
custDspIntrFlag	Boolean	Indicating if a customer has instructed that a limit order or block size order should not be displayed. See the Data Dictionary for a list of allowed values.	R
firmDesignatedID	Text(40)	The FDID assigned by the Industry Member to the account submitting the order.	R
accountType	Choice	Represents the type of beneficial owner of the account for which the order was received or originated. See Data Dictionary for the list of allowed values.	R
infoBarrierID	Alphanumeric (12)	Specifying the identifier of the information barrier in place for a trading unit that will meet the criteria of the “no-knowledge” exception in FINRA Rule 5320.02. Any alphanumeric not containing a delimiter.	C
aggregatedOrders	Name/Value Pairs	This field applies to a representative/aggregated order created by the Industry Member, or a riskless principal order to link to the associated order(s). It specifies the original disparate order IDs and quantities (if partial) being consolidated in this representative/aggregated order, or the order IDs and quantities associated with the riskless principal order.  Must be present if the representativeInd = "Y".  One or multiple Name/Value pair(s) may be included in this field.	C
negotiatedTrade	Choice	Indicates whether the order is a result of a negotiated trade. See the Data Dictionary for a list of allowed values.	R
representativeInd	Choice	Indicates the type of representative order. See the Data Dictionary for a list of allowed values.	R
seqNum	Alphanumeric (10)	The sequence number assigned to the order event by the ATS's matching engine. Any alphanumeric not containing a delimiter. Only required for ATSs.	A
displayPrice	Price	The displayed price of this order as instructed by the customer or client. Required when the ATS displays the order outside of ATS.	C
workingPrice	Price	The working price of the order at the time it was accepted.	A
displayQty	Whole Quantity	The displayed quantity for this order.	A
atsOrderType	Name/Value Pairs	Shows the ATS-specific order type as selected from a list of order types defined by this reporter via the Reporter Portal.	A
nbbPrice	Price	The NBBO at the moment the order was originated or received. Prices are required, quantities are optional.	A
nbbQty	Whole Quantity		O
nboPrice	Price		A

Field Name	Data Type	Description	
nboQty	Whole Quantity		O
nbboSource	Choice	Source of the NBBO data used. See the Data Dictionary for a list of allowed values.	A
nbboTimestamp	Timestamp	The date/time at which the NBBO was referenced upon the receipt of the order.	A

Lifecycle keys for this Reportable Event:

- Order Key: date, reporter, *symbol*, *orderID*
- Quote Key: date, reporter, *symbol*, *quoteID* (if applicable)
- Order Key: date, reporter, *symbol*, *aggregatedOrders.Name*



## 4.2. New Order Supplemental Event

The Supplement Event serves as a supplement to the New Order event. This event accommodates reporting in two scenarios:

- 1) When the number of Name/Value pairs included under the *aggregatedOrders* field causes the New Order event to exceed the maximum allowed message length. Generally, this includes scenarios where so many orders are being aggregated together in a New Order that the number of Name/Value Pairs included in the field *aggregatedOrders* causes the message to exceed the allowed length.
- 2) When there is no explicit linkage to disparate orders when a representative order is generated. This supplement event can be used to capture the relationship of representative and disparate orders and submitted to CAT separately as an addition to the original New Order event.

This event can be submitted in the same file as the original New Order event or in a separate file, so long as it is submitted on the same date as the New Order event. One New Order event can have multiple New Order Supplement events. Multiple New Order Supplement events are considered as additions (not replacements or modifications). The *aggregatedOrders* field in the New Order Supplement event should only contain the additional Name/Value Pairs that have not been captured in the original New Order event (or another Supplement event for the same New Order).

### New Order Supplement Event Field Specifications

Field Name	Data Type	Description	
type	Message Type	MENOS	R
firmROEID	Alphanumeric(12)	An identifier assigned to the record by the reporting firm.	O
eventTimestamp	Timestamp	The date/time of the representative order. This must match the <i>eventTimestamp</i> value reported on the New Order this event supplements (including scenarios in which the supplement is created at a later time).	R
symbol	Symbol	The symbol of the stock in the symbology of the primary listing exchange or FINRA for OTC Equity Securities.	R
orderID	Text(40)	The internal order ID assigned to the order by the Industry Member. Must be unique within same date, reporter, and <i>symbol</i> combination. This must match the <i>orderID</i> on the New Order event.	R
aggregatedOrders	Name/Value Pairs	This field serves as the supplement to the <i>aggregatedOrder</i> field of the New Order event, specifying the disparate order IDs and quantities (if partial) being consolidated in this representative/aggregated order, or the order IDs and quantities associated with the riskless principal order.  One or multiple Name/Value pair(s) may be included in this field.	R

Lifecycle keys for this Reportable Event:

- Order Key: date, reporter, *symbol*, *orderID*
- Order Key: date, reporter, *symbol*, *aggregatedOrders.Name*

### 4.3. Order Route

An Industry Member must report to CAT an Order Route event when:

- Routing to another Industry Member
- Routing to foreign broker-dealers
- Routing to exchanges
- Routing between two IMIDs (e.g. two different FINRA MPIDs) attributed to the same legal entity (i.e. the same CRD)
- Routing partial quantities of an order (assigned using *routedOrderID* in routing message)

In order to maintain order lifecycle linkage, the *orderID* populated in the Order Route event must reflect any changes made to the *orderID* internally by the broker before routing the order. If, for example, an order was subject to a Cancel/Replace that changed the Order ID, then the value used for *orderID* in an Order Route event must reflect those changes - in other words, the most recent *orderID* is used to reference the order.

#### Handling Instructions on the Order Route

The handling instructions included in this event should represent those on the routed order. If the handling instructions do not change from the Order Accepted or New Order associated with the order, Industry Members may use the handling instruction code "RAR" - routed as received, instead of repeating each individual handling instruction.

#### Notes

- Please note that internal routes to another desk or department within an Industry Member are not reported using the Order Route event; instead an Order Internal Route event is used. See the Order Internal Route section for more details.

#### Order Route Event Field Specifications

Field Name	Data Type	Description	
type	Message Type	MEOR	R
firmROEID	Alphanumeric (12)	An identifier assigned to the record by the reporting firm.	O
eventTimestamp	Timestamp	The date/time of the Order Route. Can be manual or electronic. If <i>manualFlag</i> is <i>true</i> , timestamp must be reported to seconds. If <i>manualFlag</i> is <i>false</i> , timestamp must be reported to milliseconds or a finer increment up to nanoseconds.	R
manualFlag	Boolean	Must be marked as <i>true</i> if the order is routed manually.	R
electronicDupFlag	Boolean	Indicating whether this is a duplicative electronic message of a manual event. If populated, this message will not be linked to any other events in Phase 2a.	C
electronicTimestamp	Timestamp	When <i>manualFlag</i> is <i>true</i> , the time at which the order is electronically captured.	C
symbol	Symbol	The symbol of the stock in the symbology of the primary listing exchange or FINRA for OTC Equity Securities.	R

Field Name	Data Type	Description	
senderIMID	Industry Member ID	The IMID used to identify the Industry Member that is routing the order, known by the destination. When routing to another Industry Member, this value <u>must match the <i>routingOrigin</i> on the Order Accepted event reported by the destination, while routing to an exchange, it equals the <i>routingParty</i> reported by the exchange on the Participant Order Accepted event.</u> Not required when routing to a foreign broker-dealer.	C
destination	Industry Member ID / Exchange ID	When routing to another Industry Member, it is the IMID used to identify the Industry Member that is receiving this routed order. And it must match the <u><i>receiverIMID</i> field on the Order Accepted event reported by the destination Industry Member.</u> When routing to an exchange, it is the Exchange ID of the destination exchange. <u>Must match the <i>exchange</i> field on the Order Accepted event reported by the destination exchange.</u> Not required if the destination is a foreign broker-dealer.	C
destinationType	Choice	Indicating whether the destination of the route is an Industry Member, an exchange or a foreign broker-dealer. See the Data Dictionary for a list of allowed values.	R
orderID	Text (40)	This <i>orderID</i> is the latest internal order ID assigned to the order before routing.	R
priorOrderDate	Date	Only required when this event is not on the same calendar day as the date when <i>orderID</i> is assigned, then this is the date when <i>orderID</i> is assigned.	C
routedOrderID	Text (40)	The ID assigned to the order by the Industry Member when routing the order to the destination. This value must match the value for <i>routedOrderID</i> reported by the destination in their Order Accepted report. Not required when routing destination is a foreign broker-dealer or when routed manually.	C
session	Text (40)	The session ID used when routing the order. This must match the session ID reported in the order accepted event by the receiving Industry Member, ATS, or exchange. Not required when routing destination is a foreign broker-dealer or when routed manually. Must be reported as blank if routing to another Industry Member.	C
side	Choice	The side of the order: See the Data Dictionary for a list of allowed values.	R
price	Price	The limit price of the order, if applicable.	C
quantity	Real Quantity	The order quantity.	R
minQty	Whole Quantity	The minimum quantity of an order to be executed. Required when applicable.	C
orderType	Choice	The type of order being routed (e.g., market, limit) See the Data Dictionary for a list of allowed values.	R

Field Name	Data Type	Description	
timeInForce	Choice	The Time-in-Force for the order (e.g., DAY, IOC, GTC). See the Data Dictionary for a list of allowed values.	R
tradingSession	Choice	The trading session(s) during which an order is eligible to trade. See the Data Dictionary for a list of allowed values.	R
shortSaleExptInd	Boolean	Short sale exempt indicator. If the value for the field <i>side</i> is "Exempt", this field is required and indicates if the order was eligible to be marked Short Exempt according to SEC Rule 201. The value is <i>true</i> if the order may be marked short exempt consistent with SEC Rule 201.	C
isoInd	Choice	Indicates the order was routed as an Intermarket Sweep Order. See the Data Dictionary for a list of allowed values.	R
handlingInstructions	Name/Value Pairs	Defines the handling instructions, as described in the Data Dictionary for handlingInstructions.	C
routeRejectedFlag	Boolean	Indicates the routed order was not accepted by the destination (rejected or no response) when marked <i>true</i> . (This field is optional in Phase 2a. Routes that are not accepted are required to be reported in Phase 2c.)	O
seqNum	Alphanumeric (10)	The sequence number assigned to the order event by the ATS's matching engine. Any alphanumeric not containing a delimiter.	A

Lifecycle keys for this Reportable Event:

- Order Key: date (from eventTimestamp if *priorOrderDate* is not present), reporter, *symbol*, *orderID*
- Order Key: *priorOrderDate* (when present), reporter, *symbol*, *orderID*
- Route Link Key: date, *senderIMID*, *destination*, *symbol*, *session*, *routedOrderID*

#### **4.3.1. Order Modify Route (Potential Phase 2c Event)**

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<Deferred - event not required for Phase 2a or Phase 2b. SROs will evaluate need for a modified route event after reviewing Phase 2a/2b data and include event in Phase 2c, if necessary.>

#### **4.3.2. Order Cancel Route (Potential Phase 2c Event)**

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<Deferred - event not required for Phase 2a or Phase 2b. SROs will evaluate need for a canceled route event after reviewing Phase 2a/2b data and include event in Phase 2c, if necessary.>

## 4.4. Order Accepted

When an Industry Member receives a routed order from another CAT Reporter (i.e., Industry Member, ATS or exchange), then an Order Accepted event must be reported to CAT by the Industry Member receiving the routed order. As described in Order Route event, if an Industry Member accepts a routed order from another IMID belonging to the same Industry Member, i.e., the same CRD, an Order Accepted event must be reported.

Once all Industry Members are reporting to CAT, in all cases, the order reported with this event should have already been originated by another broker and reported upon origination with a New Order event. A New Order event represents the beginning of the order lifecycle in CAT, therefore a new customer order is represented with a New Order event - not an Order Accepted event. Similarly, orders received by an Industry Member from its non-broker-dealer affiliates or from a non-reporting foreign broker-dealer should be reported as a New Order event - NOT an Order Accepted event. (Note: At the start of Phases 2a and 2b, there will be some lifecycles beginning at Order Accepted event, as small Industry Members will not be required to report until a later phase).

### Order Accepted Field Specifications

Field Name	Data Type	Description	
type	Message Type	MEOA	R
firmROEID	Alphanumeric (12)	An identifier assigned to the record by the reporting firm.	O
eventTimestamp	Timestamp	The date/time of receipt of the order. Can be manual or electronic. If <i>manualFlag</i> is <i>true</i> , timestamp must be reported to seconds. If <i>manualFlag</i> is <i>false</i> , timestamp must be reported to milliseconds or a finer increment up to nanoseconds.	R
manualFlag	Boolean	Must be marked as <i>true</i> if the order is received or captured manually.	R
electronicDupFlag	Boolean	Indicating whether this is a duplicative electronic message of a manual event. If populated, this message will not be linked to any other events in Phase 2a.	C
electronicTimestamp	Timestamp	The time at which the order is electronically captured.	C
symbol	Symbol	The symbol of the stock in the symbology of the primary listing exchange or FINRA for OTC Equity Securities.	R
orderID	Text (40)	Order ID assigned to the order by the Industry Member upon acceptance. Must be unique within same date, reporter, and <i>symbol</i> combination.	R
receiverIMID	Industry Member ID	The IMID of the Industry Member receiving the order. When receiving from another Industry Member, it <u>must match the <i>destination</i> field on the Order Route event reported by the routing Industry Member.</u> If receiving from an exchange as the routing broker, <u>then this must match the <i>routingParty</i> on the Order Route event reported by the exchange.</u>	R

Field Name	Data Type	Description	
routingOrigin	Industry Member ID / Exchange ID	When the order is routed from another Industry Member, this is the IMID of the sending Industry Member from which the order is routed, and <u>it must match senderIMID in the Order Route event reported by the routing Industry Member</u> . When the order is routed from an exchange, this is the Exchange ID of the sending entity from which the order is routed, and <u>the value must match the exchange field in the Order Route event reported by the exchange</u> .	R
routingOriginType	Choice	Indicating the type of origin from which the order is routed. See the Data Dictionary for a list of allowed values.	R
routedOrderID	Text (40)	The Order ID as received on the order before being assigned a new Order ID upon acceptance. This is the Order ID assigned by the routing Industry Member. This value must match the value for <i>routedOrderID</i> reported by the routing Industry Member or exchange in their Order Route report. Not required when the order is manually received.	C
manualOrderID	Text (40)	When this is a duplicative electronic message of a previously (separately) reported manual Order Accepted event (electronicDupFlag = true), this field is to capture the internal order ID of the manual order. Optional for Phase 2a.	O
deptType	Choice	This is the category of internal department, unit or desk receiving the order. See the Data Dictionary for a list of allowed values.	R
session	Text (40)	The ID assigned to the specific session that the routing Industry Member or exchange used to route the order to the receiving Industry Member. Not required when routed manually. Must be reported as blank if receiving from another Industry Member.	C
side	Choice	The side of the order: See the Data Dictionary for a list of allowed values.	R
price	Price	The limit price of the order, if applicable.	C
quantity	Real Quantity	The order quantity.	R
minQty	Whole Quantity	The minimum quantity of an order to be executed. Required when applicable.	C
orderType	Choice	The type of order as routed to the destination reporting the accepted event: (e.g., market, limit) See the Data Dictionary for a list of allowed values.	R
timeInForce	Choice	The Time-in-Force for the order (e.g., DAY, IOC, GTC). See the Data Dictionary for a list of allowed values.	R
tradingSession	Choice	The trading session(s) during which an order is eligible to trade. See the Data Dictionary for a list of allowed values.	R
isolnd	Choice	Indicates the order was accepted as an Intermarket Sweep Order. See the Data Dictionary for a list of allowed values.	R



Field Name	Data Type	Description	
handlingInstructions	Name/Value Pairs	Defines the handling instructions, as described in the Data Dictionary for handlingInstructions. A pipe-delimited (“ ”, ASCII decimal 124, hex 7C) field including all relevant instructions.	C
custDsplntrFlag	Boolean	Indicating if a customer has instructed that a limit order or block size order should not be displayed. See the Data Dictionary for a list of allowed values.	R
infoBarrierID	Alphanumeric (12)	Specifying the identifier of the information barrier in place for a trading unit that will meet the criteria of the “no-knowledge” exception in FINRA Rule 5320.02. Any alphanumeric not containing a delimiter.	C
seqNum	Alphanumeric (10)	The sequence number assigned to the order event by the ATS’s matching engine. Any alphanumeric not containing a delimiter.	A
displayPrice	Price	The displayed price for the order. Required when the ATS displays the order outside of ATS.	C
workingPrice	Price	The working price of the order at the time it was accepted.	A
displayQty	Whole Quantity	The displayed quantity of the order.	A
atsOrderType	Name/Value Pairs	Shows the ATS-specific order type as selected from a list of order types defined by this Industry Member via the Reporter Portal.	A
nbbPrice	Price	The NBBO at the moment the order was received. Prices are required, quantities are optional.	A
nbbQty	Whole Quantity		O
nboPrice	Price		A
nboQty	Whole Quantity		O
nbboSource	Choice	Source of the NBBO data used. See the Data Dictionary for a list of allowed values.	A
nbboTimestamp	Timestamp	The date/time at which the NBBO was referenced upon the receipt of the order.	A

Lifecycle keys for this Reportable Event:

- Order Key: date, reporter, *symbol*, *orderID*
- Route Link Key: date, *senderIMID*, *destination*, *symbol*, *session*, *routedOrderID*

## 4.5. Order Internal Route

An Order Internal Route event must be reported when an order is passed to different departments or desks within the *reporterIMID*.

Although multiple *reporterIMIDs* may be attributed to a single Industry Member, routes between different IMIDs attributed to the same Industry Member are not considered internal routes.

**Note** that an Order Internal Route event does not follow the logic of sending / receiving two-sided reporting followed throughout the rest of these Industry Member Technical Specifications. It is required to be reported from the perspective of the recipient desk. The Order Internal Route merely shows that an order was received by an internal destination and if a new *orderID* has been assigned to the order as a result of this Order Internal Route.

- Order Internal Route may also represent the routing of partial quantities of an order internally, and the practice of assigning those *slices* new *orderIDs*. In this case, multiple internal routes may occur on the same original *orderID* reported in an Order Accepted event or New Order event. Similarly, if an order is routed internally and then subsequently multiple slices are routed to yet another destination internally, this event should represent the receiving desk, *quantities*, and new *orderIDs* of those routed slices as received by the subsequent internal destination. This approach will allow CAT to track changes in *orderID* within an Industry Member as an order is passed between internal entities or partial quantities are routed to internal entities as *slices* of another order.
- The major difference between Order Internal Route and Child Order events is that Child Order event can only be used when no desk change or desk route happens. For example, some Industry Members may choose to first generate child orders using the Child Order event to represent slices of a parent order, then to route those slices internally to another desk (Order Internal Route event). This approach is also acceptable for CAT reporting and will not result in unlinked events.

Order Internal Route Modified and Order Internal Route Canceled are not required to be reported until Phase 2c.

### 4.5.1. Order Internal Route

Order Internal Route event is used to report routing within a *reporterIMID* as described above.

#### Internal Route Field Specifications

Field Name	Data Type	Description	
type	Message Type	MEIR	R
firmROEID	Alphanumeric(12)	An identifier assigned to the record by the reporting firm.	O
eventTimestamp	Timestamp	The date/time of receipt by the receiving desk. Can be manual or electronic. If <i>manualFlag</i> is <i>true</i> , timestamp must be reported to seconds. If <i>manualFlag</i> is <i>false</i> , timestamp must be reported to milliseconds or a finer increment up to nanoseconds.	R
manualFlag	Boolean	Must be marked as <i>true</i> if the order is routed to another desk manually.	R
electronicTimestamp	Timestamp	The time at which the order is electronically captured.	C

Field Name	Data Type	Description	
symbol	Symbol	The symbol of the stock in the symbology of the primary listing exchange or FINRA for OTC Equity Securities.	R
priorOrderID	Text (40)	This is the most recent internal order ID before being internally routed. <ul style="list-style-type: none"> <li>• If no other internal route occurred, then this is the <i>orderID</i> as it appeared in the original New Order or Order Accepted event.</li> <li>• If a separate order internal route already occurred, and this even represents a subsequent order internal route - then this field is the <i>orderID</i> of the previous internal route event.</li> </ul>	R
priorOrderDate	Date	Required when this event is not on the same calendar day as the date when <i>priorOrderID</i> is assigned. Then it is the date when <i>priorOrderID</i> is assigned.	C
orderID	Text (40)	The ID assigned to the order by the receiving desk as a result of the order internal route. Must be unique within same date, reporter, and <i>symbol</i> combination. This value must match the value for <i>priorOrderID</i> in a subsequent Order Internal Route event. If the internal destination desk does not assign a new ID upon an internal route, this must be the same as the <i>priorOrderID</i> .	R
deptType	Choice	The category of department, unit, or desk that received this Order Internal Route event. See the Data Dictionary for a list of allowed values.	R
receivingDeskType	Choice	Indicating the type of desk or department receiving the order. More granular than the field <i>deptType</i> . Required when the destination of an internal route is a desk. See the Data Dictionary for a list of allowed values.	R
infoBarrierID	Alphanumeric(12)	Specifying the identifier of the information barrier in place for the desk to which the order was routed that will meet the criteria of the “no-knowledge” exception in FINRA Rule 5320.02. Any alphanumeric not containing a delimiter.	C
side	Choice	The side of the order: See the Data Dictionary for a list of allowed values.	R
price	Price	The limit price of the order, if applicable.	C
quantity	Real Quantity	The order quantity.	R
minQty	Whole Quantity	The minimum quantity of an order to be executed. Required when applicable.	C
orderType	Choice	The type of order being routed (e.g., market, limit) See the Data Dictionary for a list of allowed values.	R
handlingInstructions	Name/Value Pairs	Defines the handling instructions, as described in the Data Dictionary for handlingInstructions.	C

Lifecycle keys for this Reportable Event:

- Order Key: date, reporter, *symbol*, *orderID*
- Prior Order Key: date, reporter, *symbol*, *priorOrderID*

#### **4.5.2. Order Internal Route Modified (Phase 2c)**

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<Deferred - Not Required Until Phase 2c>

#### **4.5.3. Order Internal Route Canceled (Phase 2c)**

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<Deferred - Not Required Until Phase 2c>

## 4.6. Child Order

CAT provides several ways to report parent/child order activity. The Child Order event is provided solely for the convenience of Industry Members to help model scenarios in which an order is split or sliced into smaller "child" orders that are handled independently of their parent order - in a way that best reflects each individual Industry Member's system(s).

For example, in the scenario when Industry Members create independent child orders with new *orderIDs*, if the Child Order event is reported, then the changes of order IDs are captured. Afterwards, the Industry Member can reference each individual child order in any subsequent event by the new order ID. However, if no Child Order event is reported, then the Industry Member can only reference the order at the parent level by the order ID of the parent. There is no scenario in which the use of Child Order event is mandatory.

Notes:

- Child Order event can only be used when an order is sliced and assigned new order IDs within the same desk. An Order Internal Route event must be reported when routed to another desk.
- There is no limit to how many "generations" can be created through Child Order events. The *parentOrderID* will be the *orderID* of the most recent order, whether that was a New Order/Order Accepted or a previous Child Order.
- Child Orders must belong to the same FDID as the parent orders. Child Orders should *not* be used to create representative orders. If the FDID changes, a representative New Order event must be used and not a Child Order.
- Child Orders should *not* be used for equity legs of a multi-leg option order.
- This event only includes the key data elements and fields that may be changed from the parent order or that are required for linkage, i.e., certain key data elements from the parent order may not be changed when creating Child Orders.

### 4.6.1. Child Order Event

Child Order Event

Field Name	Data Type	Description	
type	Message Type	MECO	R
firmROEID	Alphanumeric (12)	An identifier assigned to the record by the reporting firm.	O
eventTimestamp	Timestamp	The date/time at which the child order was originated.	R
symbol	Symbol	The symbol of the stock in the symbology of the primary listing exchange or FINRA for OTC Equity Securities.	R
parentOrderID	Text (40)	The internal order ID assigned to the parent order by the Industry Member. Must match the <i>orderID</i> in the New Order, Order Accepted or most recent associated event reported by this Industry Member.	R
orderID	Text (40)	Order ID assigned to the child order by the Industry Member upon origination. Must be different from the <i>parentOrderID</i> . Must be unique within same date, reporter, and <i>symbol</i> combination.	R
priorOrderDate	Date	Required when this event is not on the same calendar day as the date when <i>parentOrderID</i> is assigned. Then the date when <i>parentOrderID</i> is assigned must be captured in this field.	C

Field Name	Data Type	Description	
side	Choice	The side of the order: See the Data Dictionary for a list of allowed values.	R
price	Price	The limit price of the order, if applicable.	C
quantity	Real Quantity	The order quantity.	R
minQty	Whole Quantity	The minimum quantity of an order to be executed. Required when applicable.	C
orderType	Choice	The type of order (e.g., market, limit). See the Data Dictionary for a list of allowed values.	R
timeInForce	Choice	The Time-in-Force for the order(e.g., DAY, IOC, GTC). See the Data Dictionary for a list of allowed values.	R
tradingSession	Choice	The trading session(s) during which an order is eligible to trade. See the Data Dictionary for a list of allowed values.	R
isolnd	Choice	Indicates the order was an Intermarket Sweep Order. See the Data Dictionary for a list of allowed values.	R
handlingInstructions	Name/Value Pairs	Defines the handling instructions, as described in the Data Dictionary for handlingInstructions. A pipe-delimited (“ ”, ASCII decimal 124, hex 7C) field including all relevant instructions.	C
displayPrice	Price	The displayed price for the order. Only required if the Industry Member of this event assigns a display price.	A
workingPrice	Price	The working price of the order at the time it was originated or received.	A
displayQty	Whole Quantity	The displayed quantity of the order.	A
nbbPrice	Price	The NBBO at the moment the order was originated or received. Prices are required, quantities are optional.	A
nbbQty	Whole Quantity		O
nboPrice	Price		A
nboQty	Whole Quantity		O
nbboSource	Choice	Source of the NBBO data used. See the Data Dictionary for a list of allowed values.	A
nbboTimestamp	Timestamp	The date/time at which the NBBO was referenced upon the receipt of the order.	A

Lifecycle keys for this Reportable Event:

- Order Key: date, reporter, *symbol*, *orderID*
- Prior Order Key: date, reporter, *symbol*, *parentOrderID*

#### 4.6.2. Child Order Modified

When the price, quantity or any Material Terms of the child order has been changed, a Child Order Modified event must be reported to CAT. This modification event is only used when the child order creation is reported to CAT in a Child Order event. As such, modifying a partial quantity internal route can not be reported in this event.

All attributes and Material Terms of the Order of a modified child order listed on this event should be reported when applicable, including the fields that remain unchanged.

### Child Order Modified Event Field Specifications

Field Name	Data Type	Description	
type	Message Type	MECOM	R
firmROEID	Alphanumeric (12)	An identifier assigned to the record by the reporting firm.	O
eventTimestamp	Timestamp	The date/time at which the child order was modified.	R
symbol	Symbol	The symbol of the stock in the symbology of the primary listing exchange or FINRA for OTC Equity Securities.	R
parentOrderID	Text(40)	The internal order ID assigned to the parent order by the Industry Member. Must match the <i>orderID</i> in the New Order, Order Accepted or most recent Order Modified associated with this event reported by this Industry Member.	R
orderID	Text (40)	Order ID assigned to the child order by the Industry Member upon origination. Must be different from the <i>parentOrderID</i> . Must be unique within same date, reporter, and <i>symbol</i> combination.	R
priorOrderID	Text (40)	The most recent OrderID for this child order prior to the modification.  If the <i>orderID</i> remains the same after the modification, it must be the same as <i>orderID</i> .  If the order was modified several times, this value should match the <i>orderID</i> in the most recent Child Order Modified event.	R
priorOrderDate	Date	Required when this event is not on the same calendar day as the date when <i>priorOrderID</i> is assigned.	C
side	Choice	The side of the order. See the Data Dictionary for a list of allowed values.	R
price	Price	The limit price of the order, if applicable.	C
quantity	Real Quantity	The order quantity.	R
minQty	Whole Quantity	The minimum quantity of an order to be executed.	C
leavesQty	Real Quantity	The number of shares left open after the modification has occurred.	R
orderType	Choice	The type of order (e.g., market, limit). See the Data Dictionary for a list of allowed values.	R
timeInForce	Choice	The Time-in-Force for the order (e.g., DAY, IOC, GTC). See the Data Dictionary for a list of allowed values.	R
tradingSession	Choice	The trading session(s) during which an order is eligible to trade. See the Data Dictionary for a list of allowed values.	R
isolnd	Choice	Indicates the order was an Intermarket Sweep Order. See the Data Dictionary for a list of allowed values.	R

Field Name	Data Type	Description	
handlingInstructions	Name/Value Pairs	Defines the handling instructions, as described in the Data Dictionary for handlingInstructions. A pipe-delimited (“ ”, ASCII decimal 124, hex 7C) field including all relevant instructions.	C
displayPrice	Price	The displayed price for the order. Only required if the Industry Member of this event assigns a display price.	A
workingPrice	Price	The working price of the order at the time it was originated.	A
displayQty	Whole Quantity	The displayed quantity of the order.	A
nbbPrice	Price	The NBBO at the moment of the order was routed. Prices are required, quantities are optional.	A
nbbQty	Whole Quantity		O
nboPrice	Price		A
nboQty	Whole Quantity		O
nbboSource	Choice	Source of the NBBO data used. See the Data Dictionary for a list of allowed values.	A
nbboTimestamp	Timestamp	The date/time at which the NBBO was referenced upon the receipt of the order.	A

Lifecycle keys for this Reportable Event:

- Order Key: date, reporter, *symbol*, *orderID*
- Prior Order Key: date, reporter, *symbol*, *priorOrderID*

### 4.6.3. Child Order Canceled

If a child order is canceled, a Child Order Canceled event must be reported to CAT by the Industry Member.

**Note** that a partial cancellation can be reported either with a Child Order Modified event or Child Order Canceled event with *leavesQty*, depending on how it is handled by the Industry Member. If an actual Cancel message was used, the Industry Member should report a Child Order Canceled event to CAT. If a modify or cancel/replace message was used, a Child Order Modified event should be reported to CAT. This keeps the reported event in line with the action taken by the Industry Member.

#### Child Order Canceled Event Field Specifications

Field Name	Data Type	Description	
type	Message Type	MECOC	R
firmROEID	Alphanumeric (12)	An identifier assigned to the record by the reporting firm.	O
eventTimestamp	Timestamp	The date/time at which the child order was canceled.	R
symbol	Symbol	The symbol of the stock in the symbology of the primary listing exchange or FINRA for OTC Equity Securities.	R
parentOrderID	Text (40)	The internal order ID assigned to the parent order by the Industry Member.	R



Field Name	Data Type	Description	
orderID	Text (40)	Order ID assigned to the child order by the reporter upon origination. Must be different from the <i>parentOrderID</i> .	R
priorOrderDate	Date	Required when this event is not on the same calendar day as the date when the <i>orderID</i> was assigned.	C
side	Choice	The side of the order. See the Data Dictionary for a list of allowed values.	R
cancelQty	Real Quantity	The quantity being canceled.	R
leavesQty	Whole Quantity	The quantity left open of this child order after cancellation. Full cancellation will result in a zero in this field. Note that, this is not the leaves quantity of the parent order.	R
initiator	Choice	Specifies the initiator of the cancellation. See the Data Dictionary for a list of allowed values.	R

Lifecycle keys for this Reportable Event:

- Order Key: date, reporter, *symbol*, *orderID*

## 4.7. Order Modified and Cancel/Replace Event

When the price, quantity or any other Material Term of an order has been changed or when an order is cancel/replaced, an Industry Member must report an Order Modified event to CAT. This Order Modified event concerns both of the following scenarios:

- 1) A new order is generated (with a new Order ID) during the modification and completely replaces the prior order. In this case, the *orderID* field must capture the identifier for the new order. Additionally, the new order must be linked to the prior one through *priorOrderID*.
- 2) If the order ID remains the same during the modification, the *priorOrderID* must match *orderID*.

Note that in the first scenario, if the order has been modified several times, the *priorOrderID* must refer to the most recent order ID prior to this modification, which may not always be the original order ID.

Side is required to be reported, but side adjustments are only allowed for same-side changes (e.g., changes between short and long sell).

All attributes and Material Terms of the modified order listed on this event should be reported when applicable, including the fields that remain unchanged.

### Order Modified and Cancel/Replace Event Field Specifications

Field Name	Data Type	Description	
type	Message Type	MEOM	R
firmROEID	Alphanumeric (12)	An identifier assigned to the record by the reporting firm.	O
eventTimestamp	Timestamp	The date/time of receipt of the modification to the order. Can be manual or electronic. If <i>manualFlag</i> is <i>true</i> , timestamp must be reported to seconds. If <i>manualFlag</i> is <i>false</i> , timestamp must be reported to milliseconds or a finer increment up to nanoseconds.	R
manualFlag	Boolean	Must be marked as <i>true</i> if the order is modified or replaced manually.	R
electronicDupFlag	Boolean	Indicating whether this is a duplicative electronic message of a manual event. If populated, this message will not be linked to any other events in Phase 2a.	C
electronicTimestamp	Timestamp	The time at which the order is electronically captured.	C
symbol	Symbol	The stock symbol.	R
orderID	Text (40)	The internal order ID assigned to the order by the Industry Member. Must be unique within same date, reporter, and <i>symbol</i> combination.	R

Field Name	Data Type	Description	
priorOrderID	Text (40)	The most recent OrderID for the order prior to this Order Modified event.  If the <i>orderID</i> remains the same after the modification, it must be the same as <i>orderID</i> .  If the order was modified several times, this value should match the <i>orderID</i> in the most recent Order Modified event.	R
priorOrderDate	Date	Required when this event is not on the same calendar day as the date when priorOrderID is assigned.	C
receiverIMID	Industry Member ID	Required when the modification is as the result of an order modify route.  The IMID of the Industry Member receiving the routed order modification. When receiving from another Industry Member, it must match the <i>destination</i> field on the Order Modify Route (Order Route in 2a) event reported by the routing Industry Member. If receiving from an exchange, the this must match the <i>routingParty</i> on the Participant Order Modify Route reported by the exchange.	C
routingOrigin	Industry Member ID / Exchange ID	Required when the modification is as the result of an order modify route.  When the order modification is routed from another Industry Member, this is the IMID of the sending Industry Member from which the order is routed, and it must match <i>senderIMID</i> in the Order Modify Route (Order Route in 2a) event reported by the routing Industry Member. When the order is routed from an exchange, this is the Exchange ID of the sending entity from which the order is routed. The value must match the <i>exchange</i> field in the Participant Order Modify Route event reported by the exchange.	C
routingOriginType	Choice	Required when the modification is as the result of an order modify route. Indicating the type of origin from which the order is routed. See the Data Dictionary for a list of allowed values.	C
routedOrderID	Text (40)	The ID for the order as sent by the routing entity.  Not required if this modification is initiated by the Industry Member, or when the modify route is received manually.	C
quoteID	Text (40)	If this order modification was the result of a quote provided to a customer/client, this is the <i>quoteID</i> of the quote offered to the reporter's customer/client. Required if this order was originated as the result of a quote.	C

Field Name	Data Type	Description	
priorQuoteID	Text (40)	The most recent <i>quoteID</i> for the order prior to this Order Modified event  Not required if the prior New Order or Order Modified event does not have a <i>quoteID</i> .	C
initiator	Choice	Indicates whether the customer/client or Industry Member initiated the order modification. See the Data Dictionary for a list of allowed values.	R
session	Text (40)	The ID assigned to the session used to receive the modify route message from the routing Industry Member or the routing exchange. Not applicable if it is customer modification. Must be reported as blank if receiving from another Industry Member.	C
side	Choice	The side of the order. See the Data Dictionary for a list of allowed values. For this Reportable Event, only same-side adjustments are allowed (e.g., long to short sell).	R
price	Price	The limit price of the order, if applicable.	C
quantity	Real Quantity	The order quantity.	R
minQty	Whole Quantity	The minimum quantity of an order to be executed. Required when applicable.	C
leavesQty	Real Quantity	The number of shares left open after the modification has occurred.	R
orderType	Choice	The type of order being submitted (e.g., market, limit). See the Data Dictionary for a list of allowed values.	R
timeInForce	Choice	The time-in-force for the order (e.g. DAY, IOC, GTC). See the Data Dictionary for a list of allowed values.	R
tradingSession	Choice	The trading session(s) during which an order is eligible to trade. See the Data Dictionary for a list of allowed values.	R
isolInd	Choice	Indicates the order was an Intermarket Sweep Order. See the Data Dictionary for a list of allowed values.  Required if modification is to Order Accepted event.	C
handlingInstructions	Name/Value Pairs	Defines the handling instructions, as described in the Data Dictionary for handlingInstructions.	C
custDspIntrFlag	Boolean	Indicating if a customer/client has instructed that a limit order or block size order should not be displayed. See the Data Dictionary for a list of allowed values.	R
infoBarrierID	Alphanumeric (12)	Specifying the identifier of the information barrier in place for a trading unit that will meet the criteria of the “no-knowledge” exception in FINRA Rule 5320.02. Any alphanumeric not containing a delimiter.	C

Field Name	Data Type	Description	
aggregatedOrders	Name/Value Pairs	Applies to representative order, aggregated order or riskless principal order created by the Industry Member, specifying the disparate order IDs and quantities being consolidated in this representative or aggregated order. Note that all the customer/client order IDs and quantities being consolidated into this order must be stated in this field, even though some may remain unchanged.	C
representativeInd	Choice	Indicated if the representative linkage is required. Mandatory for all the representative and aggregated orders. See the Data Dictionary for allowed values.	R
seqNum	Alphanumeric (10)	The sequence number assigned to the order event by the ATS's matching engine. Any alphanumeric not containing a delimiter.	A
displayPrice	Price	The displayed price of the order as instructed by the customer/client or sending Industry Member, or the displayed price assigned by the Industry Member.	A
workingPrice	Price	The working price of the order. e.g., automated changes to prices (e.g., PEG orders) would be tracked in this field.	A
displayQty	Whole Quantity	The displayed quantity for this order at the time the order was placed.	A
atsOrderType	Name/Value Pairs	Shows the ATS-specific order types as selected from a list of order types defined by this ATS.	A
nbbPrice	Price	The NBBO at the moment the order was modified. Prices are required, quantities are optional.	A
nbbQty	Whole Quantity		O
nboPrice	Price		A
nboQty	Whole Quantity		O
nbboSource	Choice	Source of the NBBO data used. See the Data Dictionary for a list of allowed values.	A
nbboTimestamp	Timestamp	The date/time at which the NBBO was referenced upon the receipt of the order.	A

Lifecycle keys for this Reportable Event:

- Order Key: date (from eventTimestamp), reporter, *symbol*, *orderID*
- Prior Order Key: date (from eventTimestamp if *priorOrderDate* is not present), reporter, *symbol*, *priorOrderID*
- Prior Order Key: *priorOrderDate* (when present), reporter, *symbol*, *priorOrderID*
- Route Link Key: date, *symbol*, *receiverIMID*, *routingOrigin*, *session*, *routedOrderID*
- Quote Key: date, reporter, *symbol*, *quoteID*

## 4.8. Order Modified (Cancel/Replace) Supplement Event

The Order Modified Supplement event serves as a supplement to the Order Modified event, just as the Supplement Event serves as a supplement to the New Order event.

### Order Modified Supplement Event Field Specifications

Field Name	Data Type	Description	
type	Message Type	MEOMS	R
firmROEID	Alphanumeric (12)	An identifier assigned to the record by the reporting firm.	O
eventTimestamp	Timestamp	The date/time of the Order Modified this event supplements.	R
symbol	Symbol	The symbol of the stock being executed.	R
orderID	Text (40)	The internal order ID assigned to the order by the Industry Member. This must match the <i>orderID</i> on the Order Modified event.	R
aggregatedOrders	Name/Value Pairs	This field serves as the supplement to the <i>aggregatedOrder</i> field of the Order Modified event, specifying the disparate order IDs and quantities (if partial) being consolidated in this representative/ aggregated order, or the order IDs and quantities associated with the riskless principal order.  One or multiple Name/Value pair(s) may be included in this field.	R

Lifecycle keys for this Reportable Event:

- Order Key: date, reporter, *symbol*, *orderID*
- Order Key: date, reporter, *symbol*, *aggregatedOrders.Name*

## 4.9. Order Adjusted Event

The Order Modified event requires the full state of the order be reported to CAT for each modify. However, there are some common cases where only the price or quantity are modified. If such changes are initiated by the Industry Member, which can occur frequently, the Order Adjusted event can be used in these situations. However, Order Adjusted events may not be used if a price or quantity change is initiated by a routing Industry Member.

The only types of modifications that are allowed to be reported with this event are changes to the side, price or quantity of the order.

- Side adjustments are only allowed for same-side changes (e.g., changes between short and long sell). The side only needs to be reported if it changes.
- If a price change is reported, then all three price fields (*price*, *displayPrice*, and *workingPrice*) must represent the current state of the order relative to price. The quantity fields can be omitted.
- Likewise, if a quantity change is reported, then all three quantity fields must represent the current state of the order relative to quantity. The price fields can be omitted.

When the display price or quantity changes as the result of a display ATS matching engine action and not from a customer instruction, an Order Adjusted event must be used (the Order Modified event cannot be used in this scenario).

Any modification that cannot be fully represented in this Reportable Event must be reported via the Order Modified event.

### Order Adjusted Event Field Specifications

Field Name	Data Type	Description	
type	Message Type	MEOJ	R
firmROEID	Alphanumeric (12)	An identifier assigned to the record by the reporting firm.	O
eventTimestamp	Timestamp	The date/time of receipt of the modification to the order. Can be manual or electronic. If <i>manualFlag</i> is <i>true</i> , timestamp must be reported to seconds. If <i>manualFlag</i> is <i>false</i> , timestamp must be reported to milliseconds or a finer increment up to nanoseconds.	R
manualFlag	Boolean	Must be marked as <i>true</i> if the order is adjusted manually.	R
electronicTimestamp	Timestamp	The time at which the order is electronically captured.	C
symbol	Symbol	The symbol of the stock in the symbology of the primary listing exchange or FINRA for OTC Equity Securities.	R
orderID	Text (40)	The internal order ID assigned to the order by the Industry Member. Must be unique within same date, reporter, and <i>symbol</i> combination.	R

Field Name	Data Type	Description	
priorOrderID	Text (40)	The most recent OrderID for the order prior to this Order Modified event.  If the <i>orderID</i> remains the same after the modification, it must be the same as <i>orderID</i> .  If the order was modified several times, this value should match the <i>orderID</i> in the most recent Order Modified event.	R
priorOrderDate	Date	Required when this event is not on the same calendar day as the date when priorOrderID is assigned.	C
initiator	Choice	Indicates whether the customer/client or Industry Member initiated the order modification. See the Data Dictionary for a list of allowed values.	R
side	Choice	The side of the order. See the Data Dictionary for a list of allowed values.  For this Reportable Event, only same-side adjustments are allowed (e.g., long to short sell)	C
price	Price	The limit price of the order. Present if changed or if other price fields changed. Otherwise, not present.	C
quantity	Real Quantity	The order quantity. Present if changed or if other quantity fields changed. Otherwise, not present.	C
minQty	Whole Quantity	The minimum quantity of an order to be executed. Present if changed or if other quantity fields changed. Otherwise, not present.	C
leavesQty	Real Quantity	The number of shares left open after the adjustment/modification has occurred. Present if changed or if other quantity fields changed. Otherwise, not present.	R
seqNum	Alphanumeric (10)	The sequence number assigned to the order event by the ATS's matching engine. Any alphanumeric not containing a delimiter.	A
displayPrice	Price	The displayed price of the order. Present if changed or if other price fields changed. Otherwise, not present.	A
workingPrice	Price	The working price of the order. e.g., automated changes to prices (e.g., PEG orders) would be tracked in this field. Present if changed or if other price fields changed. Otherwise, not present.	A
displayQty	Whole Quantity	The displayed quantity for this order. Present if changed or if other quantity fields changed. Otherwise, not present.	A
nbbPrice	Price	The NBBO at the moment the order was modified. Prices are required, quantities are optional.	A
nbbQty	Whole Quantity		O
nboPrice	Price		A
nboQty	Whole Quantity		O
nbboSource	Choice	Source of the NBBO data used. See the Data Dictionary for a list of allowed values.	A



Field Name	Data Type	Description	
nbboTimestamp	Timestamp	The date/time at which the NBBO was referenced upon the receipt of the order.	A

Lifecycle keys for this Reportable Event:

- Order Key: date, reporter, *symbol*, *orderID*
- Prior Order Key: date, reporter, *symbol*, *priorOrderID*

## 4.10. Order Canceled

The Order Canceled event is used in specific situations when an order is fully or partially canceled. Note:

- Partial cancellation of an order may be reported to CAT using either an Order Canceled event or an Order Modified event.
- This Order Canceled Event is only reported by the entity that performs the cancellation. Cancellations by away venues are not required to be reported. For example, if Broker B accepts an order from Broker A, and Broker B initiated a cancel on the order, then B is responsible for reporting the order canceled (not Broker A).
- Implicit order cancellations are not required to be reported to CAT (e.g., cancellation due to expiration of Time in Force.)

### Order Canceled Event Field Specifications

Field Name	Data Type	Description	
type	Message Type	MEOC	R
firmROEID	Alphanumeric (12)	An identifier assigned to the record by the reporting firm.	O
eventTimestamp	Timestamp	The date/time of receipt of the cancellation. Can be manual or electronic. If <i>manualFlag</i> is <i>true</i> , timestamp must be reported to seconds. If <i>manualFlag</i> is <i>false</i> , timestamp must be reported to milliseconds or a finer increment up to nanoseconds.	R
manualFlag	Boolean	Must be marked as <i>true</i> if the order is canceled manually.	R
electronicTimestamp	Timestamp	The time at which the order is electronically captured.	C
symbol	Symbol	The symbol of the stock in the symbology of the primary listing exchange or FINRA for OTC Equity Securities.	R
orderID	Text (40)	The internal order ID assigned to the order by the Industry Member.	R
priorOrderDate	Date	Only required when this Reportable Event is not on the same calendar day as the date when <i>orderID</i> is assigned.	C
cancelQty	Real Quantity	The quantity being canceled.	R
leavesQty	Real Quantity	The quantity left open after the cancel event. The full cancel will result in zero in this field.	R
initiator	Choice	Indicates who initiated the order cancellation (e.g., customer, Industry Member). See the Data Dictionary for a list of allowed values.	R
seqNum	Alphanumeric (10)	The sequence number assigned to the order event by the ATS's matching engine. Any alphanumeric not containing a delimiter.	A

Lifecycle keys for this Reportable Event:

- Order Key: date (from *eventTimestamp* if *priorOrderDate* is not present), reporter, *symbol*, *orderID*
- Order Key: *priorOrderDate* (when present), reporter, *symbol*, *orderID*

## 4.11. Equity Quote

In Phase 2a, the following quotations must be reported:

- Quotes in NMS Securities sent to an exchange or the ADF
- Quotes in OTC Equity Securities received by an Industry Member CAT Reporter operating an inter-dealer quotation system.
- Quotes in OTC Equity Securities that meet the definition of bid or offer under the CAT NMS Plan sent by a broker-dealer to a quotation venue not operated by a CAT Reporter.

Quotes in OTC equity securities sent to an inter-dealer quotation system operated by an Industry Member CAT Reporter must be reported in Phase 2c.

The Equity Quote Event is used to report quotes in OTC equity securities. Quotes in NMS Securities sent to an exchange must be reported using the New Order and Route Events.

For two-sided quotes - bidPrice, bidQty, askPrice, and askQty must all be populated. For one-sided quotes both a quantity and a price field must be populated for either the bid or the ask.

Note that there is no Quote Modify event. The field priorQuoteID is used to report modifications to a previously reported Equity Quote. If the field priorQuoteID is populated with a value in the Equity Quote event, then this Equity Quote is considered to replace the quote described in the priorQuoteID field. In the case when quote ID does not change for a modified quote, the priorQuoteID and the quoteID (new) will have the same value.

Otherwise, if the field onlyOneQuoteFlag = true, any Equity Quote event offered by the same *reporterIMID* to the same destination in the same symbol will be considered canceled by CAT.

### New Quote Event Field Specifications

Field Name	Data Type	Description	
type	Message Type	MENQ	R
firmROEID	Alphanumeric (12)	An identifier assigned to the record by the reporting firm.	O
eventTimestamp	Timestamp	The date/time the quote was sent by the Industry Member to the recipient. Can be manual or electronic. If <i>manualFlag</i> is true, timestamp must be reported to seconds. If <i>manualFlag</i> is false, timestamp must be reported to milliseconds or a finer increment up to nanoseconds.	R
seqNum	Text (10)	The sequence number assigned to the quote by the reporter. Any alphanumeric not containing a delimiter. Required for inter-dealer quotation systems only.	C
symbol	Symbol	The symbol of the stock in the symbology of the primary listing exchange or FINRA for OTC Equity Securities.	R
senderIMID	Industry Member ID	The IMID of the Industry Member that is sending the quote, as known by the destination. This value must match the <i>routingOrigin</i> on the Quote Received event reported by the destination.  Not required if the recipient of the quote is not a reporter to CAT.	C

Field Name	Data Type	Description	
destination	Industry Member ID	This field contains the SRO-assigned identifier of the destination Industry Member. This value must match the <i>routingOrigin</i> field on the Quote Received event reported by the destination. Required if the destination of the quote is another broker-dealer or ATS.	C
quoteID	Text (40)	The internal quote ID assigned to the quote by the Industry Member. Must be unique within same date, reporter, and <i>symbol</i> combination.	R
routedQuoteID	Text (40)	The quote ID as sent to the recipient of the quote. Not required if the recipient of the quote is a customer/client (e.g. not an Industry Member). If the <i>routedQuoteID</i> is the same as the <i>quoteID</i> , then the <i>quoteID</i> should be repeated in this field. The same conditions for uniqueness that apply to the <i>quoteID</i> also apply to the <i>routedQuoteID</i> .	C
onlyOneQuoteFlag	Boolean	Value is <i>true</i> if the recipient only allows one quote per <i>symbol</i> for this Industry Member. Otherwise, false.	R
priorQuoteID	Text (40)	This field is only relevant for an update/replacement of an existing quote, and must not be populated for new Quotes. After this Reportable Event, the quote specified in this field will be considered to have been replaced. This field does not have to be included if <i>onlyOneQuoteFlag</i> is true, since it is known implicitly that the previous quote is being replaced. This field is the <i>quoteID</i> of the quote that is being replaced.	C
bidPrice	Price	Price being bid.	C
bidQty	Whole Quantify	Quantity being bid.	C
askPrice	Price	Price being asked.	C
askQty	Whole Quantify	Quantity being asked.	C
firmDesignatedID	Text (40)	The firm designated ID assigned by the Industry Member to the account from which the quote was originated.	C
accountType	Choice	Represents the type of account that originated this quote. Must be provided when <i>firmDesignatedID</i> is present. See the Data Dictionary for a list of allowed values.	C
unsolicitedInd	Choice	Indicating whether this is an unsolicited quote. Please see the data dictionary for allowed values.	R
mpStatusCode	Choice	Market Participant Status Code, indicating if the market maker's quote is open or closed. Please see the Data Dictionary for allowed values. Only required for the inter-dealer quotation systems.	C
quoteRejectedFlag	Boolean	If the result of the quote is rejected or no response was received, value should be <i>true</i> . (For Phase 2a, this is not required to be reported. In Phase 2c, the field will change to required.)	O

### 4.11.1. Quote Received

When Quotes are sent to another Industry Member, that receiving Industry Member must report their receipt of the quote. Note that Industry Members do not have to report the quotes that they do not accept.

#### Quote Received Event Field Specifications

Field Name	Data Type	Description	
type	Message Type	MEQR	R
firmROEID	Alphanumeric (12)	An identifier assigned to the record by the reporting firm.	O
eventTimestamp	Timestamp	The date/time the quote was accepted by the Industry Member. Can be manual or electronic. If <i>manualFlag</i> is <i>true</i> , timestamp must be reported to seconds. If <i>manualFlag</i> is <i>false</i> , timestamp must be reported to milliseconds or a finer increment up to nanoseconds.	R
seqNum	Alphanumeric (10)	The sequence number assigned to the quote received message by the reporter. Any alphanumeric not containing a delimiter. Required for inter-dealer quotation systems only.	C
symbol	Symbol	The symbol of the stock in the symbology of the primary listing exchange or FINRA for OTC Equity Securities.	R
receiverIMID	Industry Member ID	The IMID of the Industry Member receiving the quote (the Industry Member reporting this Reportable Event). It must match the <i>destination</i> field on the New Quote event reported by the routing entity.	R
routingOrigin	Industry Member ID	The IMID of the Industry Member providing the quote. This value must match the string <i>senderIMID</i> in the Order Accepted event reported by the routing Industry Member.	R
quoteID	Text (40)	The internal quote ID assigned to the quote by Industry Member. Must be unique within same date, reporter, and <i>symbol</i> combination.	R
receivedQuoteID	Text (40)	The quote ID as received by the ATS or Industry Member, should match the <i>routedQuoteID</i> in the New Quote event created by the issuer of the quote.	R
onlyOneQuoteFlag	Boolean	<i>true</i> if the Industry Member only allows one quote per <i>symbol</i> for the issue of the quote; <i>false</i> otherwise.	R
priorQuoteID	Text (40)	This field is only relevant for an update/replacement of an existing quote. After this Reportable Event, the quote specified in this field will be considered to have been replaced. This field does not have to be included if <i>onlyOneQuoteFlag</i> is <i>true</i> , since it is known implicitly that the previous quote is being replaced. This is the <i>quoteID</i> of the quote previously accepted by the Industry Member that is being replaced.	C
bidPrice	Price	Price being bid.	C
bidQty	Unsigned	Quantity being bid.	C
askPrice	Price	Price being asked.	C
askQty	Unsigned	Quantity being asked.	C

Field Name	Data Type	Description	
mpStatusCode	Choice	Market Participant Status Code, indicating if the market maker's quote is open or closed. Please see the Data Dictionary for allowed values. Only required for the inter-dealer quotation systems.	C
unsolicitedInd	Choice	Indicating whether this is an unsolicited quote. Please see the data dictionary for allowed values.	R

#### 4.11.2. Quote Canceled

The Industry Member issuing the quote or the recipient of a quote (if an ATS or Industry Member) may cancel a quote. If the issuer of a quote cancels a quote where the recipient was an ATS or an Industry Member (not a customer), then both the issuer of the quote and the entity that accepted the quote must report Quote Canceled events.

#### Quote Canceled Event Field Specifications

Field Name	Data Type	Description	
type	Message Type	MEQC	R
firmROEID	Alphanumeric (12)	An identifier assigned to the record by the reporting firm.	O
eventTimestamp	Timestamp	The date/time the quote was canceled by the Industry Member to the recipient. Can be manual or electronic. If <i>manualFlag</i> is <i>true</i> , timestamp must be reported to seconds. If <i>manualFlag</i> is <i>false</i> , timestamp must be reported to milliseconds or a finer increment up to nanoseconds.	R
seqNum	Text (10)	The sequence number of the quote cancel message. Any alphanumeric not containing a delimiter. Required for inter-dealer quotation systems only.	C
symbol	Symbol	The symbol of the stock in the symbology of the primary listing exchange or FINRA for OTC Equity Securities.	R
quoteID	Text (40)	The internal quote ID assigned to the quote by the Industry Member. (The <i>quoteID</i> of the quote being canceled).	R
onlyOneQuoteFlag	Boolean	<i>true</i> if the ATS or Industry Member only allows one quote per <i>symbol</i> for the issue of the quote; false otherwise.	R
initiator	Choice	Specifies who initiated the cancel: the issuer of the quote or the recipient. See the Data Dictionary for a list of allowed values.	R
mpStatusCode	Choice	Market Participant Status Code, indicating if the market maker's quote is open or closed. Please see the Data Dictionary for allowed values. Only required for the inter-dealer quotation systems.	C
cancelReason	Choice	This code represents the reason why the quote was canceled. See the Data Dictionary for a list of allowed values.	O

## 4.12. Trade

A Trade Event is used when the Industry Member acts as the executing broker and is required to report the trade for public dissemination purposes. Note that when an Industry Member is not required to report the execution of a customer order for public dissemination purposes, an Order Fulfillment event must be used. See Section 4.13 Order Fulfillment for more details.

### Trade Side Details

Trade events are generally two-sided, containing information on both sides of the trade (with the exception of negotiated trades and internalized trades). The details of each side are reported in buyDetails and sellDetails respectively. The buyDetails must contain the *orderID* of the buy side of the trade and the sellDetails must contain the *orderID* of the sell side of the trade. Side Details may contain only one orderID per side. If a single order is crossed against multiple orders, a separate Trade Event must be reported for the execution of each individual order.

Note that the data type Trade Side Details is described as a list of fields in the table immediately following the Trade event table. These are data elements such as an *orderID* associated with a side of the trade.

### Internalized Trade

In the scenario where the Industry Member internalizes an order by filling it from a proprietary account, the Industry Member must report the orderID on the customer side and the FDID and the account type of the proprietary account on the firm side. No order ID is required on the firmSideDetails.

### Negotiated Trade

If an execution occurs as the result of a negotiated trade between two Industry Members, both of the Industry Members, for CAT purposes, are considered to have executed the trade and must submit a Trade event with the *negotiatedTradeSide* marked appropriately. The *negotiatedTradeSide* indicates whether the Industry Member is performing a negotiated buy or negotiated sell in this execution. The Industry Member must capture the full details for its own side, while only the IMID of the contra-side.

Trades that are executed by a market maker as the result of a displayed quotation must be reported using the Trade as Result of Quote Event. See Section 4.12.2 for the reporting requirements for trades executed by a market maker as the result of a quote.

#### 4.12.1. Trade Event

The tables below describe the data elements to report agency cross or internalized orders by filling them from a proprietary account.

#### Trade Event Field Specifications

Field Name	Data Type	Description	
type	Message Type	MEOT	R
firmROEID	Alphanumeric (12)	An identifier assigned to the record by the reporting firm.	O

Field Name	Data Type	Description	
eventTimestamp	Timestamp	The date/time at which the trade was executed. Can be manual or electronic. If <i>manualFlag</i> is <i>true</i> , timestamp must be reported to seconds. If <i>manualFlag</i> is <i>false</i> , timestamp must be reported to milliseconds or a finer increment up to nanoseconds.	R
manualFlag	Boolean	Must be marked as <i>true</i> if this is a manual execution.	R
electronicTimestamp	Timestamp	Required for manual order handling only, the time the execution is systemized.	C
symbol	Symbol	The symbol of the stock in the symbology of the primary listing exchange or FINRA for OTC Equity Securities.	R
tradeID	Text (40)	Unique ID assigned to this execution by the Industry Member. This ID will be used in subsequent events when a specific trade needs to be identified. The combination of date, reporter, <i>symbol</i> , and <i>tradeID</i> must be unique.	R
quantity	Real Quantity	Quantity of the trade.	R
price	Price	Price of the trade.	R
marketCenterID	Choice	The national securities exchange or transaction reporting system operated by FINRA where the trade was reported. See the Data Dictionary for a list of allowed values.	C
negotiatedTradeSide	Choice	Indicates whether this is a negotiated trade. See the Data Dictionary for a list of allowed values.	R
buyDetails	Trade Side Details	See Order Trade Side Details table below.	R
sellDetails	Trade Side Details	See Order Trade Side Details table below.	R
reportingExceptionCode	Choice	Indicates the reason that a unique identifier (e.g., Branch Sequence Number, Compliance ID) was not supplied to a transaction reporting system. Must be provided if the execution is not required to be reported to a FINRA transaction reporting system. See the Data Dictionary for a list of allowed values.	C
seqNum	Alphanumeric (10)	The sequence number assigned to the Reportable Event by the ATS's matching engine. Any alphanumeric not containing a delimiter.	A
nbbPrice	Price	The national best bid price at the moment the trade occurred.	A
nbbQty	Whole Quantity	The national best bid quantity at the moment the trade occurred.	O
nboPrice	Price	The national best offer price at the moment the trade occurred.	A
nboQty	Whole Quantity	The national best offer quantity at the moment the trade occurred.	O
nbboSource	Choice	Source of the NBBO Data Used. See the Data Dictionary for a list of allowed values.	A
nbboTimestamp	Timestamp	The date/time at which the NBBO was referenced upon the receipt of the order.	A



## Trade Side Details

Field Name	Data Type	Description	
orderID	Text (40)	The order ID assigned by the Industry Member to the order on this side.  Not required for the non-reporter side in a negotiated trade.	C
priorOrderDate	Date	Only required when this event is not on the same calendar day as the date when <i>orderID</i> is assigned, then this is the date when <i>orderID</i> is assigned.	C
sideIMID	Industry Member ID	Indicating the party on the trade. If this side of the trade was an order that was the result of an: <ul style="list-style-type: none"> <li>Order Accepted Event - this is the <i>senderIMID</i> of the order's Order Accepted event</li> <li>New Order Event - this IMID is the same as the <i>reporterIMID</i></li> </ul>	R
side	Choice	The side of the order. See the Data Dictionary for a list of allowed values.	R
leavesQty	Real Quantity	The leaves quantity of the order after the execution. Not required for the non-reporter side in a negotiated trade or the prop side of an internalized trade.	C
capacity	Choice	The capacity of the order. Not required for the non-Industry Member side in a negotiated trade. See the Data Dictionary for a list of allowed values.	C
firmDesignatedID	Text (40)	Only required for internalized trades. The FDID of the broker proprietary account against which a customer/client order is being filled.	C
accountType	Choice	Required if <i>firmDesignatedID</i> is populated. Represents the type of account against which a customer/client order is being filled. See Data Dictionary for the list of allowed values.	C
tapeTradeID	Text (40)	The unique identifier reported by the Industry Member to the TRF/ADF/ORF based on the reporting specifications of the specific facility, required when the ID was supplied to a transaction reporting system: <ul style="list-style-type: none"> <li>Compliance ID in ORF and ADF</li> <li>Branch Sequence Number in FINRA/NQ TRF</li> <li>FINRA Compliance Number in FINRA/NYSE TRF</li> </ul> Not required for the non-Industry Member side in a negotiated trade.	C

### Lifecycle Keys for this Reportable Event:

- Order Key: date, reporter, *symbol*, *buyDetails.orderID*
- Order Key: date, reporter, *symbol*, *sellDetails.orderID*
- Trade Key: date, reporter, *symbol*, *tradeID*
- TRF Key: date, reporter, *symbol*, *tapeTradeID*

#### 4.12.2. Trade as the Result of a Quote

If a trade is the result of a quote displayed by a market maker on an inter-dealer quotation system where the market maker is the executing broker under FINRA trade reporting rules and required to report the trade to the FINRA ORF, the Trade as the Result of a Quote event must be used to report the trade. The market maker is required to report the Quote ID of the quote from the inter-dealer quotation in order to link the quote to the trade.

#### Trade on a Quote Event Field Specifications

Field Name	Data Type	Description	
type	Message Type	MEOTQ	R
firmROEID	Alphanumeric (12)	An identifier assigned to the record by the reporting firm.	O
eventTimestamp	Timestamp	The date/time at which the trade was executed. Can be manual or electronic. If <i>manualFlag</i> is <i>true</i> , timestamp must be reported to seconds. If <i>manualFlag</i> is <i>false</i> , timestamp must be reported to milliseconds or a finer increment up to nanoseconds.	R
manualFlag	Boolean	Must be marked as <i>true</i> if this is a manual execution.	R
electronicTimestamp	Timestamp	The time the execution is systemized.	C
symbol	Symbol	The symbol of the stock in the symbology of the primary listing exchange or FINRA for OTC Equity Securities.	R
tradeID	Text (40)	Unique ID assigned to this execution by the Industry Member. This ID will be used in subsequent events when a specific trade needs to be identified. The combination of date, reporter, <i>symbol</i> , and <i>tradeID</i> must be unique.	R
quantity	Real Quantity	Quantity of the trade.	R
price	Price	Price of the trade.	R
marketCenterID	Choice	The national securities exchange or transaction reporting system operated by FINRA where the trade was reported. See the Data Dictionary for a list of allowed values.	C
negotiatedTradeSide	Choice	Indicating whether this execution is the result of a negotiated trade or quote.	R
buyDetails	Trade on a Quote Side Details	See Order Trade Side Details table below.	C
sellDetails	Trade on a Quote Side Details	See Order Trade Side Details table below.	C
reportingExceptionCode	Choice	Indicates the reason that a unique identifier (e.g., Branch Sequence Number, Compliance ID) was not supplied to a transaction reporting system. Must be provided if the execution is not required to be reported to a FINRA transaction reporting system. See the Data Dictionary for a list of allowed values.	C

## Trade on a Quote Side Details

Field Name	Data Type	Description	
quoteID	Text (40)	The quote ID assigned to the quote by the Industry Member. Must be unique per Industry Member, date, <i>symbol</i> . Must match the <i>quoteID</i> reported by the Industry Member of this event that was offered a quote.	C
sideIMID	Industry Member ID	Party on the trade. If this side is the reporting Industry Member, then this is the IMID of the Industry Member	R
side	Choice	The side of the order. See the Data Dictionary for a list of allowed values.	R
capacity	Choice	The capacity the Industry Member acts in the execution. Only required for the Industry Member side.	C
leavesQty	Real Quantity	The leaves quantity after the execution.	C
tapeTradeID	Text (40)	The unique identifier reported by the Industry Member to the TRF/ADF/ORF based on the reporting specifications of the specific facility, required when the ID was supplied to a transaction reporting system: <ul style="list-style-type: none"> <li>• Compliance ID in ORF and ADF</li> <li>• Branch Sequence Number in FINRA/NQ TRF</li> <li>• FINRA Compliance Number in FINRA/NYSE TRF</li> </ul>	C

### Lifecycle Keys for this Reportable Event:

- Order Key: date, reporter, *symbol*, *buyDetails.orderID*
- Order Key: date, reporter, *symbol*, *sellDetails.orderID*
- Order Key: date, reporter, *symbol*, *buyDetails.quoteID*
- Order Key: date, reporter, *symbol*, *sellDetails.quoteID*
- Trade Key: date, reporter, *symbol*, *tradeID*
- TRF Key: date, reporter, *symbol*, *tapeTradeID*

## 4.13. Order Fulfillment

The Order Fulfillment event is used to report the execution of a customer/client order that is not required to be reported for public dissemination purposes. Order Fulfillment reports are required for scenarios where a representative order was used to facilitate the execution of the customer/client order. Examples include orders executed on a riskless principal basis and orders executed on an agency basis via a representative agency order, such as in aggregation scenarios. An Order Fulfillment is also required when an order is routed to a foreign market and the resulting foreign execution is not captured by CAT. In this scenario, the Order Fulfillment is used to obtain the execution information for the customer order since such information is not otherwise available in CAT.

The Order Fulfillment event is designed to capture the customer/client details and the firm side details, which reflect the representative order details for the order used to execute the customer/client order. In Phase 2a, not all scenarios require the firm side details to be populated.

The field *fulfillmentLinkType* is used to indicate if the Industry Member (firm) side details are required. Below are the values allowed:

- Y - Representative Order; linkage required
- YF - Representative order; linkage required in future phase
- YP - Fill from pre-existing Principal order; linkage required
- FOR - No linkage required; Fulfillment on an order routed to a foreign destination

Appendix C contains detailed descriptions of representative order scenarios and illustrates when marking of the representative order, linkage between the represented order and the representative order, and Order Fulfillment linkage is required in each phase.

### 4.13.1. Order Fulfillment Event

#### Order Fulfillment Event Field Specifications

Field Name	Data Type	Description	
type	Message Type	MEOF	R
firmROEID	Alphanumeric (12)	An identifier assigned to the record by the reporting firm.	O
eventTimestamp	Timestamp	The date/time when the fulfillment was processed by the Industry Member. Can be manual or electronic. If <i>manualFlag</i> is <i>true</i> , timestamp must be reported to seconds. If <i>manualFlag</i> is <i>false</i> , timestamp must be reported to milliseconds or a finer increment up to nanoseconds.	R
manualFlag	Boolean	Must be marked as <i>true</i> if this is a manual process.	R
electronicTimestamp	Timestamp	The time the fulfillment is systemized.	C
symbol	Symbol	The symbol of the stock in the symbology of the primary listing exchange or FINRA for OTC Equity Securities.	R
fulfillmentID	Text (40)	The unique identifier for the fulfillment. The combination of reporter, date, <i>symbol</i> and <i>fulfillmentID</i> must be unique.	R

Field Name	Data Type	Description	
fulfillmentLinkType	Choice	Indicates how the order is fulfilled and whether the order details of the Industry Member side are required (scenarios where linkage is required between client and firm order). See Data Dictionary for allowed values.	R
quantity	Real Quantity	Quantity being executed and assigned. It may or may not be the full quantity of the order.	R
price	Price	Price of the executed shares.	R
clientDetails	Fulfillment Side Details	See Fulfillment Side Details table below.	R
firmDetails	Fulfillment Side Details	Used to capture the Industry Member side order details. See Fulfillment Side Details table below. Not required when the <i>fulfillmentLinkType</i> = FOR or YF.	C

#### Fulfillment Side Details

Field Name	Data Type	Description	
orderID	Text (40)	The order ID assigned by the Industry Member to the order on this side.	R
priorOrderDate	Date	Required when this Reportable Event is not on the same calendar day as the date when <i>orderID</i> is assigned.	C
sideIMID	Industry Member ID	Indicating the party on the trade. If this side of the trade was an order that was the result of an: <ul style="list-style-type: none"> <li>Order Accepted Event - this is the <i>senderIMID</i> of the order's Order Accepted event</li> <li>New Order Event - this IMID is the same as the <i>reporterIMID</i></li> </ul>	R
side	Choice	The side of the order. See the Data Dictionary for a list of allowed values.	R
leavesQty	Real Quantity	The leaves quantity of the order after the execution.	C
capacity	Choice	Indicates the capacity the Industry Member acted in the execution. See the Data Dictionary for a list of allowed values.	R

#### Lifecycle Keys for this Reportable Event:

- Order Key: date (from eventTimestamp if *firmDetails.priorOrderDate* is not present), reporter, *symbol*, *firmDetails.orderID*
- Order Key: date (from eventTimestamp if *clientDetails.priorOrderDate* is not present), reporter, *symbol*, *clientDetails.orderID*
- Order Key: *firmDetails.priorOrderDate* (when present), reporter, *symbol*, *firmDetails.orderID*
- Order Key: *clientDetails.priorOrderDate* (when present), reporter, *symbol*, *clientDetails.orderID*
- Fulfillment: date, reporter, *symbol*, *fulfillmentID*

## 4.14. Order Fulfillment Amendment

If the order fulfillment is amended, an amendment event must be reported to CAT with required details. This Reportable Event must capture the entire state of the fulfillment after it has been amended, even though some of the data elements may remain unchanged.

For example, an Industry Member has a trade correction from the exchange after the customer order has already been fulfilled. Subsequently, the Industry Member decided to amend the executed shares given back to the customer. In this scenario, both the original Order Fulfillment and Order Fulfillment Amendment events must be reported to CAT, even though they may happen on the same day. However, if the trade correction comes before any initial fulfillment has been made, and the Industry Member directly gives the corrected shares to the customer, then only one Order Fulfillment event is necessary to be reported.

If an Industry Member makes a correction via a debit/credit to the customer's account instead of modifying the executed shares given back to the customer, then the Industry Member does not need to report an Order Fulfillment Amendment event.

Note that the amendment reporting is only applicable to Order Fulfillment events, not the events reported to the TRF for media dissemination (which would have originally been reported as Trade events).

### Order Fulfillment Amendment Event

Field Name	Data Type	Description	
type	Message Type	MEFA	R
firmROEID	Alphanumeric (12)	An identifier assigned to the record by the reporting firm.	O
eventTimestamp	Timestamp	The date/time when the fulfillment was processed by the Industry Member. Can be manual or electronic. If <i>manualFlag</i> is <i>true</i> , timestamp must be reported to seconds. If <i>manualFlag</i> is <i>false</i> , timestamp must be reported to milliseconds or a finer increment up to nanoseconds.	R
manualFlag	Boolean	Must be marked as <i>true</i> if this is a manual process.	R
electronicTimestamp	Timestamp	The time the fulfillment is systemized.	C
symbol	Symbol	The symbol of the stock in the symbology of the primary listing exchange or FINRA for OTC Equity Securities.	R
fulfillmentID	Text (40)	The unique identifier for the fulfillment. The combination of reporter, date, <i>symbol</i> and <i>fulfillmentID</i> must be unique.	R
priorFulfillmentDate	Date	The most recent date on which the fulfillment was last amended. If this is the first amendment on the Fulfillment, then it is the date of the original Fulfillment. Only present if this is at a different date from the original Fulfillment or last Fulfillment Amendment.	C

Field Name	Data Type	Description	
priorFulfillmentID	Text (40)	The most recent <i>fulfillmentID</i> assigned by the Industry Member on the prior Fulfillment or Fulfillment Amendment event.  If the <i>fulfillmentID</i> remains the same after the amendment, it must be the same as <i>fulfillmentID</i> .	R
quantity	Real Quantity	Quantity being executed and assigned. It may or may not be the full quantity of the order.	R
price	Price	Price of the executed shares.	R
fulfillmentLinkType	Choice	Specifies the type of the fulfillment - Riskless Principal Flip, Principal Flip or Aggregated Order Flip. Refer to the Data Dictionary for the acceptable values for this field. See the Data Dictionary for a list of allowed values.	R
clientDetails	Fulfillment Side Details	See Fulfillment Side Details table above.	R
firmDetails	Fulfillment Side Details	See Fulfillment Side Details table above.	C
reason	Text (255)	Optional free-form text field, with the reason for the amendment.	O

Lifecycle Keys for this Reportable Event:

- Order Key: date (from eventTimestamp if *firmDetails.priorOrderDate* is not present), reporter, *symbol*, *firmDetails.orderID*
- Order Key: date (from eventTimestamp if *clientDetails.priorOrderDate* is not present), reporter, *symbol*, *clientDetails.orderID*
- Order Key: *firmDetails.priorOrderDate* (when present), reporter, *symbol*, *firmDetails.orderID*
- Order Key: *clientDetails.priorOrderDate* (when present), reporter, *symbol*, *clientDetails.orderID*
- Fulfillment Key: date, reporter, *symbol*, *fulfillmentID*
- Prior Fulfillment Key: date, reporter, *symbol*, *priorFulfillmentID*

#### **4.15. Post-trade Allocation (Phase 2c)**

<Deferred - Not Required Until Phase 2c>

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## 5. Single Leg Option Events

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This section describes Reportable Events for single leg option transactions. The following table lists each option Reportable Event type with its corresponding Message Type code.

### Notes

- In Phase 2b, Industry Members are required to report CAT Industry Member Data related to Eligible Securities that are options and meet the definition of Simple Electronic Option Orders<sup>4</sup>, excluding Electronic Paired Option Orders.

Events and data elements that are greyed out do not apply to Phase 2b.

- The greyed out order events will not be supported in Phase 2b; any submission on unsupported event types will generate an error.
- If data elements are greyed out for Phase 2b on a supported order event, the fields will be supported<sup>5</sup> though not required. The Industry Member may voluntarily report the elements in Phase 2b.

### Linkages in Phase 2b

In Phase 2b, the definition of an electronic single option order will result in unlinked events within a single CAT Reporter. To address these expected unlinked events, two fields (*priorUnlinked* and *nextUnlinked*) are used as described below. The purpose of these fields is to identify that the immediately preceding or following event is not reportable in Phase 2b and is not present for linkage. An immediately preceding or following event may be a manual event, complex order event, or a paired order. The *priorUnlinked* and *nextUnlinked* fields have values to indicate why the immediately preceding or following event is not present.

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<sup>4</sup> “Simple Electronic Option Orders” mean orders to buy or sell a single option that are not related to or dependent on any other transaction for pricing or timing of execution that are either received or routed electronically by an Industry Member CAT Reporter. “Electronic Paired Option Orders” mean electronic option orders that contain both the buy and sell side that is routed to another Industry Member or exchange for crossing and/or price improvement as a single transaction on an exchange. Further, the events related to Simple Electronic Option Orders subject to reporting in Phase 2b are limited to those events which involve electronic receipt of an order, or electronic routing of an order. Electronic receipt of an order is defined as the initial receipt of an order by an Industry Member in electronic form in standard format directly into an order handling or execution system. Electronic routing of an order is the routing of an order via electronic medium in standard format from one Industry Member’s order handling or execution system to an exchange or another Industry Member.

For more details, please refer to the Interpretive FAQ (<https://www.catnmsplan.com/faq/interpretive-faq/>).

<sup>5</sup> For Industry Members reporting in CSV, the greyed out data elements will take empty columns if not populated.

Field Name	Values	
nextUnlinked	M	Next Manual
	C	Next Complex
	P	Next Paired
	Blank	Not applicable
priorUnlinked	M	Prior Manual
	C	Prior Complex
	Blank	Not applicable

One or both of these fields will be on all options event types as conditional. If an event does not have this field populated, linkage will be attempted.

### Special circumstances of a complex order being represented as individual legs in Phase 2b

In the special circumstance of an Industry Member sending (receiving) a complex order electronically as individual legs of the complex orders, the preferred method of reporting is to suppress the events associated with these messages. If an Industry Member cannot do this, the Industry Member must populate the *handlingInstructions* field with 'CMPX' to indicate that the order (route) is part of a complex option order in Phase 2b. In addition, such voluntarily reported single leg orders must include a *priorUnlinked* or *nextUnlinked* flag of 'C', as applicable, to indicate they will not link to a related order at the sending (receiving) firm.

### Summary of Option Order Events

Section	Event	Message Type	Description
5.1	New Option Order	MONO	Event used to report new option orders to CAT.
5.2	Option Order Supplement	MONOS	Used for certain aggregated orders in addition to the New Order event.
5.3	Paired Option Order	MONP	Event used to report a cross of an agency/initiating order and contra side order(s) for single-leg option orders.
5.4.1	Option Order Route	MOOR	Reported to CAT by an Industry Member that has routed an option order to another Industry Member or an exchange.
5.4.2	Option Order Modify Route	MOMR	Deferred - event not required for Phase 2a or Phase 2b. SROs will evaluate need for a modified route event after reviewing Phase 2a/2b data and include event in Phase 2d, if necessary.
5.4.3	Option Order Cancel Route	MOCR	Deferred - event not required for Phase 2a or Phase 2b. SROs will evaluate need for a canceled route event after reviewing Phase 2a/2b data and include event in Phase 2d, if necessary.
5.5	Option Order Accepted	MOOA	Reported when an Industry Member accepts a single-leg option order routed from another Industry Member or an exchange.
5.6.1	Option Order Internal Route	MOIR	Reported when an order is internally routed from where it was accepted or originated to another desk or other internal destination.
5.6.2	Option Order Internal Route Modified	MOIM	Reported when an Industry Member modifies an internal route.

Section	Event	Message Type	Description
5.6.3	Option Order Internal Route Canceled	MOIC	Reported when an Industry Member cancels an internal route.
5.7.1	Child Option Order	MOCO	Reported for the generation of child order(s). This is to provide flexibility of reporting, there is not a scenario in which the use of Child Option Order is mandatory.
5.7.2	Child Option Order Modified	MOCOM	Reported when a Child Option Order is modified.
5.7.3	Child Option Order Canceled	MOCOC	Reported when a Child Option Order is canceled.
5.8	Option Order Modified	MOOM	Reported when an order originated or received by an Industry Member is modified.
5.8.1	Option Order Modified Supplement	MOOMS	Used for certain aggregated orders in addition to the Option Order Modified event.
5.9	Option Order Adjusted	MOOJ	Alternative, simplified event that may be reported when only the price and/or quantity of an order is modified.
5.10	Option Order Canceled	MOOC	Reported when an order originated or received by an Industry Member is fully or partially canceled.
5.11.1	Option Order Fulfillment	MOOF	Reports how orders are fulfilled by each entity that handled a given order.
5.11.2	Option Order Fulfillment Amendment	MOFA	Reports how an order fulfillment was amended.
5.12.1	Option Post-Trade Allocation	MOPA	Reports how option positions (executed contracts) are allocated to end customer accounts and sub-accounts by clearing firms during post-trade processing.
5.12.2	Option Post-Trade Amended Allocation	MOAA	Reports an amendment to a previously reported allocation.

## 5.1. New Option Order Event

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An Industry Member must report a New Option Order event to CAT when an order is received or originated. This includes:

- New customer orders<sup>6</sup>
- Representative orders
- Proprietary orders
- Order(s) received from a non-reporting foreign broker-dealer or affiliate.

Note that an order received from another CAT Reporter (US broker-dealer, ATS, or an exchange) must be reported as an Option Order Accepted event.

### Representative Orders

#### Phase 2b Representative Orders

While there are fewer representative order scenarios for options than equities, to the extent they are used, representative orders will be treated the same as equity representative orders, including the phased reporting approach for such orders.

Specifically, in Phase 2b, representative orders and linkage to the represented order is required for simple, electronic orders between the representative street-side order and the customer or client order being represented, when the representative order was originated specifically to represent a single customer/client order and there is:

- An existing, direct electronic link in the Industry Member's system between the order being represented and the representative order, and
- Any resulting executions are immediately and automatically applied to the represented order in the Industry Member's system.

Any portion of a specific order handling scenario that involves a complex or paired order is not reportable until Phase 2d.

See Appendix C for a detailed description of representative order reporting.

#### Phase 2d Representative Orders

Any scenario that does not meet the definition of Phase 2b representative order will fall into this category, including any scenario involving a manual or complex order.

See the CAT Industry Member Reporting Scenarios document for detailed examples of how representative order scenarios for options are reported in Phase 2b.

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<sup>6</sup> Note - this document refers to orders received from CAT Reporters as "client order," and orders received from non-CAT Reporters, including non-US broker-dealers, as "customer orders."

## New Option Order Event

Field Name	Data Type	Description	
type	Message Type	MONO	R
firmROEID	Alphanumeric (12)	An identifier assigned to the record by the reporting firm.	O
eventTimestamp	Timestamp	The date/time of receipt of the order. Can be manual or electronic. If <i>manualFlag</i> is <i>true</i> , timestamp must be reported to seconds. If <i>manualFlag</i> is <i>false</i> , timestamp must be reported to milliseconds or a finer increment up to nanoseconds.	R
manualFlag	Boolean	Must be marked as <i>true</i> if the order is handled manually.	R
electronicDupFlag	Boolean	Indicating whether this is a duplicative electronic message of a manual event. If populated, this message will not be linked to any other events in Phase 2b.	C
electronicTimestamp	Timestamp	When <i>manualFlag</i> is <i>true</i> , the time at which the order is electronically captured. Options manual order specifications are deferred to Phase 2d.	C
optionID	Text (22)	The 21-character OSI Symbol of the option. For FLEX Percent options, a percentage symbol (%) is appended before the OSI symbol elements. See the <a href="#">Option Symbols</a> section for more information.	R
orderID	Text (40)	The internal order ID assigned to the order by the Industry Member. Must be unique within same date, reporter, and <i>optionID</i> combination.	R
originator	Choice	This field indicates whether the order was initiated by the reporting Industry Member or received from a customer or foreign B/D, and identifies affiliates. See the Data Dictionary for a list of allowed values.	R
deptType	Choice	This is the category of internal department, unit or desk originating the order. See Data Dictionary for list of allowed values.	R
side	Choice	The side of the order. For options events, the allowed values are Buy and Sell. See the Data Dictionary for a list of allowed values.	R
price	Price	The limit price of the order per contract, if specified by the order originator. Not required for market orders. For FLEX Percent options, this field may reflect a percentage of the underlying closing price, e.g., for a price equal to 95.5% of the underlying close price, this field would contain 95.5.	C
quantity	Real Quantity	The quantity of contracts.	R
minQty	Whole Quantity	The minimum quantity of contracts to be executed. Required when instructed by the order originator.	C
orderType	Choice	The type of order being submitted (e.g. market, limit, cabinet). See the Data Dictionary for a list of allowed values.	R
timeInForce	Choice	The time-in-force for the order (e.g. DAY, IOC, GTC). See the Data Dictionary for a list of allowed values.	R

Field Name	Data Type	Description	
tradingSession	Choice	The trading session(s) during which an order is eligible to trade. See the Data Dictionary for a list of allowed values.	R
handlingInstructions	Name/Value Pairs	This field will contain zero or more order instruction codes, each separated by a single pipe symbol. See the Data Dictionary for allowed values.	C
firmDesignatedID	Text (40)	The FDID assigned by the Industry Member.	R
optionOriginCode	Choice	Represents the type of beneficial owner of the account for which the order was received or originated. See the Data Dictionary for a list of allowed values.	R
aggregatedOrders	Name/Value Pairs	This field is required when reporting an aggregated order created by the Industry Member. It specifies the original order IDs and quantities (if partial) being consolidated into this aggregated order. One or multiple Name/Value pair(s) may be included in this field.	C
cmtaFirm	Alphanumeric (8)	Required for CMTA trades. See the Data Dictionary for more information.	C
openCloseIndicator	Choice	Describes whether the action taken – either buying or selling this option – will open/increase a new position or will close/decrease an existing position.	R
representativeInd	Choice	Indicates if the representative linkage is required. For Phase 2b, only values "N" and "YF" are allowed to be populated on New Option Order event.	R
nextUnlinked	Choice	Indicates if the internal immediate next step is not reported and no linkage will be available in Phase 2b. See Data Dictionary for a list of allowed values.	C

Lifecycle keys for this Reportable Event:

- Order Key: date, reporter, *optionID*, *orderID*
- ComplexOrderKey: date, reporter, (*complexOptionID*), *complexOrderID* (Not applicable in Phase 2b)

## 5.2. Option Order Supplement Event

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<Deferred - Not Required Until Phase 2d>

### 5.3. Paired Option Order (Phase 2d)

<Deferred - Not Required Until Phase 2d>

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## 5.4. Option Order Route

Industry Members must report Option Order Route events to CAT when reporting the routing of option orders.

### 5.4.1. Option Order Route Event

An Industry Member must report to CAT an Option Order Route Event when:

- Routing to other Industry Members
- Routing to foreign broker-dealers
- Routing to exchanges
- Routing between two IMIDs (e.g. two different FINRA MPIDs) attributed to the same legal entity (i.e. the same CRD)
- Routing partial quantities of an order (assigned using *routedOrderId* in routing message)

In order for CAT to maintain order lifecycle linkage, the *orderId* populated in the Option Order Route event must reference the most recent internal ID of the order. For example, if an order was modified before routing out, the Route Event must use the ID assigned on the order modification.

Internal routes to another desk or department within an Industry Member are not reported using the Option Order Route event; instead an Option Order Internal Route event is used. See the Option Order Internal Route section for more details.

#### Handling Instructions on the Option Order Route

The handling instructions included in this event should represent those on the routed order. If the handling instructions do not change from the Option Order Accepted or New Option Order associated with the order, Industry Members may use the handling instruction code "RAR" - routed as received, instead of repeating each individual handling instruction.

#### Option Order Route Event Field Specifications

Field Name	Data Type	Description	
type	Message Type	MOOR	R
firmROEID	Alphanumeric (12)	An identifier assigned to the record by the reporting firm.	O
eventTimestamp	Timestamp	The date/time of the route. Can be manual or electronic. If <i>manualFlag</i> is <i>true</i> , timestamp must be reported to seconds. If <i>manualFlag</i> is <i>false</i> , timestamp must be reported to milliseconds or a finer increment up to nanoseconds.	R
manualFlag	Boolean	Must be marked as <i>true</i> if the order is handled manually. Not applicable for Phase 2b.	R
electronicDupFlag	Boolean	Indicating whether this is a duplicative electronic message of a manual event. If populated, this message will not be linked to any other events in Phase 2b.	C
electronicTimestamp	Timestamp	The time at which the order is electronically captured. Not applicable for Phase 2b.	C
optionID	Text (22)	The 21-character OSI Symbol of the option. For FLEX Percent options, a percentage symbol (%) is appended before the OSI symbol elements. See the <a href="#">Option Symbols</a> section for more information.	R

Field Name	Data Type	Description	
senderIMID	Industry Member ID	The IMID used to identify the Industry Member that is routing the order, known by the destination. When routing to another Industry Member, this value <u>must match the <i>routingOrigin</i> on the Option Order Accepted event reported by the destination, while routing to an exchange, it equals the <i>routingParty</i> reported by the exchange on the Participant Order Accepted event</u> . Not required when routing to a foreign broker-dealer.	C
destination	Industry Member ID / Exchange ID	When routing to another Industry Member, it is the IMID used to identify the Industry Member that is receiving this routed order. <u>Must match the <i>receiverIMID</i> field on the Option Order Accepted event reported by the destination Industry Member. When routing to an exchange, use the Exchange ID of the destination exchange. Must match the <i>exchange</i> field on the Order Accepted event reported by the destination exchange</u> . Not required if the destination is a foreign broker-dealer.	C
destinationType	Choice	Indicating whether the destination of the route is an Industry Member, an exchange or a foreign broker-dealer. See the Data Dictionary for a list of allowed values.	R
orderID	Text (40)	This <i>orderID</i> is the latest internal order ID assigned to the order before routing.	R
priorOrderDate	Date	Required when this event is not on the same calendar day as the date when <i>orderID</i> is assigned.	C
routedOrderID	Text (40)	The ID assigned to the order by the Industry Member when routing the order to another Industry Member or exchange. This value must match the value for <i>routedOrderID</i> reported by the destination in their Option Order Accepted report.  Required unless the order is routed to a non-reporting foreign destination.	C
session	Text (40)	The session ID used when routing the order. This must match the session ID on the Option Order Accepted event reported by the receiving exchange. Must be reported as blank if routing to another Industry Member. Not required for manual route or route to a foreign non-reporting entity.	C
side	Choice	The side of the order. See the Data Dictionary for a list of allowed values.	R
price	Price	The limit price per contract included on the order when routed. Not required for market orders. For FLEX Percent options, this field may reflect a percentage of the underlying close price (e.g. a contract price of 101% of the underlying close price would be represented in this field as 101.00).	C
quantity	Real Quantity	The quantity of contracts included on the order when routed.	R

Field Name	Data Type	Description	
minQty	Whole Quantity	The minimum quantity of an order to be executed. Required if included on the order when routed.	C
orderType	Choice	The type of order being routed (e.g., market, limit) See the Data Dictionary for a list of allowed values.	R
timeInForce	Choice	The Time-in-Force for the order (e.g., DAY, IOC, GTC). See the Data Dictionary for a list of allowed values.	R
tradingSession	Choice	The trading session(s) during which an order is eligible to trade. See the Data Dictionary for a list of allowed values.	R
handlingInstructions	Name/Value Pairs	Defines the handling instructions, as described in the Data Dictionary for handlingInstructions.	C
routeRejectedFlag	Boolean	Indicates the routed order was not accepted by the destination (rejected or no response) when marked <i>true</i> . Not applicable for Phase 2b. (Routes that are not accepted are required to be reported in Phase 2d.) See the Data Dictionary for a list of allowed values.	O
optionOriginCode	Choice	Represents the type of beneficial owner of the account for which the order was received or originated. See the Data Dictionary for a list of allowed values.	R
exchOriginCode	Text (4)	The code signifying the origin of the account as sent to the exchange, e.g., P (Professional Customer), J (Joint Back Office). Only required for orders routed to an exchange. See the Data Dictionary for a list of allowed values.	C
cmtaFirm	Alphanumeric (8)	Required for CMTA trades.	C
executingFirm	Alphanumeric (8)	The OCC number of the executing/give-up firm.	C
openCloseIndicator	Choice	Describes whether the action taken – either buying or selling this option – will open/increase a new position or will close/decrease an existing position. See the Data Dictionary for a list of allowed values.	C
priorUnlinked	Choice	Indicates if the internal immediate prior step is not reported and no linkage will be available in Phase 2b. See Data Dictionary for the list of allowed values.	C
nextUnlinked	Choice	For Option Order Route events, only applicable to single legs of a complex option order. Indicates if no linkage will be available in Phase 2b to the receiving side. Allowed values on Option Order Routes limited to "C" or blank.	C

Lifecycle keys for this Reportable Event:

- Order Key: date (from eventTimestamp if *priorOrderDate* is not present), reporter, *optionID*, *orderID*
- Order Key: *priorOrderDate* (when present), reporter, *optionID*, *orderID*
- Route Link Key: date, *senderIMID*, *destination*, *optionID*, *session*, *routedOrderID*

#### **5.4.2. Option Order Modify Route Event (Potential Phase 2d)**

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<Deferred - event not required for Phase 2a or Phase 2b. SROs will evaluate need for a modified route event after reviewing Phase 2a/2b data and include event in Phase 2d, if necessary.>

#### **5.4.3. Option Order Cancel Route Event (Potential Phase 2d)**

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<Deferred - event not required for Phase 2a or Phase 2b. SROs will evaluate need for a canceled route event after reviewing Phase 2a/2b data and include event in Phase 2d, if necessary.>

## 5.5. Option Order Accepted

When an Industry Member receives a routed option order from another Industry Member or an exchange, then an Option Order Accepted event must be reported to CAT. As described in Options Order Route event, if an Industry Member accepts a routed order from another Industry Member, even though that IMID may attribute to the same Industry Member, i.e., the same CRD, an Order Accepted event must be reported.

Once all Industry Member are reporting, in all cases, the order reported with this event should have already been originated by another Industry Member and reported upon origination with a New Option Order event. A New Option Order event represents the beginning of the order lifecycle in CAT, therefore a new customer order is represented with a New Option Order event - not an Option Order Accepted event. At the start of Phase 2b, there will be some lifecycles beginning at Option Order Accepted event, as Small Industry Members are not required to report until a later phase.

Orders received from a non-reporting foreign entity or affiliate should be reported as a New Option event instead of an Option Order Accepted event.

### Option Order Accepted Field Specifications

Field Name	Data Type	Description	
type	Message Type	MOOA	R
firmROEID	Alphanumeric (12)	An identifier assigned to the record by the reporting firm.	O
eventTimestamp	Timestamp	The date/time of receipt of the order. Can be manual or electronic. If <i>manualFlag</i> is <i>true</i> , timestamp must be reported to seconds. If <i>manualFlag</i> is <i>false</i> , timestamp must be reported to milliseconds or a finer increment up to nanoseconds.	R
manualFlag	Boolean	Must be marked as <i>true</i> if the order is handled manually.	R
electronicDupFlag	Boolean	Indicating whether this is a duplicative electronic message of a manual event. If populated, this message will not be linked to any other events in Phase 2b.	C
electronicTimestamp	Timestamp	The time at which the order is electronically captured.	C
optionID	Text (22)	The 21-character OSI Symbol of the option. For FLEX Percent options, a percentage symbol (%) is appended before the OSI symbol elements. See the <a href="#">Option Symbols</a> section for more information.	R
orderID	Text (40)	The order ID assigned to the order by the Industry Member upon acceptance. Must be unique within same date, reporter, and <i>optionID</i> combination.	R
receiverIMID	Text (40)	The ID string used to identify the Industry Member receiving the order. It is not required to match the IMID of the Industry Member, but it must match the destination field on the Option Order Route event reported by the routing Industry Member.	R

Field Name	Data Type	Description	
routingOrigin	Industry Member ID / Exchange ID	When the order is routed from another Industry Member, this is the IMID of the sending Industry Member from which the order is routed. <u>Must match senderIMID in the Option Order Route event reported by the routing Industry Member.</u> When the order is routed from an exchange, this is the Exchange ID of the sending Industry Member from which the order is routed. <u>And the value must match the exchange field in the Order Route event reported by the exchange.</u>	R
routingOriginType	Choice	Indicating the type of origin from which the order is routed. See the Data Dictionary for a list of allowed values.	R
routedOrderID	Text (40)	The Order ID as received on the order before being assigned a new Order ID upon acceptance. This is the Order ID assigned by the routing Industry Member. This value must match the value for <i>routedOrderID</i> reported by the routing Industry Member or exchange in its CAT Option Order Route report. Required unless the order is received from a non-reporting foreign entity.	C
session	Text (40)	The ID assigned to the specific session that the routing member used to route the order to the Industry Member. Must be reported as blank if routing member is another Industry Member.	C
deptType	Choice	This is the category of internal department, unit or desk receiving the order. See the Data Dictionary for a list of allowed values.	R
side	Choice	The side of the order. See the Data Dictionary for a list of allowed values.	R
price	Price	The price per contract received on this order. Not required for market orders.	C
quantity	Real Quantity	The quantity of contracts on the accepted order.	R
minQty	Whole Quantity	The minimum quantity of an order to be executed. Required if included on the order when received.	C
orderType	Choice	The type of order received (e.g., market, limit) See the Data Dictionary for allowed values.	R
timeInForce	Choice	The Time-in-Force for the order (e.g., DAY, IOC, GTC). See the Data Dictionary entry for allowed values.	R
tradingSession	Choice	The trading session(s) during which an order is eligible to trade.	R
handlingInstructions	Name/Value Pairs	The handling instructions, as described in the Data Dictionary. All instructions included on the order when received are required to be reported.	C
optionOriginCode	Choice	Represents the type of beneficial owner of the account for which the order was received or originated as reported on the New Option Order event. See the Data Dictionary for list of allowed values.	R
cmtaFirm	Alphanumeric (8)	Required for CMTA trades.	C
executingFirm	Alphanumeric (8)	The OCC number of the executing/give-up Industry Member.	C

Field Name	Data Type	Description	
openCloseIndicator	Choice	Describes whether the action taken – either buying or selling this option – will open/increase a new position or will close/decrease an existing position.	C
priorUnlinked	Choice	For Option Order Accepted events, only applicable to single legs of a complex option order. Indicates if no linkage will be available in Phase 2b to the sending side. Allowed values on Option Order Accepted limited to "C" or blank.	C
nextUnlinked	Choice	Indicates if the internal immediate next step is not reported and no linkage will be available in Phase 2b. See Data Dictionary for list of allowed values.	C

Lifecycle keys for this Reportable Event:

- Order Key: date, reporter, *optionID*, *orderID*
- Route Link Key: date, *senderIMID*, *destination*, *optionID*, *session*, *routedOrderID*

## 5.6. Option Order Internal Route

An Option Order Internal Route events must be reported when an order is passed internally to a different department or desk within a *reporterIMID*.

Although multiple *reporterIMIDs* may be attributed to a single Industry Member, routes between different IMIDs attributed to the same Industry Member are not considered internal routes.

**Note** that an Optional Order Internal Route event does not follow the logic of sending/receiving two-sided reporting followed throughout the rest of these Industry Member Technical Specifications. It is required to be reported from the perspective of the recipient desk. The Option Order Internal Route merely shows that an order was received by an internal destination and if a new orderID has been assigned to the order as a result of the Option Order Internal Route.

- An Option Order Internal Route may also represent the routing of partial quantities of an option order internally, and the practice of assigning those slices new *orderIDs*. In this case, multiple slices are routed to yet another destination internally - this event should represent the receiving desk, quantities, and new orderIDs of those routed slices as received by the subsequent internal destination. This approach will allow CAT to track changes in *orderID* within an Industry Member as an order is passed between internal entities or partial quantities are routed to internal entities as slices of another order.
- The major difference between Option Order Internal Route and Child Option Order events is that the Child Option Order event can only be used when no desk change or desk route happens. For example, some Industry Members may first choose to generate child orders using the Child Option Order event to represent slices of a parent order, then route those slices internally to another desk (Option Order Internal Route event). This approach is also acceptable for CAT reporting and will not result in unlinked events.

Option Order Internal Route Modified and Option Order Internal Route Canceled are not required to be reported until Phase 2d.

### 5.6.1. Option Order Internal Route Event

Option Order Internal Route event is used to report an order sent internally to another desk.

Option Order Internal Route Field Specifications

Field Name	Data Type	Description	
type	Message Type	MOIR	R
firmROEID	Alphanumeric (12)	An identifier assigned to the record by the reporting firm.	O
eventTimestamp	Timestamp	The date/time of receipt by the receiving desk. Can be manual or electronic. If <i>manualFlag</i> is <i>true</i> , timestamp must be reported to seconds. If <i>manualFlag</i> is <i>false</i> , timestamp must be reported to milliseconds or a finer increment up to nanoseconds.	R
manualFlag	Boolean	Must be marked as <i>true</i> if the order is handled manually.	R
electronicTimestamp	Timestamp	The time at which the order is electronically captured.	C



Field Name	Data Type	Description	
optionID	Text (22)	The 21-character OSI Symbol of the option. For FLEX Percent options, a percentage symbol (%) is appended before the OSI symbol elements. See the <a href="#">Option Symbols</a> section for more information.	R
priorOrderID	Text (40)	This is the most current internal <i>orderID</i> of the order being internally routed by this event. This field must match an <i>orderID</i> already reported in another event such as an Option Order Accepted or New Option Order event. If a separate internal route already occurred, and this even represents a subsequent internal route - then this field is the <i>orderID</i> of the previous internal route event. If no other internal route occurred, then this is the <i>orderID</i> as it appeared in the original New Option Order or Order Option Accepted event.	R
priorOrderDate	Date	The date when <i>priorOrderID</i> is assigned. Only required when this event is not on the same calendar day as the date when <i>priorOrderID</i> is assigned.	C
orderID	Text (40)	The ID assigned to the order by the Industry Member's receiving desk as a result of the internal route. Must be unique within same date, reporter, and <i>optionID</i> combination. This value must match the value for <i>priorOrderID</i> in any subsequent Option Order Internal Route event, as well as the <i>orderID</i> in an external Option Order Route event if such a subsequent event occurs. If the internal destination does not assign a new order ID upon an internal route, this must be the same as the <i>priorOrderID</i> .	R
deptType	Choice	The category of department, unit, or desk that is the destination of this internal route event. See the Data Dictionary for allowed values.	R
receivingDeskType	Choice	Field indicating the type of desk receiving the internally routed order. More granular than the field <i>deptType</i> . Only required when the destination of an internal route is a desk. See the Data Dictionary for allowed values.	R
side	Choice	The side of the order. See the Data Dictionary for a list of allowed values.	R
price	Price	The limit price of the order. Required if included on the order when internally routed.	C
quantity	Real Quantity	The quantity of contracts on the order when internally routed.	R
minQty	Whole Quantity	The minimum quantity of an order to be executed. Required if included on the order when internally routed.	C
orderType	Choice	The type of order being internally routed (e.g., market, limit) See the Data Dictionary for allowed values.	R
handlingInstructions	Name/Value Pairs	The handling instructions, as described in the Data Dictionary for handlingInstructions. Required when included on the order when internally routed.	C

Field Name	Data Type	Description	
openCloseIndicator	Choice	Describes whether the action taken – either buying or selling this option – will open/increase a new position or will close/decrease an existing position.	C
priorUnlinked	Choice	Indicates if the internal immediate prior step is not reported and no linkage will be available in Phase 2b. See Data Dictionary for list of allowed values.	C
nextUnlinked	Choice	Indicates if the internal immediate next step is not reported and no linkage will be available in Phase 2b. See Data Dictionary for list of allowed values.	C

Lifecycle keys for this Reportable Event:

- Order Key: date, reporter, *optionID*, *orderID*

**5.6.2. Option Order Internal Route Modify Event (Phase 2d)**

<Deferred - Not Required Until Phase 2d>

**5.6.3. Option Order Internal Route Canceled Event (Phase 2d)**

<Deferred - Not Required Until Phase 2d>

## 5.7. Child Option Order

The Child Option Order event is provided solely for the convenience of Industry Members to help model scenarios in which an order is split or sliced into smaller "child" orders that are handled independently of their parent order - in a way that best reflects each individual Industry Member's system(s).

For example, in the scenario when Industry Members create independent child orders with new *orderIDs*, if the Child Option Order event is reported, then the changes of order IDs are captured. Afterwards, the Industry Member can reference each individual child option order in subsequent events by the new order ID. However, if no Child Option Order event is reported, then the Industry Member can only reference the order at the parent level by the order ID of the parent. There is no scenario in which the use of a Child Option Order event is absolutely mandatory.

### Notes:

- Child Option Order events can only be used when an order is sliced and assigned new order IDs within the same desk. An Option Order Internal Route event must be reported when routed to another desk.
- There is no limit to how many "generations" can be created using Child Option Order events. The *parentOrderID* will be the *orderID* of the most recent order, whether that was a New Option Order/Option Order Accepted or a previous Child Option Order.
- Child Option Orders must belong to the same FDID as the parent order.
- Child Option Orders should **not** be used for single legs of a multi-leg option order.
- This event only includes the key data elements and fields that may be changed from the parent order or that are required for linkage, i.e., certain key data elements from the parent order may not be changed when creating Child Option Orders.

### 5.7.1. Child Option Order Event

#### Child Option Order Event Field Specifications

Field Name	Data Type	Description	
type	Message Type	MOCO	R
firmROEID	Alphanumeric (12)	An identifier assigned to the record by the reporting firm.	O
eventTimestamp	Timestamp	The date/time of receipt by the receiving desk. Can be manual or electronic. If <i>manualFlag</i> is <i>true</i> , timestamp must be reported to seconds. If <i>manualFlag</i> is <i>false</i> , timestamp must be reported to milliseconds or a finer increment up to nanoseconds.	R
optionID	Text (22)	The 21-character OSI Symbol of the option. For FLEX Percent options, a percentage symbol (%) is appended before the OSI symbol elements. See the <a href="#">Option Symbol</a> section for more information.	R
parentOrderID	Text (40)	The internal order ID assigned to the parent order by the Industry Member. Must match the <i>orderID</i> in the New Option Order, Order Accepted, or most recent associated event reported by this Industry Member.	R
orderID	Text (40)	The internal order ID assigned to the order by the Industry Member. Must be unique within same date, reporter, and <i>optionID</i> combination.	R

Field Name	Data Type	Description	
priorOrderDate	Date	Required when this event is not on the same calendar day as the date when <i>orderID</i> is assigned.	C
side	Choice	The side of the order. For options events, the allowed values are Buy and Sell.	R
price	Price	The limit price of the order per contract, if specified by the order originator. Not required for market orders. For FLEX Percent options, this field may reflect a percentage of the underlying closing price, e.g., for a price equal to 95.5% of the underlying close price, this field would contain 95.5.	C
quantity	Real Quantity	The quantity of contracts.	R
minQty	Whole Quantity	The minimum quantity of contracts to be executed. Required when instructed by the order originator.	C
orderType	Choice	The type of order being submitted (e.g. market, limit, cabinet). See Data Dictionary for a list of allowed values.	R
timeInForce	Choice	The time-in-force for the order (e.g. DAY, IOC, GTC). See the Data Dictionary for a list of allowed values.	R
tradingSession	Choice	The trading session(s) during which an order is eligible to trade. See the Data Dictionary for a list of allowed values.	R
handlingInstructions	Name/Value Pairs	This field will contain zero or more order instruction codes, each separated by a single pipe symbol. See Data Dictionary for allowed values.	C
openCloseIndicator	Choice	Describes whether the action taken - either buying or selling this option - will open/increase a new position or will close/decrease an existing position.	R

Lifecycle keys for this Reportable Event:

- Order Key: date, reporter, *optionID*, *orderID*
- Prior Order Key: date, reporter, *optionID*, *parentOrderID*

### 5.7.2. Child Option Order Modified Event

When the price, quantity, or any Material Term of the child option order has been changed, a Child Option Order Modified event must be reported to CAT. This modification event is only used when the child option order creation is reported to CAT in a Child Option Order event. As such, modifying a partial quantity internal route cannot be reported in this event.

All attributes and Material Terms of the Order of a modified child option order listed on this event should be reported when applicable, including the fields that remain unchanged.

#### Child Option Order Modified Event Field Specifications

Field Name	Data Type	Description	
type	Message Type	MOCOM	R
firmROEID	Alphanumeric (12)	An identifier assigned to the record by the reporting firm.	O

Field Name	Data Type	Description	
eventTimestamp	Timestamp	The date/time of receipt by the receiving desk. Can be manual or electronic. If <i>manualFlag</i> is <i>true</i> , timestamp must be reported to seconds. If <i>manualFlag</i> is <i>false</i> , timestamp must be reported to milliseconds or a finer increment up to nanoseconds.	R
optionID	Text (22)	The 21-character OSI Symbol of the option. For FLEX Percent options, a percentage symbol (%) is appended before the OSI symbol elements. See the <a href="#">Option Symbol</a> section for more information.	R
parentOrderID	Text (40)	The internal order ID assigned to the parent order by the Industry Member. Must match the <i>orderID</i> in the New Option Order, Order Accepted, or most recent associated event reported by this Industry Member.	R
orderID	Text (40)	The internal order ID assigned to the order by the Industry Member. Must be unique within same date, reporter, and <i>optionID</i> combination.	R
priorOrderID	Text (40)	The most recent orderID for this child order prior to the modification.  If the order ID remains the same after the modification, it must be the same as <i>orderID</i> .  If the order was modified several times, this value should match the orderID in the most recent Child Option Order Modified event.	R
priorOrderDate	Date	Required when this event is not on the same calendar day as the date when <i>orderID</i> is assigned.	C
side	Choice	The side of the order. For options events, the allowed values are Buy and Sell.	R
price	Price	The limit price of the order per contract, if specified by the order originator. Not required for market orders. For FLEX Percent options, this field may reflect a percentage of the underlying closing price, e.g., for a price equal to 95.5% of the underlying close price, this field would contain 95.5.	C
quantity	Real Quantity	The quantity of contracts.	R
minQty	Whole Quantity	The minimum quantity of contracts to be executed. Required when instructed by the order originator.	C
leavesQty	Real Quantity	The number of contracts left open after the modification has occurred.	R
orderType	Choice	The type of order being submitted (e.g. market, limit, cabinet). See Data Dictionary for a list of allowed values.	R
timeInForce	Choice	The time-in-force for the order (e.g. DAY, IOC, GTC). See the Data Dictionary for a list of allowed values.	R
tradingSession	Choice	The trading session(s) during which an order is eligible to trade. See the Data Dictionary for a list of allowed values.	R
handlingInstructions	Name/Value Pairs	This field will contain zero or more order instruction codes, each separated by a single pipe symbol. See Data Dictionary for allowed values.	C

Field Name	Data Type	Description	
openCloseIndicator	Choice	Describes whether the action taken - either buying or selling this option - will open/increase a new position or will close/decrease an existing position.	R

Lifecycle keys for this Reportable Event:

- Order Key: date, reporter, *optionID*, *orderID*
- Prior Order Key: date, reporter, *optionID*, *priorOrderID*

### 5.7.3. Child Option Order Canceled

If a child option order is canceled, a Child Option Order Canceled event must be reported to CAT by the Industry Member.

Note that a partial cancellation can be reported either with a Child Option Order Modified event or Child Option Order Canceled event with *leavesQty*, depending on how it is handled by the Industry Member. If an actual cancel message was used, the Industry Member should report a Child Option Order Canceled event to CAT. If a modify or cancel/replace message was used, a Child Option Order Modified event should be reported to CAT. This keeps the reported event in line with the action taken by the Industry Member.

#### Child Option Order Canceled Event Field Specifications

Field Name	Data Type	Description	
type	Message Type	MOCOM	R
firmROEID	Alphanumeric (12)	An identifier assigned to the record by the reporting firm.	O
eventTimestamp	Timestamp	The date/time of receipt by the receiving desk. Can be manual or electronic. If <i>manualFlag</i> is <i>true</i> , timestamp must be reported to seconds. If <i>manualFlag</i> is <i>false</i> , timestamp must be reported to milliseconds or a finer increment up to nanoseconds.	R
optionID	Text (22)	The 21-character OSI Symbol of the option. For FLEX Percent options, a percentage symbol (%) is appended before the OSI symbol elements. See the <a href="#">Option Symbol</a> section for more information.	R
parentOrderID	Text (40)	The internal order ID assigned to the parent order by the Industry Member.	R
orderID	Text (40)	Order ID assigned to the child order by the reporter upon origination. Must be different from the <i>parentOrder ID</i> .	R
priorOrderDate	Date	Required when this event is not on the same calendar day as the date when the <i>orderID</i> was assigned.	C
side	Choice	The side of the order. For options events, the allowed values are Buy and Sell.	R
cancelQty	Real Quantity	The quantity being canceled.	R
leavesQty	Whole Quantity	The quantity left open of this child order after cancellation. Full cancellation will result in a zero in the field. Note that, this is the leaves quantity of the parent order.	R
initiator	Choice	Specifies the initiator of the cancellation. See the Data Dictionary for a list of allowed values.	R

Lifecycle Keys for this Reportable Event:

- Order Key: date, reporter, *optionID*, *orderID*

## 5.8. Option Order Modified and Cancel/Replace Event

When the price, quantity or any other Material Terms of the Order has been changed or when an order is cancel/replaced, an Industry Member must report an Option Order Modified event to CAT. This Option Order Modified event concerns both of the following scenarios:

- 1) A new order is generated (with a new Order ID) during the modification and completely replaces the prior order. In this case, the *orderID* field must capture the identifier for the order. Additionally, the new order must be linked to the prior order through *priorOrderID*.
- 2) If the Order ID remains the same during the modification, the *priorOrderID* must match the event *orderID*.

Note that in the first scenario, if the order has been modified several times, the *priorOrderID* must refer to the most recent *orderID* prior to this modification, which may not always be the original order ID.

Side is required to be reported, but side adjustments are only allowed for same-side changes (e.g., changes between short and long sell).

All attributes and Material Terms of the modified order listed on this event should be reported when applicable, including the fields that remain unchanged.

### Option Order Modified and Cancel/Replace Event

Field Name	Data Type	Description	
type	Message Type	MOOM	R
firmROEID	Alphanumeric (12)	An identifier assigned to the record by the reporting firm.	O
eventTimestamp	Timestamp	The date/time of receipt of the modification to the order. Can be manual or electronic. If <i>manualFlag</i> is <i>true</i> , timestamp must be reported to seconds. If <i>manualFlag</i> is <i>false</i> , timestamp must be reported to milliseconds or a finer increment up to nanoseconds.	R
manualFlag	Boolean	Must be marked as <i>true</i> if the order is handled manually.	R
electronicDupFlag	Boolean	Indicating whether this is a duplicative electronic message of a manual event. If populated, this message will not be linked to any other events in Phase 2b.	C
electronicTimestamp	Timestamp	The time at which the order is electronically captured.	C
optionID	Text (22)	The 21-character OSI Symbol of the option. For FLEX Percent options, a percentage symbol (%) is appended before the OSI symbol elements. See the <a href="#">Option Symbols</a> section for more information.	R
orderID	Text (40)	The internal order ID assigned to this order by the Industry Member. Must be unique within same date, reporter, and <i>optionID</i> combination.	R



Field Name	Data Type	Description	
priorOrderID	Text (40)	The most recent <i>orderID</i> for the order prior to this Option Order Modified event. If the <i>orderID</i> does not change as the result of this modification, this field value will be the same as <i>orderID</i> . If the order has been modified several times, this value should match the <i>orderID</i> reported for the most recent Option Order Modified event.	R
priorOrderDate	Date	The date when <i>priorOrderID</i> is assigned. Only required when this event is not on the same calendar day as the date when <i>priorOrderID</i> is assigned.	C
routedOrderID	Text (40)	The ID for the order as sent by the routing Industry Member.  Not required if this modification is initiated by the Industry Member, or when a modify route is received from a non-reporting foreign entity.	C
initiator	Choice	Indicates whether the customer/client initiated the order modification. See the Data Dictionary for a list of allowed values.	R
session	Text (40)	The ID assigned to the session used to receive the modify route message from the routing exchange. Must be reported as blank if routing from another Industry Member. Not applicable and thus not required if it is customer-initiated modification or a modification to the Industry Member's own order.	C
side	Choice	The side of the order. See the Data Dictionary for a list of allowed values.	R
price	Price	The limit price of the order, if applicable. Required if included on the order when originated.	C
quantity	Real Quantity	The order quantity.	R
minQty	Whole Quantity	The minimum quantity of an order to be executed. Required if included on the order when originated.	C
leavesQty	Real Quantity	The number of contracts left open after the modification has occurred.	R
orderType	Choice	The type of order being submitted (e.g., market, limit). See the Data Dictionary for a list of allowed values.	R
timeInForce	Choice	The time-in-force for the order (e.g. DAY, IOC, GTC). See the Data Dictionary for a list of allowed values.	R
tradingSession	Choice	The trading session(s) during which an order is eligible to trade. See the Data Dictionary for a list of allowed values.	R
handlingInstructions	Name/Value Pairs	The handling instructions, as described in the Data Dictionary. Required if included on the order when originated.	C
optionOriginCode	Choice	Represents the type of beneficial owner of the account for which the order was received or originated. See the Data Dictionary for list of allowed values.	R

Field Name	Data Type	Description	
openCloseIndicator	Choice	Describes whether the action taken – either buying or selling this option – will open/increase a new position or will close/decrease an existing position.	C
cmtaFirm	Alphanumeric (8)	Required for CMTA trades.	C
executingFirm	Alphanumeric (8)	The OCC number of the executing/give-up firm.	C
priorUnlinked	Choice	Indicates if the internal immediate prior step is not reported and no linkage will be available in Phase 2b. See Data Dictionary for list of allowed values. (Note the flag set as 'M' will indicate the prior Order Accepted/New Order is manual, not that the client modify route request comes in manually from the sender).	C
nextUnlinked	Choice	Indicates if the internal immediate next step is not reported and no linkage will be available in Phase 2b. See Data Dictionary for list of allowed values.	C

Lifecycle keys for this Reportable Event:

- Order Key: date (from eventTimestamp), reporter, *optionID*, *orderID*
- Prior Order Key: date (from eventTimestamp if *priorOrderDate* is not present), reporter, *optionID*, *priorOrderID*
- Prior Order Key: *priorOrderDate* (when present), reporter, *optionID*, *priorOrderID*
- Route Link Key: date, *optionID*, *receiverIMID*, *routingOrigin*, *session*, *routedOrderID*

### 5.8.1. Option Order Modified Supplement Event

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<Deferred - Not Required Until Phase 2d>

## 5.9. Option Order Adjusted Event

Industry Members must report to CAT the Option Order Modified event, which records the full state of the order reported to CAT on each modification. However, there are some common scenarios where only the order price and/or quantity of an order are modified. If such changes are initiated by the Industry member, the Option Order Adjusted event can be used. However, Option Order Adjusted events may not be used if a price or quantity change is initiated by a routing Industry Member.

- Price change only - the *price* field and *leavesQty* must be reported to represent the current state of the order with respect to price. The two conditionally-required quantity fields (*quantity*, *minQty*) can be omitted.
- Quantity change only - both conditionally-required quantity fields (*quantity*, *minQty*) and *leavesQty* must be reported. The *price* field can be omitted.
- Both price and quantity change - If both price and quantity change, all fields must be reported.

Any modification that cannot be fully represented in this Reportable Event must be reported via the Option Order Modified event.

### Option Order Adjusted Event Field Specifications

Field Name	Data Type	Description	
type	Message Type	MOOJ	R
firmROEID	Alphanumeric (12)	An identifier assigned to the record by the reporting firm.	O
eventTimestamp	Timestamp	The date/time of receipt of the modification to the order. Can be manual or electronic. If <i>manualFlag</i> is <i>true</i> , timestamp must be reported to seconds. If <i>manualFlag</i> is <i>false</i> , timestamp must be reported to milliseconds or a finer increment up to nanoseconds.	R
manualFlag	Boolean	Must be marked as <i>true</i> if the order is handled manually.	R
electronicTimestamp	Timestamp	The time at which the order is electronically captured.	C
optionID	Text (22)	The 21-character OSI Symbol of the option. For FLEX Percent options, a percentage symbol (%) is appended before the OSI symbol elements. See the <a href="#">Option Symbols</a> section for more information.	R
orderID	Text (40)	The internal order ID assigned to the order by the Industry Member. Must be unique within same date, reporter, and <i>optionID</i> combination.	R
priorOrderID	Text (40)	The most recent <i>orderID</i> for the order prior to this Option Order Adjusted event.  If the <i>orderID</i> remains the same after the modification, it must be the same as <i>orderID</i> .  If the order was modified several times, this value should match the <i>orderID</i> in the most recent Option Order Adjusted event.	R

Field Name	Data Type	Description	
priorOrderDate	Date	The date when <i>priorOrderID</i> is assigned. Only required when this event is not on the same calendar day as the date when <i>priorOrderID</i> is assigned.	C
initiator	Choice	Indicates whether the customer initiated the order modification. See the Data Dictionary for a list of allowed values.	R
side	Choice	The side of the order. See the Data Dictionary for a list of allowed values. For this event, only same-side adjustments are allowed (e.g., long to short sell)	C
price	Price	The limit price of the order. Present if changed or if other price fields changed. Otherwise, not present.	C
quantity	Real Quantity	The order quantity. Present if changed or if other quantity fields changed. Otherwise, not present.	C
minQty	Whole Quantity	The minimum quantity of an order to be executed. Present if changed or if other quantity fields changed. Otherwise, not present.	C
leavesQty	Real Quantity	The number of contracts left open after the adjustment/has occurred. Present if changed or if other quantity fields changed. Otherwise, not present.	R
priorUnlinked	Choice	Indicates if the internal immediate prior step is not reported and no linkage will be available in Phase 2b. See Data Dictionary for list of allowed values.	C
nextUnlinked	Choice	Indicates if the internal immediate next step is not reported and no linkage will be available in Phase 2b. See Data Dictionary for list of allowed values.	C

Lifecycle keys for this Reportable Event:

- Order Key: date, reporter, *optionID*, *orderID*
- Prior Order Key: date, reporter, *optionID*, *priorOrderID*

## 5.10. Option Order Canceled Event

The Option Order Canceled event is used in specific situations when an options order is fully or partially canceled. Note:

- Partial cancellation of an order may be reported to CAT using either an Option Order Canceled event or an Option Order Modified event.
- This Option Order Canceled Event is only reported by the Industry Member that performs the cancellation. Cancellations by away venues are not required to be reported. For example, if Industry Member Broker B accepts an order from Industry Member Broker A, and Broker B initiated a cancel on the order, then B is responsible for reporting the order canceled (not Broker A).
- Implicit order cancellations are not required to be reported to CAT (e.g., cancellation due to expiration of Time in Force).

### Option Order Canceled Field Specifications

Field Name	Data Type	Description	
type	Message Type	MOOC	R
firmROEID	Alphanumeric(12)	An identifier assigned to the record by the reporting firm.	O
eventTimestamp	Timestamp	The date/time of receipt of the cancellation. Can be manual or electronic. If <i>manualFlag</i> is <i>true</i> , timestamp must be reported to seconds. If <i>manualFlag</i> is <i>false</i> , timestamp must be reported to milliseconds or finer increment up to nanoseconds.	R
manualFlag	Boolean	Must be marked as <i>true</i> if the order is handled manually.	R
electronicTimestamp	Timestamp	The time at which the order is electronically captured.	C
optionID	Text (22)	The 21-character OSI Symbol of the option. For FLEX Percent options, a percentage symbol (%) is appended before the OSI symbol elements. See the <a href="#">Option Symbols</a> section for more information.	R
orderID	Text (40)	The internal order ID assigned to the order by the Industry Member.	R
priorOrderDate	Date	The date when <i>orderID</i> is assigned. Only required when this event is not on the same calendar day as the date when <i>orderID</i> is assigned.	C
cancelQty	Real Quantity	The quantity being canceled.	R
leavesQty	Real Quantity	The quantity of contracts left open after the cancel event. For full order cancellations, zero should be populated in this field.	R
initiator	Choice	Indicates who initiated the order cancellation (e.g., customer/client, Industry Member). See the Data Dictionary for a list of allowed values.	R
priorUnlinked	Choice	Indicates if the internal immediate prior step is not reported and no linkage will be available in Phase 2b. See Data Dictionary for list of allowed values.	C

Lifecycle keys for this Reportable Event:

- Order Key: date (from *eventTimestamp* if *priorOrderDate* is not present), reporter, *optionID*, *orderID*
- Order Key: *priorOrderDate* (when present), reporter, *optionID*, *orderID*

## 5.11. Option Order Fulfillment

The Option Order Fulfillment event is designed to show an execution given back to the original option order(s), informing its customer/client of the number of contracts executed and at what price, that is not required to be reported for public dissemination purposes.

An Order Fulfillment event must be reported in the following scenarios:

- When an aggregated order executes, and the Industry Member gives back executed contracts to each order that was part of the aggregated order. An Option Order Fulfillment event will be reported for each order that was part of an aggregated order.
- When an Industry Member creates a “representative” multi-leg complex option order. If the representative order is executed, the Industry Member must report an Option Order Fulfillment event for each of the orders being represented.
- When an order is routed to a foreign non-reporting entity, the Industry Member must report an Option Order Fulfillment to represent the outcome of the order.

For the first two scenarios above, Phase 2b does not require explicit order linkage between the bunched or representative order and the “underlying” order. Prior to Phase 2d, the Order Fulfillment events only contain the clientDetails. The fulfillmentLinkType must be marked as “YF”.

In the scenario of routing to a foreign non-reporting destination, the fulfillment event is always one sided (customer order only) and the fulfillmentLinkType must be marked as “FOR”.

### 5.11.1. Option Order Fulfillment Event

#### Option Order Fulfillment Event Field Specifications

Field Name	Data Type	Description	
type	Message Type	MOOF	R
firmROEID	Alphanumeric(12)	An identifier assigned to the record by the reporting firm.	O
eventTimestamp	Timestamp	The date/time when the fulfillment was processed by the Industry Member. Can be manual or electronic. If <i>manualFlag</i> is <i>true</i> , timestamp must be reported to seconds. If <i>manualFlag</i> is <i>false</i> , timestamp must be reported to milliseconds or finer increment up to nanoseconds.	R
manualFlag	Boolean	Must be marked as <i>true</i> if this is a manual process.	R
electronicTimestamp	Timestamp	The time the fulfillment is systemized.	C
optionID	Text (22)	The 21-character OSI Symbol of the option. For FLEX Percent options, a percentage symbol (%) is appended before the OSI symbol elements. See the <a href="#">Option Symbols</a> section for more information.	R
fulfillmentID	Text (40)	A unique identifier for the fulfillment. For each Industry Member, the combination of date, <i>optionID</i> , and <i>fulfillmentID</i> must be unique.	R
quantity	Real Quantity	Quantity being reported as fulfilled with this event. It may or may not be the full quantity of the order.	R
price	Price	Price at which the order contracts are being fulfilled.	R

Field Name	Data Type	Description	
fulfillmentLinkType	Choice	Specifies the type of the fulfillment. See the Data Dictionary for a list of allowed values.	R
clientDetails	Fulfillment Side Details	See Fulfillment Side Details table below.	C
firmDetails	Fulfillment Side Details	See Fulfillment Side Details table below. Not applicable in Phase 2b.	O
priorUnlinked	Choice	Indicates if the internal immediate prior step is not reported and no linkage will be available in Phase 2b. See Data Dictionary for list of allowed values.	C

### Options Fulfillment Side Details

Field Name	Data Type	Description	
orderID	Text (40)	The order ID assigned by the Industry Member to the order on this side.	R
priorOrderDate	Date	Required when this Reportable Event is not on the same calendar day as the date when <i>orderID</i> is assigned.	C
sideIMID	Industry Member ID	Indicating the party on the fulfillment. If this side is an order that was the result of an Option Order Accepted event, this is the <i>senderIMID</i> of the order's Option Order Accepted event. If this side is an order that resulted from a New Option Order event, this IMID is the same as the <i>reporterIMID</i> of this event.	R
side	Choice	The side of the order. See the Data Dictionary for a list of allowed values.	R
leavesQty	Real Quantity	The leaves quantity of the order after the execution.	C
capacity	Choice	The capacity of the order. See the Data Dictionary for a list of allowed values.	R

### Lifecycle Keys for this Reportable Event:

- Order Key: date (from eventTimestamp if *firmDetails.priorOrderDate* is not present), reporter, *optionID*, *firmDetails.orderID*
- Order Key: date (from eventTimestamp if *clientDetails.priorOrderDate* is not present), reporter, *optionID*, *clientDetails.orderID*
- Order Key: *firmDetails.priorOrderDate* (when present), reporter, *optionID*, *firmDetails.orderID*
- Order Key: *clientDetails.priorOrderDate* (when present), reporter, *optionID*, *clientDetails.orderID*
- Fulfillment: date, reporter, *optionID*, *fulfillmentID*

### 5.11.2. Option Order Fulfillment Amendment Event

If an order fulfillment is amended by an Industry Member on or after the trade date, an Option Order Fulfillment Amendment event is used.

For example, if an Industry Member fulfills its customer's/client's order on an average price basis or work the order through representative or bunched orders. Afterwards, when a trade correction or trade break comes from the exchange and subsequently changes the price or quantity of the fulfilled contracts, both the original Option Order Fulfillment event and the Option Order Fulfillment Amendment event would be reported to CAT.



The Option Order Fulfillment Amendment is not used in the following scenarios.

- If a customer order is worked directly in an Agency capacity (without any representing or bunching) and filled print-for-print, when a trade break or trade correction occurs, the Industry Member does not need to report a Fulfillment Amendment event.
- When a trade correction occurred same-day before the client order was fulfilled, only the Order Fulfillment event would be necessary to report to CAT, presuming it contained the updated (post-correction) average price.
- When an Industry Member fulfills an order and receives a trade break from the exchange, it is possible that the Industry Member may choose to take the delta (e.g. using an error account) without amending the manner by which the order was fulfilled.

### Options Order Fulfillment Amendment Event Field Specifications

Field Name	Data Type	Description	
type	Message Type	MOFA	R
firmROEID	Alphanumeric (12)	An identifier assigned to the record by the reporting firm.	O
eventTimestamp	Timestamp	The date/time that the fulfillment was amended. Can be manual or electronic. If <i>manualFlag</i> is <i>true</i> , timestamp must be reported to seconds. If <i>manualFlag</i> is <i>false</i> , timestamp must be reported to milliseconds or finer increment up to nanoseconds.	R
manualFlag	Boolean	Must be marked as <i>true</i> if this is a manual process.	R
electronicTimestamp	Timestamp	Required for manual order process only, the systematized timestamp.	C
optionID	Text (22)	The 21-character OSI Symbol of the option. For FLEX Percent options, a percentage symbol (%) is appended before the OSI symbol elements. See the <a href="#">Option Symbols</a> section for more information.	R
fulfillmentID	Text (40)	A new internal identifier assigned to this amended fulfillment. Must be unique per reporter, date, <i>optionID</i> .	R
priorFulfillmentDate	Date	The most recent date on which the fulfillment was last amended. If this is the first amendment, then it is the date of the original Fulfillment. Only present if this is at a different date from the original Fulfillment or last Fulfillment Amendment.	C
priorFulfillmentID	Text (40)	The most recent <i>fulfillmentID</i> assigned by the Industry Member on the prior Fulfillment or Fulfillment Amendment event.	R
fulfillmentLinkType	Choice	Specifies the type of the fulfillment - Riskless Principal Flip, Principal Flip or Aggregated Order Flip. See the Data Dictionary for a list of allowed values.	R
quantity	Real Quantity	Amended quantity being reported as fulfilled with this event. It may or may not be the full quantity of the order.	R
price	Price	Amended price at which the order contracts are being fulfilled.	R
clientDetails	Fulfillment Side Details	This field is used to capture the customer/client details. See Options Fulfillment Side Details table.	C

Field Name	Data Type	Description	
firmDetails	Fulfillment Side Details	See Fulfillment Side Details table below. Not applicable in Phase 2b.	O
reason	Text (255)	Optional text field to report the reason for the amendment.	O
priorUnlinked	Choice	Indicates if the internal immediate prior step is not reported and no linkage will be available in Phase 2b. See Data Dictionary for list of allowed values.	C

**Lifecycle Keys for this Reportable Event:**

- Order Key: date (from eventTimestamp if *firmDetails.priorOrderDate* is not present), reporter, *optionID*, *firmDetails.orderID*
- Order Key: date (from eventTimestamp if *clientDetails.priorOrderDate* is not present), reporter, *optionID*, *clientDetails.orderID*
- Order Key: *firmDetails.priorOrderDate* (when present), reporter, *optionID*, *firmDetails.orderID*
- Order Key: *clientDetails.priorOrderDate* (when present), reporter, *optionID*, *clientDetails.orderID*
- Fulfillment Key: date, reporter, *optionID*, *fulfillmentID*
- Prior Fulfillment Key: date, reporter, *optionID*, *priorFulfillmentID*

## 5.12. Linked Multi-Leg Option Order Events (Phase 2d)

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<Deferred - Not Required Until Phase 2d>

### 5.13. Option Post-Trade Allocations (Phase 2d)

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<Deferred - Not Required Until Phase 2d>

## 6. Submission Process

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In this section, information is provided regarding how to format submission files, submit to CAT (including a general data flow overview), the registration process, network and transport options, and CAT access and reporting hours.

### 6.1. File and Data Formats

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All files sent from the CAT Reporter (or the third-party CAT Reporting Agent for the CAT Reporter) must be compressed, encrypted, and signed. However, the information in this section assumes, for the most part, that the file being described is the raw, unencrypted data (after being verified, decrypted, and uncompressed).

All files submitted on a given date must have a unique file name, as defined in 6.1.1. The mechanism used for uploading files will prevent duplicate file names from being accepted into the CAT system.

Archive files are not allowed to be submitted into the CAT System. Each set of records must be submitted as an individually compressed, encrypted, and signed file. For example: Do NOT zip, tar, or 7z all of the submitted files into one consolidated file. The files must be individually compressed, encrypted, and submitted.

All data elements are submitted using ISO-8859-1 encoding. This is a one-byte-per-character encoding, with possible values in the range of [0, 255]. This encoding has the characteristic that the encoding character definitions are the same as the first 256 code points of UTF-8. However, only fully defined values will be accepted.

According to the encoding specification, byte values in the ranges [0, 31] and [127, 159] are undefined. As a result, any record submitted with character values in those ranges will be rejected as invalid. In cases where data is echoed back in feedback files, invalid characters will be translated to a 3-character octal value, preceded by a backslash.

#### 6.1.1. File Names

---

Files are to be named in the following manner:

```
<CAT Reporter ID>_<Date>_[<Group>_]<File Kind>_<File  
Number>.<Extension>[.<Compression Extension>].<Encryption Extension>
```

- **CAT Reporter ID** is the unique ID assigned to the reporter by CAT
- **Date** is the calendar date for all events in the file in YYYYMMDD format - not the date the file was generated or reported
- **Group** is an optional reporter-defined string. It must either be missing, or composed of up to 20 alphanumeric characters. The field exists solely for reporters' convenience. Other than file name validation, it is ignored by the CAT processor
- **File Kind** is "OrderEvents" for Industry Members
- **File Number** is the sequence number of this file, 6-digits long, left-padded with zeros. The tuple (CAT Reporter ID, Date, File Kind, File Number) must be unique. The File Number determines the order that a file will be processed within a File Kind.
- **Extension** is the extension, representing the format of the data inside: json, csv
- **Compression Extension** is the extension representing the compression used to compress the data file: gz, bz2, xz, zip. It is only needed if compression is done

outside of the encryption process. If your OpenPGP tool handles compression, Compression Extension should be left off

- **Encryption Extension** is the extension indicating that the file is encrypted and must be either `.pgp` or `.pgpe`.

### 6.1.2. Metadata Files

For each data file that is uploaded to CAT, associated metadata must also be uploaded. Submitters may pair the metadata file one-to-one with the data file, so that when the "pair" is ready, both files can be moved and processed in a timely manner, or the submitter may choose to package multiple metadata "blocks" for multiple data files into one metadata file. But they must be for the same calendar date, reporter, on the same file version and by the same submitter. Each metadata "block" contains checksum and signing of the files that are submitted, which are needed to verify integrity and track provenance of the submissions.

The metadata file must be named in the following manner:

```
<CAT Reporter ID>_<Date>_[<Group>_]<File Kind>_<Metadata File  
Number>.<Extension>[.<Compression Extension>].<Encryption Extension>
```

- CAT Reporter ID, Date (and Group) must be consistent with the data file(s)
- Metadata file number is the sequence number of the metadata file, 6-digits long, left-padded with zeros. The combination (CAT Reporter ID, Date, Metadata File Number) must be unique.
- Extension is `.meta`
- The metadata file must be first signed in cleartext, then compressed and then encrypted.

An Industry Member may use multiple metadata files for a day. If an Industry Member is uploading multiple metadata files, the Industry Member should set the *doneForDay* flag as *false* until the last metadata file is submitted for the date with *doneForDay* = *true*. Once a metadata file with *doneForDay* = *true* is received, this signals that the files submitted by the Industry Member are ready for the linkage discovery processing stage. However, this will not "close" the submission process. If an Industry Member discovers it needs to make additional data submissions, the Industry Member may continue to submit the additional data files with a new metadata file. If no metadata files for a trading day are flagged *doneForDay* = *true*, the *doneForDay* flag(s) those files will be automatically set to true upon submission deadline at 8:00AM.

The metadata file does not need to be compressed, but must still be encrypted and signed like the data file. The metadata file is in JSON format, and contains:

#### Metadata Files

Field Name	Data Type	Description	
type	Message Type	META	R
doneForDay	Boolean	Used to indicate the last metadata file for the Submitter/Industry Member Reporter on the date. Any file submitted with <i>doneForDay</i> = <i>true</i> should be the last set of files submitted for the day. It defaults to false.	O

Field Name	Data Type	Description		
date	Date	The calendar date for the data contained within the data file - a single data file must contain data for a single date.	R	
reporter	Reporter ID	The CAT-assigned ID for the entity required to report data to CAT.	R	
submitter	Reporter ID	The CAT-assigned ID for the entity submitting data on behalf of the reporter. The CAT Reporting Agent must have been previously authorized to submit data on behalf of the Industry Member Reporter. If the Industry Member submits data on its own behalf, then the Submitter would be the same as the Reporter.	R	
fileVersion	Version	A version number for the schema file used to encode and format this file. The schema file will be inferred from the File Kind of the file.	R	
files	File Details	See File Details table below	R	
<b>Repeating Groups - Start</b>				
→	fileName	As described above	The name of the corresponding data file of this metadata block	R
→	origFileNumber	Array of Unsigned	The original File Numbers of the files that will be corrected with this metadata's corresponding data file. Required and only required for the correction file.	C
→	recordCount	Unsigned	The number of new-line delimited records in the data file	R
→	rawHash	Alphanumeric (64)	SHA256 of the raw data file. This field and/or compressedHash must be provided.	C
→	compressedHash	Alphanumeric (64)	SHA256 of the compressed data file. This field and/or rawHash must be provided.	C
→	encryptedByteCount	Unsigned	The total number of bytes in the data file, after having been compressed and encrypted.	R
→	encryptedHash	Alphanumeric (64)	SHA256 of the encrypted data file	R
→	symmetricKey	Alphanumeric (64)	The symmetric key or passphrase used to encrypt the file.	O
<b>Repeating Groups - End</b>				

The hashes are to be submitted as 64-character hexadecimal string encodings of the hash value.

```
{
  "type": "META",
  "doneForDay": false,
  "date": 20180919,
  "reporter": "MPID",
  "submitter": "OSOID",
  "fileVersion": "1.0",
  "files": [
    {
      "fileName": "MPID_20180919_OrderEvents_000001",
      "recordCount": "5217",
```

```

    "rawHash": "08997E354AEAE2EA9E71E685CE1CC6FCCD1EB17E957B18573617CA80199
EA67A",
    "compressedHash": "99A7712E2CC1CB3A5789B91E3C1D1E76D7F83D82C8D35FF1F56B
156A49C228E2",
    "encryptedByteCount": "5217000",
    "encryptedHash": "19B60BF100D4EBDCEDCE2E01F94EF048AB5A3F67FCB4B08B8AB2A
54BEEDC0087",
    "symmetricKey": "83E1DC8A9D32E5CDC5BBEE72DF57BF5C"
  },
  {
    "fileName": "MPID_20180919_OrderEvents_000002",
    "recordCount": "9999",
    "rawHash": "8F4C6DF6DF7C68B1177CE572C848B1B5484417CE2DF274FCCB2BDB8955D
97BE3",
    "compressedHash": "00660828E45FFCCA37EF9CCF2A4967308DDA033CD498B0A1810F
3BFC4BF6BFCC",
    "encryptedByteCount": "99990001",
    "encryptedHash": "31B2D6AEF6988F2C552CB1E7D586F43260B3ECE1B93B9CC3E25AC
4795BD6ECF9",
    "symmetricKey": "FE7AC2D9347909B3E94C2E960F26EC3A"
  }
]
}

```

If a metadata block in the file has an error, the erroneous block will be dropped, and proper corresponding feedback will be returned (see Section 7 for File Acknowledgment Feedback or Basic File Integrity Feedback). The rest of the "blocks" of the metadata file will continue to be processed. The reporter can resubmit the corrected metadata block in another metadata file.

Reporters can include the metadata for original data files and for correction files into one metadata file, as long as they are for the same reporter, submitter and calendar day.

### 6.1.3. Data Files

All data files are either new-line delimited JSON objects, or new-line delimited CSV records. This means that for JSON, there is no top level object. Instead, the file acts as the top level container for each object. Each object is a normal JSON object, separated with a new-line (ASCII decimal 10, hex 0A). For CSV files, each record's fields are separated with a comma (ASCII decimal 44, hex 2C).

Each JSON object is terminated by a new-line, but the data in the object itself must not include new-lines. Specifically, each line in the file must contain exactly one complete record, no matter whether the submission format is JSON or CSV. In either case, the total maximum length of any line is 4095 bytes. The examples in the document include new-lines between elements for readability.

#### 6.1.3.1. JSON Schema

JSON schema files for each record type will be provided on the CAT public website. Industry Members will be able to download and use these schemas to format and validate their CSV and JSON data files prior to submission. These schemas will also allow Industry Members to translate their data files from JSON to CSV or from CSV to JSON formats, as desired.

The schema files will be maintained by the Plan Processor and will be versioned as the message specifications change. The meta files submitted to CAT will contain a version



identifier specifying which version of the schema the associated reference or order data was formatted in accordance with. This will allow the CAT System to perform a basic initial formatting validation of all submitted data.

Provided here is an abbreviated example of a JSON schema containing only part of the equity New Order event and a couple definitions for Choice fields:

```
{
  "description": "CAT schema for equity new order event",
  "version" : "1.0",
  "eventDefinitions" : [
    {
      "eventName" : "New Order",
      "fields" : [
        {
          "JSONDataType": "String",
          "name" : "type",
          "dataType" : "Choice",
          "defaultValue": "MENO",
          "position" : 0,
          "required": "Required"
        },
        {
          "JSONDataType": [ "Number", "String" ],
          "name" : "eventTimestamp",
          "dataType" : "Timestamp",
          "position" : 2,
          "required": "Required"
        },
        {
          "JSONDataType": "String",
          "name" : "symbol",
          "dataType" : "Symbol",
          "position" : 3,
          "required": "Required"
        },
        {
          "JSONDataType": "String",
          "name" : "orderID",
          "dataType" : "Text",
          "position" : 4,
          "maxLength" : 40,
          "required": "Required"
        },
        {
          "JSONDataType": "String",
          "name" : "originator",
          "dataType" : "Choice",
          "position" : 5,
          "required": "Conditional"
        }
      ]
    }
  ],
  "choices": {
    "originator": ["A", "I", "N", "F", "M", "X"]
  }
}
```

```
}
```

Note that the file is not a typical "JSON schema" but a schema describing the Reportable Events in JSON.

The field "JSONDataType" indicates the underlying JSON data type.

The field "dataType" is the actual type, as indicated in this specification, with some further restrictions over the underlying JSON data type.

The field "name" is the JSON field name. The "name" is also used as a lookup key to find valid values for a field of dataType "Choice."

Each field of dataType "Choice" will contain a corresponding entry in the "choices" object, which contains the list of valid choices. The key is the value in the name field. If the name field contains a '.' (period), then the value is part of a nested JSON object and the key will be the trailing name. For example, if the field has a Choice field with the name "buyDetails.side" then the field "buyDetails" contains a JSON object with a member named "side" and "side" would be used as the key to lookup the valid choices for the element.

The field "position" is the 0-based index where this field would be expected in a CSV version of the data.

The field "required" indicates whether the field is "Required," "Conditional," or "Optional." If submitting in JSON, any conditional or optional field that is not provided must be omitted. If submitting in CSV, and conditional or optional field that it not provided must be an empty column (i.e., in the following example position 2 is considered to be omitted: zero,1,,three).

Note that the Timestamp data type has two possible representations, so the JSONDataType is an array of choices: String for a formatted string and Number for nanoseconds since the epoch.

### 6.1.3.2. CSV Conversion

The JSON schema defines valid data types, and mappings between JSON and CSV. Note that schemas can change with each specification version, and the authoritative schemas will be available on the CAT website. For this discussion, assume the following schema for an Equity Order Adjusted event. Provided here is an abbreviated example of a JSON schema containing only part of the Order Adjusted event and a couple definitions for Choice fields:

```
{
  "description": "CAT schema for Equity Order Adjusted event",
  "version": "1.0",
  "eventDefinitions": [
    {
      "eventName": "Order Adjusted Event",
      "fields": [
        {
          "name": "type",
          "dataType": "Message Type",
          "JSONDataType": "String",
          "required": "Required",
          "defaultValue": "MEOJ",
          "position": 0
        },

```

```

    {
      "name": "eventTimestamp",
      "dataType": "Timestamp",
      "JSONDataType": "String,Number",
      "required": "Required",
      "position": 1
    },
    {
      "name": "manualFlag",
      "dataType": "Boolean",
      "JSONDataType": "boolean",
      "required": "Required",
      "position": 3
    },
    {
      "name": "seqNum",
      "dataType": "Unsigned",
      "JSONDataType": "Number",
      "required": "Conditional",
      "position": 4
    },
    {
      "name": "symbol",
      "dataType": "Symbol",
      "JSONDataType": "String",
      "required": "Required",
      "position": 5
    },
    {
      "name": "orderID",
      "dataType": "Text",
      "JSONDataType": "String",
      "required": "Required",
      "maxLength": 40,
      "position": 6
    }
  ]
}
],
"choices": {
  "side": ["Buy", "Sell", "Exempt", "Cross", "CrossShort"]
}
}

```

Below is a sample event based on the JSON representation:

```

{
  "type": "MEOJ",
  "eventTimestamp": "20170901T120102.123456",
  "manualFlag": "false",
  "symbol": "XYZ",
  "orderID": "T12346",
  "priorOrderID": "T12345",
  "initiator": "Customer",
  "side": "Buy",
  "quantity": "1100",
  "minQty": "100",
  "leavesQty": "100"
}

```

The corresponding CSV would be:

```
MEOJ,20170901T120201.123456,E,false,,,XYZ,T12346,T12345,Customer,Buy,,,,,
1100,100,100,,,,,,,,,
```

## 6.2. Connectivity and Registration

CAT supports network access for reporting order events via VPN or direct connections (i.e., cross connects).

Thesys CAT will organize the VPN and cross-connect setups between Industry Members and Thesys CAT Cages in Equinix data centers. For direct connections, Industry Members will be responsible for procuring cross-connects to and within the Equinix Data Centers.

CAT will allow Industry Members to use extranet providers to connect to the CAT facilities in the CH2 and NY4 data centers. Extranet equipment will not be permitted inside Thesys CAT cages or cabinets. IPSEC is not required but will be supported.

More detailed information on connectivity and the registration process will be provided in the Industry Member Onboarding User Guide.

## 6.3. Transport Options

Industry Members may use different mechanisms (SFTP or the Reporter Web Portal) to send/obtain different types of information to/from CAT.

Basic types of CAT information:

- 1) Submissions (e.g. initial submission of files of order events, resubmission of files that were previously rejected, and corrections or deletions to previously accepted records;
- 2) Feedback (e.g. upload status, rejections, and reporting statistics); and
- 3) Administrative information.

Access Method	Category	SFTP	Reporter Web Portal
Submission of Order Events	Submission	✓	✓
Resubmission of Rejected Files/Records and Correction	Submission	✓	✓
File Status Retrieval	Feedback	✓	✓
Report Statistics	Feedback		✓
System Status	Submission		✓

SFTP submission allows file(s) only. If the submission is via the Reporter Web Portal, it may be sent by typing the information directly into the Web page or by submitting small files. The file size allowed via Reporter Web Portal is limited to 1GB before compression.

### 6.3.1. File Size, Encryption, and Compression

Any files transmitted via SFTP or Reporter Web Portal must be 1) compressed AND 2) encrypted AND 3) signed, for the purpose of security and efficient network usage. The following compression algorithms will be allowed:

- ZIP (extension: zip)
- Gzip (extension: gz)
- BZip2 (extension: bz2)
- LZMA2 (extension: xz)

The size of files uploaded via SFTP is limited to 100GB per file, before compression and encryption. Resumable file upload is enabled for SFTP. The size limit for the Reporter Web Portal is 1GB per file, before compression and encryption.

Submission of data to CAT requires a number of supporting requirements that include security, confidentiality, authentication, and provenance of the data submitted. To achieve this the standard capabilities of PGP will be utilized and will require encrypting, signing, and secure hashing of data. While these steps must be followed, Submitters have a choice of compression algorithms, passphrase selection and length, as well as what tools they use on their platform. When encrypting a metadata file, the CAT public encryption key must be used. This public key will be made available to reporters. The file may also be encrypted with the public key of the submitter and the public key of the reporter. Encrypted files can only be decrypted by the private key corresponding with the public key used to encrypt the file; including the optional public keys of Submitter and Reporter ensures that private key holders of CAT, Reporter, and Submitter can decrypt the encrypted file.

Public/Private keys should be RSA with a bit length of at least 2048 (minimum and recommended), and up to 4096. Interested parties can read more at <https://www.gnupg.org/faq/gnupg-faq.html> Sections 13.3-4 are directly relevant. The cipher algorithm must be AES-256(recommended) or higher. When encrypting data files, the submitter may also sign the file with their private key. Metadata files must always be signed in cleartext, and then encrypted. All files must be compressed before, or with the encryption process. The digest algorithm used to sign the file must be SHA256. The signature should also be part of the encrypted file (i.e. no detached signatures). Once a file has been encrypted and/or signed, the extensions `.pgp`, `.gpg`, or `.asc` must be appended to the end of the filename; OpenPGP compliant tools will do this for you.

### 6.3.2. SFTP Upload Process

---

Each file that is uploaded must follow these basic steps.

1. Upload the data file and the metadata file into the `upload/transit` directory, which will be at the base of the home directory for each sftp account.
2. Upon successful upload of both file types (the metadata file as well as all the data files covered by the metadata file), move all files into the `upload/complete` directory. Note that all files should be uploaded before moving either to the complete directory.

A file should never be directly uploaded into the `upload/complete` directory, as once a file has appeared there it is assumed to be the desired complete file submission. Only files that have a `.pgp` or `.gpg` extension will be processed.

The Plan Processor will remove files from the `upload/complete` directory. The Submitter should never attempt to delete files from the `upload/complete` directory.

## 6.4. Accessing Feedback Information

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### 6.4.1. CAT Feedback

---

Multiple types of feedback will be provided to Industry Members through various mechanisms, dependent upon the type of feedback provided.

- **Receipts** - receipt of a file or the arrival of a file at the next stage of processing is provided in a feedback file. A File Acknowledgement Feedback File will be provided when each file is first received. A separate file will be generated when the file reaches each stage of processing. Processing stages (and thus feedback file types) vary based on the type of file being processed. Feedback files will be available via sftp. Receipt and feedback information will also be available via the Reporter Web Portal.
- **Failure Reports** - if records in a file are rejected, if an entire file is rejected, or if there are warnings generated by a file, the feedback file will detail which records were rejected, why they were rejected, and at which stage of processing they were rejected. Note that CAT will not completely reject a file at the INGESTION stage. (Please refer to Section 7 for more details on various processing stages and feedbacks.)
- **File submission status** - current processing status (whether a file has been received, which stage of processing a file is in, etc.) will be made available via the Reporter Web Portal.
- **Reporting Statistics** - reporting statistics will be made available via the CAT Reporter Web Portal on a daily basis, and are posted when processing for all files has completed. The daily statistics will include, at a minimum, the following information for order events and reference data:
  - CAT Reporter ID
  - Date of Submission
  - Number of files received
  - Number of files accepted
  - Number of files rejected
  - Number of total order events received
  - Number of order events accepted
  - Number of order events rejected
  - Number of each type of report received
  - Number of each type of report accepted
  - Number of each type of report rejected
  - Number of unknown accounts
  - Number of late submissions
  - Order-IDs rejected
  - Reasons(s) for rejection
  - Number of records attempted to be matched
  - Number of records matched
  - Percentage of records matched

## 6.5. CAT Reporting Hours

---

### Submission of Order Events

Pursuant to SEC Rule 613, the CAT NMS Plan requires Industry Members to record order events contemporaneously with the actual transactions themselves. Realtime reporting to CAT is not required. Data may be bulk uploaded at the end of the Trading Day, or may be broken into multiple batches and uploaded in pieces throughout the day. However, all Reportable Events for one Trading Day must be reported to CAT by 8:00 AM Eastern Time on the next Trading Day.

*Trading Day* for Industry Members is defined as:

- **Start:** immediately after 4:15:00PM and no fractions of a second Eastern Time on one trade date
- **End:** exactly 4:15:00PM and no fraction of a second Eastern Time on the next trade date (T=Trading Day, a defined term)<sup>7</sup>

Note that the Trading Day is only used to determine the reporting deadline of order events. It does not impact the date on the file name (calendar day) or the date used to create linkages (date on eventTimestamp). Additional details on reporting dates and deadlines are included in Appendix D.

CAT accepts submissions (via SFTP and Reporter Web Portal) 24 hours per day, 7 days per week, other than during announced scheduled maintenance. Events that occurred during a particular Trading Day may be reported anytime between the time the event occurred and the reporting deadline, which is 8:00 AM Eastern Time on the following Trading day. Reports received after the deadline will be marked late by CAT.

The table below gives some examples of the reporting deadline.

Event Occurs	Holiday	Report Due to CAT (T+1)
Monday 14:20 PM ET	N/A	Tuesday 8:00 AM ET
Monday 23:40 PM ET	N/A	Wednesday 8:00 AM ET
Friday 11:00 AM ET	N/A	Monday 8:00 AM ET
Friday 16:02 PM ET	N/A	Monday 8:00 AM ET
Friday 16:02 PM ET	The Following Monday	Tuesday 8:00 AM ET
Wednesday 15:00 PM ET	Thursday, Friday is half day	Friday 8:00 AM ET

### Deadline of Rejection Repair

Rejections will be provided to Industry Members in the following order:

- File Format Validation Error
- Syntax and Semantics Error
- Context Issues

Once rejections are available, repairs can be made immediately.

---

<sup>7</sup> Note that the Trading Day definition for Participants is different. It starts on 1 millisecond from 12:00AM of T, and ends at 12:00AM of T+1.

In order to comply with the rule, all rejections that require repair should be repaired before **8AM Eastern Time on T+3** (transaction date + three Trading Days). Repairs received after the standard repair window will be classified as late.

If corrections are not received by **8AM Eastern Time T+5** (transaction date + five Trading Days), Participants’ regulatory staff and the SEC will be notified. The Plan Processor shall notify the Participants’ regulatory staff and the SEC as to how corrections submitted after T+5 will be re-processed. The Operating Committee will be involved with decisions on how to re-process the data.

Event Occurs	Holiday	Initial Report Due (T+1)	Standard Repair Window (T+3)
Monday 14:20 PM ET	N/A	Tuesday 8:00 AM ET	Thursday 8:00 AM ET
Monday 23:40 PM ET	N/A	Wednesday 8:00 AM ET	Friday 8:00 AM ET
Friday 11:00 AM ET	N/A	Monday 8:00 AM ET	Wednesday 8:00 AM ET
Friday 16:02 PM ET	N/A	Monday 8:00 AM ET	Wednesday 8:00 AM ET
Friday 16:02 PM ET	Next Monday	Tuesday 8:00 AM ET	Thursday 8:00 AM ET
Wednesday 15:00 PM ET	Thursday, Friday is half day	Friday 8:00 AM ET	Tuesday 8:00 AM ET

### Deadline for Corrections and Deletions

Sometimes an Industry Member will have occasion to correct a report that may have passed all data validation and integrity checks. All such corrections must be submitted within the same three day timeframe as provided for record repairs. Specifically, Industry Members will be provided the same T+3 window for submitting timely corrections to data.

## 6.6. Security

---

In recognition of the importance of security, CAT has strict mechanisms for security controls. This section describes the CAT security overview and data security standards, to make sure the data is secured both during in transit and while stored in CAT.

Submission to CAT requires a valid user ID and password. Industry Members must obtain a master user ID and password combination during the CAT registration process.

Industry Members will also be assigned a multi-factor authentication (MFA) token during the registration process. An MFA token is required for authentication when accessing SFTP and Reporter Web Portal.

Order Submission or Correction via SFTP or Reporter Web Portal must be compressed and encrypted. All communication with the web portal is done through secure HTTPS, and all such activity is captured in system logs.

Industry Members are not allowed to view or download the actual data files from SFTP or Reporter Web Portal after submission. Data will be deleted from SFTP in a predefined time window, after it has been successfully processed and loaded into CAT data store.

### 6.6.1. Data Security Standard

---

In addition to data transport security provided by TLS and SSH, CAT requires that the data be



secure at rest. To achieve this, CAT recommends one of the supported, industry standard tools for encryption to be used. PGP, OpenPGP, and GPG (GNU Privacy Guard), in addition to OpenSSL may be used for both symmetric and asymmetric encryption and decryption.

Asymmetric encryption will be accomplished by the Industry Member using the Industry Member's private key and the CAT public key. Upon retrieval by CAT, the CAT private key will be used to decrypt the files. Should the Industry Member desire to be able to decrypt the data at another time, the Industry Member should encrypt with both the Industry Member's public key, as well as the CAT public key.

Automated systems are an anticipated component of CAT submission, error retrieval, and status monitoring, and automated access is permitted in limited roles.

CAT provides restricted automated (role based) sub-accounts with restricted access. Please note that automated access accounts must be associated with a person. These accounts will be permitted to use public security keys from their registered location. Public security keys will be registered via the Web portal, and associated with the restricted functional account. Should a Participant desire HSM support, most HSM devices allow public key extraction using commonly available tools from OpenSSL and OpenSSH, utilizing the `pkcs12`, `ssh-keygen` modules.

## 7. Feedback and Corrections

---

This section describes the procedures for obtaining feedback and how to submit corrections, including different types of feedback messages, data elements, and formats of the correction reports. After data submission, CAT will conduct data validations, provide feedback to CAT Reporting Agents and Industry Members, and allow corrections to be submitted.

Feedback will be made available via the Reporter Web Portal, both in the form of a user-centric webpage and a programmable API.

For descriptions in this section, the CAT will consider a file to be successfully decrypted if and only if all of the decryption, decompression, and signature validation steps succeed.

### 7.1. Feedback Files

---

For each data file, there are two types of files generated at different stage of processing and returned to the Industry Member and CAT Reporting Agent as feedback - the feedback file and the reject file.

The format of the files will match the format of the original file submission in JSON or CSV.

These files will be available as soon as they are generated, and accessible under the corresponding directory on the feedback sftp server for both the CAT Reporting Agent and Industry Member. They will also be made available via the Reporter Web Portal. Note that the IP address of the sftp server where files are uploaded may differ from the IP address of the sftp server where receipts and rejects are placed.

- **Feedback File**

Receipts will be available as soon as they are generated in the form of a feedback file, accessible under a subdirectory of `download/feedback` in both the CAT Reporting Agent's and Industry Member's home directory on the feedback sftp server.

The exact subdirectory on the sftp server where feedback files may be found is:

```
download/feedback/<YYYYMMDD>/<CATReporterId>/
```

Where `YYYYMMDD` is the calendar date of the events in the submitted file.

Feedback from different stages of processing will have different file extensions. See the following sections for more details.

If there are failures or warnings, they will be available in the feedback file. It is possible for a record to have multiple failures, which will be represented by multiple JSON objects or new-line delimited CSV records within the failures array with the same record indexes.

- **Reject File**

If any of the ingestion failures correspond to specific records, a reject file (with extension `.reject`) will also be generated in the `download/failures` directory in the home directory of both the submitter and reporter. The reject filename will be included with the feedback record under the field `rejectFile`. The reject file will be populated with Correction Records containing the original rejected records and record index, to make

corrections easier to submit (as described in the Corrections section). The record index is the offset from the beginning of the file to the first byte of the record.

Feedback files will have the same base name as the submitted file. The file name will be appended with an extension describing the feedback type and .pgp. It will be compressed, encrypted, and signed. Compression will be based on the compression preferences associated with the public keys used to encrypt the feedback file. The keys used will be the CAT Reporting Agent's key, Industry Member's key (if different), and the CAT public key. It will be signed with the CAT private key. For example, if a file was submitted from CAT Reporter "MYID", with the following name:

```
MYID_20170101_OrderEvents_000123.csv.gz.pgp
```

The following would be the filename for the acknowledgement feedback file:

```
MYID_20170101_OrderEvents_000123.ack.pgp
```

Filenames are considered unique using the base name of the file (i.e., after removing all suffixes). Thus, trying to upload files that differ only in extension would be considered an error for uploading files with duplicate filenames.

Filename	Basename - used for comparison
MYID_20170101_OrderEvents_000123.csv.gz.pgp	MYID_20170101_OrderEvents_000123
MYID_20170101_OrderEvents_000123.csv.bz2.pgp	MYID_20170101_OrderEvents_000123
MYID_20170101_OrderEvents_000123.json.gz.pgp	MYID_20170101_OrderEvents_000123

If multiple files are submitted with the same base name, but with different format or compression extensions, then a \_<N> will be applied to the base name of the second and subsequent feedback file names, where N will be the iteration of the feedback file.

If multiple files are submitted with the same base name or CAT needs to provide feedback when reprocessing a file feedback, an \_<N> will be applied to the base name of the feedback files to avoid overwrite of any feedback files contained at that time in the download directories.

Feedback files will be generated as each data file goes through various stages of processing. CAT will have four main processing stages, as described below:

1. File Acknowledgement
2. Basic File Integrity Check
3. Order Events - Ingestion
4. Order Events - Linkage Discovery

Please see the following sections for details of each stage.

Some stages will complete almost immediately, generating feedback shortly after the file has been uploaded (e.g. File Acknowledgement stage); other stages may take significant time, meaning that feedback could be delayed (either due to queuing behind other jobs, or because certain data elements are required to advance). For file acknowledgement, basic file integrity or ingestion stages, feedback will be provided as soon as the processing of each stage is completed. However, the feedback from linkage discovery phase, due to the dependency on other reporters' order events, will not be provided in a short period of time to the reporter after submission.

The minimum retention time for feedback files on the sftp server is 10 business days; after that time they may be removed from the server. Feedback will continue to be available after that time via the Reporter Web Portal.

Failure codes are listed in Appendix E.

## 7.2. File Acknowledgement

A receipt of acknowledgement will be generated for each file and metadata pair that appears in the `upload/complete` directory or uploaded via the Reporter Web Portal.

The data and metadata file should be moved into the `upload/complete` directory within a reasonable timeframe of each other. If a file is rejected (e.g., because the filename is not in the correct format or there is a timeout without seeing the associated data/metadata file), the receipt will contain a status of Failure and one or more failure codes with descriptions.

Files will be removed from the `upload/complete` directory after they are processed, though they may not be removed immediately after processing.

### 7.2.1. File Acknowledgement Feedback

An acknowledgement feedback file will have a `.ack` extension and will contain the following fields:

- CAT Submitter ID (as determined from sftp or web portal username)
- CAT Reporter ID (as determined from filename, if available)
- Timestamp of Receipt - timestamp file is received and receipt is generated
- Date (calendar date as submitted from filename, if available)
- File Name
- Feedback Version - the version of feedback file schema
- Status - Success or Failure
- Failures - a repeating group of failure codes and descriptions
  - Severity - WARNING or ERROR
  - Failure Code
  - Failure Description

The following is an example JSON object for a successful file acknowledgement:

```
{
  "submitter": "SUBID",
  "reporter": "MYID",
  "receiptTimestamp": "20170307T153552.000001089",
  "date": 20170307,
  "fileName": "MYID_20170307_OrderEvents_000123.json.gz.pgp",
  "feedbackVersion": "0.1",
  "status": "Success"
}
```

CSV presentation of a successful file acknowledgement:

```
Line 0      SUBID,MYID,20170307T153552.000001089,20170307,
           MYID_20170307_OrderEvents_000123.json.gz.pgp,0.1,Success
```

The following is an example JSON object for an unsuccessful file acknowledgement:

```
{
  "submitter": "SUBID",
  "reporter": "MYID",
  "receiptTimestamp": "20170307T153552.000001089",
  "date": "20170307",
  "fileName": "MYID_20170307_OrderEvents_000123.json.gz.pgp",
  "feedbackVersion": "0.1",
  "status": "Failure"
},
{
  "severity": "ERROR",
  "code": "FILE.TIMEOUT.001",
  "desc": "Time out waiting for meta file."
}
```

CSV presentation:

```
Line 0      SUBID,MYID,20170307T153552.000001089,
           20170307,MYID_20170307_OrderEvents_000123.json.gz.pgp,0.1,Failure
Line 1      ERROR, FILE.TIMEOUT.001, Time out waiting for meta file
```

## 7.3. Basic File Integrity

When all the data file(s) and associated metadata file have been received, basic validation will begin. If the metadata file cannot be decrypted, a failure will be generated, and no further attempt will be made to process the file until a valid metadata file is uploaded. If there is an error for one 'block' of metadata within the file, the 'block' with the failure is dropped from processing but the remaining metadata 'blocks' and associated files will still be processed. The Industry Member can submit another metadata file with the corrected 'block' to complete processing.

### 7.3.1. Basic File Integrity Checks

The values contained in the metadata file will be checked against properties of the corresponding data file. The following properties will be checked:

- **Matching Date** - the date part of the filename must match the metadata Date
- **Submitter** - metadata CAT Submitter ID must be the same as actual submitter (as determined from sftp or web portal username)
- **Reporter** - the CAT Reporter ID part of the filename must match the metadata CAT Reporter ID
- **Encrypted Size** - metadata Encrypted Byte Count must equal size of encrypted, received file
- **Encrypted Hash** - metadata Encrypted Hash must equal computed SHA256 of encrypted, received file
- **Decryption** - the data file must be successfully decrypted
- **Compressed Hash** - computed SHA256 must equal metadata Compressed Hash, if provided
- **Data Hash** - computed SHA256 must equal metadata Raw Hash, if provided

One or both of the Compressed Hash and Data Hash must be provided. If neither are provided, then the file will be rejected.

Note that all data elements in the metadata file are validated during this stage except Record Count, which will be validated when the file is actually processed.

### 7.3.2. Basic File Integrity Feedback

A basic file integrity feedback file will have a `.integrity` extension and will contain the following fields:

- CAT Submitter ID (as determined from sftp or web portal username)
- CAT Reporter ID (as determined from filename)
- Timestamp of Receipt - timestamp when receipt was generated
- Date
- Feedback Version - the version of feedback file schema
- Status - Success or Failure
- Failures - a repeating group of failure codes and descriptions
  - Severity - WARNING or ERROR
  - Failure Code
  - Failure Description

The following is an example JSON object for a successful integrity check:

```
{
  "submitter": "SUBID",
  "reporter": "MYID",
  "receiptTimestamp": "20170307T153552.000001089",
  "date": 20170307,
  "feedbackVersion": "0.1",
  "status": "Success"
}
```

#### CSV conversion

```
Line 0      SUBID,MYID,20170307T153552.000001089,20170307,0.1,Success
```

The following is an example JSON object for an unsuccessful integrity check:

```
{
  "submitter": "SUBID",
  "reporter": "MYID",
  "receiptTimestamp": "20170307T153552.000001089",
  "date": 20170307,
  "feedbackVersion": "0.1",
  "status": "Failure"
},
{
  "severity": "ERROR",
  "code": "INT.META.001",
  "desc": "Encrypted SHA does not match SHA in meta file."
}
```

#### CSV conversion

```
Line 0      SUBID,MYID,20170307T153552.000001089,20170307,Failure
```

```
Line 1      ERROR,INT.META.001,Encrypted SHA does not match SHA in meta file.
```

## 7.4. Order Event Files

---

Order Event files are composed of many different types of records. Any record determined to be malformed or otherwise invalid will be rejected as a failure.

- If the number of records in the file does not match the Record Count in the metadata file or metadata block, the entire file will be rejected.
- If an Order Event file contains anything other than expected order event messages, the entire file will be rejected.

Each field of the order event will be checked and validated, resulting in one of three states for the record: success, error, or warning. An error will prevent the record from being processed. A warning will not prevent the record from being processed, but may indicate that a record will be subject to errors during a later stage or processing. Depending on the type of warning, the record may be processed and ignored, or processed and applied to the data set. A record with only warning(s) but without error(s) do not require corrective action from the Industry Member.

For example, there are occasions where symbols are “delisted” late and may already have been referenced by some Industry Members (most likely in stage two). CAT allows incremental uploads throughout the day. Thus, their order event reports may contain opens and/or cancels for those symbols. Instead of rejecting these records, CAT will generate warnings for benign order actions and silently ignore them. Execution events for such symbols, however, will generate errors.

The system is backward compatible when there is a change or transition to a new version of reporting specifications. In such cases where the latest/preferred method is detectable, but not detrimental, a warning may be generated to inform the reporter on the details, but the record will still be accepted and processed by the system.

### 7.4.1. Order Event Feedback

---

The act of processing order events has multiple stages: ingestion and linkage discovery.

During the ingestion phase, each record will be checked for proper formatting (JSON field names and values, CSV values in proper columns, etc) and data contents. The defined JSON schemas for each record type will be used to validate every field of each record. The schema defines the format of each record and the data types and acceptable ranges of each value. In addition, it defines which fields are mandatory.

Fields whose value depends on context (and are not defined in the schema) will be validated by explicit rules to make sure that all requirements for their processing are followed.

Order events will be checked for both internal consistencies and valid relationships when referencing other orders or events from the same reporter.

The full lifecycle will be generated from the full set of order events, and any order that is not fully linked will be flagged as an error.

CAT will not completely reject a file at the ingestion or linkage discovery stage. Any file that passes the basic file integrity check will be fully scanned, and feedback will be provided for each of the records in the file.

Receipts will be generated for each phase. The feedback files will have the following extensions for each stage:

- INGESTION - `.ingestion`
- LINKAGE DISCOVERY - `.linkage`

The feedback files will contain the following fields:

- CAT Submitter ID
- CAT Reporter ID
- Timestamp of Receipt
- Date - Calendar date of the events/file
- Stage - INGESTION or LINKAGE\_DISCOVERY
- Status - Success if all records in the file were accepted, Failure if some or all records were rejected, or Warning if some or all records have warnings
- Number of Accepted Records - this stage only
- Number of Rejected Records - this stage only
- Reject Filename - if present, contains the relative name of the file in the `downloads/failures` directory containing records that were rejected.
- Feedback Version - the version of feedback file schema
- Failures - a repeating group, each containing:
  - Severity - WARNING or ERROR
  - Failure Code
  - Failure Description
  - Original Record Index - if applicable, the 0-based byte index of the record in the submitted file
  - Reject Record Index - if applicable, the 0-based byte index of the record in the Reject Report
  - Firm ROEID - the value reported in the `firmROEID` field in the original Order Event if populated (otherwise blank)

The following is an example JSON object for a successful OrderEvents ingestion:

```
{
  "submitter": "SUBID",
  "reporter": "MYID",
  "receiptTimestamp": "20170307T153552.000001089",
  "date": 20170307,
  "stage": "INGESTION",
  "status": "Success",
  "acceptedCount": 214513134,
  "rejectedCount": 0,
  "feedbackVersion": "0.1"
}
```

CSV presentation:

```
Line 0      SUBID,MYID,20170307T153552.000001089,20170307,INGESTION,Success,
           214513134,0,0.1
```



The following is an example JSON object for an unsuccessful OrderEvents normalization:

```
{
  "submitter": "SUBID",
  "reporter": "MYID",
  "receiptTimestamp": "20170307T153552.000001089",
  "date": 20170307,
  "stage": "INGESTION",
  "status": "Failure",
  "acceptedCount": 214513132,
  "rejectedCount": 2,
  "rejectFile": "MYID_20170307_OrderEvents_000002.rejects.pgp",
  "feedbackVersion": "0.1",
},
{
  "severity": "ERROR",
  "code": "OE.INGEST.014",
  "desc": "Invalid value for TIF",
  "origIdx": 123456,
  "rejIdx": 0,
  "firmROEID": "DESKP123456"
},
{
  "severity": "WARNING",
  "code": "OE.INGEST.009",
  "desc": "Symbol has been delisted",
  "origIdx": 654321,
  "rejIdx": 1234,
  "firmROEID": "DESKC56789"
}
}
```

CSV presentation:

Line 0	SUBID,MYID,20170307T153552.000001089,20170307,INGESTION,Failure,214513132,2,MYID_20170307_OrderEvents_000002.rejects.pgp,0.1
Line 1	ERROR, OE.INGEST.014,Invalid value for TIF,123456,DESKP123456
Line 2	WARNING,OE.INGEST.009,Symbol has been delisted,654321,1234,DESKC56789

## 7.5. Corrections

Corrections may be made manually via the web portal or uploading correction data files. If the entire file was rejected, then corrections should be submitted as repair records.

Corrections may be made at any time, even if beyond the error correction timeframe.

### 7.5.1. Repair Records

Repair records may be submitted to correct or delete a previously submitted record. Both records that have been previously rejected and records that have already been accepted may be repaired.

Repair records should be submitted in a repair file in the same format (JSON or CSV) as the original file requiring corrections. (Reporters will not be allowed to submit a JSON repair file if the original file was submitted in CSV and vice versa.) The repair file may contain repair records from multiple original files, as long as all repair records for the same calendar date. The repair filename must contain the same Reporter ID, date (calendar date) and marked as "OrderEvents", with the string "Corrections" appended, as well as the sequence number of the correction file. For example, if the original filenames with errors were MYID\_20170101\_OrderEvents\_000123.[json|csv] and MYID\_20170101\_OrderEvents\_000130.[json|csv] then the repair filename may be MYID\_20170101\_OrderEvents\_Corrections\_000001.[json|csv].

Metadata for the repair file may be submitted as its own meta file or as a metadata 'block' within a combined metadata file.

Metadata for the repair record should be valid for the repair record file, not the original files being repaired. For example, the Encrypted Hash and Encrypted Size should be the hash and size of the repair record file.

Each repair record will uniquely identify a record to repair using the 0-based index of the original record, combined with the original file number. If the record to be repaired cannot be identified, the repair record will be rejected. If a feedback file has a failure file associated with it, then the index will be pre-populated on Correction Records in the failure file to ease repair submissions. Otherwise, if correcting or deleting non-rejected records, the submitter will need to populate these fields itself.

Reject files (as indicated by the `rejectFile` field on some feedback records) can be used to submit corrections. Since the files are pre-populated with Correction Records, a file only needs to be downloaded, the appropriate changes to the contents of the record(s) made, and the file submitted with the appropriate file name.

Repair record files may contain delete and correction records only. If an invalid record type is detected in the file, then the entire file will be rejected.

### 7.5.2. Submitter Created Repair File Structure

In order to locate the original data file(s) to be corrected, the Reporter must list the original file numbers (of the original data file being corrected) in the metadata of the correction files. For example, if the correction file (correction file name:

MYID\_20170307\_OrderEvents\_Corrections\_000001.JSON) contains the corrections or deletions for the following original data files:

- `origFileName:"MYID_20170307_OrderEvents_000123.json"` (`origFileNumber=000123`)
- `origFileName:"MYID_20170307_OrderEvents_000130.json"` (`origFileNumber=000124`)

Then metadata for this correction file must include `"origFileNumber": [000123,000124]`

For example:

```
{
  "type": "META",
  "doneForDay": false,
  "date": 20170307,
  "reporter": "MYID",
  "submitter": "MYID",
  "fileVersion": "1.0",
```

```

"files": [
  {
    "fileName": "MYID_20170307_OrderEvents_Corrections_000001",
    "origFileNumber": [000123, 000124],
    "recordCount": "5217",
    "rawHash": "08997E354AEAE2EA9E71E685CE1CC6FCCD1EB17E957B18573617CA80199
EA67A",
    "compressedHash": "99A7712E2CC1CB3A5789B91E3C1D1E76D7F83D82C8D35FF1F56B
156A49C228E2",
    "encryptedByteCount": "5217000",
    "encryptedHash": "19B60BF100D4EBDCEDCE2E01F94EF048AB5A3F67FCB4B08B8AB2A
54BEEDC0087",
    "symmetricKey": "83E1DC8A9D32E5CDC5BBEE72DF57BF5C"
  }
]
}

```

The repairs records in the correction file are organized in a record change list. The repairs should be grouped by original file number.

```

{"origFileNumber": "000123"
 "repairRecords": [
   {"type": "DEL", "recordIdx": 456},
   {"type": "DEL", "recordIdx": 5098}
 ],
 {"origFileNumber": "000124"
 "repairRecords": [
   {"type": "DEL", "recordIdx": 9005},
   {"type": "DEL", "recordIdx": 12345}
 ]
}

```

In the CSV presentation, origFileNumber will be flattened into the first column of each line, and the repairRecords will be starting from the next columns. For the examples above, the CSV presentation will look like below.

Line 0	000123, DEL, 456
Line 1	000123, DEL, 5098
Line 2	000124, DEL, 9005
Line 3	000124, DEL, 12345

### 7.5.2.1. Delete Record

A delete record must contain the following fields:

- Record Type - DEL
- Original Record Index - the 0-based index of the record in the original file

The following is an example delete record:

```

{
  "type": "DEL",
  "recordIdx": 456
}

```

### 7.5.2.2. Correction Record

---

A correction record must contain the following fields:

- Record Type - COR
- Original Record Index - the 0-based index of the record in the original file
- Replacement record - the corrected record

The following is an example correction record:

```
{
  "type": "COR",
  "recordIdx": 456,
  "newRecord": {
    "type": "MENO",
    "firmROEID": "CORO12345",
    "eventTimestamp": "20170801T143031.123456",
    "manualFlag": false,
    "symbol": "XYZ",
    "orderID": "O12345",
    "originator": "N",
    "deptType": "O",
    "side": "Buy",
    "price": 10.01,
    "quantity": 500,
    "orderType": "LMT",
    "timeInForce": "DAY",
    "tradingSession": "REG",
    "custDspIntrFlag": false,
    "firmDesignatedID": "PROP456",
    "accountType": "O",
    "negotiatedTrade": false
  }
}
```

### 7.5.2.3. Repair File Sample

---

Please see a sample of a repair file in JSON below:

```

{"origFileNumber": 000123,
 "repairRecords": [
   {"type": "DEL","recordIdx": 456},
   {"type": "DEL","recordIdx": 457}]
},
{"origFileNumber": 000124,
 "repairRecords": [
  {
   "type": "COR",
   "recordIdx": 567,
   "newRecord": {
    "type": "MENO",
    "firmROEID": "CORO98765",
    "eventTimestamp": "20170801T143031.123456",
    "manualFlag": false,
    "symbol": "XYZ",
    "orderID": "O12345",
    "originator": "N",
    "deptType": "O",
    "side": "Buy",
    "price": 10.01,
    "quantity": 500,
    "orderType": "LMT",
    "timeInForce": "DAY",
    "tradingSession": "REG",
    "custDspIntrFlag": false,
    "firmDesignatedID": "PROP456",
    "accountType": "O",
    "negotiatedTrade": false
   }
  }
 ]
}

```

**CSV presentation:**

```

Line 0      000123,DEL,456
.....
Line 1      000123,DEL,457
.....
Line 2      000124,COR,567,MENO,CORO98765,20170801T143031.123456,false,,,
            XYZ,O12345,N,O,,Buy,10.01,500,,LMT,DAY,REG,,false,PROP456,O,,,
            false,N,,,,,,,,,,,,,

```

**7.5.3. rejectFile (CAT Provided) Format**

The rejectFile that can be accessed in `downloads/failures` will be pre-populated with Correction Records. Below is an example of the rejectFile:

```

{
  "type": "COR",
  "recordIdx": 567,
  "newRecord": {
    "type": "MENO",
    "firmROEID": "DESK98765",
    "eventTimestamp": "20170801T143031.123456",
    "manualFlag": false,
    "symbol": "XYZ",
    "orderID": "O12345",
    "originator": "N",
    "deptType": "O",
    "side": "Buy",
    "price": 10.01,
    "quantity": 500,
    "orderType": "LMT",
    "timeInForce": "DAY",
    "tradingSession": "REG",
    "custDspIntrFlag": false,
    "firmDesignatedID": "PROP456",
    "accountType": "O",
    "negotiatedTrade": false,
    "representativeInd": "N"
  }
},
{
  "type": "COR",
  "recordIdx": 8965,
  "newRecord": {
    "type": "MENO",
    "firmROEID": "DESK12345",
    "eventTimestamp": "20170801T143035.123456",
    "manualFlag": false,
    "symbol": "ABC",
    "orderID": "O56789",
    "originator": "N",
    "deptType": "O",
    "side": "Buy",
    "price": 100.01,
    "quantity": 200,
    "orderType": "LMT",
    "timeInForce": "DAY",
    "tradingSession": "REG",
    "custDspIntrFlag": false,
    "firmDesignatedID": "PROP456",
    "accountType": "O",
    "negotiatedTrade": false,
    "representativeInd": "N"
  }
}

```

In the example above, two correction records are included and pre-populated with the original records as they were submitted. The submitter or reporter may simply modify the erroneous data elements, rename the file and submit it to CAT as the correction file.

Below is the CSV format presentation.

```
Line 0      COR,567,MENO,DESK98765,20170801T143031.123456,false,,XYZ,O12345,
           N,O,,Buy,10.01,500,,LMT,DAY,REG,,false,PROP456,O,,false,
           N,,,,,,,,,
.....
Line 1      COR,8965,MENO,DESK12345,20170801T143035.123456,false,,ABC,O56789,
           N,O,,Buy,100.01,200,,LMT,DAY,REG,,false,PROP456,O,,false,
           N,,,,,,,,,
.....
```

#### 7.5.4. Repair Record Feedback

Repair record files will receive the same types of feedback as the file being repaired.

Note that if one record needs to be corrected more than once, all corrections must refer to the original record by the original file number (`origFileNumber`) and record index (`recordIdx`). If multiple corrections are submitted for one original record, the most recent correction - the correction file with the highest file number - will be treated as the valid version.

For example, if the Reporter submits a correction for original file `MYID_20170307_OrderEvents_000123` (`fileNumber = 000123`, `recordInd = 456`) in a correction file `MYID_20170307_OrderEvents_Corrections_000001`. And later the Reporter desires to correct the same record again that overwrites the previous correction. Then the second correction (correction file name: `MYID_20170307_OrderEvents_Corrections_000009`) must still reference to the original file number and record index - `fileNumber 000123` and `recordInd 456`. Between the two correction files, the one with larger file number (`000009`) will be treated as the most recent valid version of the record.

## 8. Testing

---

CAT will provide an environment for testing that mirrors the current functionality of the CAT production environment, as well as including functionality for the next release version of the CAT environment when available. The CAT testing environment will automatically determine which specification version Industry Members and CAT Reporting Agents are using for submissions. If error reporting formats change, Industry Members and CAT Reporting Agents will receive feedback in the current and new specification via ftp, as well as have access to current/new web portal urls for specification changes that impact the web portal. Current/new connectivity changes will also be supported concurrently.

The testing environment performs lifecycle linkage, and Industry Members and CAT Reporting Agents are encouraged to coordinate testing with their counterparties so as to test lifecycle linkage with their counterparties. Without simultaneous contra-party reporting in the test environment, Industry Members and CAT Reporting Agents will not be able to test linkage with their counterparties.

Industry Members and CAT Reporting Agents should test their submissions using the testing environment before they begin submitting to the production environment.

The test environment is available 24 hours a day, 6 days a week. Refer to the CAT website for contact information and hours of operation for support.

Industry Members and CAT Reporting Agents connect to the test environment in the same manner they would connect to the production environment. However, for the connection to the test environment, one or more alternate IP/domains may be used.

Testing does not relieve an Industry Member of its responsibilities to submit production data to the CAT System.



## 9. Additional Information

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### 9.1. Public Website

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The CAT Public Website, [www.catnmsplan.com](http://www.catnmsplan.com), is available via the public internet, and is hosted outside the CAT secure network. The CAT Public Website provides information about the CAT, such as a link to SEC Rule 613, Technical Specifications, FAQs, training materials, and CAT Help Desk contact information.

Web announcements will be made available on the public website ([www.catnmsplan.com](http://www.catnmsplan.com)). You can also subscribe to receive email notifications regarding changes to the website. These announcements are used to post information related to the operation of CAT.

Please contact [helpdesk@thesyscat.com](mailto:helpdesk@thesyscat.com) for any questions and/or feedback regarding this document.

## Appendix

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### A. Change Release Management Process

---

Following publication of version 1.0, changes to this Industry Member Technical Specification will be released as follows:

- All proposed amendments to the Technical Specifications will be made in accordance with the CAT NMS Plan, including being approved or deemed approved (as applicable) by the CAT NMS, LLC Operating Committee.
- Prior to the go-live date for any system changes set forth in the Technical Specifications:
  - A new Technical Specifications will be posted to the CAT Public Website, [www.catnmsplan.com](http://www.catnmsplan.com).
  - A notice will be posted on the CAT NMS Plan Public website with a summary of changes, the go-live date for the changes and links to relevant information.
  - One or more email alerts will be sent to CAT Reporters with a summary of changes set forth in the revised Technical Specifications, the go-live date for the changes and links to relevant information.
  - Industry Members will be permitted to perform testing of the revised Technical Specifications in advance of the go-live date for the changes. [Information on such testing will be set forth in the notices and alerts described above.]
  - As the go-live date approaches, Industry Members will be able to conduct testing and will receive support from Thesys CAT to prepare for production reporting using the revised Technical Specifications format. The revised Technical Specifications will include a summary list of changes as well as a table listing the specific areas of the document where the changes have been made.

## B. Clock Synchronization Requirement

---

In previous sections, details are described regarding Order Events and data elements. Timestamp, as one of the required data elements for each order event, must be correctly reported by Industry Members at predefined granularity. This section provides an overview of the corresponding clock synchronization requirements applicable to Industry Members.

In order to comply with applicable requirements of Clock Synchronization and correctly record the Timestamp fields for order events. Industry Members are required to synchronize Business Clocks at a minimum to within 50 milliseconds of the time maintained by the National Institute of Standards and Technology (NIST) and to maintain such synchronization. Business clocks that are solely used for Manual Order Events or for the time of allocation on Allocation Reports must be synchronized at a minimum to within a one second tolerance.

The tolerance includes:

- The difference between the NIST standard and a time provider's clock;
- Transmission delay from the source; and
- The amount of drift in the Participant's clock.

To ensure the accuracy of timestamps for Reportable Events, Industry Members must document and maintain their synchronization procedures for Business Clocks. Industry Members must keep a log of the time when they synchronize their Business Clocks and the results of the synchronization process. This log should include notice of any time a Business Clock drifts more than the applicable tolerances specified above. Such log must include results for a period of time of not less than five years ending on the then current date, or for the entire period for which the Industry Member has been required to comply with this Rule if less than five years. Industry Members must also certify their compliance with these clock synchronization requirements and report violations according to requirements established by the Operating Committee.

Any time provider and technology may be used for clock synchronization as long as the Business Clocks are in compliance with the accuracy requirement.

If additional details are needed, please refer to the *Clock Sync User Guide* to be published, or to Participants' applicable rules.

Note: The tolerance for clock synchronization does not impact the amount of time allowed for CAT reporting. CAT does NOT require Industry Members to report order information within 50 milliseconds of receiving an order.

## C. Representative Order Linkages

---

The CAT NMS Plan requires that customer orders be linked to representative orders created in firm accounts for the purpose of facilitating the execution of a customer order. This Appendix outlines reporting requirements for creating linkages between customer and representative orders.

### Phase 2a Requirements

#### 1. Representative Order Reporting

In Phase 2a, representative orders must be reported to CAT and marked as a representative order. Representative orders are identified using the *representativeInd* field on New Order events.

Allowed values for this field include:

- Y Representative order, linkage required
- YS Representative order, linkage required; details in supplement event
- YF Representative order, linkage required in future phase
- YP Representative order, pricing guarantee, linkage not required
- N Not a representative order

#### 2. Representative Order Linkages

In Phase 2a, linkage is required between the representative street side order and the order being represented when the representative order was originated specifically to represent a single order (received from a customer or another broker-dealer) and there is:

- 1) an existing direct electronic link in the Industry Member's system between the order being represented and the representative order, and
- 2) any resulting executions are immediately and automatically applied to the represented order in the Industry Member's system

Linkages are required between the customer/clients order and the representative order for both executed and unexecuted orders. Executed orders must also have a link between the Order Fulfillment Event for the customer/client order and the representative order from which the fill came.

The following fields are used in the linkage process:

##### At the Order Level

- *representativeInd* indicates if an order was originated to represent a customer/client order
- *aggregatedOrders* specifies the original order IDs and quantities being consolidated in the representative order

##### At the Order Fulfillment Level

- *orderID* contains the firm side order that was used to fill the customer order
- *fulfillmentLinkType* indicates whether there is order level and trade level linkage, only trade level linkage (e.g., fill from the pre-existing customer order), or why the firm side details are not present

## Representative Order Marking and Linkage Requirements by Phase

### Single Order Scenarios

The table below details requirements for both linkage and marking of a Representative Order in Single Order scenarios. These requirements are NOT applicable in situations where an electronic link does not exist between the Industry Member's OMS and EMS. Please refer to Data Dictionary for relevant field values. Please refer to the [CAT Industry Member Reporting Scenarios](#) document for further information on how the relevant field values should be populated for each scenario.

Scenario Description	Is Linkage Required?				Is Rep Order Marking Required?			
	MENO		MEOF		MENO		MEOF	
	Phase 2a	Phase 2c	Phase 2a	Phase 2c	Phase 2a	Phase 2c	Phase 2a	Phase 2c
<b>Riskless Principal Scenarios</b>								
A. Single Prop Order, single fill	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
B. Single Prop Order, multiple fills, print for print	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
C. Single Prop Order, multiple fills, average price fill to customer	No	Yes	No	Yes	Yes	Yes	Yes	Yes
D. Multiple Prop Orders, multiple fills, print for print	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
E. Multiple Prop Orders, multiple fills, average price fill to customer	No	Yes	No	Yes	Yes	Yes	Yes	Yes
F. Fill of a customer order from a pre-existing principal order (Manning scenario)	No	No	Yes	Yes	No	No	Yes	Yes
<b>Agency Scenarios - applies when a firm's order handling and/or reporting system does not allow for a route to be directly associated with the customer order or child order (with the same Order ID) and instead must generate/report a route from a separate order (with a different Order ID) created by the firm for the purpose of working the customer order.</b>								
G. Single Rep Order, single fill	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
H. Single Rep Order, multiple fills, print for print to customer account	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
I. Single Rep Order, multiple fills, single average price booking to customer account; no print for print details available to customer account	No	Yes	No	Yes	Yes	Yes	Yes	Yes
J. Multiple Rep Orders, multiple fills, print for print	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
K. Multiple Prop Orders, multiple fills, average price fill to customer	No	Yes	No	Yes	Yes	Yes	Yes	Yes

Principal Net Trading - assumed that all street side fills are guaranteed to go to the customer order								
L. Single Prop Order, multiple fills, print for print	No	Yes	No	Yes	Yes	Yes	Yes	Yes
M. Single Prop Order, multiple fills, print for print	No	Yes	No	Yes	Yes	Yes	Yes	Yes
N. Single Prop Order, multiple fills, average price fill to customer	No	Yes	No	Yes	Yes	Yes	Yes	Yes
O. Multiple Prop Orders, multiple fills, print for print	No	Yes	No	Yes	Yes	Yes	Yes	Yes
P. Multiple Prop Orders, multiple fills, average price fill to customer	No	Yes	No	Yes	Yes	Yes	Yes	Yes
Other Single Order Scenarios								
Q. Price Guarantee Scenarios (e.g., GVWAP, Stop Stock) - either single or aggregated orders	No	No	No	No	No	Yes	No	Yes

*Aggregated Order Scenarios*

[Placeholder for Phase 2c. Aggregated Order Reporting will be finalized and included in future version of the specification.]

## D. CAT Date Definitions and Reporting Guidelines

---

The following key date terms are used throughout the document for reporting instructions:

- **eventTimestamp:** The time of the order handling or execution pursuant to Section 6.8 of the CAT NMS Plan (e.g. origination, receipt, etc., depending on the respective order event). The time is reported as per the calendar date of the order event.
- **date (Linkage Keys):** The date used for linkage keys is the date portion of the *eventTimestamp* (calendar date)<sup>8</sup>.
- **date (File Name):** The date used to create file names is the calendar date for all events in the file. The file must only contain records with the same calendar date as the file name.
- **CAT Trading Day:** Trading Day for Industry Members is defined as beginning immediately after 4:15:00PM and no fractions of a second Eastern Time on one trade date and ending at exactly 4:15:00PM and no fractions of a second Eastern Time on the next trading date.
- **CAT Reporting Due By Date:** All events that occurred by 4:15PM on one Trading Day must be reported by 8:00AM the following Trading Day.

### Order Event Times and Reporting Deadlines

The table below illustrates the reporting deadlines for Order Events across multiple calendar days and CAT Trading Days.

#	orderID	eventTimestamp (Calendar Day)	Date Used in Linkage Key (Calendar Day)	Date in File Name (Calendar Day)	CAT Trading Day (4:15PM cutoff time)	CAT Reporting Due By
1	O1234	Wed, 9/12 16:13:00	9/12	9/12	9/12	9/13, 8:00 AM
2	O1235	Wed, 9/12 16:16:00	9/12	9/12	9/13	9/14, 8:00 AM
3	O1234	Fri, 9/14 16:01:00	9/14	9/14	9/14	9/17, 8:00 AM
4	O1235	Fri, 9/14 16:45:00	9/14	9/14	9/17	9/18, 8:00 AM
5	O1234	Sat, 9/15 12:30:01	9/15	9/15	9/17	9/18, 8:00 AM
6	O1234	Mon, 9/17 10:30:05	9/17	9/17	9/17	9/18, 8:00 AM

Order IDs must be unique within the same calendar date. In the table above, the *orderID* in row 1 and 2 are distinct since both orders have a calendar date of 9/12. The Trading Day is not used for determining *orderID* uniqueness, as illustrated in rows 5 and 6.

The Trading Day for Industry Members is defined as starting 1 millisecond after 4:15PM on one trade date and ending 4:15PM on the next trade date. As shown in rows 1 and 2, events with a timestamp after 4:15PM (row 2) are considered to be the following trading date and are not due until T+1 at 8:00AM. Alternatively, Industry Members may submit one file per calendar day (the orders on rows 1 and 2 can both be submitted on a 9/12 file). The Trading Day only exists to determine the reporting deadline of an event, it does not impact the date used to create linkage or the file name.

<sup>8</sup> In the scenario when an order event needs to be linked to a prior event on a different date - e.g. modify a GTC order on a prior day - an additional field "priorOrderDate" is reported on the event and will be used in linking. However, it doesn't impact the eventTimestamp or date in file name of the event itself.

Weekends are excluded from Trading Days. Events from 4:15PM on a Friday to 4:15PM the follow Monday are the same Trading day, but files must be separated by the calendar date (see rows 4, 5, and 6).

Holidays are also excluded from Trading Days. Hypothetically, if Monday 9/17 were a holiday in the example, the next available Trading Day becomes Tuesday 9/18.

#	orderID	eventTimestamp (Calendar Day)	Date Used in Linkage Key (Calendar Day)	Date in File Name (Calendar Day)	CAT Trading Day (4:15PM cutoff time)	CAT Reporting Due By
3	O1234	Fri, 9/14 16:01:00	9/14	9/14	9/14	9/18, 8:00 AM
4	O1235	Fri, 9/14 16:45:00	9/14	9/14	9/18	9/19, 8:00 AM
5	O1234	Sat, 9/15 12:30:01	9/15	9/15	9/18	9/19, 8:00 AM
6	O1234	Tues, 9/18 10:30:05	9/18	9/18	9/18	9/19, 8:00 AM



## E. Failure Codes<sup>9</sup>

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The failure code is a machine-parseable string of why a file or record was rejected.

Each failure code is divided into a failure category, sub-category and value, joined together by a period.

<category>.<sub-category>.<value>

- Category and sub-category are defined as the table below. Each category corresponds to the stage of processing at which a file or record was rejected.
- Value will be an alphanumeric (12) code that represents a specific error or warning. The list of values will be refined and a complete list of codes and descriptions will be provided.

Failure Category	Failure Sub-Category
FILE A problem with the file name or permissions	NAME - A problem with the file name
	PERM - A problem with file permissions
	TIMEOUT - A timeout waiting for the corresponding data or meta file
INT A problem with file metadata or hash	META - An incorrect or mismatched metadata value
OE A problem with an order event file or record	COUNT - Fewer or more records in the file than specified by the Record Count
	INGEST - A problem with an individual record encountered in the ingestion stage
	LINK - A problem with an individual record encountered in the linkage discovery stage

A failure code may be used for warnings or errors, distinguished by the severity field in the failure report. The failure code itself does not distinguish between a warning (in which a record is accepted but still shows up in the feedback report) and an error (which causes a record to be rejected).

A failure description is a human readable field returned with a failure code that informs a user which field failed, the value which was submitted (if applicable to the error), and why it is incorrect. The failure descriptions are specific to the type of field that has a failure and the original value used by the reporter.

For example, the following failure code tells the user the severity is an error, the failure was identified on an Order Event file during the ingestion stage, and the field *originalOrderID* is missing from the record.

```
{"severity":"ERROR",
 "code":"OE.INGEST.200.I001",
 "desc":"Invalid record - no field: originalOrderID: processing field
 'originalOrderID' at file offset 49346",
 "origIdx":49346,
 "rejIdx":0}
```

---

<sup>9</sup> Note that this section provides the structure of how failure codes are generated and concatenated. A final list of specific values and descriptions will be published when finalized.

The following failure code example was also identified on an Order Event file during the ingestion stage. The description informs the user that the value submitted is invalid as it was more than 40 characters in length.

```
{ "severity": "ERROR",
  "code": "OE.INGEST.200.A23",
  "desc": "Invalid record - invalid value for Text(40):
12345678901234567890123456789012345678901: processing field
'originalOrderID' at file offset 49847",
  "origIdx": 49847,
  "rejIdx": 546 }
```

Below is a sample of Failure Codes/Descriptions.

Not that this is not the final list nor a complete list. The code values will be refined to lower granularities.

Failure Code	Failure Description
FILE.NAME.100.xxx	Corresponding data file was not uploaded in the allowed time frame.
FILE.NAME.100.xxx	Time out waiting for json/csv file.
FILE.NAME.200.xxx	Submitted file has been previously received.
FILE.NAME.200.xxx	Submitted file did not follow proper naming convention.
INT.META.100.xxx	Meta file encrypted hash does not match actual file.
INT.META.100.xxx	Uploaded meta file could not be successfully decrypted and signatures verified.
INT.META.200.xxx	Meta file submitter id is not valid for this sftp account.
INT.META.400.xxx	Meta file origFileNumber field missing for corrections
INT.META.400.xxx	Meta file fileVersion field is invalid.
OE.INGEST.200.xxx	Invalid record - Reject: duplicate key
OE.INGEST.200.xxx	Invalid record - eventTimestamp is for wrong date: processing field 'eventTimestamp'
OE.INGEST.200.xxx	Invalid record - Reject: duplicate modify for orderKey
OE.INGEST.200.xxx	Invalid record - LinkError: broken modify chain
OE.INGEST.200.xxx	Invalid record - LinkError: order not found
OE.INGEST.200.xxx	Invalid record - LinkError: parent order not found
OE.INGEST.200.xxx	Invalid record - invalid symbol: processing field 'symbol'
OE.INGEST.200.xxx	Invalid record - unknown reporterIMID: processing field 'senderIMID': processing column 23
OE.INGEST.200.xxx	Invalid record - invalid value for Boolean: True: processing field 'onlyOneQuoteFlag': processing column 15
OE.INGEST.200.xxx	Invalid record - no field: sellDetails.sideIMID: processing field 'sellDetails.sideIMID'
OE.INGEST.200.xxx	Invalid record - invalid value for Alphanumeric(12): 1234567891234: processing field 'firmROEID'
OE.INGEST.200.xxx	Invalid record - invalid value for Price: OE-8: processing field 'displayPrice': processing column 10

## F. Glossary

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<b>Display ATS</b>	An ATS that displays subscriber orders outside of the ATS.
<b>Eligible Security</b>	"Eligible Security" includes: (i) all NMS Securities, meaning "any security or class of securities for which transaction reports are collected, processed, and made available pursuant to an effective transaction reporting plan, or an effective national market system plan for reporting transaction in Listed Options"; and (ii) all OTC Equity Securities, meaning "any equity security, other than an NMS Security, subject to prompt last sale reporting rules of a registered national securities association and reported to one of such association's equity trade reporting facilities".
<b>Electronic Capture Time</b>	For manual orders, the timestamp or when the Manual Order Event was captured electronically in the relevant order handling and execution system of the CAT Reporter.
<b>FDID</b>	FDID is defined in Section 1.1 of the CAT NMS Plan as "a unique identifier for each trading account designated by Industry Members for purposes of providing data to the Central Repository.
<b>IMID</b>	An Industry Member Identifier, IMID, is any identifier assigned by an SRO to one of its members and is used as part of the linkage key in orders routed between Industry Members. Examples include FINRA MPIDs, Nasdaq MPIDs, NYSE Mnemonics, Cboe User Acronyms, and CHX Acronyms.
<b>Manual Order Event</b>	A non-electronic communication of order-related information for which CAT Reporters must records and report the of the event.
<b>Material Terms of an Order</b>	Includes: the NMS Security or OTC Equity Security symbol; security type; price (is applicable); size (displayed and non-displayed); side (buy/sell); order type; if a sell order, whether the order is long, short, short exempt; open/close indicator (except on transactions in equities); time in force (if applicable); if the order is for a Listed Option, option type (put/call), option symbol or root symbol, underlying symbol, sticker price, expiration date, and open/close (except on market maker quotations); and any special handling instructions.
<b>Order</b>	The term order shall include: (i) Any order received by a member of a national securities exchange or national securities association from any person; (ii) Any order originated by a member of a national securities exchange or national securities association; or (iii) Any bid or offer.
<b>Reportable Event</b>	Includes, but is not limited to, the original receipt or origination, modification, cancellation, routing, execution (in whole or in part) and allocation of an order, and receipt of a routed order

**Reporter ID**

The CAT Reporter ID is the SRO assigned identifier that an Industry Member uses to report order events to CAT. A CAT Reporter may use any SRO assigned identifier that is valid on the CAT Trading Day for which order events are submitted.

**Submitter ID**

The Submitter ID is the identifier of the CAT Reporting Agent, the entity authorized to submit the files to CAT on behalf of the Industry Member. CAT Reporters may authorize third-parties ("CAT Reporting Agents") to submit data to CAT on their behalf. The CAT Reporting Agent must be authorized to submit data on behalf of the Reporter. Each CAT Reporting Agent will be assigned a unique Submitter ID by CAT during onboarding. If an Industry Member submits data on their own behalf, then the Submitter ID assigned to the entity may be same as the CAT Reporter ID.

**Trading Day**

For Industry Member CAT Reporters, Trading Day is defined as beginning immediately after 4:15:00PM and no fractions of a second Eastern Time on one trade date and ending at exactly 4:15:00PM and no fractions of a second Eastern Time on the next trade date.

## G. Data Dictionary

Field Name	Data Type	Description
accountType	Choice	<p>Represents the type of beneficial owner of the account which an order was received or originated.</p> <p><b>Allowed Values</b></p> <p>A Institutional Customer - An institutional account as defined in FINRA Rule 4512(c)</p> <p>C Combined - An order representing more than one type of account</p> <p>E Employee Account - An employee or associated person of an Industry Member</p> <p>I Individual Customer - An account that does not meet the definition of FINRA Rule 4512(c) and is also not a proprietary account.</p> <p>O Market Making</p> <p>P Other Proprietary</p> <p>X Error Account - Error account of the firm</p>

Field Name	Data Type	Description
aggregatedOrders	Name/Value Pairs	<p>This field applies to a representative/aggregated order created by the broker-dealer, or a riskless principal order to link to the associated order(s). It specifies the original order IDs and quantities being consolidated in this representative/aggregated order, or the order IDs and quantities associated with the riskless principal order.</p> <p>The data type of this field is Name/Value Pairs, where the Name must be the orderID in the New Order/Order Accepted event of the original order, and Value specifies the quantity being consolidated into the representative/aggregated order. For example:  <pre>{ "aggregatedOrders": "O1234=500 O1235=1000 O1236=800" }</pre></p> <p>One or multiple Name/Value pair(s) may be included in this field. Quantity is only required when partial quantity of the order is bunched, and optional for full quantities. In the example above, if both O1234 and O1235 have full quantity being bunched and O1236 is partial, it can also be represented as:  <pre>{ "aggregatedOrders": "O1234 O1235 O1236=800" }</pre></p> <p>Generally, all the "underlying" orders are on the same calendar date of the aggregated New Order event. In case one or multiple orders are on a different date, the date portion must be included together with the orderID as in the format of @YYMMDD@orderID. For example, if an aggregated order created on 08152018, but it includes O12345 from date 08142018. Then it should be represented as:  <pre>{ "aggregatedOrders": "O1234 @20180814@O1235 O1236=800" }</pre></p> <p>Note that if the aggregatedOrders field makes the event exceed the maximum length allowed, a corresponding supplement event should be reported as a supplement to capture the additional name/value pairs that are included in the original event (or another supplement event for the same order).</p>
askPrice	Price	Price being asked in a quote.
askQty	Unsigned	Quantity being asked in a quote.
atsOrderType	Name/Value Pairs	ATS only field. ATSS will provide their order types and handling instructions to CAT by submitting data dictionaries. Multiple name value pairs can be included in this field separated by pipe delimiters.

Field Name	Data Type	Description
auctionFlag	Boolean	A boolean field where <i>true</i> indicates the order is being submitted to any type of exchange auction mechanism. For guaranteed crosses such as a Qualified Contingent Cross, Customer Match, and any other non-auction crossing mechanisms generally executed without market exposure, this value should be <i>false</i> .  <b>Allowed values:</b> true false
bidPrice	Price	Price being bid in a quote.
bidQty	Whole Quantify	Quantity being bid in a quote.
buyDetails	Trade Side Details	It is in the format of Trade Side Details, a compound data type that consists of a list of fields (see Section 2.4 Data Type). <i>buyDetails</i> is only used in Equity Trade Events or Trade on a Quote Events to capture the buy side details of the trade. Please see Section 4.12.1 for list of fields.
cancelQty	Real Quantity	The quantity being canceled in Order Cancel Event. A value of zero means that the cancel was for the full remaining quantity. For example, if an order for 500 shares had partially executed 200 shares, and then the remainder was canceled, the cancelQty could contain either 300 or 0.
cancelReason	Choice	Expresses the cancellation reason for a quote with one of the below accepted values. Additional values may be added by request.  <b>Allowed Values:</b> DIS Session disconnected ALL Market Maker Canceled All Quotes
capacity	Choice	Specifies the capacity of a given side of a trade.  <b>Allowed Values:</b> Agency Principal RisklessPrincipal
clientDetails	Fulfillment Side Details	It is in the format of Fulfillment Side Details, a compound data type that consists of a list of fields (see Section 2.4 Data Type). <i>clientDetails</i> is only used in Equity and Option Order Fulfillment and Fulfillment Amendment Events to capture the customer or client side details of the Fulfillment. Please see Section 4.13.1 for list of fields.
cmtaFirm	Alphanumeric (8)	The OCC number provided for clearing at the point of option order origination. Required for CMTA trades. Leading zeros may be omitted (e.g. 00501 may be reported as 501).

Field Name	Data Type	Description
custDsplntrFlag	Boolean	<p>Indicating if a customer has instructed that a limit order or block size order should not be displayed.</p> <p><b>Allowed Values:</b></p> <p>true Customer has instructed that a limit order should not be displayed or that a block size order be displayed.</p> <p>false No instruction has been received from the customer that a limit order should be displayed or that a block size order be displayed.</p>
deptType	Choice	<p>Used in a New Order, Order Accepted, and Internal Route event to identify the category of internal department, unit or desk originating or accepting the order.</p> <p><b>Allowed Values:</b></p> <p>A Agency - a desk or department where orders may be routed to other market centers, either by a trading system or with the assistance of traders. This would include smart routers and algorithmic trading.</p> <p>ATS ATS - a trading system that meets the definition of "Alternative Trading System" under Regulation ATS.</p> <p>MA Market Access - When a member permits another broker-dealer to use a market participant identifier assigned to the member to route orders directly to market centers.</p> <p>T Trading - A desk or department where orders are executed. This may be interpreted as either a trading system or a desk or department where orders are executed with the assistance of traders.</p> <p>O Other - A department that does not execute orders or make routing decisions.</p>



Field Name	Data Type	Description
destination	Industry Member ID / Exchange ID	<p>This field contains the SRO-assigned identifier of the destination Industry Member or the Exchange ID of the destination exchange (unless destinationType = N, then this field will be blank). This value must match the routingOrigin field on the Order Accepted events or Quote Received event reported by the destination.</p> <p>When destinationType = F, it is the IMID of an Industry Member</p> <p><b>Allowed Values</b> (When destinationType = E)</p> <p>BOX BOX Options Exchange  CBOE Cboe Options  C2 C2 Options  BYX Cboe BYX Exchange  BZX Cboe BZX Equities  BOXOP Cboe BZX Options  EDGA Cboe EDGA  EDGX Cboe EDGX Equities  EDGXOP Cboe EDGX Options  IEX Investor's Exchange  MIAMI Miami International Securities Exchange  MIAX MIAX PEARL  BX Nasdaq BX Equities Market  NOBO Nasdaq BX Options Market  PSX Nasdaq PHLX Equities Market  PHLX Nasdaq PHLX Options Market  NSDQ Nasdaq Stock Market  NOM Nasdaq Options Market  ISE Nasdaq ISE  GEMX Nasdaq GEMX  MRX Nasdaq MRX  AMER NYSE American Equities  AMEROP NYSE American Options  ARCA NYSE ARCA Equities  ARCAOP NYSE ARCA Options  NYSE The New York Stock Exchange  CHX NYSE CHX  NSX NYSE NSX</p>
destinationType	Choice	<p>Indicating whether the destination of the route is an Industry Member, an exchange or a foreign broker-dealer.</p> <p><b>Allowed Values:</b></p> <p>F Industry Members  E Exchange  N Foreign</p>
displayPrice	Price	ATS only field. The displayed price for an order if ATS displays orders outside of ATS.
displayQty	Whole Quantity	ATS only field. The displayed quantity for an order.

Field Name	Data Type	Description
electronicDupFlag	Boolean	<p>Indicating whether the event is a duplicative electronic message of a manual event. Must be present if true. If populated as true, this message will not be linked to any other events in Phase 2a/2b. If the field is not present, the system will treat it as false.</p> <p><b>Allowed Values</b> true false</p>
electronicTimestamp	Timestamp	<p>For manually executed events, the time at which the action was systematically captured. Required to be reported at the most granular level an Industry Member's order handling or execution systems use to capture data for the reported event, with at least millisecond granularity.</p>
eventTimestamp	Timestamp	<p>EventTimestamp generally refers to when an event occurred, depending on the event. Refer to the events definitions to see what this timestamp represents within the context of that event. If electronic, required to be reported at the most granular level an Industry Member's order handling or execution systems use to capture data for the reported event, with at least millisecond granularity. For manual order handling, <i>eventTimestamp</i> is the manual handling or execution time (i.e. if it is immediately systematized, it must be at millisecond granularity; if is first handled manually and later systematized, it is only required to be reported in increments of at least one second).</p>

Field Name	Data Type	Description
exchOriginCode	Text (4)	<p>Not applicable to equity events. The code signifying the origin of the account as sent to an option exchange. Only required for orders routed to an exchange.</p> <p><b>Possible Values</b></p> <p><b>When destination exchange is CBOE/C2:</b>  B = Broker Dealer  D=Customer Floor Broker Workstation  E=Customer Internal  F = Firm  H=Firm Internal  I=In Crowd Market Maker  J=Firm Floor Broker Workstation  K=Broker Dealer Floor Broker Workstation  L= B/Ds that are billed as 'Firm' but clear in the 'C' range at OCC  N = Away Market Maker  R=Broker Dealer Internal  U=MM from FBW  W=Broker Dealer Floor Broker Workstation  X=Customer BD  Y = Specialist registered in the underlying security at the primary exchange  Z=N,Y from FBW</p> <p><b>When destination exchange is NASDAQ OMX:</b>  B = Broker Dealer  F = Firm  O = Off Floor Market Maker  P = Professional Customer</p>

Field Name	Data Type	Description
exchOriginCode (cont.)	Text (4)	<p><i>Continued from prior row</i></p> <p><b>When destination exchange is NASDAQ OMX PHLX:</b>  F = Firm  A = Away Market Maker  O = Off Floor Market Maker  B = Broker Dealer  L = ALO (Away Linkage Order) Market Maker  Y = specialist registered in the underlying security at the primary exchange  P = Professional Customer</p> <p><b>When destination exchange is NASDAQ OMX BX Options:</b>  B = Broker Dealer  C = Customer  F = Firm  M = Market Maker  O = Off Floor Market Maker  P = Professional Customer</p> <p><b>When destination exchange is MIAX:</b>  F = Firm  C = Customer  M = Market Maker</p> <p><b>When destination exchange is NYSE MKT:</b>  F = Firm  N = Non-member  P = Professional Customer</p> <p><b>When destination exchange is NYSE Arca:</b>  F = Firm  N = Non-member  P = Professional Customer</p> <p><b>When destination exchange is BOX:</b>  B = House  F = Away Broker  M = Market Maker, Non Client, Pro, Away Affiliated Market Maker, Away Market Maker  C = Client, Away Broker Customer, Broker Customer, Away Market Maker Customer, Professional Customer</p> <p><b>When destination exchange is ISE/Gemini:</b>  F = Firm  B = Broker/Dealer  N = Far Away Market Maker  P = Professional Customer</p>

Field Name	Data Type	Description
exchOriginCode (cont.)	Text (4)	Continued from prior row  <b>When destination exchange is BATS or EDGX:</b> C = Customer F = Firm M = Market Maker U = Professional Customer N = Away Market Maker B = Broker Dealer J = Joint Back Office
executingFirm	Alphanumeric (8)	The OCC clearing number of the executing/give-up firm.
firmDesignatedID	Text(40)	FDID is defined in Section 1.1 of the CAT NMS Plan as “a unique identifier for each trading account designated by Industry Members for purposes of providing data to the Central Repository, where each such identifier is unique among all identifiers from any given Industry Member for each business date.”
firmDetails	Fulfillment Side Details	It is in the format of Fulfillment Side Details, a compound data type that consists of a list of fields (see Section 2.4 Data Type). <i>firmDetails</i> is only used in Equity and Option Order Fulfillment and Fulfillment Amendment Events to capture the firm side details of the Fulfillment. Please see Section 4.13.1 for list of fields.
firmROEID	Alphanumeric (12)	An identifier of the record assigned by the Industry Member. Any alphanumeric not containing a delimiter.  This firm ROE ID is only for the purpose of easy reporting for Industry Members and CAT Reporting Agents and any additional criteria for acceptable values (i.e. uniqueness) is up to the Industry Member’s discretion. This field will not be processed and is not available for CAT Users.
fulfillmentID	Text (40)	The identifier for the order fulfillment. The combination of reporter, date, symbol and fulfillmentID must be unique.
fulfillmentLinkType	Choice	Specifies the type of the fulfillment.  <b>Allowed Values:</b> Y Representative Order, linkage required YF Representative Order or Option Order Fulfillment, linkage required in future phase YP Fill from pre-existing Principal order, linkage required FOR Fulfillment on an order routed to a foreign destination, no linkage required

Field Name	Data Type	Description
handlingInstructions	Name/Value Pairs	<p>This order handling instructions field is a way to provide multiple instruction codes in a relatively flexible manner. This field will contain zero or more order instruction codes, each separated by a single pipe symbol (ASCII decimal 124, hex 7C). Codes which require a value will include that value immediately after the code Field Name and a single equal sign (ASCII decimal 61, hex 3D).</p> <p>All instructions that apply to the order are to be included. Values are case sensitive.</p> <p><b>Allowed Values (presence indicates truth):</b></p> <p>ADD Add on Order. The customer adds additional shares to the order after it was fully executed.</p> <p>ALG Order was received or originated with instructions to work using a trading algorithm</p> <p>ALGMod Order originally received with instructions to work using a trading algorithm is later modified by the customer/client to use a different trading algorithm or change the settings of the trading algorithm</p> <p>ALO Add Liquidity Only</p> <p>AOB At or Between. Instructs the trader to execute at a trade price equal to the NBBO or between the NBBO and the midpoint.</p> <p>AOK Auction or Kill</p> <p>AON All or None</p> <p>ATT Attributable</p> <p>CDIF Customer Display Instruction Flag - Indicates the customer has instructed that a limit order or block order should not be displayed</p> <p>CLO At the Close</p> <p>CMC Contingent on Market Conditions</p> <p>CMPX Complex option order that is tracked as a single leg option order with separate complex instructions</p> <p>CND Conditional Order. An order where the terms and conditions of the order are derived from a related transaction.</p> <p>CNH Cash Not Held. Instructs the Trader to buy or sell as much stock as possible, over the course of the trading day, for a specified amount.</p> <p>CPR Counterparty Restriction. Instructions that the order cannot be placed against certain counterparties.</p> <p>CSH Delivery Instruction: Cash trade settles on the same date</p> <p>d Discretionary Peg</p>

Field Name	Data Type	Description
handlingInstructions (Cont.)	Name/Value Pairs	<p>DIR Directed Orders - Orders that meet the definition of "Directed Order" under Rule 600(b) (19) of Regulation NMS (formerly defined under SEC Rule 11Ac1-6). That definition specifies that the term directed order shall mean a customer order that the customer specifically instructed the broker or dealer to route to a particular venue for execution.</p> <p>DIV Dividend Reinvestment Order. Order is part of a dividend reinvestment program.</p> <p>DNI Do Not Increase</p> <p>DNR Do Not Reduce</p> <p>DNRT Do Not Route</p> <p>EW Exchange for Physical Transaction - Equity trade component of an "exchange for physical" transaction. An exchange for physical transaction involves two parties simultaneously executing a futures contract and an equity transaction (for the securities covered by the futures contract), typically involving baskets that replicate common indices</p> <p>F7 Strict Scale</p> <p>F8 Try to Scale</p> <p>FA No Cross. The broker executing this trade is forbidden from taking other side of the trade.</p> <p>FB OK to Cross. The broker executing this trade is allowed to take the other side of the trade.</p> <p>FC Call First. Refer to the customer/client before trading.</p> <p>FD Percent of Volume. The sender does not want to be all the volume.</p> <p>FH Reinstate on System Failure. If system failure interrupts trading/order routing, attempt to reinstate this order, subject to time in force limitations. Note that depending on the type/severity of the failure, this may not be possible.</p> <p>FI Institutions Only.</p> <p>FJ Reinstate on Trading Halt. If trading in this instrument is halted, reinstate this order when/if trading resumes, subject to time in force limitations.</p> <p>FK Cancel on Trading Halt. If trading in this instrument is halted, cancel this order and do not reinstate it when/if trading resumes.</p> <p>FL Last Peg</p> <p>FN Non negotiable</p> <p>FO Opening Peg</p> <p>FQ Cancel on System Failure. If a system failure interrupts trading or order routing, attempt to cancel this order. Note that depending on the type and severity of the failure, this might not be possible.</p>

Field Name	Data Type	Description
handlingInstructions (Cont.)	Name/Value Pairs	FS Suspend
		FW Peg to VWAP
		FX Trade Along. Trade Along. Customers/clients who specify "Trade Along" give brokers permission to handle and place their order in the market even if the broker already has its own proprietary orders for the same security placed in the market.
		FY Try to Stop
		FZ Cancel if Not best
		Fb Strict Limit
		Fc Ignore Price Validity Checks
		Fd Peg to Limit Price
		Fe Work to Target Strategy
		FBA NYSE Floor Broker Algorithm indicates that the order is routed to the Exchange via a NYSE Floor Broker Algorithm
		FOK Fill or Kill - Indicates the order is intended for immediate execution in its entirety, and if not executed in its entirety, the order is canceled
		FUT Futures Related Trade
		G G Order - An order for an account covered by Exchange Act §11(a) that relies on §11(a)(1)(G) as an exemption to §11(a)(1)
		IDX Intra-Day Cross
		IO Imbalance Only
		LOC Limit on Close - Instructs the trader to execute the order at the closing price provided that the closing price is at or within the limit specified
		LOO Limit on Open - Instructs trader to execute the order at the opening price provided that the opening price is at or within the limit specified.
		M Midpoint Peg
		MAC Market at Close. Instructs the trader to execute the order at the closing inside quote price of regular market hours.
		MAO Market at Open. Instructs the trader to execute the order at the opening inside quote price of regular market hours.
MOB Midpoint or Better. Instructs the trader to execute at a trade price equal to the mid-point or better.		
MRP Merger Related Transfer Position		
MTL Market to Limit. An order that is sent in as a market order to execute at the current best price. If the entire order does not immediately execute at the market price, the remainder of the order is re-submitted as a limit order with the limit price set to the price at which the original order executed.		



Field Name	Data Type	Description
handlingInstructions (Cont.)	Name/Value Pairs	<p>ND Delivery Instructions: Next Day - trade settles on next trade date</p> <p>NH Not Held</p> <p>OPG At the Open</p> <p>OPO Opt Out of Locked Market</p> <p>OPT Options Related Trade</p> <p>OVD Over the Day. Requires that a trader break up an order into several partial executions. The customer may specify the number of executions.</p> <p>P Market Peg</p> <p>PEG Indicates that the customer's limit price is to be determined by a specific market price and/or volume factor or that the limit price should be determined pursuant to a specific formula</p> <p>PSO Post Only</p> <p>R Primary Peg</p> <p>RLO Retail Liquidity Order (On Exchange)</p> <p>RSV Reserve Side Order. Required for an order for which a customer has authorized the public display of part of the full size of the order with the remainder held in reserve on an undisplayed basis to be displayed in whole or in part as the displayed part is executed.</p> <p>SCL Scale. Requires partial executions that are not more than a specified price increment apart.</p> <p>SLD Slide –Instruction to adjust limit price to prevent locked or crossed market</p> <p>SLR Delivery Instructions: Seller's Option - trade settles on the date determined by a seller. Stop Limit on Quote. An order that is triggered by a quotation at which point the stopped order becomes a limit order.</p> <p>SMT Smart Router indicates that the order is routed out via a Smart Router.</p> <p>SOQ Stop on Quote. An order that is triggered by a quotation at which point the stopped order becomes a market order.</p> <p>STP Self Trade Prevention</p> <p>SW Stop Stock Transaction - Any transaction resulting from an order for which a member and another party agree that the order will be executed at a Stop Stock Price or better.</p> <p>TS Trailing Stop</p> <p>WCO While Connected</p> <p>WDP With Discretion Price</p> <p>WRK Work. Leaves the time of execution to the trader's discretion; either full execution or partial executions are accepted.</p>

Field Name	Data Type	Description
handlingInstructions (Cont.)	Name/Value Pairs	<p>Some allowed values are name value pairs and must be accompanied by a value:</p> <p><b>Allowed Values (Name Value Pairs):</b></p> <p>AucResp Auction Response. Requires the Auction ID value for option orders originated in response to an exchange auction.</p> <p>DISP Display Price. The display price as instructed by the customer at the time the order is placed. Requires a numeric value representing the display price (e.g., DISP=10.00)</p> <p>DISQ Display Quantity. The display quantity as instructed by the customer at the time the order is placed. Requires a numeric value representing the display quantity (e.g., DISQ=1000)</p> <p>STOP Stop Price - requires a Numeric value representing the stop price (e.g., STOP=17.95)</p> <p>XDATE Expire Date - requires a Date value, representing the date that the order expires. The value must be in Date format (e.g., May 15, 2017 would be XDATE=20170515). The order expires at the close of the specified date.</p> <p>XTIME Expire Time - requires a Timestamp value, representing the time that the order expires. The value must be in a valid Timestamp format.</p> <p>TMO The trigger time of the Time Managed Order (e.g. the specific date and time that an order becomes a market or limit price order) - requires a Timestamp value.</p> <p>For orders routed without any changes to the handling instructions, reporters may use single code to indicate the handling instructions are equal to the received order.</p> <p><b>Allowed Value:</b> RAR Routed As Received</p>
infoBarrierID	Alphanumeric (12)	Specifying the identifier of the information barrier in place for a trading unit that will meet the criteria of the "no-knowledge" exception in FINRA Rule 5320.02. Any alphanumeric not containing a delimiter.
initiator	Choice	<p>Indicates who initiated a cancel or modification request. If the Industry Member initiated the cancel or modification event, value should be "Firm", otherwise "Customer".</p> <p><b>Allowed Values:</b> Customer Firm</p>

Field Name	Data Type	Description
isolnd	Choice	Indicates the order was an Intermarket Sweep Order or Trade-at Intermarket Sweep Order.  <b>Allowed Values:</b> ISOD Intermarket Sweep Order - Day ISOI Intermarket Sweep Order IOC NA Not applicable
leavesQty	Real Quantity	The quantity remaining unfilled after the event. The meaning of this field is dependent on the event in which it's used. Refer to each individual event definition for more detail.
manualFlag	Boolean	The flag for whether or not the order was received manually (i.e. an order is called in by phone) or handled manually (Reportable Event was manual action). See this field in context of the event definitions.  <b>Allowed Values:</b> true false
manualOrderID	Text (40)	The internal order ID of the previously (separately) reported manual order event when followed by a duplicative electronic message.

Field Name	Data Type	Description
marketCenterID	Choice	<p>The national securities exchange or transaction reporting system operated by registered securities association where the trade was reported. Used on Equity Trade event only.</p> <p><b>Allowed Values:</b></p> <p><b><i>FINRA transaction reporting systems</i></b>  DN FINRA/NYSE Trade Reporting Facility  D ADF  L FINRA/Nasdaq Trade Reporting Facility  DC FINRA/Nasdaq Chicago Trade Reporting Facility  O OTC Reporting Facility</p> <p>A NYSE MKT  B Nasdaq BX  C NYSE National  F Non-US Exchange  I International Securities Exchange  J Cboe EDGA Exchange  K Cboe EDGX Exchange  M NYSE Chicago Stock Exchange  N New York Stock Exchange  P NYSE Arca  Q The Nasdaq Stock Market  V Investors Exchange  W CBOE Stock Exchange  X Nasdaq PSX  Y Cboe BYX Exchange  Z Cboe BZX Exchange</p>
minQty	Whole Quantity	Requires an Unsigned value, representing the minimum quantity allowed to be executed in a single transaction.
mpStatusCode	Choice	<p>Market Participant Status Code, indicating if the market maker's quote is open or closed.</p> <p><b>Allowed Values:</b>  O Open  C Close</p>
nbboSource	Choice	<p>ATS only field. Source of the NBBO data used.</p> <p><b>Allowed Values:</b>  Direct  SIP  Hybrid  NA Not Applicable</p> <p>NBBO Source of 'NA' is used when the NBBO Engine Look up Date and Time is not applicable for the ATS Order Type or the ATS canceled the order without referencing the NBBO. If this value is used, the related NBBO fields must be left blank.</p>

Field Name	Data Type	Description
nbbTimestamp	Timestamp	ATS only field. The date/time at which the NBBO was referenced.
nbbPrice	Price	ATS only field. The national best bid price at the moment of the timestamp. If the event changes the NBBO, this is the national best bid price before the change effected by the event, in this sense, this field is always the national best bid price immediately before the event occurs. See this field in context of the event definitions for more info.
nbbQty	Whole Quantity	ATS only field. The national best bid quantity at the moment of the timestamp. If the event changes the NBBO, this is the national best bid quantity before the change effected by the event, in this sense, this field is always the national best bid quantity immediately before the event occurs. See this field in context of the event definitions for more info.
nboPrice	Price	ATS only field. The national best offer price at the moment of the timestamp. If the event changes the NBBO, this is the national best offer price before the change effected by the event, in this sense, this field is always the national best offer price immediately before the event occurs. See this field in context of the event definitions for more info.
nboQty	Whole Quantity	ATS only field. The national best offer quantity at the moment of the timestamp. If the event changes the NBBO, this is the national best offer quantity before the change effected by the event, in this sense, this field is always the national best offer quantity immediately before the event occurs. See this field in context of the event definitions for more info.
negotiatedTrade	Choice	In a <u>New Order</u> event, it identifies if an order is the result of a negotiated trade between two reporters. <b>Allowed Values:</b> true false
negotiatedTradeSide	Choice	In a <u>Trade event</u> , it indicates whether this is a negotiated trade and whether this report is for a negotiated buy or negotiated sell.  <b>Allowed Values:</b> NBUY The Reporter is on the Buy side of the negotiated trade. This must be consistent with side of the order. NSELL The Reporter is on the Sell side of the negotiated trade. This must be consistent with side of the order. NA Not Applicable

Field Name	Data Type	Description
nextUnlinked	Choice	For Phase 2b, indicates whether the reported option event is unlinked to the next event in the option order lifecycle as the next event is out of scope for Phase 2b.  <b>Allowed Values:</b> M The immediate internal step is handled manually, no subsequent linkage C The next step of the order is to be represented by a complex order, no subsequent linkage P The next step of the order is a paired option order, no subsequent linkage
onlyOneQuoteFlag	Boolean	<i>true</i> if the system allows only one quote for the particular market maker; false otherwise.  <b>Allowed Values:</b> true false
openCloseIndicator	Choice	Allowed values: Open, Close. For option events, this field describes whether the action taken (buying or selling) will open a new position or will close an existing position in the order originator's account. Must be reported as a point-in-time value on each event (therefore, this may differ between New Option Order and Option Order Route for the same orderID).
optionID	Text(22)	The 21-character OSI Symbol of the option. For FLEX Percent options, a percentage symbol (%) is appended before the OSI symbol elements.
optionOriginCode	Choice	Represents the type of beneficial owner of the account for which the order was received or originated.  <b>Allowed Values:</b> C Customer P Professional Customer F Firm (non Market Maker, other proprietary) M Market Maker
orderID	Text (40)	The internal order ID assigned to the order by the Industry Member.
orderType	Choice	The order type defines the type of order being placed, and must be exactly one of the permitted values.  <b>Allowed Values:</b> CAB Cabinet LMT Limit MKT Market

Field Name	Data Type	Description
originator	Choice	This indicates if the order was initiated by the firm or received from a customer or foreign B/D, and identifies affiliates.  <b>Allowed Values:</b> A Customer - Domestic Affiliate I Customer - Foreign Affiliate N Customer - Non Affiliate F Firm M Foreign Broker/Dealer - Affiliate X Foreign Broker/Dealer - Non Affiliate
parentOrderID	Text(40)	Used in a New Child Order event to identify the parent order from which the child order is generated from.
price	Price	The limit price of the order. However the definition of this field is dependent on the event in which it's used. Refer to the events definitions to see what this price represents within the context of that event. For example: In Trade event, this is the price of the trade.
priorFulfillmentID	Text(40)	The most recent internal ID given to the fulfillment event by the reporter. Values for this field should reflect the fulfillmentID provided in the most recent (prior) Order Fulfillment Amendment event.
priorFulfillmentDate	Date	The most recent date on which the fulfillment was last amended. If this is the first amendment no Fulfillment, then it is the date of the original Fulfillment. Only present if this is at a different date from the original Fulfillment or last Fulfillment Amendment.
priorOrderDate	Date	priorOrderDate generally refers to a prior date when the orderID or priorOrderID or parentOrderID is assigned, depending on the event. Refer to the events definitions to see what this date represents within the context of that event.
priorOrderID	Text(40)	Generally, it is the identifier of the order referred by the event (e.g. most recent order ID before a modification). Refer to the events definitions to see what orderID represents within the context of that event.  If the order was modified several times, this should be order ID in the most recent Order Modified or Order Adjusted.
priorQuoteID	Text(40)	The most recent quoteID of the existing quote before being updated or replaced.

Field Name	Data Type	Description
priorUnlnked	Choice	For Phase 2b, indicates whether the reported option event is unlinked to the prior event in the option order lifecycle as the prior event is out of scope Phase 2b.  <b>Allowed Values:</b> M The immediate prior order handling is manual, no linkage to the prior event. C This is a single leg order split from a complex parent order, no linkage to the parent.
quantity	Real Quantity	The quantity of the order.
quoteID	Text(40)	The internal quote ID assigned to the quote by the reporter.
quoteRejectedFlag	Boolean	Indicates if the quote was not accepted by the destination.  <b>Allowed Values:</b> true false
reason	Text (255)	Free format text field, with reason for the action.
receivedQuoteID	Text(40)	Used in a Quote Received event to identify the quote ID as received by the ATS or broker dealer, should match the routedQuoteID in the New Quote event created by the issuer of the quote.
receiverIMID	Industry Member ID	In the Quote Received Event: The IMID of the reporter receiving the quote (the reporter of this event). See event details for linkage criteria.  In the Order Accepted: The IMID of the reporter receiving the order. See event details for linkage criteria.



Field Name	Data Type	Description
receivingDeskType	Choice	<p>Indicating the type of desk or department receiving the order. More granular than the field deptType. Only required when the destination of an internal route is a desk.</p> <p><b>Allowed Values:</b>  A Agency  AR Arbitrage  B Block Trading  C Convertible Desk  CR Central Risk Books  D Derivatives  EC Equity Capital Markets  EC IN International  IS Institutional  O Other  PF Preferred Trading  PR Proprietary  PT Program Trading  S Sales  SW Swaps  T Trading Desk  TR Treasury</p>
reportingExceptionCode	Choice	<p>Indicates the reason that a unique identifier (e.g., Branch Sequence Number, Compliance ID) was not supplied to a transaction reporting system.</p> <p><b>Allowed Values:</b>  A Agency Average Price Transaction  F Reported on Form T pursuant to FINRA Trade Reporting Rules  M Execution where a FINRA transaction reporting system constraint prevented the entry of a unique identifier (e.g., Branch Sequence Number, Compliance ID)  P Intra-firm order filled from firm's proprietary account  R Riskless principal transaction  T Agency Post Trade Allocation</p>
representativeInd	Choice	<p>Indicates if the representative linkage is required. Mandatory for all orders.</p> <p><b>Allowed Values:</b>  Y Representative order, linkage required  YS Representative order, linkage required; details in supplement event  YF Representative order, linkage required in future phase  YP Representative order, pricing guarantee, no linkage required  N Not a representative order</p>

Field Name	Data Type	Description
routedOrderID	Text (40)	The ID assigned to this order by the routing firm when routing the order to the reporter; or, the ID assigned to this order by reporter for sending message to the routing destination.
routedQuoteID	Text(40)	In New Quote event, this is the quote ID as routed to the recipient by the reporter. However, in Quote Received event, this is quote ID as received by the reporter (ATS/broker dealer), should match the routedQuoteID in the New Quote event created by the issuer of the quote.
routeRejectedFlag	Boolean	Indicates if the routed order was not accepted by the destination (i.e rejected, no response). Not required until Phase 2c.  <b>Allowed Values:</b> true false

Field Name	Data Type	Description
routingOrigin	Industry Member ID / Exchange ID	<p>When the order is routed from another Industry Member, this is the IMID of the sending firm from which the order is routed. And <u>it must match senderIMID in the Route event reported by the routing entity</u>. When the order is routed from an exchange, this is the Exchange ID of the sending firm from which the order is routed. And <u>the value must match the exchange field in the Route event reported by the exchange</u>.</p> <p>When routingOriginType = F, it is the IMID of an Industry Member</p> <p><b>Allowed Values</b> (When routingOriginType = E)</p> <p>BOX BOX Options Exchange  CBOE Cboe Options  C2 C2 Options  BYX Cboe BYX Exchange  BZX Cboe BZX Equities  BOXOP Cboe BZX Options  EDGA Cboe EDGA  EDGX Cboe EDGX Equities  EDGXOP Cboe EDGX Options  IEX Investor's Exchange  MIAMI Miami International Securities Exchange  MIAX MIAX PEARL  BX Nasdaq BX Equities Market  NOBO Nasdaq BX Options Market  PSX Nasdaq PHLX Equities Market  PHLX Nasdaq PHLX Options Market  NSDQ Nasdaq Stock Market  NOM Nasdaq Options Market  ISE Nasdaq ISE  GEMX Nasdaq GEMX  MRX Nasdaq MRX  AMER NYSE American Equities  AMEROP NYSE American Options  ARCA NYSE ARCA Equities  ARCAOP NYSE ARCA Options  NYSE The New York Stock Exchange  CHX NYSE CHX  NSX NYSE NSX</p>
routingOriginType	Choice	<p>Indicating the type of origin from which the order is routed.</p> <p><b>Allowed Values:</b>  F Industry Members  E Exchange</p>

Field Name	Data Type	Description
sellDetails	Trade Side Details	It is in the format of Trade Side Details, a compound data type that consists of a list of fields (see Section 2.4 Data Type). <i>sellDetails</i> is only used in Equity Trade Events or Trade on a Quote Events to capture the sell side details of the trade. Please see Section 4.12.1 for list of fields.
senderIMID	Industry Member ID	In an Order Accepted event, when the order is routed from an Industry Member, this is the SRO-assigned member ID of the routing origin.
seqNum	Alphanumeric (10)	<p>ATS only field. The sequence number of the event, used to identify the sequence of events when multiple events have the same timestamps.</p> <p>The sequence number is required to be strictly increasing for a given reporter, date, and symbol, and can be used to sort each event in chronological order where multiple events have the same timestamp.</p> <p>For more detail, please refer to Section 2.3.1 - Timestamps and Sequence Numbers.</p>
session	Text (40)	The name/ID of the session being used to send the order (between firm with exchange, firm with firm, or firm with ATS). May be any string shared between sender and receiver, including, <blank>, so long as they match, to ensure uniqueness in linkage.
shortSaleExptInd	Boolean	<p>Boolean field. Indicates if the order was eligible to be marked Short Exempt according to SEC Rule 201. The value is <i>true</i> if the order may be marked short exempt consistent with SEC Rule 201. The value is <i>false</i> if the order was not exempt according to SEC Rule 201.</p> <p><b>Allowed Values:</b> true false</p>
side	Choice	<p>Side of the event.</p> <p><b>Allowed Values:</b> Buy Sell Short Exempt</p>
sideIMID	Industry Member ID	<p>In Trade Side Details and Fulfillment Side Details, if this side of the trade/fulfillment was an order that was the result of an Order Accepted event, this is the senderIMID of the order's Order Accepted event. If this side of the trade was an order that resulted from a New Order event, this IMID is the same as the reporterIMID of this event.</p> <p>Required for buyDetails, sellDetails, clientDetails, and firmDetails.</p>

Field Name	Data Type	Description
symbol	Symbol	The stock symbol, in the symbology of the listing exchange, or FINRA OTC symbology for OTC Equity Securities.
tapeTradeID	Text (40)	Used in a Trade event to record the unique identifier reported by the firm to the TRF/ADF/ORF based on the reporting specifications of the specific facility, required when the ID was supplied to a transaction reporting system: <ul style="list-style-type: none"> <li>• Compliance ID in ORF and ADF</li> <li>• Branch Sequence Number in FINRA/NQ TRF</li> <li>• FINRA Control Number in FINRA/NYSE TRF</li> </ul>
timeInForce	Choice	Specifies the Time-In-Force for an order.  <b>Allowed Values:</b> DAY    A day order IOC    Immediate or Cancel GTC    Good till Canceled GTT    Good till Time (requires XTIME in handlingInstructions) GTD    Good till Date (requires XDATE in handlingInstructions) GTM    Good this Month (valid until last business day of the month in which order was received) GTX    Good till Crossing
tradeID	Text (40)	Used in a Trade event. A reporter-assigned identifier for the trade. The combination of date, reporter, symbol, and tradeID must be unique.
tradingSession	Choice	The trading session(s) during which an order is eligible to trade.  <b>Allowed Values:</b> FOR    To be executed only on a Foreign Market PRE    Pre-Market Only PREREG    Pre-Market and Regular REG    Regular Only REGPOST    Regular and Post-Market POST    Post-Market Only PREPOST    Pre-Market and Post-Market ALL    All Sessions

Field Name	Data Type	Description
type	Message Type	<p>Specifies the event type.</p> <p><b>Equity Events:</b>  MENO New Order  MENOS New Order Supplement  MEOR Order Route Event  MEMR Modify Order Route  MECR Cancel Order Route  MEOA Order Accepted  MEIR Order Internal Route  MEIM Order Internal Route Modified  MEIC Order Internal Route Canceled  MECO Child Order  MECOM Child Order Modified  MECOC Child Order Canceled  MEOM Order Modified  MEOMS Order Modified Supplement  MEOJ Order Adjusted  MEOC Order Canceled  MENQ New Quote  MEQR Equity Quote Received  MEQC Equity Quote Canceled  MEOT Trade  MEOTQ Trade as the Result of a Quote  MEOF Order Fulfillment  MEFA Order Fulfillment Amendment  MEPA Post Trade Allocation  MEAA Amended Allocation</p> <p><b>Option Events:</b>  MONO New Option Order  MONOS Option Order Supplement  MONP Paired Option Order  MOOR Option Order Route  MOMR Option Order Modified Route  MOCR Option Order Cancel Route  MOOA Option Order Accepted  MOIR Option Order Internal Route  MOIM Option Order Internal Route Modified  MOIC Option Order Internal Route Canceled  MOCO Child Option Order  MOCO Child Option Order Modified  MOCO Child Option Order Canceled  MOOM Option Order Modified  MOOMS Option Order Modified Supplement  MOOJ Option Order Adjusted  MOOC Option Order Canceled  MOOF Option Order Fulfillment  MOFA Option Order Fulfillment Amendment  MOPA Option Post Trade Allocation  MOAA Option Post Trade Amended Allocation</p>

Field Name	Data Type	Description
unsolicitedInd	Choice	<p>Indicates whether the quote is unsolicited or not.</p> <p>Allowed Values:</p> <p>U     Unsolicited Bid and Ask</p> <p>A     Unsolicited Ask</p> <p>B     Unsolicited Bid</p> <p>N     Not Unsolicited</p>
workingPrice	Price	<p>ATS only field. The working price of the order. For example, in a PEG order, the adjusted price due to NBBO movement should be captured in this workingPrice field.</p>